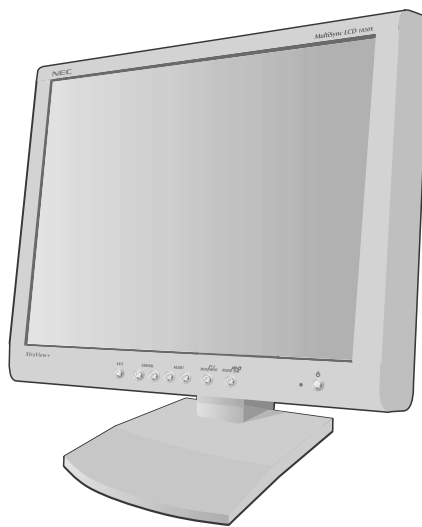


# User's Manual

Only the point is mentioned

1. A Version

**NEC**



USER'S MANUAL

## MultiSync® **LCD1850X™**

WITH AMBIX TECHNOLOGY





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	<b>WARNING</b>	
<p>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.</p> <p>REFRAIN FROM OPENING THE CABINET AS THERE ARE HIGH VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p>		

	<b>CAUTION</b>	
<p>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.</p>		
	<p>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.</p>	
	<p>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.</p>	

**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. 950.

**FCC Information**

1. Use the attached specified cables with the MultiSync LCD1850X (LH-18S02-1 and LH-18S02-BK1) color monitor so as not to interfere with radio and television reception.
  - (1) Please use the supplied power cord or equivalent to ensure FCC compliance.
  - (2) Please use the supplied shielded video signal cable, 15-pin mini D-SUB to DVI cable or DVI-D to DVI-D cable.
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.

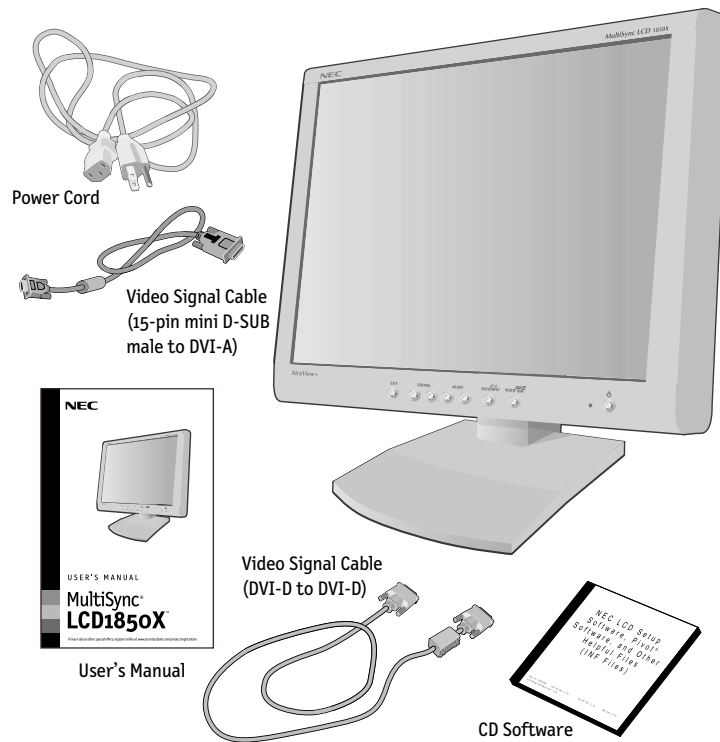
If necessary, the user should contact the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet, prepared by the Federal Communications Commission, helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is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

# Contents

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

- MultiSync LCD1850X™ monitor with tilt/swivel/pivot stand
- Power Cord
- Video Signal Cable (15-pin mini D-SUB male to DVI-A)
- Video Signal Cable (DVI-D to DVI-D)
- User's Manual
- NEC LCD Setup Software, Pivot Software and other Helpful files



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

## Quick Start

To attach the MultiSync® 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 to DVI-A signal cable to the connector of the display card in your system (Figure A.2).  
For the MAC: Connect the MultiSync Macintosh cable adapter to the computer, then attach the 15-pin mini D-SUB signal cable to the MultiSync Macintosh cable adapter (Figure B.1).

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

NOTE: To obtain the MultiSync Macintosh cable adapter call NEC-Mitsubishi Electronics Display of America, Inc. at (800) 820-1230.

3. Remove connector cover. Connect the DVI signal cable to the connector on the back of the monitor. Place the video signal cable (Figure C.1). Replace the connector cover.

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

4. 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 (Figure C.1).

NOTE: If you use this monitor at AC220-240V, please refer to Recommended Use section of this manual for proper selection of AC power cord.

5. The Vacation Switch on the right side of the monitor must be turned on. Turn on the monitor with the front power button (Figure D.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.

6. To complete the setup of your MultiSync LCD monitor, use the following OSM™ controls:
  - Auto Adjust Contrast (Analog input only)
  - Auto Adjust (Analog input only)

Auto Adjust is activated when the monitor is turned on. Refer to the Controls section of this User's Manual for a full description of these OSM controls.

NOTE: For download information on the Windows® 95/98/2000 INF file for your MultiSync LCD1850X monitor, refer to the References section of this User's Manual.

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

NOTE: Refer to User's Manual in the NEC LCD Setup Software CD case for installation and operation of this software.

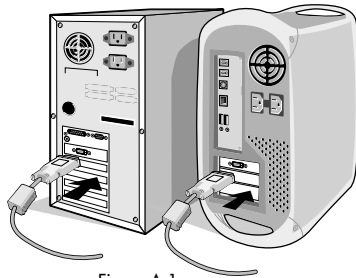


Figure A.1

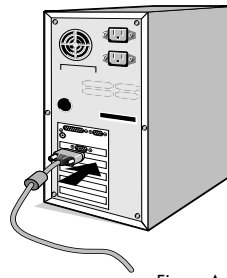


Figure A.2

3

## Quick Start -continued

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Figure B.1

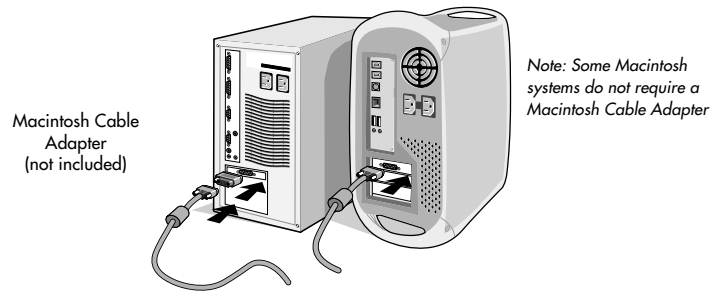


Figure C.1

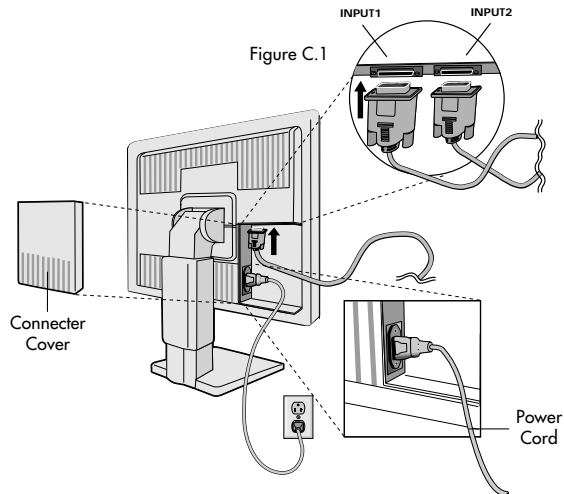
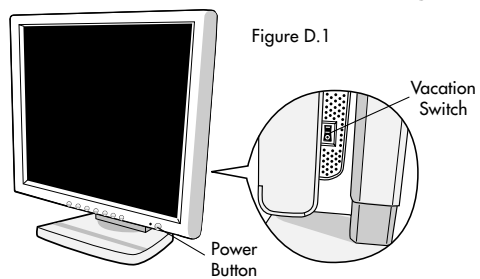


Figure D.1



4

## Quick Start -continued

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### 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).

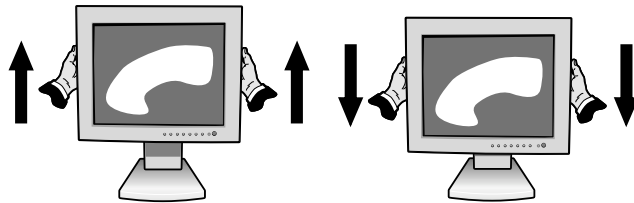


Figure RL.1

### Screen Rotation

Before rotating, the screen must be raised to the highest level to avoid knocking the screen on the desk or pinching 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 toggle the orientation of the OSM™ menu between Landscape and Portrait modes, press the RESET button while OSM menu is off.

