TABLE OF CONTENTS

1- INTRODUCTION

1-1 Overview

The operator workspace monitor must be properly adjusted for the filmed image to accurately represent the console monitor displayed image. This procedure will describe how to adjust the monitor to match the camera. Once the monitor is re-calibrated, it is essential to re-calibrate the camera before the system is used for filming. **This procedure is only for the LCD color monitor and not for the CRT monitor.**

1-2 Camera Vendor Participation

Although the steps outlined below are possible for a qualified GE Service Engineer for both Camera and Display adjustments, it is recommended that the following procedure are performed with the Camera Vendor field engineer for camera adjustments. With the Camera adjustments, it is recommended that you have one of the Customer's filming specialists available for the fine tuning and quality review of the film/monitor conformance.

2- VERIFY AMBIENT LIGHTING CONDITIONS

In the review area and operator workspace area, verify that the ambient lighting conditions are adjusted to a minimum level. In the operator workspace area, there should be only sufficient light for safely operating the system.

In the review area and operator workspace area, verify that light-boxes are not emitting light, or are properly masked, when not displaying film. This will be a source of excessive glare.

In both review area and operator workspace area, verify that there is no source of glare for reviewing films or setting up the images for film. For example, windows should not allow direct light (blinds should be closed).

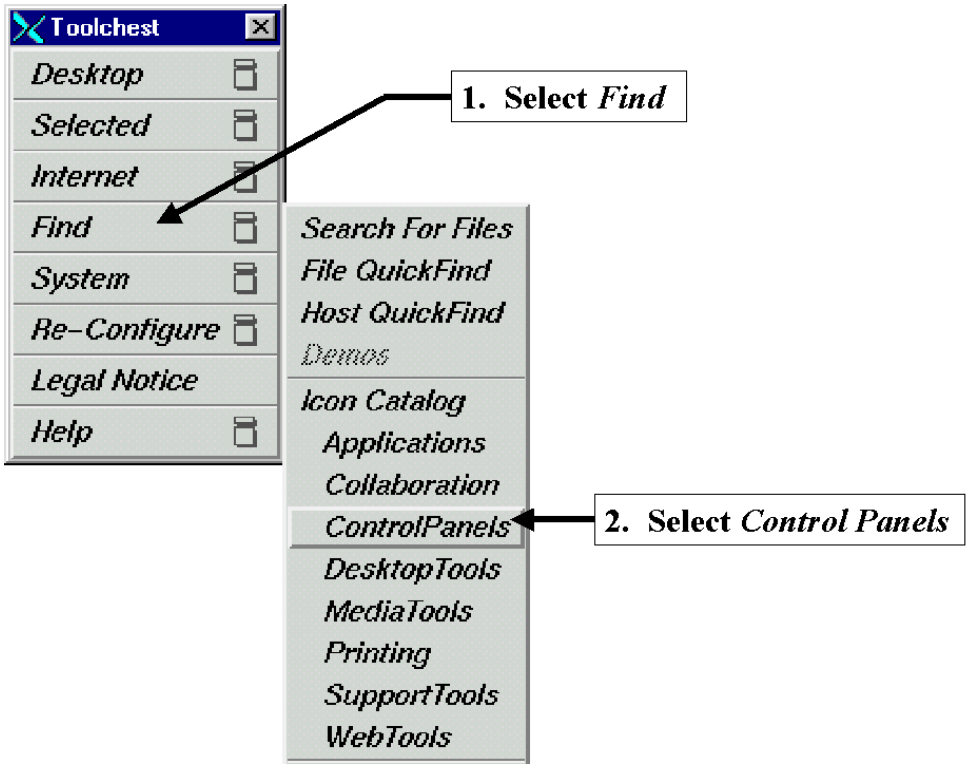
Note that both, the operator workspace area and the review area artificial lighting type should be the equivalent.

3 – SETTING LCD MONITOR FREQUENCY RATE

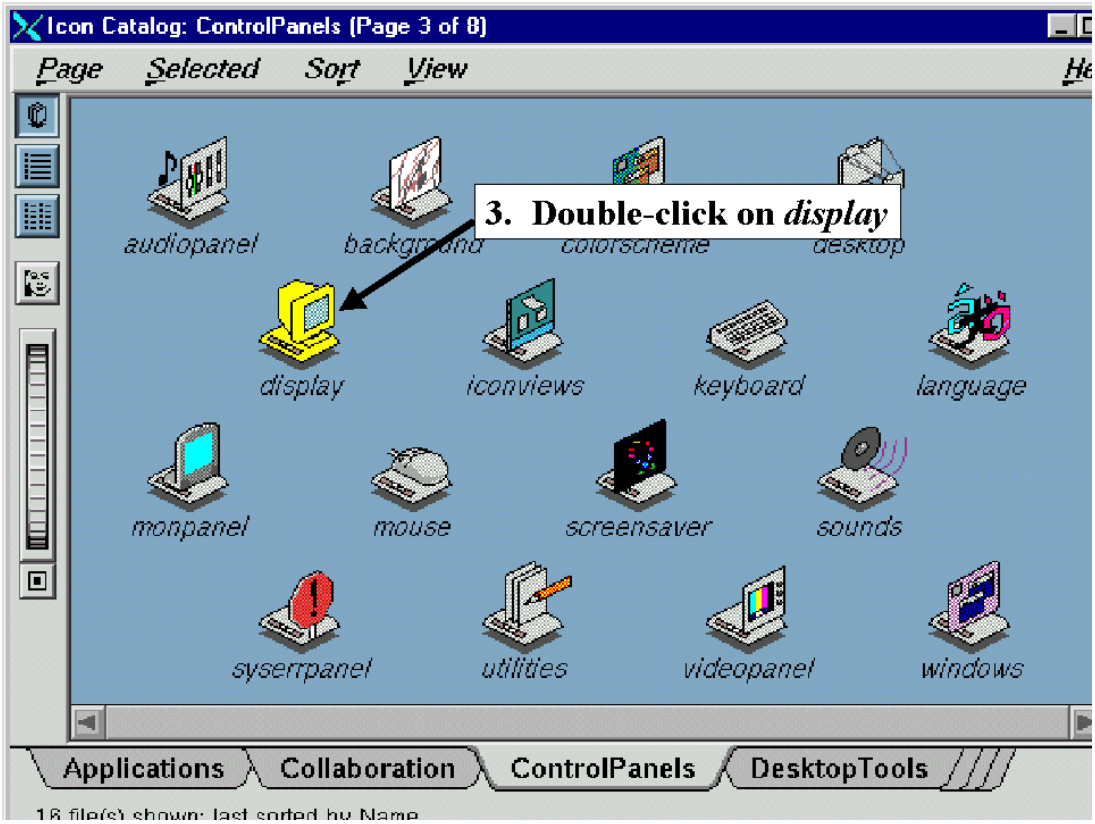
The system software must be configured for the proper monitor resolution and scan rate.

