Installation & Maintenance Guide

MD211G5

Index

Symbol Information

⚡	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.
⚠ ⚠ CAUTION 📖	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.
⏚	Protective earth terminal marked.
⏻	Stand by.
∼	AC Input.
|	Main Power On.
○	Main Power Off.

Authentication sign of Standard Inspection Bureau for U.S.A.
Complies with ANSI/AAMI ES60601-1:2005
CAN/CSA-C22.2 No. 60601-1:08

CLASSIFIED
C UL US

MEDICAL-GENERAL
MEDICAL EQUIPMENT
25KN
E350980

AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL
HAZARDS ONLY IN ACCORDANCE WITH ANSI/AAMI
ES60601-1(2005), CAN/CSA-C22.2 NO.60601-1(2008)

Registration Information

Declaration

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. 60601-1:08.

FCC Information

1. Use the attached specified cables with the MD211G5 grayscale 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 DVI-D or DisplayPort 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.

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

Type of Product:	Display Monitor
Equipment Classification:	Class B Peripheral
Model:	MD211G5

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

Classification

* Type of protection against electric shock: CLASS I equipment
* Degree of protection against electric shock: No applied part
* Degree of protection against ingress of water as detailed in the current edition of IEC529: IPX0 - No protection
* Method of sterilization or disinfection recommended by the manufacturer: Not Specified
* This device is not suitable for use in the presence of a flammable Anaesthetic Mixture with Air, Oxygen or Nitrous Oxide: No AP or APG category
* This device shall not be used in the vicinity of the patient, which is the space with surfaces likely to be contacted by the patient or an attendant who can touch the patient. This encloses a space within the room 1.83 m (6 feet) beyond the perimeter of the bed in its intended location, and extending vertically 2.29 m (7-1/2 feet) above the floor.
* Mode of operation: Continuous operation, maximum 16 hours/7 days

WARNING

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

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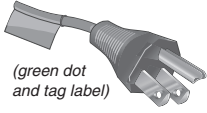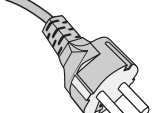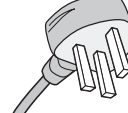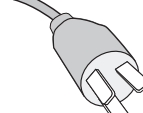
CAUTION

THIS APPARATUS MUST BE EARTHED BECAUSE OF CLASS I EQUIPMENT.
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 COVER). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Power Cord Important Information

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

Plug Type	North America	European Continental	U.K.	Chinese	Japanese
Plug Shape	*(green dot and tag label)*				
Country	U.S.A./Canada	EU (except U.K.)	U.K.	China	Japan
Voltage	120	230	230	220	100

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

Intended Use

The MD211G5 grayscale display is intended to be used for displaying and viewing of digital images for diagnosis, including digital mammography, by trained physicians.

Caution: The MD211G5 grayscale display cannot be used for a life-support system.

This device is designed as component of a final system which is in compliance to IEC 60601-1-1 requirements.

Contraindications: None known.

Safety Precautions

This device is designed for exclusive interconnection with IEC 60950 certified equipment outside of patient vicinity.

- Equipment connected to digital interfaces must comply with the respective IEC standards (e.g. IEC 60950 for data processing equipment and IEC 60601-1 for medical equipment).

- This device complies with IEC 60601-1-2. To minimize the interference from other equipment, a minimum 0.5 m distance shall be kept form other potential electromagnetic sources, such as a Cell Phone.

- To reduce the risk of electric shock, make sure that the 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 open the back cover. No user serviceable parts inside. Refer servicing to qualified service personnel. The AC outlet shall be readily available and accessible.

EMC Precaution

This product requires special EMC precautions and needs to be installed and used according to the following information.
Use the specified cable. Using other cables could increase emission or decrease immunity.
Do not place any RF communication equipment in the vicinity of this product. It could affect the performance of the product.
Any additional equipment connected to this product needs to comply with the requirements of IEC 60601-1-2.

North America Customers

Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle, marked "Hospital Only" or "Hospital Grade". That signal input port need to be connected properly and that any unused signal input port shall not be accessible for the patient to contact in the patient area after the LCD is integrated into a medical system.
Federal law restricts this device to sale by or on the order of a licensed healthcare practitioner.

European Customers

Unpacking, Installation and calibration of this display should only be done by authorized and trained personnel. Any installation done by a non-authorized person is done under his own risk and we accept no responsibility in any device malfunctioning. To secure full functionality of this display, only NEC approved display controller models for connection with the final system must be used.

Medical Imaging

MD211G5 is designed for 2048 x 2560 medical imaging.

Recommended use

Safety Precautions and Maintenance

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

WARNING: Do not modify this equipment without authorization of the manufacturer.

WARNING: To disconnect this product from the mains supply disconnect the mains plug from the socket outlet.

WARNING: To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

WARNING: No modification of this equipment is allowed.

WARNING: For EMC details information, please contact NEC local authority.

- **DO NOT OPEN THE MONITOR.** There are no user serviceable parts inside and opening or removing covers may expose you to dangerous shock hazards or other risks. Refer all servicing to qualified service personnel.

- Do not spill any liquids into the cabinet or use your monitor near water.

- Do not insert objects of any kind into the cabinet slots, as they may touch dangerous voltage points, which can be harmful or fatal or may cause electric shock, fire or equipment failure.

- Do not place any heavy objects on the power cord. Damage to the cord may cause shock or fire.

- Do not place this product on a sloping or unstable cart, stand or table, as the monitor may fall, causing serious damage to the monitor.

- The power supply cord you use must have been approved by and comply with the safety standards of your country.

- In UK, use a BS-approved power cord with molded plug having a black (5A) fuse installed for use with this monitor.

- Do not place any objects onto the monitor and do not use the monitor outdoors.

- Do not bend, crimp or damage the power cord.

- Do not use monitor in high temperatured, humid, dusty, or oily areas.

- Do not cover vent on monitor.

- Vibration can damage the backlight. Do not install the monitor where it will be exposed to continual vibration.

