PLANAR

Dome C3i/EX Display
User's Guide

Solaris Systems

020-0377-01A

Contents

Product Information

The design of the Dome CX/Dome EX digital displays takes into account every known measure to ensure your personal safety. Improper use of the display can result in electric shock, fire, or damage to the display. Read all instructions before setting up the display.

Classification:

> Shock Protection: Class I.

> Degree of Protection Against Electric Shock: No applied part.

> Degree of Protection Against Harmful Ingress of Water: Ordinary equipment (IPX0).

> Degree of Safety in the Presence of Flammable Anaesthetic Mixture with Air or with Oxygen or Nitrous Oxide:
> Not suitable for use in the presence of a flammable anaesthetic mixture with air or with oxygen or nitrous oxide.

> Mode of Operation: Continuous.

Important recycle instruction:

> (Hg) LCD lamp(s) inside this product contain mercury. This product may contain other electronic waste that can be hazardous if not disposed of properly. Recycle or dispose in accordance with local, state, or federal laws. For more information, contact the Electronic Industries Alliance at WWW.EIAE.ORG. For lamp-specific disposal information, check WWW.LAMPRECYCLE.ORG.

Symbol explanations

DISPOSAL. Do not use household or municipal waste collection services for disposal of electrical and electronic equipment. EU countries require the use of separate recycling collection services.

CAUTION. Read the accompanying text carefully, for proper operation and maintenance of the display system.

DANGEROUS VOLTAGE. Important precautions about electric shock. Read the accompanying text carefully, to prevent damage to components of the display system and for your safety.

DIRECT CURRENT.

BAROMETRIC PRESSURE. Transport and storage 12,000 meters (39,400 feet), maximum in unpressurized container.

RELATIVE HUMIDITY. Transport and storage 5% to 90% (non-condensing).

TEMPERATURE. Transport and storage -10° to 60° C.

Intended use

The Dome CX/Dome EX display is an AMLCD display designed for viewing medical X-ray images. This unit should not be used near patients and should be kept outside of 1.83 m perimeter and 2.29 m vertical.

IMPORTANT: Only the Dome E5 display can be used for primary image diagnosis in mammography. The Dome C3i, Dome E2, Dome E3, and Dome E3c display units must not be used for primary image diagnosis in mammography.

CAUTION: Federal law restricts the Dome units to sale by or on the order of a medical practitioner.

Safety precautions

External equipment intended for connection to signal input, signal output, or other connectors, must comply with the relevant IEC standard (EN/IEC 60601-1 series for medical electrical equipment). In addition, all such combinations (systems) must comply with the standard IEC 60601-1-1, Safety requirements for medical electrical systems.

Equipment not complying to IEC 60601 must be kept outside the patient environment, as defined in the standard as at least 1.5 meters from the patient or the patient support.

Any person who connects external equipment to signal input, signal output, or other connectors has formed a system and is therefore responsible for the system to comply with the requirements of IEC 60601-1-1. If in doubt, speak with a qualified technician.

Safety tips

- Never open the display case, even when the power is off. Dangerous voltage inside may cause electric shock or death.
- To avoid damage to the display, use the grounded power supply and video cable supplied by Planar, or use certified replacements.
- Be sure the display is electrically grounded. You must connect the third grounding pin on the US power cord to a grounded outlet. The European power cord does not have a third grounding pin, but it must be plugged into a grounded outlet.
- If you cannot insert the plug into the outlet you plan to use, have a licensed electrician replace the outlet with a properly grounded outlet. If the power cord connects directly into the computer, make sure the computer is grounded.
- Keep the display dry if it is part of a surgical system. The display lacks protection against liquids or spills.
- **In locations where 240V outlets are used, connect the Dome display only to a center-tapped, 240V, single-phase supply (only for Canada and the United States).**

GROUNDING RELIABILITY CAN ONLY BE ACHIEVED WHEN EQUIPMENT IS CONNECTED TO AN EQUIVALENT RECEPTABLE MARKED "HOSPITAL ONLY" OR "HOSPITAL GRADE."

Unpacking and handling tips

The Dome display is a precision instrument that requires proper care to maintain product operation and adherence to specification. Unpack the display and components carefully, then set up and handle the unit properly to avoid damage to the LCD panel.

• Use both hands to grasp the display case when lifting it from the shipping carton, but avoid touching the screen.

• Do not apply pressure to the screen or touch the screen with bare fingers or objects. Pressure can affect image quality. Cosmetics and oils on the skin are both detrimental to the screen and difficult to remove.

• Allow the display to warm up to room temperature before turning it on. Avoid sudden temperature changes in the environment, as this may cause condensation, which damages the display.

• Secure the display properly onto a standard VESA 100-mm mounting unit if you elect not to use the desk stand.

• Do not set up the display near strong light or heat sources.

• Do not block the vents on the back of the display or install the display in a built-in enclosure. Blocked vents cause excessive heat to build up inside the display, increasing risk of fire.

• When installing components, turn off your computer, but leave it plugged into a grounded outlet.

• Do not remove the back cover or disassemble the display. There are no user-serviceable parts inside.

Preventing fire and injury

• Replace the power supply or cables if damaged.

• Use only the power source indicated in this guide or listed on the display.

• Do not plug the power supply into an overloaded AC outlet or extension cord. Overloaded AC outlets and cords can result in electric shock or fire.

• Do not drop or push objects into the display case. Internal components contain high voltage.