3-1 Configuring the system

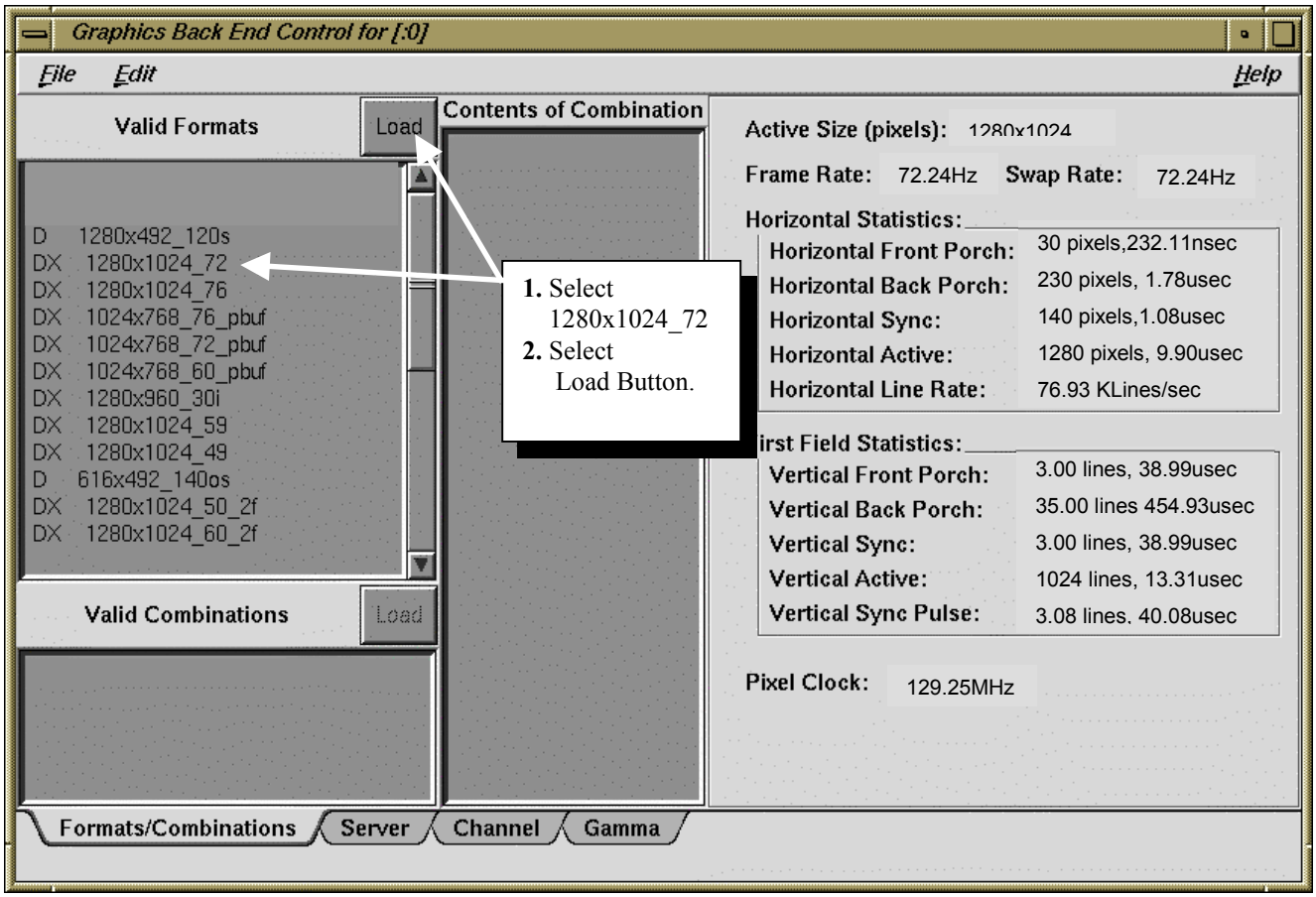
1. From the Service Desktop click on the **C-shell** soft key at the bottom of the window.
2. In the Winterm window login by typing **su <Enter>** and then typing in the password **operator <Enter>**.
3. In the Winterm window prompt type **toolchest&**. A GUI menu like that shown in Illustration 3-1 should, within 20 seconds, display on the screen. Make the selections as shown in Illustrations 3-1 and 3-2.



TOOLCHEST MENUS
ILLUSTRATION 3-1



DISPLAY SETTING THROUGH CONTROL PANELS
ILLUSTRATION 3-2



LINE RATE WINDOW
ILLUSTRATION 3-3

4. From the Display screen select **1280 X 1024_72**.

5. Verify that **1280 X 1024_72** is highlighted. At the top left of the selection window select **Load**.

6. Answer **Yes** to the two questions about loading the new setting and making it the boot default.

7. The screen will immediately change to the new setting.

8. From the upper left corner of the Graphics Back End Control window select **File → Exit**.

9. From the upper left corner of the Control Panels window select **Page → Exit**.

10. Position the cursor over the **Toolchest** label bar at the top of the Toolchest menu, single-click with the left mouse button and then select Exit from the list of selections to close the Toolchest menu.

4- CONFIGURING THE GAMMA SETTING - NEC 2000, NEC 2010 LCD MONITOR

Note

This section is for the NEC 2000 and the NEC 2010 LCD monitors ONLY. Skip to Section 5 for the NEC 2010X LCD monitor Gamma Look-Up Table Setup.

4-1 Configuring Gamma Setting for the NEC 2000 and NEC 2010 LCD Monitor

The GAMMA value is modified to optimize the contrast level of the image mid-tones to more closely represent the same contrast that is filmed.

GAMMA SETTINGS

TABLE 4-1

Monitor Type	Models	Gamma Setting
20 inch LCD	NEC 2000	1.05
20 inch LCD	NEC 2010	1.05

4-2 Checking Gamma Level

1. From the Tools Menu on the Host SGI Computer, Open **C-Shell**.

2. Type **gamma** <enter> The system should respond with the current setting. (Refer to Table 4-1, for the correct gamma setting for your monitor configuration).

   a. If the gamma value is correct, the gamma level is set. Proceed to the next section.
   b. If the value is NOT correct continue with Section 4-3

4-3 Mounting the Service CDROM

1. Insert GEMS Service Documentation CD ROM 2160623 Rev 14. Or Service CD 2250758 Rev 2 into the Signa host CDROM drive. The service class of the service CDROM does not matter.
2. On the Host SGI Computer, Open **C-Shell**.
3. Type: **cd/usr/g/bin** <enter>
4. Type: **su root** <enter> At password, type: **operator** <enter>
5. Type: **mediad** <Enter> (Mount CDROM Drive to File System, takes 20-30 seconds)

Note

If a message appears stating “another mediad is already running”, ignore it.

6. Type: **/CDROM/gamma/setfiles** <enter>

Note

Message appears stating this action was performed.

7. Type: **setgamma 1.05** <enter> (The screen should change gamma level instantly)

   Response:

   <gamma> value was 1.000000 (Original gamma value)

   <gamma> value is now 1.050000 (New gamma value)

   ---

8. Type: **umount /CDROM** <Enter> (Release the CDROM drive)
9. Type: **exit** <enter> (Changes user privileges. "root level" access to "sdc level" access).
10. Type: **exit** <enter> Close the C-Shell.
11. Remove the CDROM from the CDROM Reader.

Note

If you push the button on the front of the CDROM Reader and it does not open, it is because you did not properly "un-mount" the CDROM from the File System.

1. Re-open a C-shell
2. login as root, Password: operator
3. Type: **umount /CDROM**. (Make sure to type "umount" not "u**n**mount")
4. Exit the C-Shell.
5. Eject the CDROM with the button.