- If the monitor's LCD panel is broken, do not come in contact with the liquid crystal and handle with care.

- To prevent damage to the LCD monitor caused by tipping over due to earthquakes or other shocks, make sure to install the monitor in a stable location and take measures to prevent falling.

- Please do not touch patient and this medical device at the same time.

Immediately turn off the power, unplug your monitor from the wall outlet and move to a safe location then refer servicing to qualified service personnel under the following conditions. If the monitor is used in this condition, the monitor may cause fall, fire and electric shock:

- If the monitor stand has been cracked or peeled.

- If the monitor has been wobbled.

- If the monitor emanates an unusual odor.

- 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 is damaged.

- If the monitor does not operate normally by following operating instructions.

CAUTION

- Allow adequate ventilation around the monitor so that heat can properly dissipate. Do not block ventilated openings or place the monitor near a radiator or other heat sources. Do not put anything on top of monitor.

- The power cable connector is the primary means of detaching the system from the power supply.
  The monitor should be installed close to a power outlet which is easily accessible.

- Handle with care when transporting. Save packaging for transporting.

- Do not touch LCD panel surface while transporting, mounting and setting. Applying pressure on the LCD panel can cause serious damage.

- Carry the monitor by holding the top and the bottom of the monitor head with both hands.

- Do not carry holding only the stand.

Image Persistence: Image persistence exists, when a residual or "ghost" image of a previous image remains visible on the screen. Unlike with CRT monitors, image persistence on LCD monitors is not permanent, but constant images being displayed for a long period of time should be avoided.

To alleviate image persistence, turn off the monitor for as long as the previous image was displayed. For example, if an image was on the monitor for one hour and a residual image remains, the monitor should be turned off for one hour to erase the image.

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

Maintenance: This display is factory calibrated for diagnostic imaging, in accordance with DICOM Part 14. To ensure constant visual quality over the life of this display, the recommended time interval to re-calibrate this model is 12 months.

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 the display to 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 (15.75 inches) and no further away than 70 cm (27.56 inches) from your eyes. The optimal distance is 50 cm (19.69 inches).
- Rest your eyes periodically by focusing on an object at least 6 m (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.
- 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.
- Avoid displaying fixed patterns on the monitor for long periods of time to avoid image persistence (after-image effects).
- Get regular eye checkups.
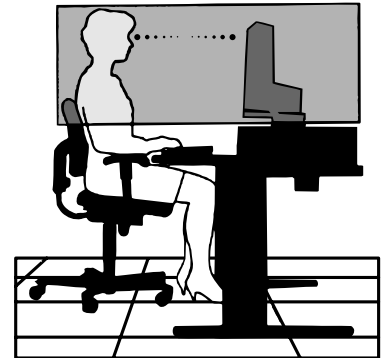
Cleaning the LCD Panel
- When the LCD is dusty, please gently wipe with a soft cloth.
- Please do not rub the LCD panel with hard or coarse material.
- Please do not apply pressure to the LCD surface.
- Please do not use OA cleaner as it will cause deterioration or discoloration on the LCD surface.

Cleaning the Cabinet
- Unplug the power supply cord from the wall outlet.
- Gently wipe the cabinet with a soft cloth.
- To clean the cabinet, dampen the cloth with a neutral detergent and water, wipe the cabinet and follow with a dry cloth.

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

Contents

Your new NEC monitor box* should contain the following:

- MD211G5 monitor with tilt/swivel/pivot/height adjust stand
- Power Cord
- Video Signal Cable (DVI-D to DVI-D cable)*¹
- DisplayPort cable
- USB Cable
- Quick Reference Guide

Power Cord*²

Quick Reference Guide

DisplayPort cable

Quick Reference Guide

USB Cable

DVI-D to DVI-D cable*¹
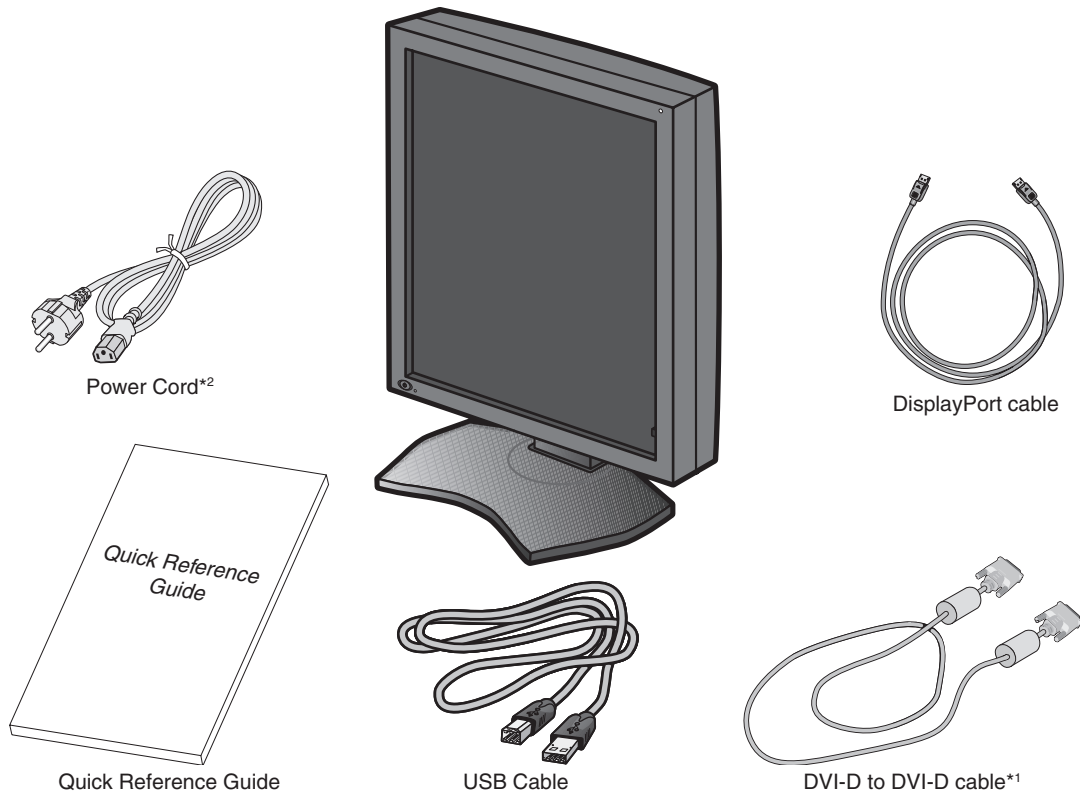
*   *Remember to save your original box and packing material to transport or ship the monitor.*

*¹   Dual link DVI cable.