• Unplug the power cord from the wall outlet during thunderstorms.

• Do not place magnetic devices, such as motors, near the display.

Cleaning the display

Observe the following guidelines to maintain the display and the LCD screen.

- Use a clean, lint-free, absorbent cotton cloth to clear off any residual glue from removal of the protective film or to remove surface dust. Apply light pressure to remove the dust.

- Dampen a clean cloth with a small amount of isopropyl alcohol to remove glue or dust if the screen is still not clean. Do not saturate the cloth; otherwise, alcohol may seep into the display case and collect in the enclosure. Use a clean, dry cloth to completely remove the alcohol residue.

- Do not use chemically treated dust cloths, acetone, toluene, or harsh solvents on the display case or the screen. They can damage the polarizer and the display case.

- Do not expose the display to water or excessive moisture. Do not allow water or other stains to stand on the unit. Wipe liquids off immediately to prevent damage to the display case and the screen.

WARNING
DISCONNECT SUPPLY BEFORE SERVICING
AVERTISSEMENT
COUPER L'ALIMENTATION AVANT L'ENTRETIEN ET LE DEPANNAGE

Shipping/storing the display

Keep the display in its shipping container until installation. Return the display to its original container whenever you need to store the unit, move it to another location, or return it for repair. The packaging supplied by the manufacturer protects the display while it is in transit. See environment specifications for more information.

Before returning the display to the container, do the following:

1 Swivel the display panel in portrait mode.
2 Push the panel down to the lowest position.
3 Use the stand lock to anchor the panel.

Disposal information

Follow your local governing ordinance and recycling policy for proper disposal or recycling of display components.

AMLCD panel mounted on desk stand

Display controller

DC power adapter

Power cords

DVI cable

Quick reference

*Display driver and
Dome CXtra software*

About the Display

The Dome CX/Dome EX display systems, ranging from 2 to 5 megapixels, consists of a TFT LCD panel and a display board and driver. The display's thin film transistors, in a transmissive-type display, use an integrated cold cathode fluorescent tube (CCFT) backlight system.

The display is designed for medical imaging in diagnostic settings, in portrait or landscape orientation, and comes fully tuned with gamma correction that complies with the DICOM Part 14 Standard. The all-digital design enables the display to produce the sharp, crisp images critical to softcopy medical viewing. Unwanted analog display image artifacts are eliminated.

Bundled with the display system, the Dome CXtra software enhances the functionality of the Dome EX display with a range of value-added services, such as DICOM calibration and error reporting. For more information, refer to Dome CXtra User's Guide.

System Requirements
- PCI slot per board (PCI66 recommended)
- 2 MB hard disk space for installation of driver, DDX, and documentation
- CD-ROM drive
- Solaris 2.5.1 to 10 operating system

NOTE: For users upgrading from Dome C3i to Dome EX display, see instructions on .

Display Components

Review this illustration of the back panel to identify controls and ports on the display unit.

Dome C3i display   *Dome EX display*
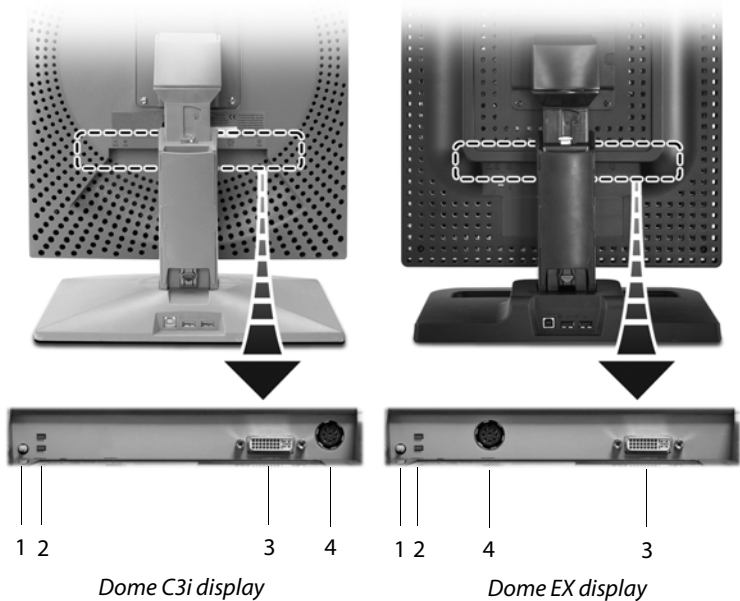
Legend
1 Reset button. Restores the display configuration to its default setting.
2 LED status lights. Provides information about the status of the display.
3 DVI connector. Drives the data to the display.
4 DIN connector. Drives power to the display; 4-pin connector on the Dome E2 display, 8-pin connector on the Dome C3i, Dome E3, Dome E3c, and Dome E5 displays.

Display Positions

You can adjust the tilt, height, viewing angle, and orientation of the display to maintain an ergonomic and comfortable viewing position. Make sure that your eyes are level with the top of the display cabinet so that you look downward to read the screen contents. Select a suitable workspace for the display. You need a stable, level, and clean surface near a wall outlet.

Tilt range	Height range
Adjust the tilt angle of the display so that the screen faces slightly down-ward from your angle of view.	Unfasten the stand lock at the top of the desk stand (slide it to the left) then raise or lower the panel to adjust the height.
Viewing angle	Orientation mode
Swivel the display panel from side to side to adjust the viewing angle.	Use both hands to turn the display 90 degrees counter-clockwise to move from portrait to landscape modes.