5- SIGNA HOST GAMMA LOOKUP TABLE INSTALLATION- NEC 2010X LCD MONITOR ONLY

CAUTION

Perform this section ONLY if you are working with an NEC 2010X LCD Monitor. If this section is performed on an NEC 2000, NEC 2010 LCD monitor, or a CRT type monitor will cause severe Image Quality problems.

The GAMMA value is modified to optimize the contrast level of the image mid-tones to more closely represent the same contrast that is filmed. This process uses a Look-Up-Table (LUT) for closer HIPPA and DICOM compliance versus a single gamma setting on earlier models of LCD's and CRT's.

5-1 Installing the Gamma Look-Up-Table for the NEC 2010X LCD Color Monitor

1. Insert GEMS Service Documentation CD ROM 2160623 Rev 14. Or Service CD 2250758 Rev 2 into the Signa host CDROM drive. The service class of the service CDROM does not matter.
2. On the Host SGI Computer, Open **C-Shell**.
3. Type: **cd /usr/g/bin** <enter> (IRIX is case sensitive. Always use case exactly as shown)
4. Type: **su root** <enter> At password, type: **operator** <enter>
5. Type: **mediad <Enter>** (Mount CDROM Drive to File System, takes 20-30 seconds)

Note

If a message appears stating “another mediad is already running”, ignore it.

6. Type: **/CDROM/gamma/setfiles** <enter>

Note

Message appears stating the action was performed.

7. Type: **umount /CDROM** <Enter> (Release the CDROM Drive.)
8. Type: **exit** <Enter> (Changes user privileges. "root level" access to "sdc level" access).
9. Type: **rungamma** <Enter>
10. The menu shown in Table 5-1 will display.

TABLE 5-1
GAMMA TOOL SELECTIONS

```
Make a selection between 1 and 7 to proceed!

[1] For INSTALLING NEC 2010X Calibration

[2] For UNINSTALLING NEC 2010X Calibration

[3] For INSTALLING NEC 1850X Calibration

[4] For UNINSTALLING NEC 1850X Calibration

[5] For INSTALLING EIZO L660 Calibration

[6] For UNINSTALLING EIZO L660 Calibration

[7] For QUITTING this Program
```

11. Determine the LCD monitor type your system is using. The name and model number is usually found on the front face of the monitor.
12. At the prompt type the number corresponding to your monitor type and if you wish to install or uninstall the gamma tables.

The tool takes only seconds to run. A successful installation or removal message will appear and the system will go back to the command line prompt. Any errors reported will also suggest what to do next.

13. type: **exit** <enter> Close the C-Shell.

14. Remove the Service CDROM from the drive at this time.

Note

If you push the button on the front of the CDROM Reader and it does not open, it is because you did not properly "un-mount" the CDROM from the File System.

1. Re-open a C-shell
2. login as root, Password: operator
3. Type: **umount /CDROM**. (Make sure to type "umount" not "u**n**mount")
4. Exit the C-Shell.
5. Eject the CDROM with the button.

15. **Re-boot Signa** to save and activate the change to software.

6 - LCD MONITOR ADJUSTMENT OVERVIEW

The monitor should be positioned no closer than 16 inches and no further away then 28 inches from your eyes. The optimal distance is 24 inches for either of the monitors.

Note

Allow the monitor to warm-up for 20 minutes before performing any adjustments.

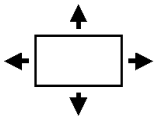
Note

The response time for the LCD monitor is 100 ms. It is normal to see a “trail” on the screen if the mouse is moved quickly.

6-1 Model NEC 2000 LCD Color Monitor Adjustment Overview

After the installation of the LCD monitor, the following adjustments must be performed:

- Auto Adjust Contrast → 
- Auto Adjust → 

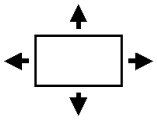
- Image Adjust → 
- Position Control → 
- AccuColor™ set-up → 

To access the On-Screen Manager OSM™, press any of the control buttons (▲,▼,+,-) to get to the main menu. Refer to Section 9 for a description of the On-Screen Manager Controls for the NEC 2000 LCD color monitor.

6-2 Model NEC 2010 LCD Color Monitor Adjustment Overview

After the installation of the LCD monitor, the following adjustments must be performed:

- Auto Adjust Contrast → 
- Auto Adjust → 

- Image Adjust → 
- Position Control → 
- AccuColor™ set-up → 

Note

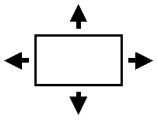
Manual Adjustment of the Position Control and Image Adjust H. Size/Fine controls may be required.

To access the On-Screen Manager OSM™, press any of the control buttons (▲,▼,◀,▶) to get to the main menu. Refer to Section 10 for a description of the On-Screen Manager (OSM™) Controls for the NEC 2010 LCD color monitor.

6-3 Model NEC 2010X LCD Color Monitor Adjustment Overview

After the installation of the LCD monitor, the following adjustments must be performed:

- Auto Adjust Contrast → 
- Auto Adjust → 

- Image Adjust → 
- Position Control → 
- AccuColor™ set-up → 

Note

Manual Adjustment of the Position Control and Image Adjust H. Size/Fine controls may be required.

To access the On-Screen Manager OSM™, press any of the control buttons (▲, ▼, ◀, ▶) to get to the main menu. Refer to Section 10 for a description of the On-Screen Manager (OSM™) Controls for the NEC 2010X LCD color monitor.

7 – LCD MONITOR ADJUSTMENT PROCESS

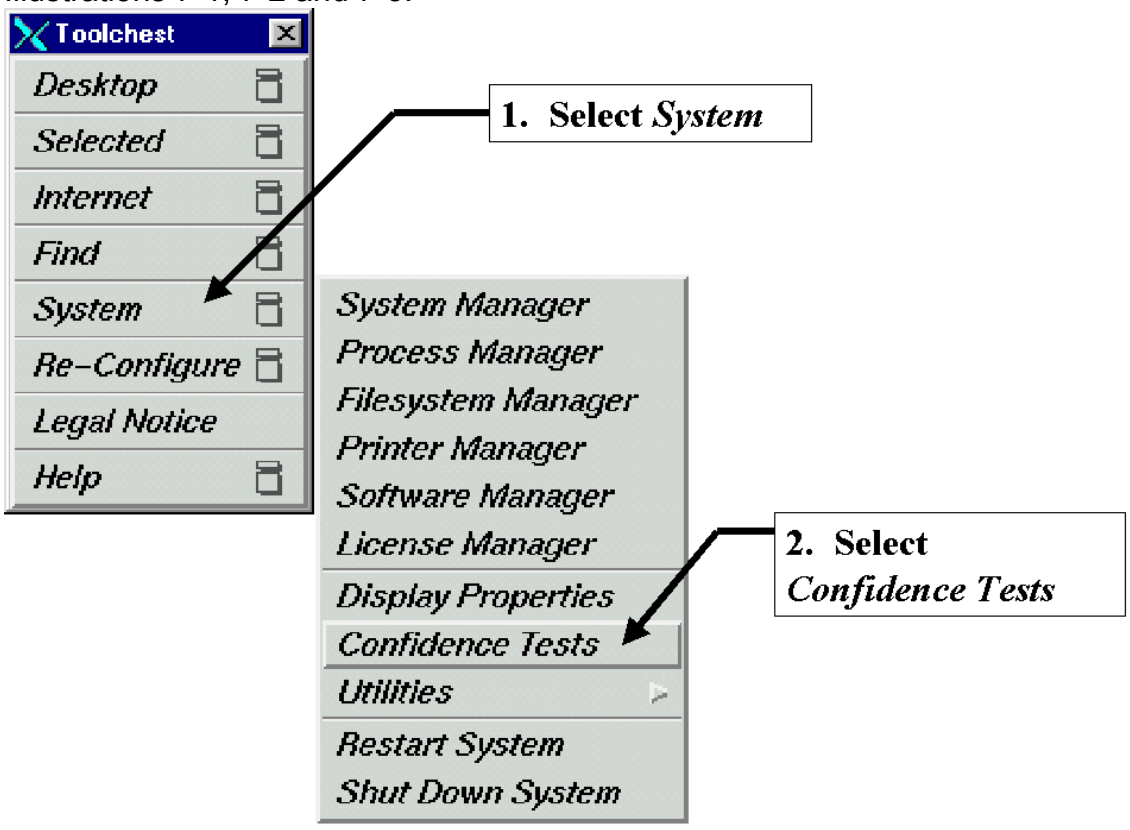
The LCD monitor adjustment process consists of two parts:

1. The first part involves making the course adjustments using the "Focus" background.

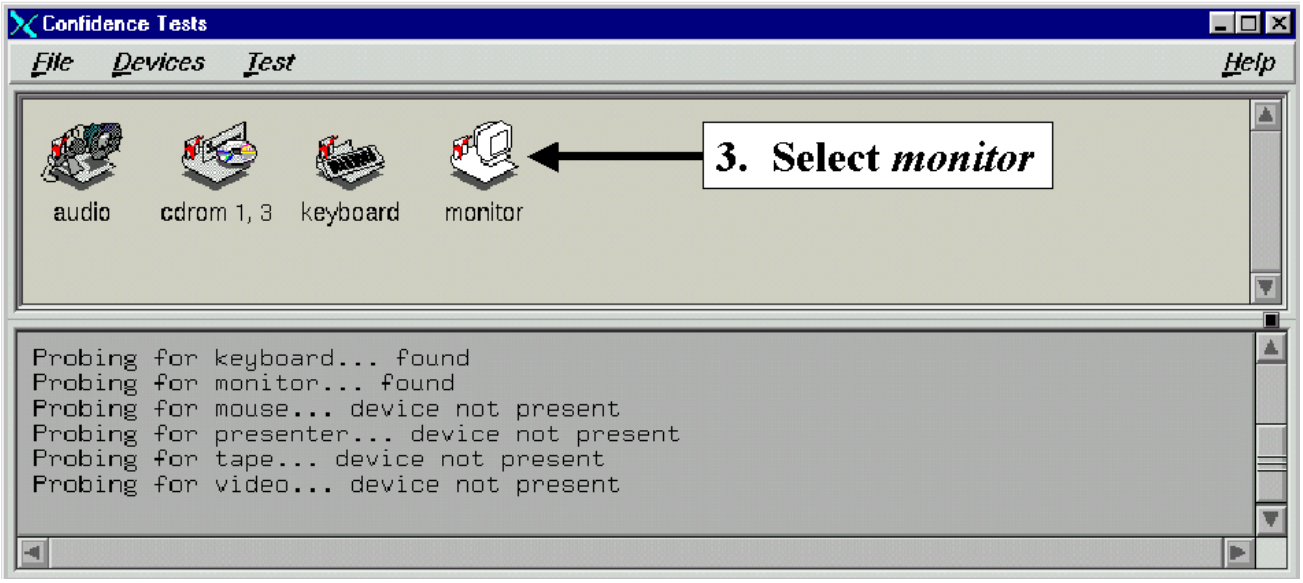
2. The second part involves using a SMPTE pattern to make finer contrast and brightness adjustments to ultimately satisfy the customers viewing needs.

7-1 Setting The Focus

1. From the Service Desktop click on the **C-shell** soft key at the bottom of the window.
2. In the Winterm window login by typing **su <Enter>** and then typing in the password **operator <Enter>**.
3. At the Winterm prompt type **toolchest&**. A GUI menu like that shown in Illustration 7-1 should, within 20 seconds, display on the screen. Make the selections as shown in Illustrations 7-1, 7-2 and 7-3.



TOOLCHEST MENUS
ILLUSTRATION 7-1



CONFIDENCE TESTS MENU
ILLUSTRATION 7-2

TEST OPTIONS
100% white field
30% white field
10% white field
Black field
Focus ← **4. Select *Focus***
Gray scale
Convergence
VIDEO CONTROLS
Red Video on
Green Video on
Blue Video on
Invert Video
Quit

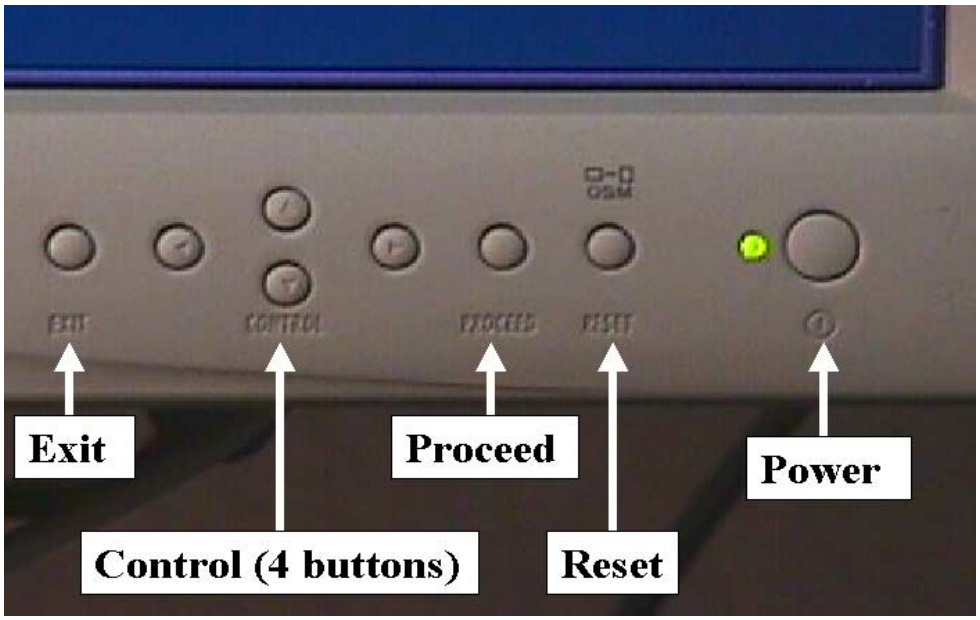
TEST OPTIONS MENU
ILLUSTRATION 7-3

4. Once **Focus** is selected then the background will change to a pattern.

5. Press the middle mouse button to toggle the Test Options Menu off.

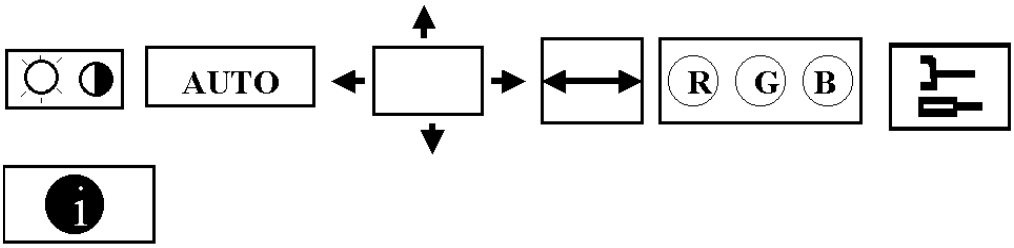
6. There should not be any visible variations (usually exhibited as alternating light and dark vertical bars) across the pattern of a properly adjusted monitor. If no variations are seen then skip ahead to section 8.