*²   Type and number of power cords included will depend on the where the LCD monitor is to be shipped. When more than one power cord is included, please use a power cord that matches the AC voltage of the power outlet and has been approved by and complies with the safety standard of your particular country.

Quick Start

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

NOTE: Make sure to read "Recommended Use" before installation.
In order to display the maximum resolution, a display controller that can output a resolution of 2048 x 2560 is needed.

1. Turn off the power to your computer.
2. **For a PC with DVI digital output:** Connect the DVI signal cable to the connector of the display controller in your system (**Figure A.1**). Tighten all screws.

   For a PC with DisplayPort output: Connect the DisplayPort cable to the connector of the display controller in your system (**Figure A.2**).
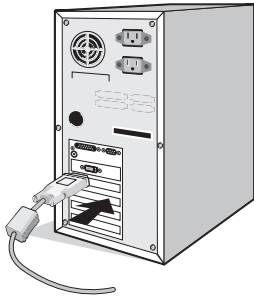
DisplayPort cable
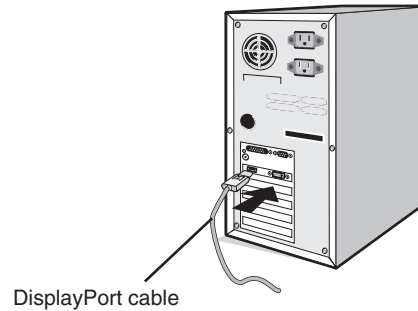
Figure A.1

Figure A.2

NOTE: 1. Please use a DisplayPort cable with a DisplayPort logo.
        2. When removing the DisplayPort cable, hold down the top button to release the lock.

3. Remove the cable cover (**Figure B**).

   To remove the cable cover, unlock the slide latch (1) on the cable cover (2) and slide the cover to the side to remove it.

Slide latch

Cable cover
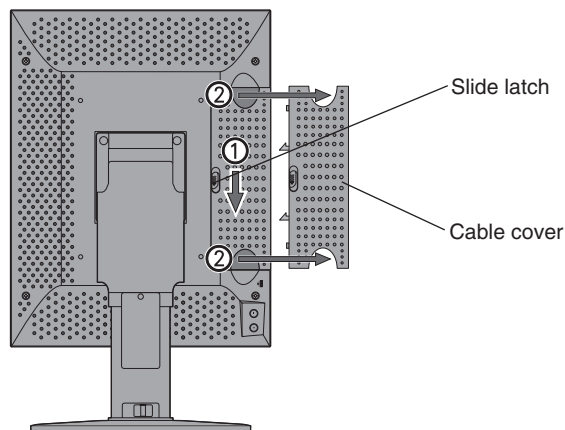
Figure B

4. Connect all cables to the appropriate connectors (**Figure C**).

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

Display Backside

Computer

AC IN

To the wall outlet
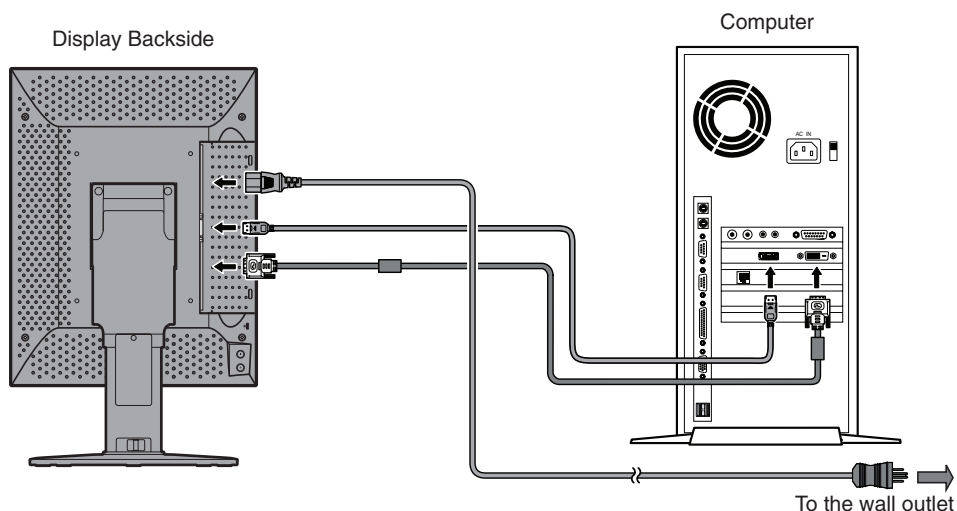
Figure C

English-8

5. To keep the cables neatly organized, place them into the cable management system that is built into the stand. Place the cables in the hooks firmly and evenly (**Figure D**).
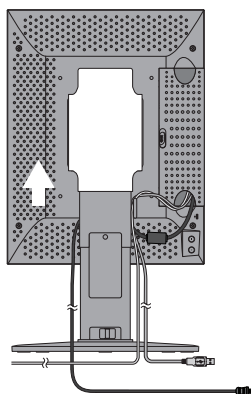
Figure D

6. Slide down the cable cover (**Figure E**).

7. Please check that you can still rotate, raise and lower the monitor screen, when you have installed the cables.

NOTE: Handle with care when raising, lowering, rotating or tilting the monitor screen.