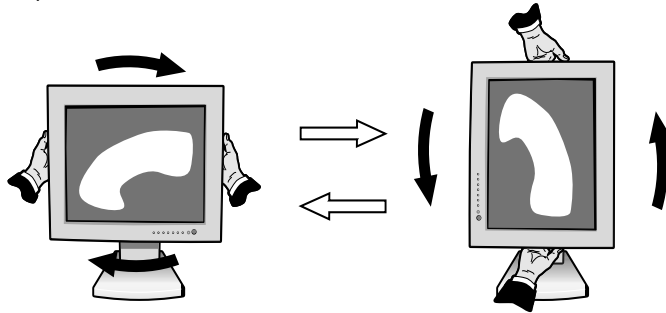


Figure R.1

## Quick Start –continued

### Tilt and Swivel

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

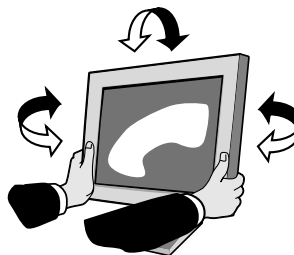


Figure TS.1

### 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 (Figure RL.1).
3. Place monitor face down on a non-abrasive surface. (Place the screen on a 2-inch platform so that the stand is parallel with the surface.) (Figure S.1)

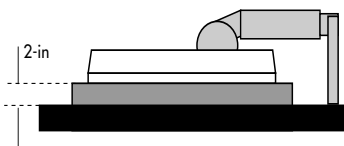


Figure S.1

4. Remove the stand cover by sliding the top/bottom pieces off the stand (Figure S.2). Remove the 4 screws connecting the monitor to the stand and lift off the stand assembly (Figure S.3). The monitor is now ready for mounting in an alternate manner.
5. Reverse this process to reattach stand.

NOTE: Use only VESA-compatible alternative mounting method.

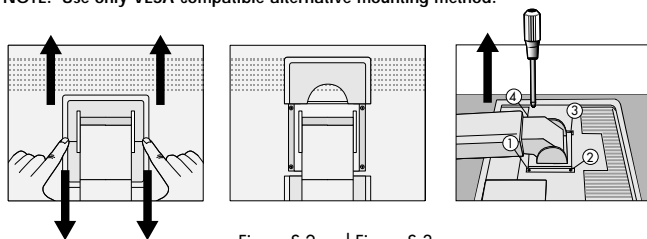


Figure S.2 and Figure S.3

Caution: Please use the attached screws (4 pcs) when mounting. To fulfil the safety requirements the monitor must be mounted to an arm which guaranties the necessary stability under consideration of the weight of the monitor. The LCD monitor shall only be used with an approved arm (e.g. GS mark).



# Controls

**OSM™ (On-Screen Manager) control buttons on the front of the monitor function as follows:**

To access OSM menu, press any of the control buttons (◀, ▶, -, +).

To change DVI/D-SUB signal input, press the NEXT button.

To rotate OSM between Landscape and Portrait modes, press the RESET button.

NOTE: OSM must be closed in order to change signal input and rotate.

	Menu
<b>EXIT</b>	Exits the OSM controls. Exits to the OSM main menu.
<b>CONTROL</b> ◀/▶	Moves the highlighted area left/right to select control menus. Moves the highlighted area up/down to select one of the controls.
<b>ADJUST</b> -/+	Moves the bar left/right to increase or decrease the adjustment. Active Auto Adjust function. Enter the Sub Menu.
<b>NEXT</b>	Moves the highlighted area of main menu right to select one of the controls.
<b>RESET</b>	Resets the highlighted control menu to the factory setting. Resets the highlighted control to the factory setting.

NOTE: When RESET is pressed in the main and sub-menu, a warning window will appear allowing you to cancel the RESET function by pressing the EXIT button.

## **Brightness/Contrast Controls**

### **BRIGHTNESS**

Adjusts the overall image and background screen brightness.

### **CONTRAST**

Adjusts the image brightness in relation to the background.

### AUTO **AUTO ADJUST (Analog input only)**

Adjusts the image displayed for non-standard video inputs.

## AUTO **Auto Adjust (Analog input only)**

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

## **Position Controls (Analog input only)**

### **LEFT / RIGHT**

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

### **DOWN / UP**

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

### **H.SIZE**

Adjusts the horizontal size by increasing or decreasing this setting.

### **FINE**

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

## Controls –continued

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### AccuColor® Control Systems

AccuColor® Control Systems: Six color presets select the desired color setting (sRGB and NATIVE color presets are standard and cannot be changed). Color temperature increases or decreases, in each preset. R,Y,G,C,B,M,S: Increases or decreases Red, Yellow, Green, Cyan, Blue, Magenta and Saturation depending upon which is selected. The change in color will appear on screen and the direction (increase or decrease) will be shown by the color bars.

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

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


### Tools 1

 **SMOOTHING:** Select one of three image sharpness settings. This function is only valid when the expanded display function (expansion function) is on.

**TEXT MODE:** Use this to display text clearly.

**NORMAL MODE:** This sharpness is between TEXT and GRAPHIC MODE.

**GRAPHIC MODE:** This mode is suited for images and photographs.


 **EXPANSION MODE:** Sets the zoom method.

**FULL :** The image is expanded to 1280 x 1024, regardless of the resolution.

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

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


**CUSTOM (DIGITAL INPUT & RESOLUTION OF 1280x1024 ONLY):** Select one of seven expansion rates. In this mode the resolution may be low and there may be blank areas. This mode is for use with special video cards.

 **VIDEO DETECT:** Selects the method of video detection when more than one computer is connected.

**FIRST DETECT:** The video input has to be switched to “FIRST DETECT” 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.

**LAST DETECT:** The video input has to be switched to the “LAST DETECT” mode. When the monitor is displaying a signal from the current source and a new secondary source is supplied to the monitor, then the monitor will automatically switch to the new video source. 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.

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







 **DVI SELECTION:** This function selects the DVI input mode. When the DVI selection has been changed, you must restart your computer.

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

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

## Controls –continued

### Tools 2

-  **LANGUAGE:** OSM™ control menus are available in seven languages.
-  **OSM POSITION:** You can choose where you would like the OSM control image to appear on your screen. Selecting OSM Location allows you to manually adjust the position of the OSM control menu left, right, down or up.
-  **OSM TURN OFF:** The OSM control menu will stay on as long as it is use. In the OSM Turn Off submenu, you can select how long the monitor waits after the last touch of a button to shut off the OSM control menu. The preset choices are 10, 20, 30, 45, 60 and 120 seconds.
-  **OSM LOCK OUT:** This control completely locks out access to all OSM control functions. When attempting to activate OSM controls while in the Lock Out mode, a screen will appear indicating the OSM controls are locked out. To activate the OSM Lock Out function, press ◀, then ▶ and hold down simultaneously. To de-activate the OSM Lock Out, press ◀, then ▶ and hold down simultaneously.
-  **RESOLUTION NOTIFIER:** This optimal resolution is 1280 x 1024. If ON is selected, a message will appear on the screen after 30 seconds, notifying you that the resolution is not at 1280 x 1024.
-  **FACTORY PRESET:** Selecting Factory Preset allows you to reset all OSM control settings back to the factory settings. The RESET button will need to be held down for several seconds to take effect. Individual settings can be reset by highlighting the control to be reset and pressing the RESET button.

### Information

**MODE DISPLAY MODE:** Provides information about the current resolution display and technical data including the preset timing being used and the horizontal and vertical frequencies.

Increases or decreases the current resolution. (Analog input only)

 **MONITOR INFO:** Indicates the model and serial numbers of your monitor.


**OSM™ Warning:** OSM Warning menus disappear with Exit button.

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

**RESOLUTION NOTIFIER:** This function gives a warning of use with optimized resolution. After power is turned on or when there is a change of input signal or the video signal doesn't have proper resolution, the **Resolution Notifier** window will open. This function can be disabled in the **TOOL** menu.

**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.

**CHECK CABLE:** This function will advise you to check all Video Inputs on the monitor and computer to make sure they are properly connected.