Desk Stand Features

Unfasten the stand lock to adjust display height. Remove the stand cover to thread the power cord and DVI cable connections to the display. To activate the USB hub function, the display must be connected to a USB-compliant computer or another hub with a USB cable. Even if the display is in power-saving mode, the USB devices function when connected to the USB ports of the display.
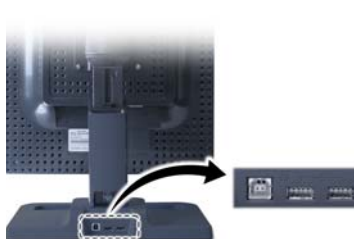
Stand height lock	
	Move the stand lock lever to the left to adjust the height of the display.
Stand cable cover	
	Press the PUSH button at the bottom of the desk stand and pull the stand cable cover down and out to remove it.
USB hub	
	Use the integrated, bus-powered USB hub to attach USB devices to the display rather than to the computer.

Installing the Display

Before you install the Dome DX2 display controller, you must set the DIP switches for your system configuration. See

Moving from Dome C3i to Dome EX Display System

If you are switching from a Dome C3i to a Dome EX display system, you need to update the firmware on the Dome DX2 board already installed in your computer system. Do the following:

1. Remove the old `DOMEdx2`, `DOMEmdlib`, and `DOMEcxtra`.
2. Install the new `DOMEdx2`, `DOMEmdlib`, and `DOMEcxtra` on the existing Dome C3i display system. The firmware is updated automatically.
3. Replace the Dome C3i display with the Dome EX display.

Warning

In locations where 240V outlets are used, connect the Dome display only to a center-tapped, 240V, single-phase supply (only for Canada and the United States).

If you leave the computer turned on, you could get an electric shock and cause damage to the system components.

Remove the display controller slowly from its package and static-shielding bag to prevent an electrostatic discharge.

Static electricity can damage the controller. When touching the board or parts of the motherboard, take these precautions:

- Wear an antistatic wrist strap.
- Discharge your body's static electricity repeatedly by touching the power supply or the metal surface of the computer chassis.

Set the DIP Switch on the Dome DX2 Board

You need to disable VGA mode and enable EPROM on the DX2 display controller for Solaris systems.

To disable VGA
Slide switch 1 into the OFF position.

To enable EPROM
Slide switch 2 into the ON position.

To set landscape mode as default display mode
Slide switch 4 into the ON position. (NOTE: For Dome C3i only.)

VIdeo 1 port
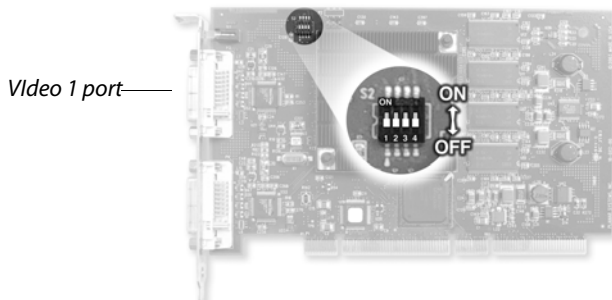
Tips

- Access to ports. For displays mounted on a desk stand, rotate the LCD panel from portrait to landscape for access to the ports.

- Threading cables. Thread the DVI cable and power cord through the back of the stand. Make sure the cable and cord run through the notches. To reattach the stand cover, align the hooks with the slots on the stand. Press the cover into place. A click sound signals a secure connection.

- Multiple displays. Connect the first display of a two-headed system, or the only display of a one-headed system, to the Video 1 port. Connect all displays to the controller before you turn on the computer and install the driver.

Install the Display Controller

Before you install the Dome DX2 display controller, choose a well-ventilated location with an adequate amount of space. Excessive heat cannot dissipate when display vents are blocked. Make sure a grounded AC outlet is within easy reach.

When installing multiple display controllers, install all boards before you install the display driver.

Turn your computer off. Leave the power cord plugged into the grounded outlet.

To install the display controller

1 Remove the blank bracket from an available PCI slot.

2 Insert the display controller into the slot, align the connector pins, and press the board down until it is firmly seated. Secure the mounting bracket.
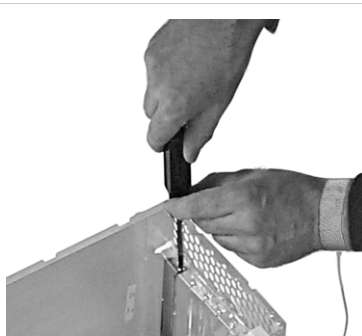
Use an available PCI slot.

Seat the board securely into the slot.

Connect the Video and Power Cables

Turn your computer off. Leave the power cord plugged into the grounded outlet. Use the Dome display with the power adapter and video cable shipped.

For the Dome E2 display, use power adapter Ault MW116KA1249F53.

For the Dome C3i, Dome E3, Dome E3c, and Dome E5 displays, use power adapter Ault MW122RA1223F52.

To connect the cables

1 Plug one end of the DVI cable into the DVI port on the interface plate. Secure the connection.

2 Plug the power cord into the power input port on the interface plate.

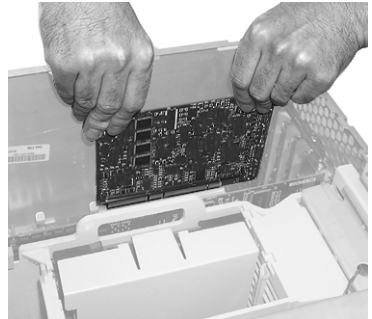3 Plug the other end of the DVI cable into the Video 1 port on the installed display controller. (Use the Video 1 port for a single display installation or for the first display of a dual setup; see page 6.) Secure the connection. Use the other port to connect a second display.