8. Connect one end of the power cord to the AC inlet on the back of the monitor and the other end to the power outlet.

NOTE: Please refer to the CAUTION section of this Installation & Maintenance Guide for proper selection of AC power cord.
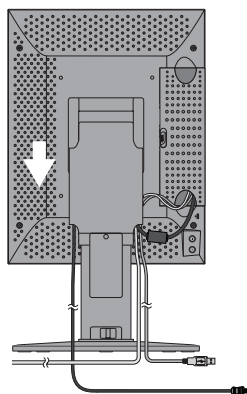
Figure E

9. Turn on the monitor with the front power switch (**Figure F**) and the computer.

NOTE: If you have any problems, please refer to the **Troubleshooting** section of this Installation & Maintenance Guide.
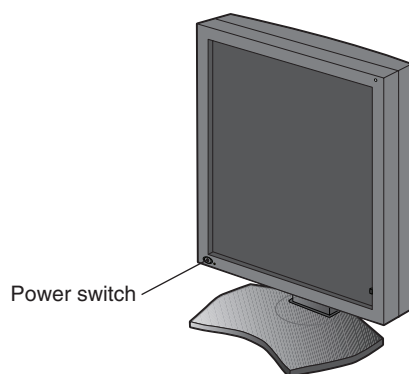
Power switch

Figure F

Controls
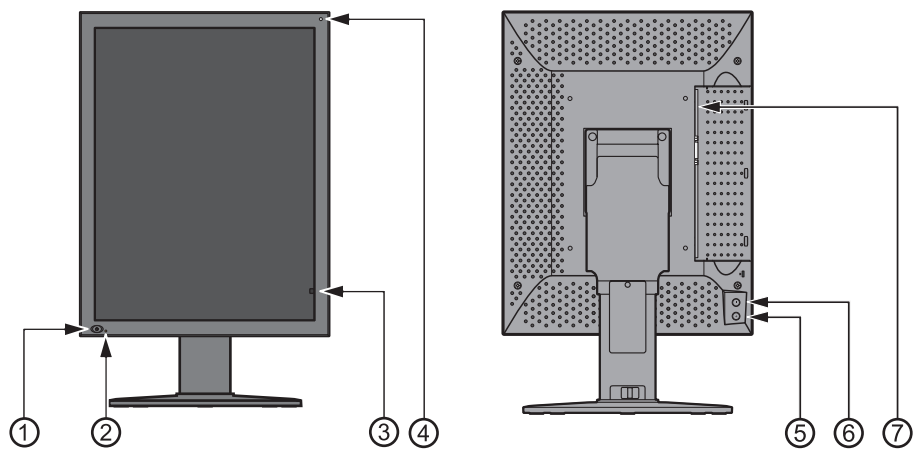
1 Power Switch	To turn the monitor on and off.
2 LED	Indicates that the power is on. Turns off automatically, when the luminance is stabilized.
3 Front Sensor	For luminance stabilization and calibration.
4 Ambient Light Sensor	Measures ambient light during calibration process.
5 + (plus) Button	To open the OSD (On Screen Display) 1st click – Display information 2nd click – Present operating state 3rd click – DICOM conformance test 4th click – OSD off (otherwise OSD disappears in 15 sec.)
6 – (minus) Button	Same as + (plus) Button
7 Main power switch	Main power supply switch.

OSD (On Screen Display)

Display information

Model
Serial Number
Maintenance Information
Total Operating Hours
Operating Hours Since The Last Calibration
EDID Data Status

```
INFORMATION
MODEL      :  MD211G5
SERIAL     :  **********
VSPU       :  REV.01
MPU        :  REV.A
ACT TIME   :  XXXXX H
LAST CAL   :  XXXXX H
EDID       :  Portrait
              (Auto Selection)
```

Present operating state

Current Luminance
Ambient Light
Current input source
Configuration Number
Luminance Setting
Gamma Setting

```
PRESENT STATE
LUMINANCE :  501 cd/m²
AMB LIGHT :  300lx
INPUT     :  DisplayPort

CALIBRATION SETTING
CONFIG    :  1
LUMINANCE :  500 cd/m²
GAMMA     :  DICOM GSDF
```

DICOM conformance test

Result of the last test
Luminance status
Continuous lighting time of the backlight

```
DICOM CONFORMANCE TEST
RESULT        :  ---
MAX DEVIATION :  ---

LAST CAL      :  XXXXX H
LUMINANCE     :  Stable
ELAPSED TIME  :  123min

To start testing,
press and hold both the
+ and - buttons for over
2 seconds.
```

Specifications

Monitor Specifications	MD211G5	Notes
LCD panel color	Clear Base	
LCD	21.3-inch (54 cm), monochrome, TFT active matrix, anti-glare	
Pixel pitch (H x V)	0.165 x 0.165 mm	
Display area (H x V)	337.9 x 422.4 mm	
Pixel (H x V)	2048 x 2560	
Grayscale	256 steps of gray out of a palette of 12277	
Backlight	Edge Light Type with white LED	
LCD Optical characteristics (typ.)	Viewing angle: 176° horizontal/vertical (contrast ratio ≥ 50:1) Contrast ratio: 1200:1 (Viewing angle perpendicular to LCD panel)	
Luminance	DICOM calibrated	500 cd/m^2 as factory default
	Maximum	600 cd/m^2 (1200 cd/m^2 typ. as LCD component)
Input sync signal	DVI 1.0 compliant, DisplayPort 1.2 compliant	
Available resolution	640 x 480 800 x 600 1024 x 768 2048 x 2560 (at Fv=25/50Hz) 2560 x 2048 (at Fv=25/50Hz)	
Input connectors	DVI 24-pin connector, DisplayPort connector	
Power Supply	AC 100-240 V ~ 50/60 Hz	
Current Rating	1.5 - 0.6 A	
USB Hub	USB Rev. 2.0 compliant, Self-powered USB upstream port (x1), USB downstream ports (x2)	
Ambient conditions Temperature: Humidity (no condensation): Air pressure:	Operating: 5 - 35°C, Transport / Storage: -20 - 60°C Operating: 20 - 80%, Transport / Storage: 10 - 85% Operating: 700 - 1060hPa, Transport / Storage: 266 - 1060hPa	
Dimensions & weight (W x H x D) Net: Packed:	390 x 487.8/584 x 227.6 mm (W x H x D: Portrait) approx. 11.8 kg 475 x 705 x 345 mm (W x H x D). approx. 15.8 kg	
Safety certifications	ANSI/AAMI ES60601-1:2005, CAN/CSA-C22.2 No. 60601-1:08, FCC-B, CE-MDD, VCCI-B	

NOTE: Technical specifications are subject to change without notice.