**NOTE:** If "  CHANGE DVI SELECTION" is displayed switch to DVI SELECTION.

# Recommended Use

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## Safety Precautions and Maintenance



FOR OPTIMUM PERFORMANCE, PLEASE NOTE THE FOLLOWING WHEN SETTING UP AND USING THE MULTISYNC® LCD COLOR 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.
- When operating the MultiSync LCD monitor with its AC 220-240V power supply, use a power supply cord that matches the power supply voltage of the AC power outlet being used. The power supply cord you use must have been approved by and comply with the safety standards of your country. (Type H05VV-F should be used in Europe)
- In UK, use a BS-approved power cord with molded plug having a black (5A) fuse installed for use with this monitor. If a power cord is not supplied with this monitor, please contact your supplier.
- Do not place any objects onto the monitor and do not use the monitor outdoors.
- The inside of the fluorescent tube located within the LCD monitor contains mercury. Please follow the bylaws or rules of your municipality to dispose of the tube properly.

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.
- Do not bend power cord.
- Do not use monitor in high temperature, humid, dusty, or oily areas.
- If glass is broken, handle with care.
- Do not cover vent on monitor.
- If monitor or glass is broken, do not come in contact with the liquid crystal and handle with care.
- 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.



CAUTION

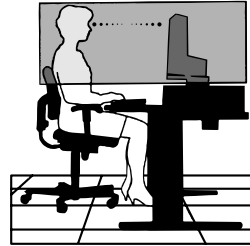
## Recommended Use –continued



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 16 inches and no further away than 28 inches from your eyes. The optimal distance is 23 inches.
- 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.
- Clean the LCD monitor surface with a lint-free, non-abrasive cloth. Avoid using any cleaning solution or glass cleaner!
- 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 Color Setting
- Use non-interlaced signals with a vertical refresh rate between 60-75Hz
- Do not use primary color blue on a dark background, as it is difficult to see and may produce eye fatigue to insufficient contrast

*For more detailed information on setting up a healthy work environment, call NEC at (800) 820-1230, NEC FastFacts™ information at (800) 366-0476 and request document #900108 or write the American National Standard for Human Factors Engineering of Visual Display Terminal Workstations – ANSI-HFS Standard No. 100-1988 – The Human Factors Society, Inc. P.O. Box 1369, Santa Monica, California 90406.*



## Features

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**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 Signaling) 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 TMDS-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 TMDS-based digital only connection, only a simple adapter is necessary for compatibility between DVI-D and other TMDS-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 TMDS-based digital only connection, only a simple adapter is necessary for compatibility between DFP and other TMDS-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 TMDS-based connector (for the digital input pins), only a simple adapter is necessary for compatibility between P&D and other TMDS-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.

**AccuColor® Control Systems:** Six color presets select the desired color setting (sRGB and NATIVE color presets are standard and cannot be changed). Color temperature increases or decreases, in each preset. R,Y,G,C,B,M,S: Increases or decreases Red, Yellow, Green, Cyan, Blue, Magenta and Saturation depending upon which is selected. The change in color will appear on screen and the direction (increase or decrease) will be shown by the color bars. NATIVE: Original color presented by the LCD panel that is unadjustable.

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

**OSM™ (On-Screen Manager) 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 OSM controls for quick

## Features –continued

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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®95/98/2000 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.

**XtraView+® Wide Viewing Angle Technology:** Allows the user to be able to see the monitor from any angle (170 degrees) from any orientation — Portrait or Landscape. Provides full 170° viewing angles either up, down, left or right. From any orientation - Portrait or Landscape, XtraView+ provides accurate brightness and color from any angle 170°.

**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.

OSM Display Screen Copyright 2001 by  
NEC-Mitsubishi Electronics Display of America, Inc.



# 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.
- 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, "INPUT 1" or "INPUT 2".

## Power Button does not respond

- Unplug the power cord of the monitor from the AC outlet to turn off and reset the monitor, or simultaneously press the RESET and Power buttons.
- Check the Vacation Switch on the right side of the monitor.

## Image persistence

- Image persistence is when a "ghost" of an image remains on the screen even after the monitor has been turned off. Unlike CRT monitors, LCD monitors' image persistence is not permanent. To alleviate image persistence, turn the monitor off for as long as an image was displayed. If an image was on the monitor for one hour and a "ghost" of that image remains, the monitor should be turned off for one hour to erase the image. NOTE: As with all personal display devices, NEC-Mitsubishi Electronics Display of America recommends using a screen saver at regular intervals whenever the screen is idle.

## Image is unstable, unfocused or swimming is apparent

- Signal cable should be completely attached to the computer.
- Use the OSM Image Adjust controls to focus and adjust display by increasing or decreasing the fine total. When the display mode is changed, the OSM Image Adjust settings may need to be re-adjusted.
- 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 or amber color can be seen)

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

## Display image is not sized properly

- Use the OSM 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).

## References

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- **BBS** **(978) 742-8706**  
 NEC-Mitsubishi Electronics Display of America Remote Bulletin Board System is an electronic service accessible with your system and a modem. Communication parameters are: 300/1200/2400/9600/14.4k/28.8k/33.6k bps, no parity, 8-data bits, 1 stop bit
- **Customer Service/ Technical Support** **(800) 632-4662**  
**Fax** **(978) 742-7049**
- **Electronic Channels:**  
 Internet e-mail: [tech-support@necmitsubishi.com](mailto:tech-support@necmitsubishi.com)  
 Internet ftp site: <ftp.necmitsubishi.com>  
 World Wide Web: <http://www.necmitsubishi.com>  
 Product Registration: <http://www.necmitsubishi.com/productregistration>  
 European Operations: <http://www.nec-monitors.com>  
 Windows® 95/98/2000 INF File: <http://support.necmitsubishi.com/software.htm>  
 then download the file NECMSINF.ZIP
- **FastFacts™ Information** **(800) 366-0476**  

INFORMATION	DESCRIPTION	DOCUMENT #
Glossary	Definition of terms related to functions, features and installation of the MultiSync® monitor	900203
More Information	Names and addresses of other groups involved in standards and features of the MultiSync monitor	900204
Macintosh Connection	Detailed information on connecting the MultiSync monitor to a Macintosh	153006
Healthy Work Environment	Detailed information on setting up a healthy work environment	900108
- **Literature & Sales Info** **(800) NEC-INFO [(800) 632-4636]**
- **MultiSync Fulfillment** **(800) 820-1230**  
 [For software & accessories]
- **TeleSales** **(800) 284-4484**

## Limited Warranty

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NEC-Mitsubishi Electronics Display of America, Inc. (hereinafter "NMD-A") warrants this Product to be free from defects in material and workmanship and, subject to the conditions set forth below, agrees to repair or replace (at NMD-A's sole option) any part of the enclosed unit which proves defective for a period of three (3) years from the date of first consumer purchase. Spare parts are warranted for ninety (90) days. Replacement parts or unit may be new or refurbished and will meet specifications of the original parts or unit.

This warranty gives you specific legal rights and you may also have other rights, which vary from state to state. This warranty is limited to the original purchaser of the Product and is not transferable. This warranty covers only NMD-A-supplied components. Service required as a result of third party components is not covered under this warranty. In order to be covered under this warranty, the Product must have been purchased in the U.S.A. or Canada by the original purchaser. This warranty only covers Product distribution in the U.S.A. or Canada by NMD-A. No warranty service is provided outside of the U.S.A. or Canada. Proof of Purchase will be required by NMD-A to substantiate date of purchase. Such proof of purchase must be an original bill of sale or receipt containing name and address of seller, purchaser, and the serial number of the product.

It shall be your obligation and expense to have the Product shipped, freight prepaid, or delivered to the authorized reseller from whom it was purchased or other facility authorized by NMD-A to render the services provided hereunder in either the original package or a similar package affording an equal degree of protection. All Products returned to NMD-A for service MUST have prior approval, which may be obtained by calling 1-800-632-4662. The Product shall not have been previously altered, repaired, or serviced by anyone other than a service facility authorized by NMD-A to render such service, the serial number of the product shall not have been altered or removed. In order to be covered by this warranty the Product shall not have been subjected to displaying of fixed images for long periods of time resulting in image persistence (afterimage effects), accident, misuse or abuse or operated contrary to the instructions contained in the User's Manual. Any such conditions will void this warranty.

NMD-A SHALL NOT BE LIABLE FOR DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR OTHER TYPES OF DAMAGES RESULTING FROM THE USE OF ANY NMD-A PRODUCT OTHER THAN THE LIABILITY STATED ABOVE. THESE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SOME STATES DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR THE LIMITATION OR EXCLUSION OF LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES SO THE ABOVE EXCLUSIONS OR LIMITATIONS MAY NOT APPLY TO YOU.

This Product is warranted in accordance with the terms of this limited warranty. Consumers are cautioned that Product performance is affected by system configuration, software, the application, customer data, and operator control of the system, among other factors. While NMD-A Products are considered to be compatible with many systems, specific functional implementation by the customers of the Product may vary. Therefore, suitability of a Product for a specific purpose or application must be determined by consumer and is not warranted by NMD-A.