4 Plug the other end of the power cord into the power supply.

5 Plug the power supply cord into a grounded AC outlet.

Power supply and DVI cable connections on Dome C3i display.

Power supply and DVI cable connections on Dome EX display.
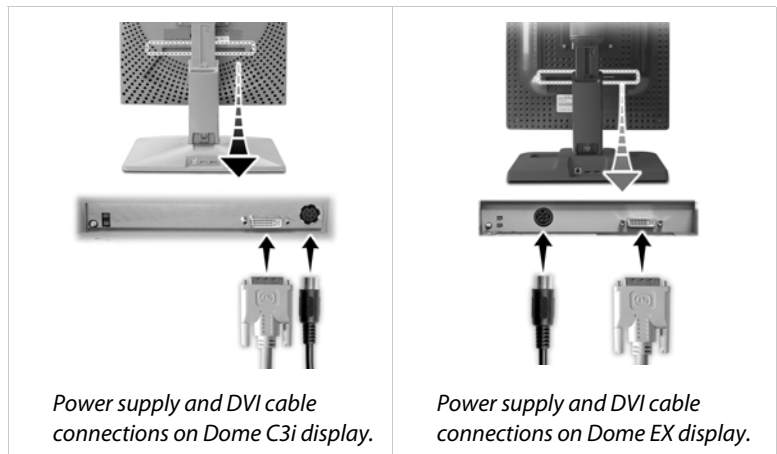
Install Dome DX2 Driver and Dome CXtra Software

Before you install the driver, install all DX2 boards and connect all Dome displays first, then boot up your system to install the driver.

Installation preparation

Installing the DX2/PCI driver for your Sun host requires about 500 KB of free space. The Dome CXtra application requires about 2.5 MB. The reference guide requires an additional 1.3 MB.

- 200 KB in /kernel/drv
- 100 KB in /usr/openwin/server/modules
- 200 KB in /usr/lib
- 1.3 MB in /opt/DOMEdx2pci
- 2.5 MB in /opt/DOMEcxtra

The installation procedure for Solaris performs these tasks:

- Installs the DOMEmdlib shared object library
- Adds the device driver
- Adds the OpenWindow™ loadable DDX driver
- Modifies the OWconfig file
- Installs the DOMEcxtra application

WARNING – Version conflict

- If previous versions of the driver and the application software exist on your system, remove them before you install the new package. Type pkgrm, and select the DOMEdx2, DOMEmdlib, and DOMEcxtra packages for removal.
- Do not remove the DOMEmdlib package already installed if it is newer than the one on the CD.
- Check the versions listed on the CD to get the software revision.

Required Sun software packages

The following two packages are prerequisites for proper operation of the Dome CXtra software.

- SUNWtltk   –   ToolTalk Runtime
- SUNWdtdte –   CDE Desktop Login Environment

To install the driver and Dome CXtra

1 Boot up with the -r option.

2 Log on as root.

3 Insert the DOME DX2 Solaris driver CD.

4 Mount the CD device if the system does not automount it.
   Then type:
   cd /cdrom/012_0006_*

5 To transfer the software packages to the system, type:
   pkgadd -d dx2pciZZZ.pkg

   where ZZZ = the revision of the CD.

   This message appears:

   The following packages are available:

1 DOMEmdlib	DOME MD library (sparc) 1.2.x
2 DOMEdx2	DOME Dx2PCI Display Support (sparc) 1.1.x
3 DOMEcxtra	Solaris CXtra Support for DOME Flat Panels (sparc) 1.0.x

   <other packages>

   Select package(s) you wish to process (or 'all' to process
   all packages). (default:all) [?,??,q]:

6 Press <Return> to install all packages.

   Messages appear, followed by this prompt:

   Do you want to continue with the installation of the package [y,n,?]

7 Type y.

Messages describe the progress of the installation. When the installation is complete, these messages appear:

Installation of <DOMEmdlib> was successful.

Installation of <DOMEdx2> was successful.

Installation of <DOMEcxtra> was successful.

The Dome CXtra application is automatically added to the CDE Application Manager.

WARNING – Firmware update

When the firmware on the Dome DX2 board has been updated, a warning message appears to remind you to shut down and power cycle the system. Follow the warning and do so.

Configure Display Settings

Before you configure your system for the Sun Common Desktop Environment or OpenWindow, you need to set the display mode for your display controller. Planar provides a default display mode that you can use or override.

Read these sections before you configure CDE or OpenWindow:
- "Overriding the default display mode" on page 13
- "Using visual classes" on page 16

Then read the appropriate section for your window environment:
- "Running OpenWindow" on page 21
- "Configuring the Common Desktop Environment" on page 21

The Dome DX2 driver automatically detects the type of flat panel connected and sets the default display mode as shown in this table.

Display	Portrait	Landscape
Using DIP Switch 4	OFF	ON
Dome C3i	1536 x 2048	2048 x 1536
Auto-Detection by Panel Position		
Dome E2	1200 x 1600	1600 x 1200
Dome E3	1536 x 2048	2048 x 1536
Dome E3c	1536 x 2048	2048 x 1536
Dome E5	2048 x 2560	2560 x 2048

Overriding the default display mode

To start CDE or OpenWindow using the default display mode, skip this section.