Troubleshooting

The display won't turn on! (The power indicator is off.)
- Make sure the display is plugged.
- Check to see if the display is turned on.

The screen is not lit!
- Check if cables are connected correctly.
- Check if the computer is turned on.
- If the LED indicator is orange, the computer may be in power saving mode. Press any key on the keyboard to wake up the computer.
- The input signal frequency or display resolution may not be appropriate for the display. Refer to the computer instruction manual and adjust the frequency and/or resolution.
- If the LED is red, this may be an error indication. Contact your supplier.

Images are not displayed properly!
- The display resolution may not be appropriate for the display. Refer to the computer instruction manual and adjust resolution.

The refresh rate is set to 50Hz (dual-link mode) and resolution loss (scan line gaps) occurs!
- This can happen when a single-link cable or a DisplayPort to Single Link adapter is used. Use the supplied dual-link cable which supports both single-link (25Hz) and dual-link (50Hz) modes, or set the refresh rate to 25Hz.
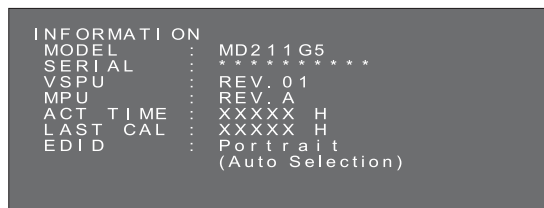
Additional Installation Information

Advanced OSD

Several control functions are available by entering the advanced OSD. These control functions are additional OSD menu items, which are always accessible after opening the standard OSD.

Control Function	Description
EDID	Change the picture format to be recognized by the operating system • **Portrait format** - 2048 x 2560 pixels [Factory Default] • **Landscape format** - 2560 x 2048 pixels
Input Source	Change the input source • **DVI** • **DisplayPort**
Configuration	Change luminance and gamma correction factory presets. The factory presets are: _(see table below)_ The configuration 1 parameter may be modified anytime by a new display calibration. **NOTE:** Regarding display calibration, please refer to the GammaCompMD QA Manual.
DICOM conformance test	Make DICOM conformance of the display by measuring and checking the display properties.

Configuration	Luminance (cd/m^2)			Gamma	Remark
	Maximum	Minimum	Ambient		
1	500	1.0	0.0	DICOM	Default
2	550	1.0	0.0	DICOM	
3	400	1.0	0.0	DICOM	

How to change the EDID setting (Portrait / Landscape)

1. Click the (+) plus button or (-) minus button on the back side of the monitor once to display the "INFORMATION" OSD.
   A display, which is similar to this picture, opens on the screen.

```
INFORMATION
MODEL    :  MD211G5
SERIAL   :  * * * * * * * * * *
VSPU     :  REV.01
MPU      :  REV.A
ACT TIME :  XXXXX  H
LAST CAL :  XXXXX  H
EDID     :  Portrait
            (Auto Selection)
```

2. Hold down the (+) plus button and the (-) minus button simultaneously for over 2 seconds.
   The "SWITCHING EDID" menu opens on the screen. Select "Portrait" or "Landscape" by the (+) plus button or the (-) minus button.

```
SWITCHING EDID
EDID   Auto Selection
       Portrait
     ▶ Landscape
```

3. After selecting your preferred EDID mode, hold down the (+) plus button and the (-) minus button simultaneously for over 2 seconds again. Then displayed (Information) OSD and Selected (Landscape) EDID data is displayed as (FIXED). Then confirm the EDID line (Portrait/Landscape) on the "INFORMATION" OSD.

```
INFORMATION
MODEL     :  MD211G5
SERIAL    :  **********
VSPU      :  REV.01
MPU       :  REV.A
ACT TIME  :  XXXXX H
LAST CAL  :  XXXXX H
EDID      :  Landscape
             (Fixed)
```

4. Click the (+) plus button or (-) minus button once to close the "INFORMATION" OSD.

NOTE: When using the "Portrait" setting, the display controller does not need to rotate the image in the video ram. In most applications, this setting is preferable. However, if there is a need to rotate the image by the display controller, the "Landscape" setting may be preferable.

Switching input source

Please operate input source change following the procedure mentioned below.

1. The (+) / (-) buttons are located in the back of the display. Press either button twice, and the present operating state appears.

Present operating state

```
PRESENT  STATE
 LUMINANCE  :  501 ㏅/㎡
 AMB LIGHT  :  300 lx
 INPUT      :  DisplayPort

CALIBRATION  SETTING
 CONFIG     :  1
 LUMINANCE  :  500 ㏅/㎡
 GAMMA      :  DICOM GSDF
```

2. With the present operating state displayed, press and hold both the buttons for 2 seconds. The switching input source screen appears.
   With the screens above displayed, select a input source using the (+) plus button or the (-) minus button.