For the name of your nearest authorized NEC-Mitsubishi Electronics Display service facility, contact NEC-Mitsubishi Electronics Display of America at 1-800-632-4662.

## TCO'95

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### MultiSync LCD1850X Black Model (LH-18S02-BK1)

Congratulations! You have just purchased a TCO'95 approved and labeled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also, to the further development of environmentally adapted electronics products.



### Why do we have environmentally labelled computers?

In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during the manufacturing. Since it has not been possible for the majority of electronics equipment to be recycled in a satisfactory way, most of these potentially damaging substances sooner or later enter Nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (Internal) and natural (external) environments. Since all methods of conventional electricity generation have a negative effect on the environment (acidic and climate-influencing emissions, radioactive waste, etc.), it is vital to conserve energy. Electronics equipment in offices consume an enormous amount of energy since they are often left running continuously.

### What does labelling involve?

This product meets the requirements for the TCO'95 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Naturskyddsforeningen (The Swedish Society for Nature Conservation) and NUTEK (The National Board for Industrial and Technical Development in Sweden).

The requirements cover a wide range of issues: environment, ergonomics, usability, emission of electrical and magnetic fields, energy consumption and electrical and fire safety.

The environmental demands concern restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental plan which must be adhered to in each country where the company implements its operational policy. The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

Labelled products must meet strict environmental demands, for example, in respect of the reduction of electric and magnetic fields, physical and visual ergonomics and good usability.

TCO'95 is a co-operative project between TCO (The Swedish Confederation of Professional Employees), Naturskyddsforeningen (The Swedish Society for Nature Conservation) and NUTEK (The National Board for Industrial and Technical Development in Sweden).

### Environmental Requirements

#### Brominated flame retardants

Brominated flame retardants are present in printed circuit boards, cables, wires, casings and housings. In turn, they delay the spread of fire. Up to thirty percent of the plastic in a computer casing can consist of flame retardant substances. These are related to another group of environmental toxins, PCBs, which are suspected to give rise to similar harm, including

## TCO'95 -continued

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reproductive damage in fish-eating birds and mammals, due to the bio-accumulative\* processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

TCO'95 demand requires that plastic components weighing more than 25 grams must not contain organically bound chlorine and bromine.

### **Lead\*\***

Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning.

TCO'95 requirement permits the inclusion of lead since no replacement has yet been developed.

### **Cadmium\*\***

Cadmium is present in rechargeable batteries and in the colour-generating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses.

TCO'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of cadmium. The colour-generating layers of display screens must not contain any cadmium.

### **Mercury\*\***

Mercury is sometimes found in batteries, relays, switches, and back-light systems, Mercury damages the nervous system and is toxic in high doses.

TCO'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of mercury. It also demands that no mercury is present in any of the electrical or electronics components concerned with the display unit, except the back-light system.

### **CFCs (freons)**

CFCs (freons) are sometimes used for washing printed circuit boards and in the manufacturing of expanded foam for packaging. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on Earth of ultraviolet light with consequent increased risks of skin cancer (malignant melanoma).

The relevant TCO'95 requirement; Neither CFCs nor HCFCs may be used during the manufacturing of the product or its packaging.

\*Bio-accumulative is defined as substances which accumulate within living organisms.

\*\*Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.

To obtain complete information on the environmental criteria document, order from:

TCO Development Unit  
SE-114 94 Stockholm  
SWEDEN  
FAX Number: +46 8 782 92 07  
E-mail (Internet): [development@tco.se](mailto:development@tco.se)

You may also obtain current information on TCO'95 approved and labelled products by visiting their website at: <http://www.tco-info.com/>

## TCO'99

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### MultiSync LCD1850X White Model (LH-18S02-1)

Congratulations! You have just purchased a TCO'99 approved and labeled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also to the further development of environmentally adapted electronics products.



### Why do we have environmentally labelled computers?

In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during the manufacturing. Since it has not been possible for the majority of electronics equipment to be recycled in a satisfactory way, most of these potentially damaging substances sooner or later enter Nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (Internal) and natural (external) environments. Since all methods of conventional electricity generation have a negative effect on the environment (acidic and climate-influencing emissions, radioactive waste, etc.), it is vital to conserve energy. Electronics equipment in offices consume an enormous amount of energy since they are often left running continuously.

### What does labelling involve?

This product meets the requirements for the TCO'99 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation) and Statens Energimyndighet (The Swedish National Energy Administration).

The requirements cover a wide range of issues: environment, ergonomics, usability, emission of electrical and magnetic fields, energy consumption and electrical and fire safety.

The environmental demands concern restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental plan which must be adhered to in each country where the company implements its operational policy. The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

Labelled products must meet strict environmental demands, for example, in respect of the reduction of electric and magnetic fields, physical and visual ergonomics and good usability.

### Environmental Requirements

#### Flame retardants

Flame retardants are present in printed circuit boards, cables, wires, casings and housings. In turn, they delay the spread of fire. Up to thirty percent of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride and these are related to another group of environmental toxins, PCBs, which are suspected to give rise to severe health effects, including reproductive damage in fish-eating birds and mammals, due to the bio-

## TCO'99 –continued

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accumulative\* processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants with organically bound chlorine and bromine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.

### **Lead\*\***

Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning.

TCO'99 requirement permits the inclusion of lead since no replacement has yet been developed.

### **Cadmium\*\***

Cadmium is present in rechargeable batteries and in the colourgenerating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses.

TCO'99 requirement states that batteries, the colourgenerating layers of display screens and the electrical or electronics components must not contain any cadmium.

### **Mercury\*\***

Mercury is sometimes found in batteries, relays and switches, Mercury damages the nervous system and is toxic in high doses.

TCO'99 requirement states that batteries may not contain any Mercury. It also demands that no mercury is present in any of the electrical or electronics components associated with the display unit.

### **CFCs (freons)**

CFCs (freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on Earth of ultraviolet light with consequent increased risks of skin cancer (malignant melanoma).

The relevant TCO'99 requirement; Neither CFCs nor HCFCs may be used during the manufacturing and assembly of the product or its packaging.

\*Bio-accumulative is defined as substances which accumulate within living organisms.

\*\*Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.

To obtain complete information on the environmental criteria document, order from:

TCO Development Unit  
SE-114 94 Stockholm  
SWEDEN  
FAX Number: +46 8 782 92 07  
E-mail (Internet): [development@tco.se](mailto:development@tco.se)

You may also obtain current information on TCO'99 approved and labelled products by visiting their website at: <http://www.tco-info.com/>

## NEC LCD Series

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### DECLARATION OF CONFORMITY

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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.

U.S. Responsible Party:	NEC-Mitsubishi Electronics Display of America, Inc.
Address:	1250 North Arlington Heights Road, Suite 500 Itasca, Illinois 60143-1248
Tel. No.:	(630) 467-3000

Type of Product:	Computer Monitor
Equipment Classification:	Class B Peripheral
Model:	MultiSync LCD1850X



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

---

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# NEC

Part No. 7A811261  
Printed in Japan



2. B Version



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# ***MultiSync LCD1850X***

User's Manual

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# **NEC**

	<b>WARNING</b>	
<p>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.</p> <p>REFRAIN FROM OPENING THE CABINET AS THERE ARE HIGH VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p>		

<b>CAUTION</b>		
<b>RISK OF ELECTRIC SHOCK • DO NOT OPEN</b>		
 CAUTION	<p>TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p>	
	<p>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.</p>	
	<p>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.</p>	

**Caution:**

When operating the MultiSync LCD1850X (LH-18S02-1 and LH-18S02-BK1) with a 220-240V AC power source in Europe, use the power cord provided with the monitor.

In the UK, a BS approved power cord with a moulded plug has a Black (five Amps) fuse installed for use with this equipment. If a power cord is not supplied with this equipment please contact your supplier.

When operating the MultiSync LCD1850X with a 220-240V AC power source in Australia, use the power cord provided with the monitor.

For all other cases, 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.

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NEC is a registered trademark of NEC Corporation.  
All other trademarks or registered trademarks are property of their respective owners.

**English-1**

# Declaration

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## Declaration of the Manufacturer

We hereby certify that the colour monitor  
MultiSync LCD1850X (LH-18S02-1)  
MultiSync LCD1850X (LH-18S02-BK1)  
is in compliance with

Council Directive 73/23/EEC:

– EN 60950

Council Directive 89/336/EEC:

– EN 55022

– EN 61000-3-2

– EN 61000-3-3

– EN 55024

and marked with



NEC-Mitsubishi Electric Visual Systems, Corp.  
MS Shibaura Bldg., 13-23,  
Shibaura 4-chome,  
Minato-Ku, Tokyo 108-0023, Japan



Power consumption of the monitor is less  
than 3 W when in power-saving mode.