You can override the default display mode by editing the OWconfig file.

Edit the OWconfig file to override the default display mode and customize your configuration for OpenWindow or CDE. Look for the OWconfig file in /usr/openwin/server/etc and in the /etc/openwin/server/etc directory on the workstation. Edit the one in the /etc/openwin/server/etc directory.

To edit the OWconfig file

1 Find the following lines in the OWconfig file.

```
#class = "XSCREENCONFIG" name="DOMEdx2pci0Config"
#           device="/dev/dx2pci0.0"
#           res="1536x2048e Panel"
#           monitor="domegray.vda"
#           board="dx2pci-2hd.xqa";
#class = "XSCREENCONFIG" name="DOMEdx2pci1Config"
#           device="/dev/dx2pci0.1"
#           res="1536x2048e Panel"
#           monitor="domegray.vda"
#           board="dx2pci-2hd.xqa";
```

2 Delete the pound sign (#) at the beginning of each line to uncomment the lines.

3 Edit the lines to match each device you installed, and save your changes.

WARNING – Editing the config file

When you edit or modify code, type it on one line. A backslash (\) indicates continuation of the line.

When you install a new driver, it overwrites the OWconfig file in this directory:

/usr/openwin/server/etc

The OWconfig file in the directory /etc/openwin/server/etc remains unchanged. This ensures that the changes you make will not be overwritten when you update to newer versions of the DOME driver. Make sure you edit these lines in the /etc directory only. If you uncomment these lines in both directories, your system ignores them.

To modify the OWconfig file

This section explains the first example from the preceding sample code, line by line, and tells how to modify those lines to match the device you are installing.

`class="XSCREENCONFIG" name="DOMEdx2pci0Config"`
The `name` provided here must be unique in the `OWconfig` file. You can alter it as long as you select a `name` that is not used for any other `XSCREENCONFIG` section.

`device="/dev/dx2pci0.0"`
This line indicates the installation of a DX2 board to which the system assigned the instance of zero (0). The second zero (0) indicates that you are using the first head. To modify this line for the device you are installing, replace the first zero (0) with the instance the system assigned to your board. For the second head, replace the second zero (0) with a one (1).

`res="1536x2048e Panel"`
This line indicates that the resolution of your flat panel (pre-adjusted timing name) is "`1536x2048e Panel`". See the table on page 39 to select the correct pre-adjusted timing name for your panel type.

`monitor="domegray.vda"`
This line indicates that you are using a grayscale display and that the pre-adjusted timing name is located in the display file `domegray.vda`.

Display files are located in the `/opt/DOMEdx2pci/monitors` directory. Do not modify these files unless Planar Support advises you to do so.

WARNING – Modifying code

When you modify the line `res="1536x2048e Panel"`, use the exact name for your display from the "Pre-Adjusted Timing Name" column in the table on page 39.

To support a color display, use "`domecolr.vda`" in place of "`domegray.vda`".

```
board="dx2pci-2hd.xqa"
```
This line indicates that you are using a DX2 board (`dx2pci`) that supports two heads (`-2hd`) and that the configuration of the board is located in the board file `dx2pci-2hd.xqa`.

The board file is located in the directory `/opt/DOMEdx2pci/boards`. Do not modify this file.

See the second code sample on for configuration of the second head.

Using visual classes

A *visual class* (or *visual*) is the X Window System™ terminology to describe the characteristics of a display. X defines the visual classes listed in this table.

Static Class	Dynamic Class
• StaticGray	• GrayScale
• StaticColor	• PseudoColor
• TrueColor	• DirectColor

Static classes do not support the use of a modifiable colormap, but the corresponding dynamic classes do.

PseudoColor is a commonly used visual type. Some applications run only on displays with a PseudoColor default visual class. When the DX2 board is connected to a grayscale display, you can configure it to emulate PseudoColor for applications by invoking the X Window System with PseudoColor as the default visual class.

WARNING – Default visual class
When connected to grayscale panels, the Dome DX2 board has a default visual class of GrayScale.
When connected to color panels such as the Dome E3c display, the Dome DX2 board has a default visual class of PseudoColor.

To emulate a PseudoColor visual class

Start the X server using `PseudoColor` as the default visual class by adding `defclass PseudoColor` to the `openwin` command or to the `Xservers` file.

For example, for a one-headed system using the DX2 board, type:

```
openwin  -dev /dev/dx2pci0.0 defclass PseudoColor
```

For a two-headed system using the DX2 board, type:

```
openwin -dev /dev/dx2pci0.0 defclass PseudoColor \
-dev /dev/dx2pci0.1 defclass PseudoColor
```

To check the default visual

Use the `xdpyinfo` command to check the default visual of a screen. Look at the correct screen and find the visual with the matching ID to verify that it is `PseudoColor`. (See page 18.)

When used on a color display, the TrueColor and DirectColor visual classes default to using 24 bpp. All other visual classes, as well as all visual classes on a grayscale display, default to using 8 bpp.