Select a DisplayPort

```
SWITCHING INPUT SOURCE
 INPUT  ▶DisplayPort
        DVI
```

Select a DVI

```
SWITCHING INPUT SOURCE
 INPUT   DisplayPort
        ▶DVI
```

3. Switching the input source, press and hold both the buttons for 2 seconds. And the present operating state with the selected input source appears.
   Current signal input source is confirmed on the INPUT description of PRESENT STATE OSD.

```
PRESENT  STATE
 LUMINANCE  :  501 ㏅/㎡
 AMB LIGHT  :  300 lx
 INPUT      :  DVI

CALIBRATION  SETTING
 CONFIG     :  1
 LUMINANCE  :  500 ㏅/㎡
 GAMMA      :  DICOM
```

Input source

```
PRESENT  STATE
 LUMINANCE  :  501 ㏅/㎡
 AMB LIGHT  :  300 lx
 INPUT      :  DisplayPort

CALIBRATION  SETTING
 CONFIG     :  1
 LUMINANCE  :  500 ㏅/㎡
 GAMMA      :  DICOM GSDF
```
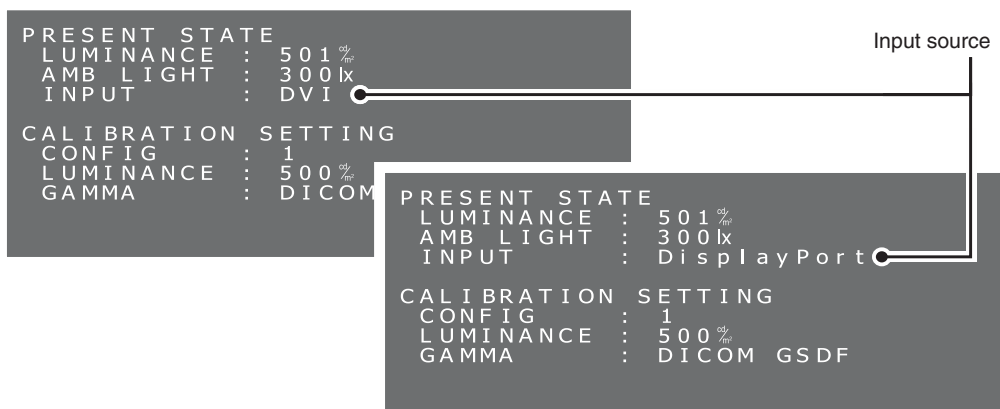
HINT: In order to apply the configuration change, make sure to press and hold both (+) and (-) buttons for over 2 seconds after moving the cursor, otherwise the screen disappears in 15 seconds and the configuration cannot be switched.

How to Change Configuration (Preset 1, 2, 3)

The NEC model MD211G5 is shipped with 3 factory preset configurations, as listed below.

Configuration	Luminance (cd/m²)			Gamma	Remark
	Maximum	Minimum	Ambient		
1	500	1.0	0.0	DICOM	[Factory Default]
2	550	1.0	0.0	DICOM	
3	400	1.0	0.0	DICOM	

The configuration can be changed via an OSD menu. The configuration 1 parameters may be modified anytime by a new display calibration. Regarding display calibration, please refer to the *GammaCompMD QA Manual*.

1. Click the (+) plus button or (-) minus button on the back side of the monitor twice to display the "PRESENT STATE" OSD. A display like this picture opens on the screen.
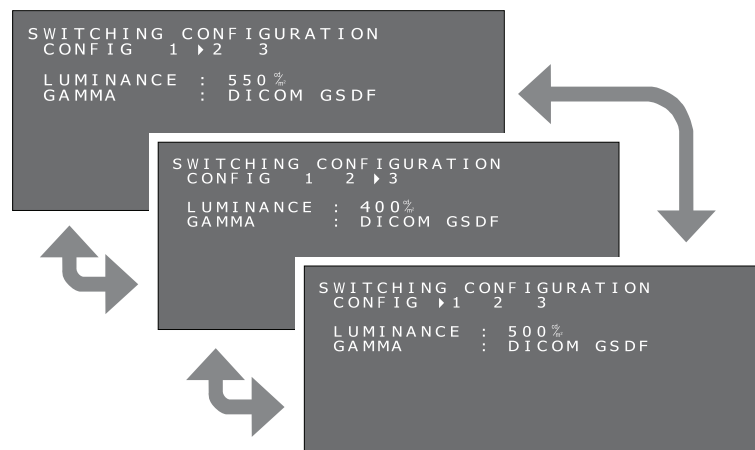
```
PRESENT  STATE
  LUMINANCE  :  501㎠
  AMB  LIGHT  :  300lx
  INPUT        :  DisplayPort

CALIBRATION  SETTING
  CONFIG      :  1
  LUMINANCE  :  500㎠
  GAMMA        :  DICOM  GSDF
```

2. With the present operating state displayed, press and hold both the buttons for 2 seconds. The switching configuration screen appears.
    With the screens above displayed, press a power-switch ⏻ quickly, the OSD switches to SWITCHING INPUT SOURCE and SWITCHING CONFIGURATION screen in that order.

```
SWITCHING  INPUT  SOURCE
  INPUT  ▶DisplayPort
            DVI
```

```
SWITCHING  CONFIGURATION
  CONFIG  ▶1    2    3

  LUMINANCE  :  500㎠
  GAMMA        :  DICOM  GSDF
```
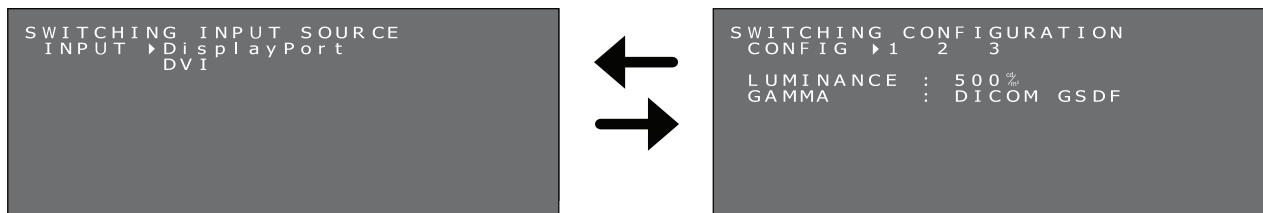
3. Select your desired configuration by the (+) plus button or the (-) minus button.

```
SWITCHING  CONFIGURATION
  CONFIG    1  ▶2    3

  LUMINANCE  :  550㎠
  GAMMA        :  DICOM  GSDF
```

```
SWITCHING  CONFIGURATION
  CONFIG    1    2  ▶3

  LUMINANCE  :  400㎠
  GAMMA        :  DICOM  GSDF
```

```
SWITCHING  CONFIGURATION
  CONFIG  ▶1    2    3

  LUMINANCE  :  500㎠
  GAMMA        :  DICOM  GSDF
```