7-2 – NEC 2000, NEC 2010 and NEC 2010X LCD Color Monitor Adjustment Process



NEC 2010 LCD FRONT PANEL MONITOR CONTROLS
ILLUSTRATION 7-4

a. Press the **Proceed** button on the front of the LCD monitor. A display similar to what is seen in Illustration 7-5 will be seen.



MONITOR ADJUSTMENT ICONS
ILLUSTRATION 7-5

b. Use the left and right **Control** buttons (◀ , ▶) to highlight the Auto Adjust icon AUTO.

c. Press the **Proceed** button on the front of the monitor. The screen will blank momentarily during the automatic adjustment process.

d. Use the ◀ , ▶ **Control** buttons to manually make **Fine** adjustments under the Image Adjust icon ↔ until the background looks satisfactory and does not exhibit any variations.

e. Select the **AccuColor® Control System** icon R G B and use the ▲ , ▼ **Control** buttons to select the first entry row under this icon.

f. Use the ◀ , ▶ **Control** buttons to select **1 - 9300**. It should not be necessary to adjust the individual color bars in the bottom row.

g. Use the **Control** buttons to select the Brightness and Contrast icon  and set the brightness to maximum.

h. Under the Brightness and Contrast icon  use the **Control** buttons to select **Auto** and then press the **Proceed** button on the front of the monitor. The monitor will blank momentarily during the auto adjustment and then the background will begin changing contrast as monitor cycles through the different contrast settings. The menu will appear when this process is completed.

i. The monitor adjustment is complete. Press the **Exit** button on the front of the monitor to exit the adjustment icons window. See Illustration 7-4, if necessary.

j. Press the middle mouse button to display the Test Options Menu.

k. Select **Quit** from the Test Options menu to exit Focus.

3. Close the Confidence Tests window by selecting **File → Exit** from the top left corner of the window.

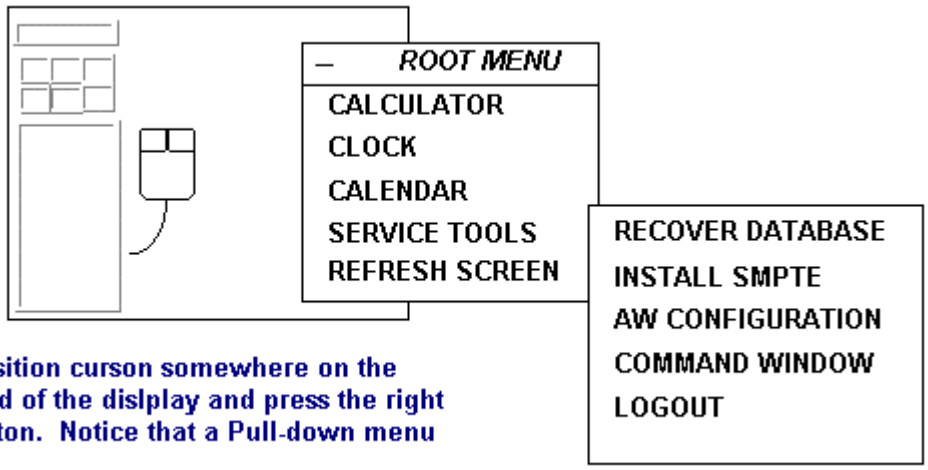
4. Close the Toolchest window by positioning the cursor over the **Toolchest** label and then left mouse click on the label and select **Close**.

8 - DISPLAYING THE SMPTE PATTERN

The SMPTE (Society of Motion Picture and Television Engineers) test pattern is used to provide a standard image for adjusting the monitor. Use this when first adjusting the monitor to achieve the best possible video display.

This test pattern is available on the Operator Workstation Host Computer after IRIX, the operating system, has booted, and after you have logged into the system.

1. Confirm that all the components in the Operators Workspace (OW), the host LCD monitor, PC LCD panel, and both the host computer and PC have power.
2. After IRIX has booted login at the login screen as **signa** using the password **adw2.0**. Press **<Enter>**.
3. After the host computer is at the applications level, install and display the SMPTE pattern. See Illustration 8-1 for installing and Illustration 8-2 for displaying SMPTE pattern. See Illustration 8-3 for sample test pattern.

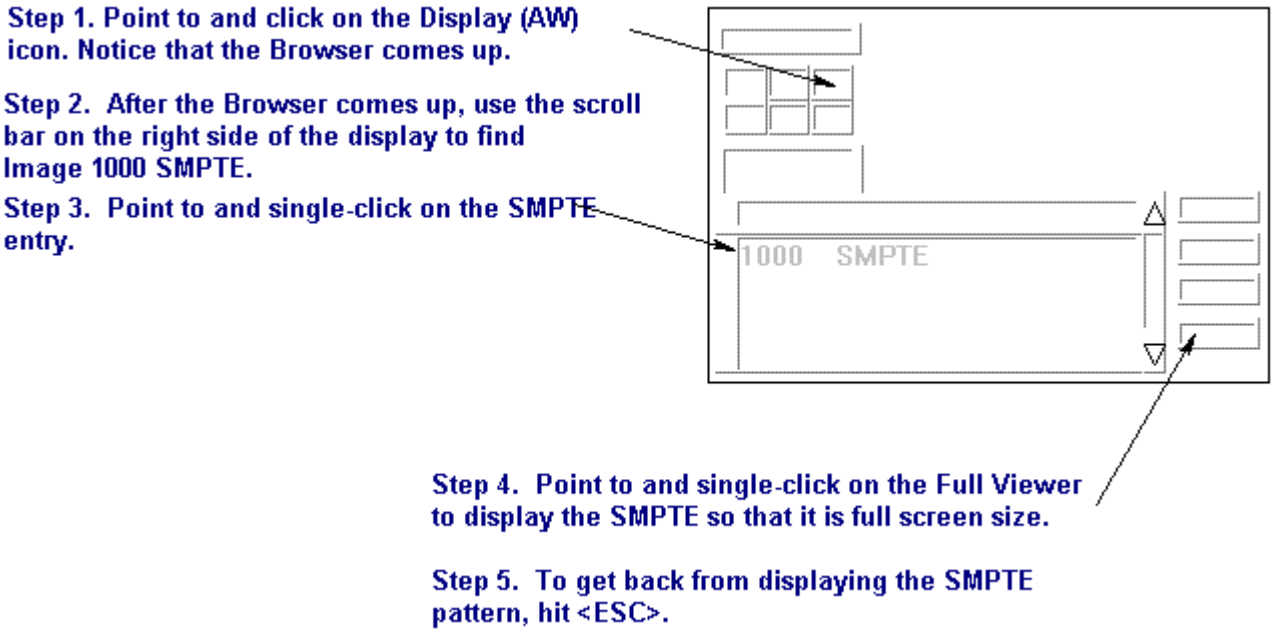


Step 1. Position curson somewhere on the background of the dislplay and press the right mouse button. Notice that a Pull-down menu appears.