Look for the lines marked with a right arrow (➤) in this sample output:

name of display: cole:0.0
version number: 11.0
vendor string: Sun Microsystems, Inc.
vendor release number: 3300
maximum request size: 262140 bytes
motion buffer size: 256
bitmap unit, bit order, padding: 32, MSBFirst, 32
image byte order: MSBFirst
number of supported pixmap formats: 2
supported pixmap formats:
    depth 1, bits_per_pixel 1, scanline_pad 32
    depth 8, bits_per_pixel 8, scanline_pad 32
keycode range: minimum 8, maximum 132
focus: window 0x280000d, revert to PointerRoot
number of extensions: 12
    SUN_ALLPLANES
    SHAPE
    MIT-SHM
        Multi-Buffering
    XInputExtension
    XInputDeviceEvents
    XTEST
    MIT-SUNDRY-NONSTANDARD
    SUN_DGA
    Adobe-DPS-Extension
    DPSExtension
    X3D-PEX

```
default screen number:    0
number of screens:    1
screen #0:
    dimensions: 1536x2048 pixels
        (433x578 millimeters)
    resolution: 90x90 dots per inch
    depths (2): 1, 8
    root window id: 0x29
    depth of root window: 8 planes
    number of colormaps: minimum 1, maximum 1
    default colormap: 0x21
    default number of colormap cells: 256
    preallocated pixels: black 1, white 0
    options: backing-store YES, save-unders YES
    current input event mask: 0xd0001d
    KeyPressMask ButtonPressMask ButtonReleaseMask
        EnterWindowMask SubstructureRedirectMask
        PropertyChangeMask ColormapChangeMask
number of visuals: 6
default visual id: 0x22
visual:
    visual id: 0x22
    class: PseudoColor
    depth: 8 planes
    size of colormap: 256 entries
    red, green, blue masks: 0x0, 0x0, 0x0
    significant bits in color specification: 8 bits
visual:
    visual id: 0x23
    class: DirectColor
    depth: 8 planes
    size of colormap: 8 entries
    red, green, blue masks: 0x7, 0x38, 0xc0
    significant bits in color specification: 8 bits
```

Look for these lines → default visual id: 0x22

Look for these lines → visual id: 0x22

Look for these lines → class: PseudoColor

visual:

    visual id: 0x24

    class: GrayScale

    depth: 8 planes

    size of colormap: 256 entries

    red, green, blue masks: 0x0, 0x0, 0x0

    significant bits in color specification: 8 bits

visual:

    visual id: 0x25

    class: StaticColor

    depth: 8 planes

    size of colormap: 256 entries

    red, green, blue masks: 0x7, 0x38, 0xc0

    significant bits in color specification: 8 bits

visual:

    visual id: 0x26

    class: TrueColor

    depth: 8 planes

    size of colormap: 8 entries

    red, green, blue masks: 0x7, 0x38, 0xc0

    significant bits in color specification: 8 bits

visual:

    visual id: 0x27

    class: StaticGray

    depth: 8 planes

    size of colormap: 256 entries

    red, green, blue masks: 0x0, 0x0, 0x0

    significant bits in color specification: 8 bits

Configure the Window Environment

Once you have set the display mode, you can configure your system to run either the OpenWindow or the CDE window environment.

NOTE: Board instances are assigned by the system.

Running OpenWindow from the console

For a one-headed system, type:

```
openwin -dev /dev/dx2pci0.0
```

For a two-headed system, type:

```
openwin -dev /dev/dx2pci0.0 -dev /dev/dx2pci0.1
```

Each device file has a name of this form:

```
/dev/dx2pciy.z
```

where y = board instance

  z = head number (0 for first head, 1 for second head)

For more information on `openwin`, refer to your Sun OpenWindow documentation.

Configuring the Common Desktop Environment

If you boot up to the X Window System, use the instructions below to configure it for your DX2 board.

CDE defaults to using a single framebuffer associated with /dev/fb, the boot console. To change the startup configuration, copy the /usr/dt/config/Xservers file to /etc/dt/config/Xservers, and edit it there.

This file contains mostly comments, but the last line is the command line used to start the X server and bring up CDE. This is the default line:

```
:0 Local local_uid@console root /usr/openwin/bin/Xsun \
:0 -nobanner
```

To use one or more DOME devices

Replace the second :0 with the -dev option flag and the appropriate device file.

For example, to use both heads of an DX2 board, change the line to this:

```
:0 Local local_uid@console root /usr/openwin/bin/Xsun \
 -dev /dev/dx2pci0.0 -dev /dev/dx2pci0.1 -nobanner
```

If you need to use a different default visual class, add the appropriate defclass option for each -dev option. See "Using visual classes" on page 16.

To use a DOME device with a Sun console

Change the line to this:

```
0 Local local_uid@console root /usr/openwin/bin/Xsun \
-dev /dev/fb -dev /dev/dx2pci0.0 -nobanner
```

DPMS Screen Saver

When you are running Solaris 2.6 to 10, CDE allows you to enable a Display Power Management Signaling (DPMS) Screen Saver. DPMS provides a standard way to manage the power used by your flat-panel display. DPMS shuts off the backlight in the flat panel when the display is not in use. This reduces the power consumption of the backlight and extends the life of the display.

On Solaris 2.5.1, the screen saver only blanks the screen while leaving the backlight on.

You can enable DPMS through the Style Manager, just as you would invoke any screen saver. You can also turn off DPMS to prevent your screen from powering off during times when you are using the flat panel frequently.

Screen saver tips

If you select any screen saver other than, or in addition to, Blank Screen, the system does not invoke DPMS. Instead, it uses the screen saver you selected.