4. After selecting your preferred CONFIGURATION mode, hold down the (+) plus button and the (-) minus button simultaneously for over 2 seconds again. Then confirm any change of configuration in the "PRESENT STATE" OSD.

```
PRESENT  STATE
  LUMINANCE  :  550㎠
  AMB  LIGHT  :  300lx
  INPUT        :  DisplayPort

CALIBRATION  SETTING
  CONFIG      :  2
  LUMINANCE  :  550㎠
  GAMMA        :  DICOM  GSDF
```

5. Click the (+) plus button or (-) minus button once to close the "PRESENT STATE" OSD.

Performing the DICOM conformance test

This function is available only when the display has been calibrated to DICOM GSDF.
Performing the DICOM conformance test ensures DICOM conformance of the display by measuring and checking the display properties.

The DICOM conformance test is recommended to be performed after 60 minutes of continuous lighting time of the backlight of the LCD panel. If the test is performed in less than 60 minutes of lighting time, a margin of measurement error may be larger because luminance is not stable enough.
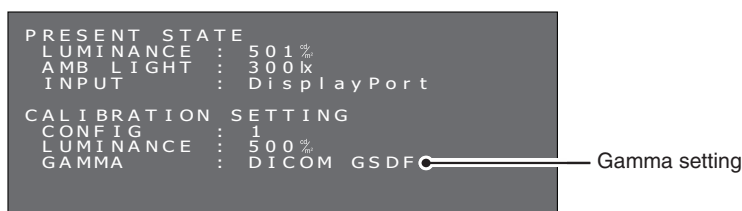
HINT: If the power management function of the display works in less than 60 minutes due to the computer power setting, change the computer setting, or try "Advanced OSD Controls without video input".

Procedures of DICOM conformance test:

1. Checking the gamma setting
   The (+) / (-) buttons are located in the back of the display. Press either button twice, and the present operating state appears. Make sure the gamma is set to "DICOM GSDF".

Present operating state

```
PRESENT STATE
 LUMINANCE  : 501 %
 AMB LIGHT  : 300 lx
 INPUT      : DisplayPort

CALIBRATION SETTING
 CONFIG     : 1
 LUMINANCE  : 500 %
 GAMMA      : DICOM GSDF ───────── Gamma setting
```
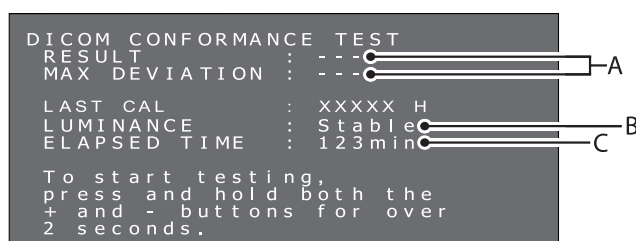
2. Displaying the DICOM conformance test screen
   Press either button again, and the DICOM conformance test screen appears.
   Make sure at least 60 minutes of continuous lighting time of the backlight has elapsed.

DICOM conformance test

```
DICOM CONFORMANCE TEST
 RESULT        : ---     ┐
 MAX DEVIATION : ---     ┴─A

 LAST CAL      : XXXXX H
 LUMINANCE     : Stable  ─B
 ELAPSED TIME  : 123min  ─C

 To start testing,
 press and hold both the
 + and - buttons for over
 2 seconds.
```

A.   Result of the last test
("---" indicates that the test has not been performed.)

B.   Luminance status
Stable: Luminance is stable. (Recommended)
Unstable: Luminance is unstable.

C.   Continuous lighting time of the backlight
Over 60 minutes (Recommended)
"Over 240 min" indicates more than 240 minutes has elapsed.

3. Performing the DICOM conformance test
   With the present operating state displayed, press and hold both the buttons for 2 seconds.
   The screen that shows the test is in execution appears.

Screen that shows the test is in execution

```
DICOM CONFORMANCE TEST

 Executing...


 To cancel testing,
 press and hold both the
 + and - buttons for over
 2 seconds.
```
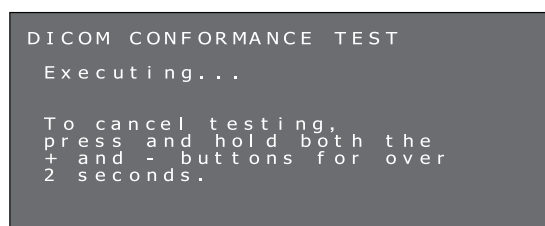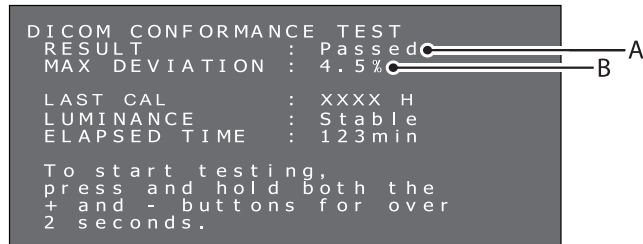
Completing the measurement takes between 30 seconds to 1 minute.
To cancel the measurement, press and hold the both plus (+) and minus (-) buttons for over 2 seconds.

4. Showing the test results
   When the measurement is completed, the test results are shown.

Test results

```
DICOM CONFORMANCE TEST
 RESULT       : Passed
 MAX DEVIATION : 4.5%

 LAST CAL      : XXXX H
 LUMINANCE     : Stable
 ELAPSED TIME  : 123min

 To start testing,
 press and hold both the
 + and - buttons for over
 2 seconds.
```
—A
—B

A.   Test results

Passed: Max. deviation ≤ 10%

Failed: Max. deviation > 10%

Canceled: Test has been canceled.