**English-2**

# For the Customer to use in U.S.A. or Canada

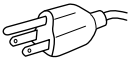
## Canadian Department of Communications Compliance Statement

**DOC:** This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.  
Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouiller du Canada.

**C-UL:** Bears the C-UL Mark and is in compliance with Canadian Safety Regulations according to CSA C22.2 #950.  
Ce produit porte la marque 'C-UL' et se conforme aux règlements de sûreté Canadiens selon CAN/CSA C22.2 No. 950.

## FCC Information

1. Use the attached specified cables with the MultiSync LCD1850X colour 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	Non shield type, 3-conductor
Length	1.8 m
Plug shape	

- (2) Shielded video signal 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-Mitsubishi Electronics Display of America, Inc.</b>
<b>Address:</b>	<b>1250 N. Arlington Heights Road Itasca, Illinois 60143-1248</b>
<b>Tel. No.:</b>	<b>(630)467-3000</b>

Type of Product:	Computer Monitor
Equipment Classification:	Class B Peripheral
Models:	MultiSync LCD1850X



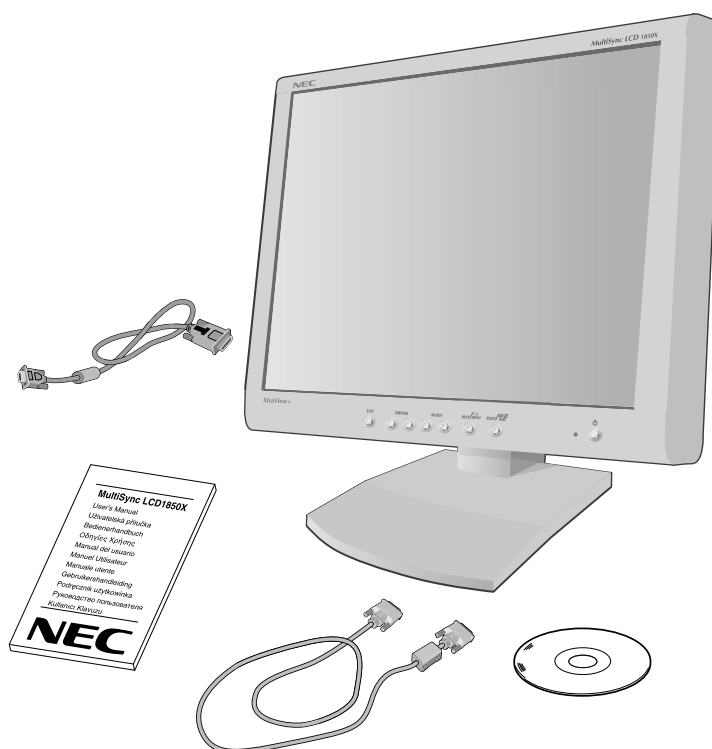
*We hereby declare that the equipment specified above conforms to the technical standards as specified in the FCC Rules.*

**English-4**

# Contents

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

- MultiSync LCD1850X monitor with tilt base
- Power Cords
- Video Signal Cable (15-pin mini D-SUB male to DVI-A)
- Video Signal Cable (DVI-D to DVI-D Cable)
- User's Manual
- NEC LCD Setup Software, Pivot Software, User's Manual and other helpful files. To see the User's Manual, Acrobat Reader 4.0 must be installed on your PC.



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

# Quick Start

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To attach the MultiSync 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-D to DVI-D 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 to DVI-A signal cable to the connector of the display card in your system (**Figure A.2**).  
**For the Mac:** Connect the MultiSync Macintosh cable adapter to the computer (**Figure B.1**). Attach the 15-pin mini D-SUB signal cable to the MultiSync Macintosh cable adapter (**Figure B.1**).

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

3. Remove connector cover. Connect the DVI signal cable to the connector on the back of the monitor. Place the video signal cable (**Figure C.1**).  
Replace connector cover.

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

4. 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 (**Figure D.1**).

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

5. Check the Vacation Switch on the right hand side of the monitor is in the ON position. Turn on the monitor with the Power Button (**Figure E.1**) and the computer.

**NOTE:** There are two switches: one on the right side and one on the front side of the monitor. DO NOT switch on/off quickly.

English-6

6. To complete the setup of your MultiSync LCD monitor, use the following OSM controls:
- Auto Adjust 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 OSM controls.

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

**NOTE:** Refer to User's Manual in the NEC LCD Setup Software CD case for installation and operation of this software.

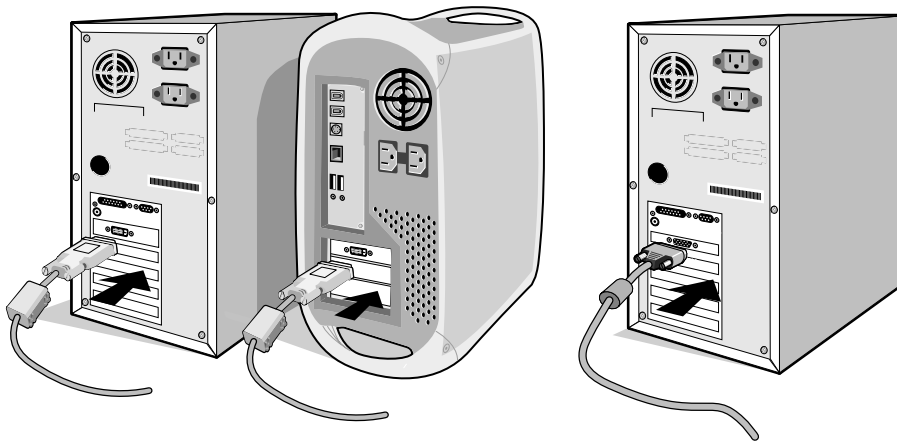


Figure A.1

Figure A.2

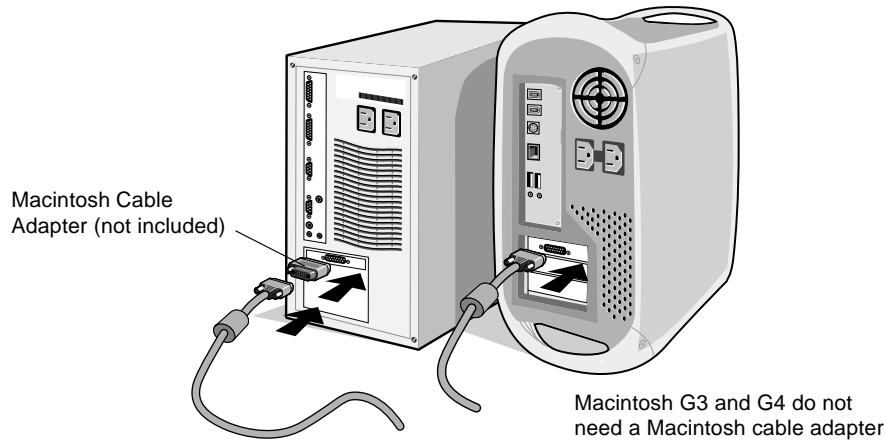
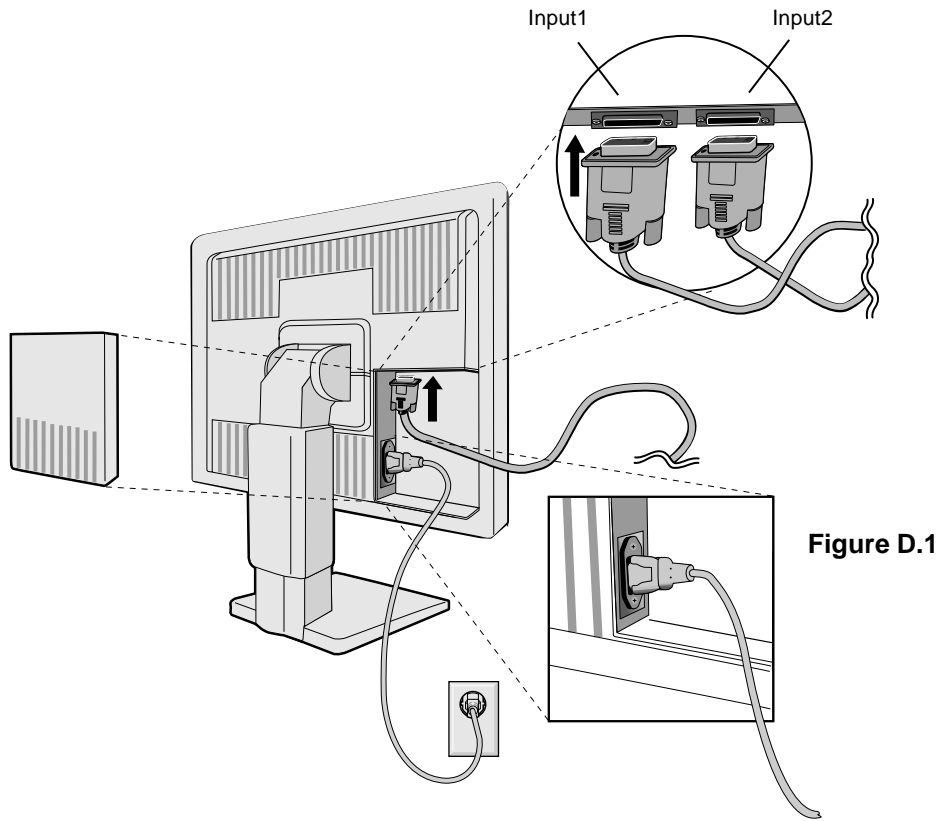