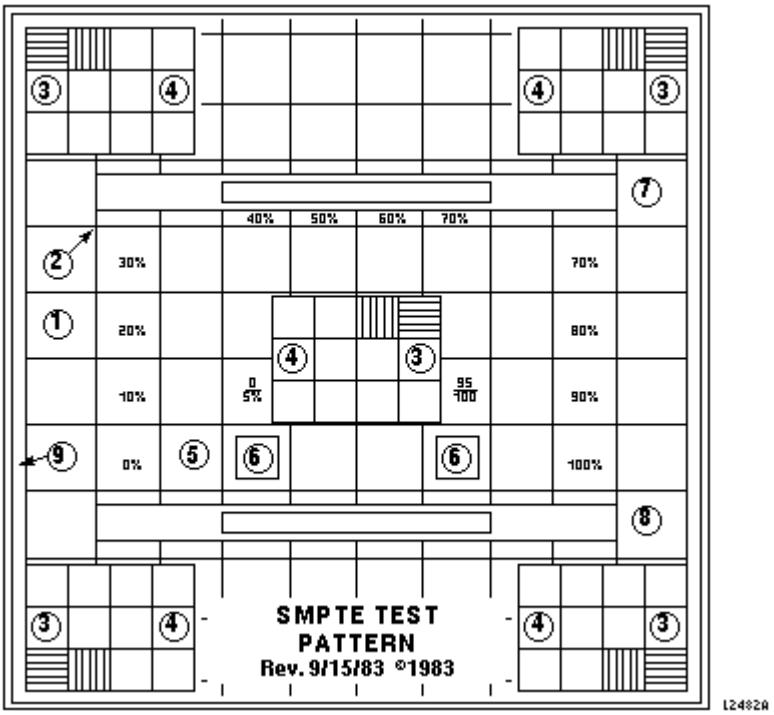
Step 2. Slide the mouse down to [Service Tools], and then over to [Install SMPTE]. This will load the SMPTE pattern into the database as Image 1000.

INSTALLING THE SMPTE PATTERN
ILLUSTRATION 8-1

8 - DISPLAYING THE SMPTE PATTERN (CONTINUED)



DISPLAYING THE SMPTE PATTERN
ILLUSTRATION 8-2



SAMPLE SMPTE TEST PATTERN
ILLUSTRATION 8-3

4. With the cursor inside the displayed image, hold down the middle mouse button and move the mouse in the horizontal plane. View the “window control” value at the base of the image and set the “window control” value to 100.

5. With the cursor inside the displayed image, hold down the middle mouse button and move the mouse in the vertical plane. View the “level control” value at the base of the image and set “level control” value to 1024.

9 - MONITOR ADJUSTMENTS

The monitor should be positioned no closer than 16 inches and no further away then 28 inches from your eyes. The optimal distance is 24 inches for either of the monitors.

Note

Allow the monitor to warm-up for 20 minutes before performing any adjustments.

Note

The response time for the LCD monitor is 100 ms. It is normal to see a “trail” on the screen if the mouse is moved quickly.

9-1 Contrast and Brightness Adjustment For NEC 2000, NEC 2010 AND NEC 2010X LCD Color Monitors

1. From the Contrast and Brightness icon  use the **Control** buttons to adjust the contrast lower if the maximum setting causes visible tearing or smearing of the pattern or alphanumeric characters (items 1,2,5-8 in Illustration 8-3).

2. From the Contrast and Brightness icon  use the **Control** buttons to adjust the brightness of the display monitor if the 5% and 95% patches are not visible (item 6 in Illustration 8-3).

Note

It may be necessary to re-adjust the contrast if tearing or smearing of the pattern or alphanumeric characters occurs (items 1,2,5-8 in Illustration 8-3).

10 - CAMERA CALIBRATION

This procedure describes the steps necessary to verify and set the camera parameters. Once the display is re-calibrated, it is essential to re-calibrate the camera before the system is used for filming. Although a qualified GE Service Engineer could perform the steps below, it is recommended that the following procedure be performed with the on-site assistance of the camera vendor field engineer.

10-1 DASM Interpolation Setup

1. Select the **Install** soft key from the Service Desktop. When prompted, login using the password **operator**.

2. Select the **DASM** folder from the top of the Guided Install GUI once it appears.

3. Set the DASM Interpolation method to linear.

4. Before exiting the GUI, insert the SaveInfo MOD or new MOD into the drive. Go to the top left corner of the Install GUI and select **<File>** and then **<Save GI Configuration to MOD>**. This process does not create a SaveInfo disk. It just creates a copy of the information already entered in the GUI tabs for use in the next software install.

5. Exit the install GUI by selecting **<File>** then **<Quit>**. If any error conditions still exist, you will be warned that no changes will be made before exiting.

10-2 Camera Imaging Look-Up Table

Verify with the camera vendor field engineer that the currently installed camera lookup table is designed to provide perceivably linear contrast for the light box conditions in the customer's viewing area. If not, request that the camera vendor field engineer replace it with the appropriate look-up table.

10-3 Camera Maximum Optical Density

Note that for optimal reviewing, the light box luminance of the diagnostic region of the film should be in the range of 50 to 500 nits. Vary the maximum optical density setting of the camera to compensate for the light box and to meet this value. A good starting position is a maximum density of 2.8.

10-4 Camera Contrast

1. With the maximum/minimum optical densities set to compensate for the review area's light box, select a look-up table for your camera that will produce a perceivably linear gray scale for the same light box and the overall ambient light conditions of the viewing area.

Note

The DICOM 3.14 Standard specifies the Barten's curve for linear perception. It is recommended that the manufacturer base perceptual linearity on this curve.

2. Film the SMPTE pattern on a 1-on-16 format display. Verify that the 5% and the 95% levels are visually equivalent. If not, perform a Contrast test with the SMPTE pattern. Select the new contrast setting from the contrast image set. A good value for the Imation DryView is 3. Use the camera's calibration procedure to set the contrast setting. Ensure that the camera maintains a perceivably linear gray scale.

Note

Filming the SMPTE pattern for contrast calibration may be optional for the camera vendor.

3. Ask the technologist to display a clinical image and set window and level controls for the desired appearance. A good image to start with is a sagittal or axial head image.

4. Capture the image on the keypad or host control interface.

5. Print a Contrast Test film. Ask the technologist to select the image that best matches the displayed image on the monitor.

10-4 Camera Contrast (continued)

6. Observe the image number below the selected image and set the Contrast control to this value.

10-5 Anatomical Filming

This portion of the procedure requires the technologist to verify the camera settings with true anatomical images.

1. Film representative anatomical images to confirm the settings. The image set should include T1 and T2 head images, joint images and c-spines.

2. Observe the accuracy of the low-tones, mid-tones and high-tones. If a filmed image is found to not be equivalent then re-calibrate the camera based on the customer's evaluation.

11 - CONTROL DESCRIPTIONS - NEC 2000 LCD COLOR MONITOR

Note

Adjustment information is not lost when the power is removed from the monitor.

11-1 Front Panel Controls

The functions of the OSM™ controls on the front of the monitor are described in Table 11-1.