- During times that you are using the flat-panel display frequently, set the Screen Saver field to Off. This setting ensures that the display does not invoke DPMS, which means that you do not have to wait for the display brightness to stabilize when you begin to use it again.
- Set the Screen Saver field to On when you plan to be away from the computer for several hours. With the screen saver running, your system conserves energy, and the backlight in the flat-panel display lasts longer.

To set the DPMS Screen Saver

1 Click Style Manager. The Style Manager dialog box appears.

2 Click Screen. The Style Manager – Screen dialog box appears.
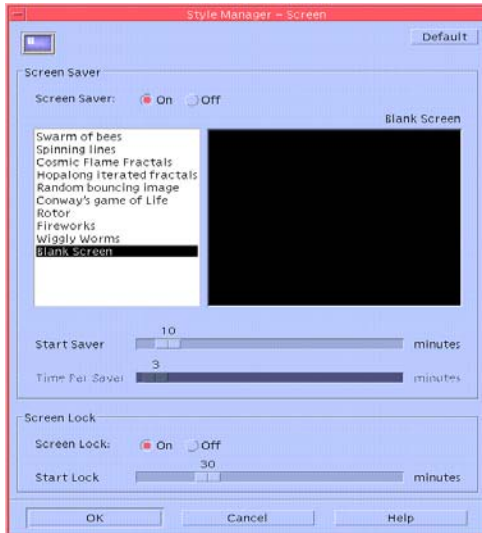
3 Click On in the Screen Saver field to activate a screen saver.

4 Select Blank Screen from the list of screen savers at the left.

5 Use the slider in the Start Saver field to set the time from when the system last receives mouse or keyboard input until the system invokes the screen saver. You can set this time from 1 (one) to 120 minutes.

Console Modification

The console appears, by default, on the first head of the first board in the system's probe list. You can change the console with the pci-probe-list environment variable. If you want to change the console without altering the probe list, change the output-device environment variable instead.

You can use the setenv command to change environment variables.

To use the setenv command

1 Power on or halt the system to get to the ok> prompt.

2 Type:

setenv output-device <device node>

These examples describe how to change the console in Ultra™ 10 and Ultra 30 systems. For more details, refer to your Sun documentation.

3 To make the DX2 board the console in an Ultra 10 system, type:

setenv output-device /pci/DOME,Dx2PCI

For an Ultra 30 system, which has two PCI buses, type:

setenv output-device /pci@X/DOME,Dx2PCI

where X depends on the location of the board.

For example, if the board is installed in the PCI66 slot, which is at location 1f,2000, type:

setenv output-device /pci@1f,2000/DOME,Dx2PCI

4 Reset the system.

> **WARNING – Setenv command**
>
> The device node portion of the setenv command differs for different Sun systems and board locations.

Dome CXtra Software

The Dome CXtra application ships on the Dome DX2 Solaris driver CD. The Dome CXtra software is automatically loaded with the default driver installation and added to the CDE Application Manager.

The Dome CXtra™ software enhances the functionality of the Dome display for viewing medical images in diagnostic settings.

The advantages of Dome CXtra includes consistent grayscale presentation of images, as a result of conformance with the DICOM Grayscale Standard display function. Specifically, the Dome display is fully calibrated to the DICOM response curve. It uses an embedded RightLight™ sensor to provide continuous luminance stability, guaranteeing consistent image quality and adherence to DICOM standards. This sensor works with the digital interface board that is built into the back of the Dome display.

For more information on the Dome CXtra software, visit www.planar.com.

Appendix

Troubleshooting

Problem	Possible Cause	Solution
No image appears on the screen	Computer is not powered on.	Turn on computer.
	Power cord is not securely connected.	Tighten power cord connection and turn on computer.
	Video cable connected incorrectly.	Make sure the first display of a dual-headed system or the only display of a single-headed system is connected to the Video 1 port on the Dome DX2 display controller.
No display on console; system does not boot.	Switch 1 on DIP switch S2 is set for VGA mode.	Disable VGA on all DX2 boards you install. Slide switch 1 on DIP switch S2 into the OFF position.
	Switch 2 on DIP switch S2 is set to OFF.	Check that EPROM is enabled on all Dome DX2 boards. Slide switch 2 on DIP switch S2 into the ON position.

Dome C3i Specification

In locations where 240V outlets are used, connect the Dome C3i display to only a center-tapped, 240V, single-phase supply (only for Canada and the United States).

Category	Characteristic Item	Specification
Screen	Screen size diagonal	528 mm (20.8 in.)
	Resolution	1536 x 2048 pixels (portrait) 2048 x 1536 pixels (landscape)
	Pixel pitch	0.207 x 0.207 mm
	Pixel arrangement	Subpixel vertical stripe
	Active area (mm)	423.9 (H) x 318.0 (V)
	Grayscale supported	3061 shades of gray – programmable gamma
	Refresh rate	60 Hz
	Contrast ratio	600:1 (typical)
	Brightness	200 fL (typical); 700 cd/m^2 (when new)
	Pixel rise/fall time	50 ms
	Viewing angle	160° (± 85°) horizontal/vertical
Interface	Digital Video In	1 DVI single-channel digital connector
	Display control - brightness	DDC2B+
	Display identification	EDID read using DDC2B+
	USB hub	Universal Serial Bus (USB) Rev. 1.1: 1 uplink B port; 2 downlink A ports
	Display status	Dual-stack tricolor LEDs on back panel
Input formats	Landscape orientation	2048 x 1536 (8-bit per pixel)
	Portrait orientation	1536 x 2048 (8-bit per pixel), automatic hardware rotate by DX2 board
	Screen type	AMLCD (active-matrix liquid crystal display)
Physical	Display size (without stand)	485.9 mm x 381.0 mm x 101.6 mm (19.1 in. x 15.0 in. x 4.0 in.)
	Display weight (without stand)	6.35 kg (<15 lb)
	Mounting options	Desktop stand with integrated USB (standard); 100-mm VESA mounting (optional)
Power	Adapter	Ault MW122KA1223F52 (CAUTION: Use only the power adapter supplied with the display unit.)