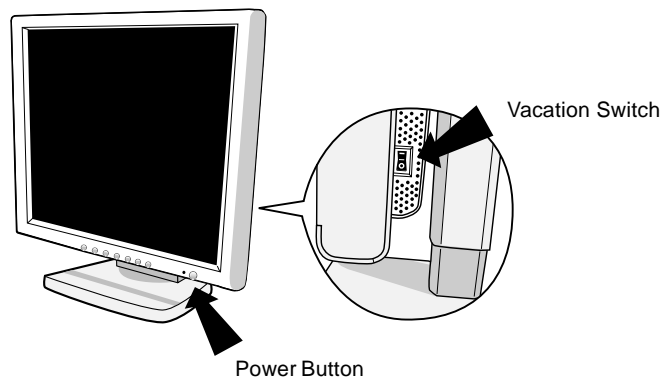
Figure B.1

English-7





**Figure C.1**



**Figure E.1**

**English-8**

## 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**).

## Screen Rotation

Before rotating, the screen must be raised to the highest level to avoid knocking the screen on the desk or pinching 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 toggle the orientation of the OSM menu between Landscape and Portrait modes, press the RESET button while OSM menu is off.

## Tilt and Swivel

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

## Remove Monitor Stand for Mounting

To prepare the monitor for alternate mounting purposes:

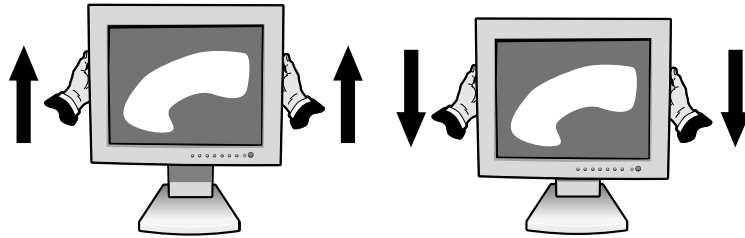
1. Disconnect all cables.
2. Place hands on each side of the monitor and lift up to the highest position (**Figure RL.1**).
3. Place monitor face down on a non-abrasive surface (Place the screen on a 50 mm platform so that the stand is parallel with the surface.) (**Figure S.1**).
4. Press the “▼” portion with your index finger and at the same time slide the lower stand cover. (**Figure S.2**)

Next, lift up the stand, remove the lower stand cover, then go on to remove the upper stand cover. (**Figure S.3**)

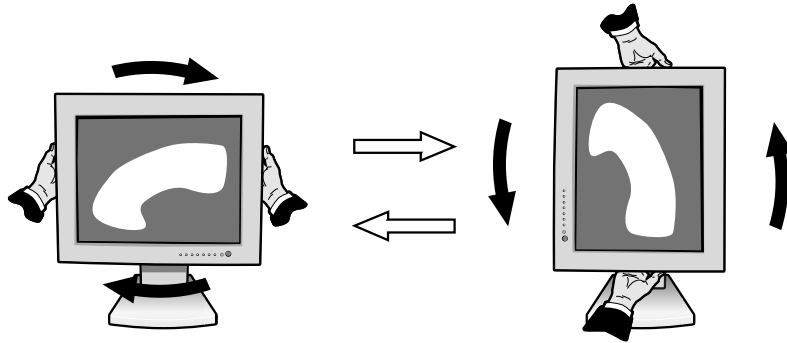
Return the stand to its original position, remove the 4 screws that connect the monitor to the stand, and lift off the stand assembly. (**Figure S.4**)

5. Reverse this process to reattach stand.

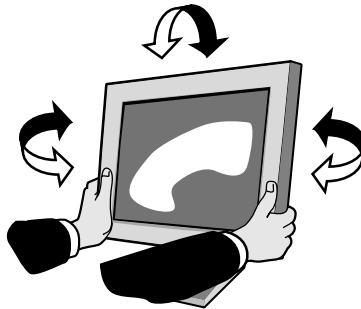
**NOTE:** Use only VESA-compatible alternative mounting method.



**Figure RL.1**



**Figure R.1**



**Figure TS.1**

**English-10**

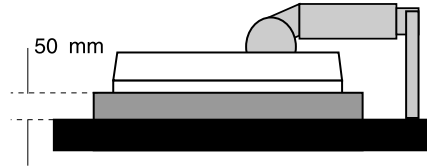


Figure S.1

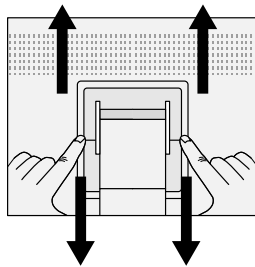


Figure S.2

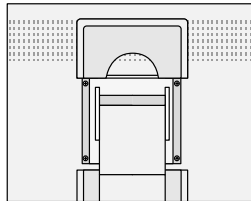


Figure S.3

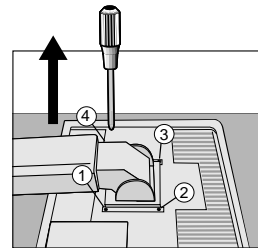


Figure S.4

**Caution:** Please use the attached screws (4pcs) when mounting. To fulfil the safety requirements the monitor must be mounted to an arm which guaranties the necessary stability under consideration of the weight of the monitor. The LCD monitor shall only be used with an approved arm (e.g. GS mark).

# Controls

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## OSM (On-Screen-Manager) Controls

The OSM controls on the front of the monitor function as follows:

To access OSM press any of the control buttons (◀, ▶, -, +).

To change DVI/D-SUB signal input, press the NEXT button.


To rotate OSM between Landscape and Portrait modes, press the RESET button.


**NOTE:** OSM menu must be closed in order to change signal input and to rotate.

<b>Control</b>	<b>Menu</b>
<b>EXIT</b>	Exits the OSM controls. Exits to the OSM main menu.
<b>CONTROL</b> ◀▶	Moves the highlighted area left/right to select control menus. Moves the highlighted area up/down to select one of the controls.
<b>ADJUST</b> -/+	Moves the bar left/right to increase or decrease the adjustment. Activates Auto Adjust function. Enter the sub menu.
<b>NEXT</b>	Moves the highlighted area of main menu right to select one of the controls.
<b>RESET</b>	Resets the highlighted control menu to the factory setting. Resets the highlighted control to the factory setting.

**NOTE:** When RESET is pressed in the main and sub-menu, a warning window will appear allowing you to cancel the RESET function by pressing the EXIT button.

## **Brightness/Contrast Controls**


 **BRIGHTNESS**  
Adjusts the overall image and background screen brightness.

 **CONTRAST**  
Adjusts the image brightness in relation to the background.


**AUTO** **AUTO ADJUST (Analog input only)**  
Adjusts the image displayed for non-standard video inputs.


**AUTO** **Auto Adjust (Analog input only)**  
Automatically adjusts the Image Position, the H. Size and Fine setting.

## **Position Controls (Analog input only)**

 **LEFT/RIGHT**  
Controls Horizontal Image Position within the display area of the LCD.

 **DOWN/UP**  
Controls Vertical Image Position within the display area of the LCD.

 **H. SIZE**  
Adjusts the horizontal size by increasing or decreasing this setting.

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

## **Color Control Systems**

Six color presets select the desired color setting (sRGB and NATIVE color presets are standard and cannot be changed). Color temperature increases or decreases in each preset.

## **R,Y,G,C,B,M,S**

Increases or decreases Red, Yellow, Green, Cyan, Blue, Magenta and Saturation depending upon which is selected. The change in color will appear on screen and the direction (increase or decrease) will be shown by the color bars.