TABLE 11-1
FRONT PANEL CONTROL FUNCTIONS - MODEL LCD2000

Control	Main Menu	Sub-Menu
EXIT	Exits the OSM™ controls.	Exits to the OSM™ controls main menu.
CONTROL ▲/▼	Used to access main menu. Moves the highlighted area up/down to select one of the controls.	Moves the highlighted area up/down to select one of the controls.
CONTROL +/-	Has no function	Moves the bar in the + or - direction to increase or decrease the adjustment
PROCEED	Proceeds to the selected menu choice (indicated by the highlighted area).	Activates Auto Adjust feature. In Display Mode, opens additional window.
RESET: The currently highlighted control to the factory setting	Resets all the controls within the highlighted menu.	Resets the highlighted control.

Note

When **RESET** is pressed, a warning window will appear allowing you to cancel the reset function.

11-2 On-screen Controls

This section describes the adjustments available for the OSM controls. The controls labeled with "•" are required during the set-up of the monitor.

- **Brightness and Contrast →** 

Brightness: Adjusts the overall image and background screen brightness.

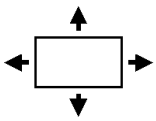
Contrast: Adjusts the image brightness in relation to the background.

Auto Adjust Contrast: Corrects the image displayed for non-standard video inputs.

11-2 ON-SCREEN CONTROLS (CONTINUED)

- **Auto** Adjust → 

Allows automatic adjust of the Position and Image Adjust Coarse control.

Position → 

Controls horizontal and vertical image position within the display area of the LCD.
Auto Adjust Position: Automatically sets the horizontal and vertical image position within the display area of the LCD.

- **Image Adjust →** 

Coarse: Adjusts the horizontal size by increasing or decreasing the Coarse setting.

Auto Adjust Coarse: Automatically adjusts the Coarse setting.

Fine: Improves focus, clarity, and image stability by increasing or decreasing the Fine setting.

- **AccuColor® Control System →** 

Color presets select the desired color setting. This setting must be set to selection **1 - 9300**. If a setting is adjusted, the name of the setting will change to Custom.
Color Gain (Red, Green, Blue): Increases or decreases the color depending upon which is selected. The change in color will appear on screen and the increase or decrease will be shown by the color bars.

OSM Location → 

You can choose where the OSM control image appears on the screen. Selecting OSM Location allows you to manually adjust the position.

OSM Turn Off Time
The OSM control menu will stay on as long as it is in use. 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, 60, and 120 seconds.

11-2 ON-SCREEN CONTROLS (CONTINUED)

OSM Lock Out

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

- To activate the Lock Out function, simultaneously press and hold down PROCEED and the ▲ button. The Lock Out window will disappear within seconds and the Lock Out function will be activated.
- To de-activate the Lock Out function, simultaneously press and hold down the PROCEED and the ▲ button.

Display 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.

Note

Mode Change should only be used if the monitor does not recognize a resolution. This shouldn't ever be the case with our system. You can change to the appropriate resolution by entering the Display Mode sub-menu and selecting the corresponding option.

Language Select

The control menus are available in six languages.

Factory Preset

This allows you to reset all control settings back to the factory settings. The RESET button will need to be held down for several seconds to take effect. Highlighting the setting and then pressing the RESET button can reset individual settings.

12 - CONTROL DESCRIPTIONS - NEC 2010 LCD COLOR MONITOR

Note

Adjustment information is not lost when the power is removed from the monitor.

12-1 Front Panel Controls

The functions of the OSM™ controls on the front of the monitor are described in Table 12-1. To access the OSM, press any of the control buttons (▲, ▼, ◀, ▶) or the PROCEED or EXIT button.

Note

When RESET is pressed, a warning window will appear allowing you to cancel the reset function.

TABLE 12-1
FRONT PANEL CONTROL FUNCTIONS - MODEL LCD2010

Control	Main Menu	Sub-Menu
EXIT	Exits the OSM™ controls.	Exits to the OSM™ controls main menu.
CONTROL ▲/▼	Used to access main menu. Moves the highlighted area up/down to select one of the controls.	Moves the highlighted area up/down to select one of the controls.
CONTROL ◀/▶	Has no function	Moves the bar in the + or - direction to increase or decrease the adjustment
PROCEED	Proceeds to the selected menu choice (indicated by the highlighted area).	Activates Auto Adjust feature. In Display Mode, opens additional window.
RESET: The currently highlighted control to the factory setting	Resets all the controls within the highlighted menu.	Resets the highlighted control.

12-2 On-Screen Controls

This section describes the adjustments available for the OSM controls. The controls labeled with "•" are required during the set-up of the monitor.

- **Brightness and Contrast →** 

Brightness: Adjusts the overall image and background screen brightness.

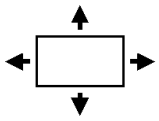
Contrast: Adjusts the image brightness in relation to the background.

Auto Adjust Contrast: Adjusts the image displayed for non-standard video inputs.

12-2 On-Screen Controls (continued)

- **Auto Adjust →** 

Automatically adjust the Image Position or the H. Size setting.

Position Controls → 

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

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

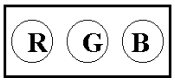
Auto: Automatically sets the horizontal and vertical image position within the display area of the LCD.

- **Image Adjust Controls →** 

H. Size: Adjusts the horizontal size by increasing or decreasing this setting.

Fine: Improves focus, clarity, and image stability by increasing or decreasing the Fine setting.

Auto Adjust Coarse: Automatically adjusts the Coarse setting.

- **AccuColor® Control System →** 

Five color presets select the desired color setting. This setting must be set to selection **1 - 9300**. If a setting is adjusted, the name of the setting will change to Custom.

R, B, G: Increases or decreases the color depending upon which is selected. The change in color will appear on screen and the increase or decrease will be shown by the color bars.

OSM H POS./OSM V POS. → 

You can choose where the OSM control image appears on the screen. Selecting OSM Location allows you to manually adjust the position.

12-2 On-Screen Controls (continued)

OSM Lock Out

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

- To enter the Lock Out mode, simultaneously press PROCEED and the ▼ button; the LOCK OUT window will appear.
- To activate the Lock Out function, simultaneously press and hold down the PROCEED and the ▲ button; the OSM window will disappear within seconds and the LOCK OUT function will be activated.
- To de-activate the Lock Out function, simultaneously press PROCEED and the ▲ button.

ALL RESET

This allows you to reset all OSM control settings back to the factory settings. Highlighting the setting and then pressing the RESET button can reset individual settings.

Information → 

Indicates the current display resolution, frequency setting, and type of Sync signal of the monitor.

Note

Mode Change should only be used if the monitor does not recognize a resolution. This shouldn't ever be the case with our system. You can change to the appropriate resolution by selecting the Mode information and selecting (increase or decrease) the corresponding option.

Note

If the ◄ or the ► button is pressed while TYPE is highlighted then the Sync Type is switched between Separate Sync and Sync on Green.

13 - CONTROL DESCRIPTIONS - NEC 2010X LCD COLOR MONITOR

The NEC 2010x LCD Panel Display does not have an RGB (BNC) style input. The video cabling uses an S-VGA type connection. It also has additional DVI/D-SUB input capability. This feature allows for the switching of inputs between two LCD Monitors, (Not Used by GE). The AC power source transformer has also been eliminated. A standard AC power cord is supplied, that plugs directly into a 110Vac power.