Passed(!), Failed(!)
"(!)" following Passed and Failed indicates that the recommended condition has not been met. (The test was performed in less than 60 minutes of continuous lighting time of the backlight.)

If the test is continuously performed in less than 30 seconds, "Unstable" is shown in LUMINANCE and "(!)" is shown in RESULT.

B.   Maximum deviation

The test results are saved until the next test or calibration.
If the achieved maximum deviation does not conform to the standard even though the test has been performed under the recommended condition, calibrate the display using an external calibration sensor.
Without the OSD operation for over 15 seconds, the OSD disappears automatically.

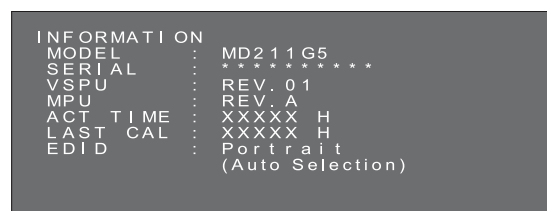# Advanced OSD Controls without video input

If no video signal is available, the display enters the power save mode and the OSD cannot be displayed.
In this case, please follow the procedure below.

1. Confirm that the display is in power save mode and the LED next to the power switch is lit orange. If the LED is off, please push the power switch to turn on the monitor.

 LED
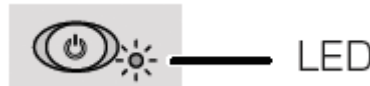
2. Hold down the (+) plus button and the (-) minus button simultaneously for over 2 seconds.
   The "INFORMATION" OSD menu opens on the screen. The LED color changes from Orange to Green.

```
INFORMATION
 MODEL    : MD211G5
 SERIAL   : **********
 VSPU     : REV.01
 MPU      : REV.A
 ACT TIME : XXXXX H
 LAST CAL : XXXXX H
 EDID     : Portrait
            (Auto Selection)
```

3. Switch EDID, input source, Configuration or DICOM conformance test referring to this manual.

   How to Change the EDID settings (see page 12)

   How to Change the input source (see page 13)

   How to Change Configuration (see page 14)

   How to make DICOM conformance test (see page 15)

4. If the display enters the power save mode during the change process, please start from the beginning again.

NOTE: This mode is released after any of the following conditions are met:
   • 3 hours has passed.
   • The display power has been turned off.
   • The DICOM conformance test has been performed.

Attaching a wall mount or multi-display mounting arm

The tilt and swivel stand, as shipped with the display, is interchangeable with commercially available wall mounts or multi-display mounting arms that:

- Come with a mount plate with 4 slotted screw holes at 100 mm x 100 mm and
- Can bear the total weight of the LCD panel (without the stand) and the cables connected to it.

For more information ask your mounting arm supplier.

Note: Use the original screws to use the LCD panel back on its original tilt stand.

CAUTION		

Choose the screw size carefully according to the mount plate thickness. If the screws are too long, they could damage the internal parts. If they are too short, the connection becomes loose and the display could fall out.

Mounting plate thickness	Screw size
1.5-4.0mm	ISO M4x16

## How to attach wall mounts or multi-display mounting arms

1. Place a soft cloth or cushioning material over a stable even surface.
2. Put the display face down on the soft cloth or cushioning material.
3. Remove 4 screws and detach the tilt and swivel stand shipped with the display.
4. Attach the wall mount or multi-display mounting arm according to the manufacturer's instructions.
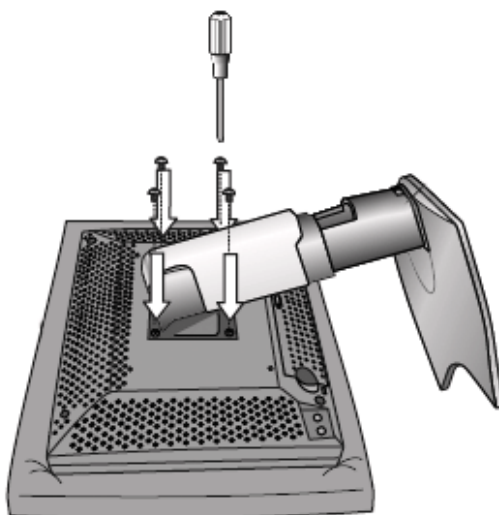
Antitheft Security Slot

The display is equipped with the security slot supported by MicroSaver Security Lock System by Kensington Technology Group. The MicroSaver locks are available at PC supply stores.

Note: Kensington is the registered trademark of Kensington Technology Group.
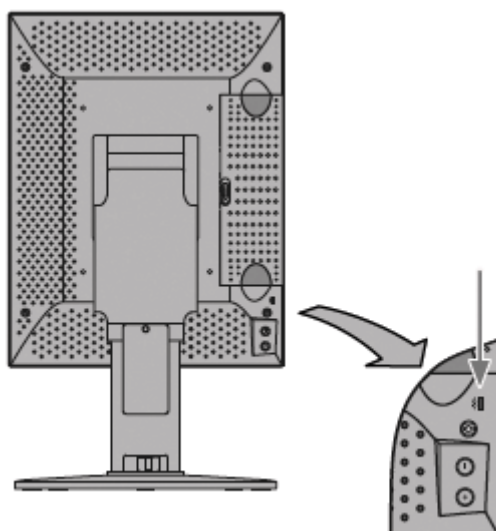
Manufacturer's Recycling and Energy Information

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

Disposing of your old NEC product

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

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

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

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

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

Energy Saving

This monitor features an advanced energy saving capability.

Mode	Power consumption	LED colour
Normal Operation	Approx. 80 W	Green (then unlit when luminance is stabilized)
Energy Saving Mode	Less than 2 W	Orange
Off Mode	Less than 2 W	Unlit

WEEE Mark (European Directive 2002/96/EC)

Within the European Union

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

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

Outside the European Union

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

NEC