## **sRGB**

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

## **NATIVE**

Original color presented by the LCD panel that is unadjustable.



## **Tools 1**



### **SMOOTHING**

Select one of three image sharpness settings. This function is only valid when the expanded display function (expansion function) is on.

#### **TEXT MODE**

Use this to display text clearly.

#### **NORMAL MODE**

This sharpness is between TEXT and GRAPHIC MODE.

#### **GRAPHIC MODE**

This mode is suited for images and photographs.



### **EXPANSION MODE**

Sets the zoom method.

#### **FULL**

The image is expanded to 1280 x 1024, regardless of the resolution.

**ASPECT**

The image is expanded without changing the aspect ratio.

**OFF**

The image is not expanded.

**CUSTOM (Digital input and Resolution of 1280 x 1024 only)**

Select one of seven expansion rates.

In this mode the resolution may be low and there may be blank areas. This mode is for use with special video cards.

**VIDEO DETECT**

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

**FIRST DETECT**

The video input has to be switched to “FIRST DETECT” 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.

**LAST DETECT**

The video input has to be switched to the “LAST DETECT” mode. When the monitor is displaying a signal from the current source and a new secondary source is supplied to the monitor, then the monitor will automatically switch to the new video source. 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.

**NONE**

The Monitor will not search the other video input port unless the monitor is turned on.





## DVI SELECTION

This function selects the DVI input mode. When the DVI selection has been changed, you must restart your computer.

### DIGITAL

DVI digital input is available.

### ANALOG

DVI analog input is available.



## Tools 2



### LANGUAGE

OSM control menus are available in seven languages.



### OSM POSITION

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



### OSM TURN OFF

The OSM control menu will stay on as long as it is use. In the OSM Turn Off submenu, you can select how long the monitor waits after the last touch of a button to shut off the OSM control menu. The preset choices are 10, 20, 30, 45, 60 and 120 seconds.



### OSM LOCK OUT

This control completely locks out access to all OSM control functions. When attempting to activate OSM controls while in the Lock Out mode, a screen will appear indicating the OSM controls are locked out. To activate the OSM Lock Out function, press ◀, then ▶ and hold down simultaneously. To de-activate the OSM Lock Out, press ◀, then ▶ and hold down simultaneously.



## RESOLUTION NOTIFIER

This optimal resolution is 1280 x 1024. If ON is selected, a message will appear on the screen after 30 seconds, notifying you that the resolution is not at 1280 x 1024.



## FACTORY PRESET

Selecting Factory Preset allows you to reset all OSM control settings back to the factory settings. The RESET button will need to be held down for several seconds to take effect. Individual settings can be reset by highlighting the control to be reset and pressing the RESET button.



## Information

MODE

### DISPLAY MODE

Provides information about the current resolution display and technical data including the preset timing being used and the horizontal and vertical frequencies. Increases or decreases the current resolution. (Analog input only)



### MONITOR INFO

Indicates the model and serial numbers of your monitor.

## OSM Warning

OSM Warning menus disappear with Exit button.

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

**RESOLUTION NOTIFIER:** This function gives a warning of use with optimized resolution. After power is turned on or when there is a change of input signal or the video signal doesn't have proper resolution, the **Resolution Notifier** window will open. This function can be disabled in the TOOL menu.

**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.

**CHECK CABLE:** This function will advise you to check all Video Inputs on the monitor and computer to make sure they are properly connected.

**NOTE:** If “**!** CHANGE DVI SELECTION” is displayed, switch to DVI SELECTION.

# Recommended Use

## Safety Precautions and Maintenance



FOR OPTIMUM PERFORMANCE, PLEASE NOTE THE FOLLOWING WHEN SETTING UP AND USING THE MULTISYNC LCD COLOR 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.
- Do not place any objects onto the monitor and do not use the monitor outdoors.
- The inside of the fluorescent tube located within the LCD monitor contains mercury. Please follow the bylaws or rules of your municipality to dispose of the tube properly.

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.
- Do not bend power cord.
- Do not use monitor in high temperature, humid, dusty, or oily areas.
- Do not cover vent on monitor.
- If monitor is broken, do not come in contact with the liquid crystal.
- If glass is broken. Handle with care.



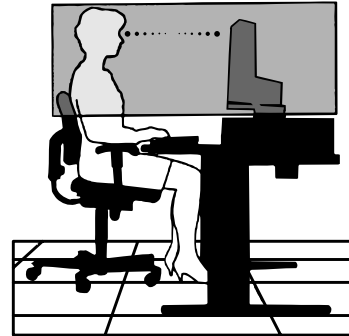
- Allow adequate ventilation around the monitor so that heat can properly dissipate. Do not block ventilated openings or place the monitor near a radiator or other heat sources. Do not put anything on top of monitor.
- The power cable connector is the primary means of detaching the system from the power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



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 58 cm.
- Rest your eyes periodically by focusing on an object at least 6 m 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 antiglare filter.
- Clean the LCD monitor surface with a lint-free, non-abrasive cloth. Avoid using any cleaning solution or glass cleaner!
- 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.



## English-20

- 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 Color Setting
- Use non-interlaced signals with a vertical refresh rate between 60-75 Hz
- Do not use primary color blue on a dark background, as it is difficult to see and may produce eye fatigue to insufficient contrast

# Specifications

Monitor Specifications	MultiSync LCD1850X Monitor	Notes
LCD Module	Diagonal: 46 cm/18.1 inches Viewable Image Size: 46 cm/18.1 inches Native Resolution (Pixel Count): 1280 x 1024	Active matrix; thin film transistor (TFT) liquid crystal display (LCD); 0.28 mm dot pitch; 240cd/m <sup>2</sup> white luminence, typical; 300:1 contrast ratio, typical
Input Signal	Video: ANALOG 0.7 Vp-p/75 Ohms Sync: Separate sync.TTL Level Horizontal sync. Positive/Negative Vertical sync. Positive/Negative Compositte sync. Positive/Negative Sync on Green (Video 0.7 Vp-p and Sync 0.3 Vp-p)	
Display Colours	Analog input: 16,777,216	Depends on display card used.
Synchronization Range	Horizontal: 31 kHz to 82 kHz Vertical: 50 Hz to 85 Hz	Automatically Automatically
DVI Digital Input	TMDS, 135 MHz max., Single Link	
Viewing Angle	Left/Right: ± 85° Up/Down: ± 85°	
Resolutions Supported	Landscape: 720 x 400*1 :VGA text 640 x 480*1 at 60 Hz to 85 Hz 800 x 600*1 at 56 Hz to 85 Hz 832 x 624*1 at 75 Hz 1024 x 768*1 at 60 Hz to 85 Hz 1152 x 870*1 at 75 Hz 1280 x 1024*2 at 60 Hz to 75 Hz  Portrait: 480 x 640*1 at 60 Hz to 85 Hz 600 x 800*1 at 56 Hz to 85 Hz 624 x 832*1 at 75 Hz 768 x 1024*1 at 60 Hz to 85 Hz 870 x 1152*1 at 75 Hz 1024 x 1280*2 at 60 Hz to 75 Hz	Some systems may not support all modes listed.
Active Display Area (Landscape)	Horizontal: 359 mm/14.1 inches Vertical: 287 mm/11.3 inches	Dependent upon signal timing used, and does not include border area.
Active Display Area (Portrait)	Horizontal: 287 mm/11.3 inches Vertical: 359 mm/14.1 inches	Dependent upon signal timing used, and does not include border area.
Power Supply	AC 100-120 V/220-240 V 50/60 Hz	
Current Rating	0.8 A @ 100-120 V, 0.35 A @ 220-240 V	

English-22

Monitor Specifications	MultiSync LCD1850X Monitor	Notes
Dimensions	Landscape:	398 mm (W) x 445 mm (H) x 218 mm (D) 15.7 inches (W) x 17.5 inches (H) x 8.6 inches (D)
	Portrait:	349 mm (W) x 469.5 mm (H) x 218 mm (D) 13.7 inches (W) x 18.5 inches (H) x 8.6 inches (D)
Weight	8.5 kg (18.7 lbs)	
Environmental Considerations		
	Operating Temperature:	5 °C to 35 °C
	Humidity:	30% to 80%
	Altitude:	0 to 3,050 m
	Storage Temperature:	-10 °C to +60 °C
	Humidity:	10% to 85%
	Altitude:	0 to 14,000 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.

\*2 NEC-Mitsubishi Electronics Display cites recommended resolutions at 60 Hz for optimal display performance.