CAUTION

The NEC 2010X .(CAT # M1000NZ) when ordered from GE Medical Systems, Inc. will come with a specially designed S-VGA type cable. If you are replacing the current NEC LCD with the 2010X model, you must replace the RGB type video cable with the S-VGA cable provided by GE. This is not a standard S-VGA cable! It cannot be purchased locally. If a standard S-VGA cable is used, patient diagnostic image quality will be impacted.

Note

Adjustment information is not lost when the power is removed from the monitor.

13-1 Front Panel Controls

The functions of the OSM™ controls on the front of the monitor are described in Table 13-1. To access the OSM, press any of the control buttons (▲, ▼, ◀, ▶) or the PROCEED or EXIT button.

Note

When RESET is pressed, a warning window will appear allowing you to cancel the reset function.

TABLE 13-1
FRONT PANEL CONTROL FUNCTIONS - MODEL LCD2010X

Control	Main Menu	Sub-Menu
EXIT	Exits the OSM™ controls.	Exits to the OSM™ controls main menu.
CONTROL ▲/▼	Used to access main menu. Moves the highlighted area up/down to select one of the controls.	Moves the highlighted area up/down to select one of the controls.
CONTROL ◀/▶	Has no function	Moves the bar in the + or - direction to increase or decrease the adjustment
PROCEED	Proceeds to the selected menu choice (indicated by the highlighted area).	Activates Auto Adjust feature. In Display Mode, opens additional window.
RESET: The currently highlighted control to the factory setting	Resets all the controls within the highlighted menu.	Resets the highlighted control.

13-2 On-Screen Controls

This section describes the adjustments available for the OSM controls. The controls labeled with "•" are required during the set-up of the monitor.

- **Brightness and Contrast →** 

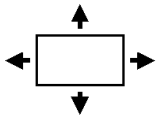
Brightness: Adjusts the overall image and background screen brightness.

Contrast: Adjusts the image brightness in relation to the background.

Auto Adjust Contrast: Adjusts the image displayed for non-standard video inputs.

- **Auto Adjust →** 

Automatically adjust the Image Position or the H. Size setting.

Position Controls → 

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

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

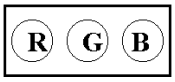
Auto: Automatically sets the horizontal and vertical image position within the display area of the LCD.

- **Image Adjust Controls →** 

I. Size: Adjusts the horizontal size by increasing or decreasing this setting.

Fine: Improves focus, clarity, and image stability by increasing or decreasing the Fine setting.

Auto Adjust Coarse: Automatically adjusts the Coarse setting.

- **AccuColor® Control System →** 

Five color presets select the desired color setting. This setting must be set to selection **1 - 9300**. If a setting is adjusted, the name of the setting will change to Custom.

R, B, G: Increases or decreases the color depending upon which is selected. The change in color will appear on screen and the increase or decrease will be shown by the color bars.

Tools 1 → 

You can choose where the OSM control image appears on the screen. Selecting OSM Location allows you to manually adjust the position**.** Normally**,** no adjustment is necessary. Use default values.

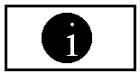
Smoothing - (Normal) Default
Expansion Mode- (Full Screen) Default
Video Detect- (First Detect) Default
DVI Selection- (Default) No effect on S-VGA systems.
Sound- Minimum (Default)

Tools 2 → 

You can choose where the OSM control image appears on the screen. Selecting OSM Location allows you to manually adjust the position**.** Normally**,** no adjustment is necessary. Use default values.
Language- English
OSM Position- Default location
OSM Turn OFF- Default
OSM Lock Out- This control completely locks out access to all OSM control functions. When attempting to activate controls while in Lock Out mode, a message screen will appear indicating that the controls are locked out.

- To enter the Lock Out mode, simultaneously press PROCEED and the ▼ button; the LOCK OUT window will appear.
- To activate the Lock Out function, simultaneously press and hold down the PROCEED and the ▲ button; the OSM window will disappear within seconds and the LOCK OUT function will be activated.
- To de-activate the Lock Out function, simultaneously press PROCEED and the ▲ button.

Factory Preset- This allows you to reset all OSM control settings back to the factory settings. Highlighting the setting and then pressing the RESET button can reset individual settings.
Resolution Notifier- Optimal Resolution is 1280x1024. If ON is selected a message will appear on the screen 30 seconds, notifying the user that the resolution is NOT at 1280x1024.

Information → 

Indicates the current display resolution, frequency setting, and type of Sync signal of the monitor. All items under this menu should not be changed. Use default values.

Note

Mode Change should only be used if the monitor does not recognize a resolution. This shouldn't ever be the case with our system. You can change to the appropriate resolution by selecting the Mode information and selecting (increase or decrease) the corresponding option.

14 - TROUBLESHOOTING GUIDE

The following section provides suggestions for troubleshooting the LCD monitor:

- **No Picture**
  - The signal cable should be completely connected to the display card/computer.
  - The display card should be completely seated in its slot.
  - Power Switch and computer power switch should be in the ON position.
  - Check the signal cable connector for bent or pushed-in pins.

- **Image Persistence**
  - Image persistance is when a “ghost” of an image remains on the screen even after the monitor has been turned off. Unlike CRT monitors, the LCD monitor’s image persistance is not permanent. To alleviate image persistance, turn off the monitor 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

It is recommended that a screen saver be used 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 control. 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 signal timings.
  - For NEC 2010 - If your text is garbled, change the video mode to non-interlace and use a 50 Hz 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.
  - Make certain the computer is not in a power saving mode.

- **Display image has a green cast to it**
  - For NEC 2000 - Open the OSM™ Display Mode and press the “**+**” Control button.
  - For NEC 2010 - Select “**TYPE**” in the OSM™ Information menu and press the ◂ or ▸ control button.

- **Display image is not sized properly**
  - For NEC 2000 - Use the OSM™ Image Adjust controls to increase or decrease the Coarse total.
  - For NEC 2010 - Use the OSM™ Image Adjust controls to increase or decrease the H. Size.

- **Selected resolution is not displayed properly**
  - For NEC 2000 - Use the OSM™ Display Mode to enter Mode Change sub-menu and confirm that the appropriate resoulution has been selected. If not, select corresponding option.
  - For NEC 2010 - Select the Display Resolution in the OSM™ Information menu to confirm that the appropriate resolution has been selected. If not, select the corresponding option by pressing the ◂ or ▸ control button.

- **Diagnostic Image Quality has been traced to problem with LCD setup. (NEC 2010X Model only)**
  - For LCD2010X only (CAT # M1000NZ) - Insure you have a S-VGA cable, provided by GE Medical Systems Inc. A standard S-VGA cable purchased locally, is NOT compatible with the use of the NEC 2010X on Signa MR Scanners. It will cause problems with Image quality.

REVISION HISTORY

REV	DATE	AUTHOR	PRIMARY REASONS FOR CHANGE
A	April 24, 2001	D. Hofstetter	Initial Version.
0	May 18, 2001	Hawthorne	Added Eizo monitor information. Rev'd document to 0.
1	Aug 6, 2001	D. Hofstetter	Removed the Eizo L660 monitor information and created a separate document for its setup. (0w2sca6d.doc or ow2sca6d.pdf) Also changed the name of this document to reflect NEC LCD monitor setups only.
2	Nov 8, 2001	D. Hofstetter	Added DICOM gamma table setup for 2010X monitor.
3	Dec 14, 2001	D. Hofstetter	Changed Monitor Frequency rate to 72Hz for all monitor configurations.