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



# Features

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

**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.

**Color Control System:** Allows you to adjust the colors on your screen and customize the color accuracy of your monitor to a variety of standards.

**OSM (On-Screen Manager) 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 OSM 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 95/98/2000 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.

English-24

**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 (170 degrees) from any orientation – Portrait or Landscape. Provides full 170° viewing angles either up, down, left or right.

**VESA Standard Mounting Interface:** Allows users to connect their MultiSync monitor to any VESA standard (100 mm pitch) 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.

**ambix Technology:** Dual input technology allowing both analog and digital inputs through one connector (DVI-I) as well as additional legacy analog support through a traditional 15-pin mini-D-sub connector. Provides traditional MultiSync technology compatibility for analog as well as TMDS (Transition Minimized Differential Signal) based 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 through one port. The “I” stands for integration for both digital and analog. The digital portion is TMDS 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 for through a DVI-D connector. As a TMDS based digital only connection, only a simple adapter is necessary for compatibility between DVI-D and other TMDS based digital connectors such as DFP 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 through a single 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 TMDS based connector (for the digital input pins), only a simple adapter is necessary for compatibility between P&D and other TMDS based digital connectors 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.

# 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. 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, "INPUT 1" or "INPUT 2".

## Power Button does not respond

- Unplug the power cord of the monitor from the AC outlet to turn off and reset the monitor, or simultaneously press the RESET and Power buttons.
- Check the Vacation Switch on the right hand side of the monitor.

## Image persistence

- Image persistence is when a "ghost" of an image remains on the screen even after the monitor has been turned off. Unlike CRT monitors, LCD monitors' image persistence is not permanent. To alleviate image persistence, turn the monitor off for as long as an image was displayed. If an image was on the monitor for one hour and a "ghost" of that image remains, the monitor should be turned off for one hour to erase the image.

**NOTE:** As with all personal display devices, NEC-Mitsubishi Electronic Displays recommends using a screen saver at regular intervals whenever the screen is idle.

## **Image is unstable, unfocused or swimming is apparent**

- Signal cable should be completely attached to the computer.
- Use the OSM Image Adjust controls to focus and adjust display by increasing or decreasing the fine total. When the display mode is changed, the OSM 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 60 Hz refresh rate.

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

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

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

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

## **Display image is not sized properly**

- Use the OSM 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).

# TCO'99

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## **MultiSync LCD1850X white Model (LH-18S02-1)**

Congratulations! You have just purchased a TCO'99 approved and labeled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also to the further development of environmentally adapted electronics products.



### **Why do we have environmentally labelled computers?**

In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during the manufacturing. Since it has not been possible for the majority of electronics equipment to be recycled in a satisfactory way, most of these potentially damaging substances sooner or later enter Nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (Internal) and natural (external) environments. Since all methods of conventional electricity generation have a negative effect on the environment (acidic and climate-influencing emissions, radioactive waste, etc.), it is vital to conserve energy. Electronics equipment in offices consume an enormous amount of energy since they are often left running continuously.

### **What does labelling involve?**

This product meets the requirements for the TCO'99 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation) and Statens Energimyndighet (The Swedish National Energy Administration).

**English-28**

The requirements cover a wide range of issues: environment, ergonomics, usability, emission of electrical and magnetic fields, energy consumption and electrical and fire safety.

The environmental demands concern restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental plan which must be adhered to in each country where the company implements its operational policy. The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

Labelled products must meet strict environmental demands, for example, in respect of the reduction of electric and magnetic fields, physical and visual ergonomics and good usability.

### **Environmental Requirements**

#### **Flame retardants**

Flame retardants are present in printed circuit boards, cables, wires, casings and housings. In turn, they delay the spread of fire. Up to thirty percent of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride and these are related to another group of environmental toxins, PCBs, which are suspected to give rise to severe health effects, including reproductive damage in fish-eating birds and mammals, due to the bioaccumulative\* processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants with organically bound chlorine and bromine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.

#### **Lead\*\***

Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning.

TCO'99 requirement permits the inclusion of lead since no replacement has yet been developed.

**Cadmium\*\***

Cadmium is present in rechargeable batteries and in the colourgenerating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses.

TCO'99 requirement states that batteries, the colourgenerating layers of display screens and the electrical or electronics components must not contain any cadmium.

**Mercury\*\***

Mercury is sometimes found in batteries, relays and switches, Mercury damages the nervous system and is toxic in high doses.

TCO'99 requirement states that batteries may not contain any Mercury. It also demands that no mercury is present in any of the electrical or electronics components associated with the display unit.

**CFCs (freons)**

CFCs (freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on Earth of ultraviolet light with consequent increased risks of skin cancer (malignant melanoma).

The relevant TCO'99 requirement; Neither CFCs nor HCFCs may be used during the manufacturing and assembly of the product or its packaging.

\* Bio-accumulative is defined as substances which accumulate within living organisms.

\*\* Lead, Cadmium and Mercury are heavy metals which are Bioaccumulative.

To obtain complete information on the environmental criteria document, order from:

**TCO Development Unit**

SE-114 94 Stockholm

SWEDEN

FAX Number: +46 8 782 92 07

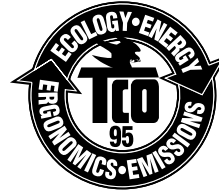
E-mail (Internet): [development@tco.se](mailto:development@tco.se)

You may also obtain current information on TCO'99 approved and labelled products by visiting their website at:

<http://www.tco-info.com/>

## **MultiSync LCD1850X Black Model (LH-18S02-BK1)**

Congratulations! You have just purchased a TCO'95 approved and labeled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also, to the further development of environmentally adapted electronics products.



### **Why do we have environmentally labelled computers?**

In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during the manufacturing. Since it has not been possible for the majority of electronics equipment to be recycled in a satisfactory way, most of these potentially damaging substances sooner or later enter Nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (Internal) and natural (external) environments. Since all methods of conventional electricity generation have a negative effect on the environment (acidic and climate-influencing emissions, radioactive waste, etc.), it is vital to conserve energy. Electronics equipment in offices consume an enormous amount of energy since they are often left running continuously.

### **What does labelling involve?**

This product meets the requirements for the TCO'95 scheme which provides for international and environmental labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Naturskyddsforeningen (The Swedish Society for Nature Conservation) and NUTEK (The National Board for Industrial and Technical Development in Sweden).

The requirements cover a wide range of issues: environment, ergonomics, usability, emission of electrical and magnetic fields, energy consumption and electrical and fire safety.



The environmental demands concern restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons) and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental plan which must be adhered to in each country where the company implements its operational policy. The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

Labelled products must meet strict environmental demands, for example, in respect of the reduction of electric and magnetic fields, physical and visual ergonomics and good usability.

TCO'95 is a co-operative project between TCO (The Swedish Confederation of Professional Employees), Naturskyddsforeningen (The Swedish Society for Nature Conservation) and NUTEK (The National Board for Industrial and Technical Development in Sweden).

### **Environmental Requirements**

#### **Brominated flame retardants**

Brominated flame retardants are present in printed circuit boards, cables, wires, casings and housings. In turn, they delay the spread of fire. Up to thirty percent of the plastic in a computer casing can consist of flame retardant substances. These are related to another group of environmental toxins, PCBs, which are suspected to give rise to similar harm, including reproductive damage in fish-eating birds and mammals, due to the bio-accumulative\* processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

TCO'95 demand requires that plastic components weighing more than 25 grams must not contain organically bound chlorine and bromine.

#### **Lead\*\***

Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning.

TCO'95 requirement permits the inclusion of lead since no replacement has yet been developed.

**Cadmium\*\***

Cadmium is present in rechargeable batteries and in the colourgenerating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses.

TCO'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of cadmium. The colourgenerating layers of display screens must not contain any cadmium.

**Mercury\*\***

Mercury is sometimes found in batteries, relays, switches, and back-light systems, Mercury damages the nervous system and is toxic in high doses.

TCO'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of mercury. It also demands that no mercury is present in any of the electrical or electronics components concerned with the display unit, except the back-light system.

**CFCs (freons)**

CFCs (freons) are sometimes used for washing printed circuit boards and in the manufacturing of expanded foam for packaging. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on Earth of ultraviolet light with consequent increased risks of skin cancer (malignant melanoma).

The relevant TCO'95 requirement; Neither CFCs nor HCFCs may be used during the manufacturing of the product or its packaging.

\*Bio-accumulative is defined as substances which accumulate within living organisms.

\*\*Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.

To obtain complete information on the environmental criteria document, order from:

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You may also obtain current information on TCO'95 approved and labelled products by visiting their website at: <http://www.tco-info.com/>