Power Supply

CAUTION: Use only the power adapter supplied with the Dome C3i display unit;
Ault MW122KA1223F52.

Category	Characteristic Item	Specification
Power input requirements	Voltage selection	Auto-ranging
	Voltage	100 – 240V AC
	Current	2.0 A
	Frequency	50 to 60 Hz
Power output requirements	Voltage	12 V DC ±5%
	Current	10.0 A (120 W)
Physical	Size	228.6 mm x 76.2 mm x 50.8 mm (9 in x 3 in x 2 in)
	Weight	1.3 kg (2.75 lb)

Reliability

Characteristic item	Specification
Display	MTBF >50,000 hours
Backlight	MTBF 50,000 hours to 50% brightness with backlight on continuously

Environment

Characteristic item		Specification
EMI shielding		No emission of low-level radiation
Temperature	operating	0° C to 40° C
	storage	-10° to 60° C
Humidity	operating	20% to 80% Relative Humidity (non-condensing)
	storage	5% to 90% Relative Humidity (non-condensing)

Dome E2 Specification

In locations where 240V outlets are used, connect the Dome E2 display to only a center-tapped, 240V, single-phase supply (only for Canada and the United States).

Category	Characteristic Item	Specification
Screen	Screen size diagonal	498 mm (19.6 in.)
	Resolution	1200 x 1600 pixels (portrait) 1600 x 1200 pixels (landscape)
	Pixel pitch	0.249 mm x 0.249 mm
	Pixel arrangement	Subpixel vertical stripe
	Active area (mm)	398.4 (H) x 298.8 (V)
	Grayscale supported	3061 shades of gray
	Refresh rate	60 Hz
	Contrast ratio	600:1 (typical)
	Brightness	900 cd/m^2 (when new)
	Pixel rise/fall time	40 ms (typical)
	Viewing angle	170° (± 85°) horizontal/vertical
Interface	Digital Video In	DVI Rev. 1.0 single-channel digital connector
	Display control - brightness	DDC2B+
	Display identification	EDID read using DDC2B+
	USB hub	Universal Serial Bus (USB) Rev. 1.1: 1 uplink B port; 2 downlink A ports
	Display status	Dual-stack tricolor LEDs on back panel
Input formats	Landscape orientation	1600 x 1200 (8-bit per pixel)
	Portrait orientation	1200 x 1600 (8-bit per pixel)
	Screen type	AMLCD (active matrix liquid crystal display)
Physical	Display size (without stand)	440 mm x 343 mm x 95 mm (17.3 in. x 13.5 in. x 3.75 in.)
	Display weight (without stand)	5.5 kg (12 lb)
	Mounting options	Desktop stand (standard); 100-mm VESA mounting (optional)
Power	Adapter	Ault MW116KA1249F53 (CAUTION: Use only the power adapter supplied with the display unit.)

Power Supply

CAUTION: Use only the power adapter supplied with the Dome E2 display unit;
Ault MW116KA1249F53.

Category	Characteristic Item	Specification
Power input requirements	Voltage selection	Auto-ranging
	Voltage	100 – 240V AC
	Current	1.0 A
	Frequency	50 to 60 Hz
Power output requirements	Voltage	12 V DC ±5%
	Current	6.67 A (80 W)
Physical	Size	127.0 mm x 76.2 mm x 44.5 mm (5 in x 3 in x 1.75 in)
	Weight	0.7 kg (1.5 lb)

Reliability

Characteristic item	Specification
Display	MTBF >50,000 hours
Backlight	MTBF 50,000 hours to 50% brightness with backlight on continuously

Environment

Characteristic item		Specification
EMI shielding		No emission of low-level radiation
Temperature	operating	0° C to 40° C
	storage	-10° to 60° C
Humidity	operating	10% to 80% Relative Humidity (non-condensing)
	storage	5% to 90% Relative Humidity (non-condensing)

Dome E3 Specification

In locations where 240V outlets are used, connect the Dome E3 display to only a center-tapped, 240V, single-phase supply (only for Canada and the United States).

Category	Characteristic Item	Specification
Screen	Screen size diagonal	528 mm (20.8 in.)
	Resolution	1536 x 2048 pixels (portrait) 2048 x 1536 pixels (landscape)
	Pixel pitch	0.207 mm, 123 ppi
	Pixel arrangement	Subpixel vertical stripe
	Active area (mm)	423.9 (H) x 318.0 (V)
	Color supported	256 shades of gray, programmable gamma from palette of up to 3061 shades
	Refresh rate	60 Hz
	Contrast ratio	700:1 (typical)
	Brightness	800 cd/m^2 (typical)
	Pixel rise/fall time	35 ms
	Viewing angle	170° (± 85°) horizontal/vertical
Interface	Digital Video In	DVI Rev. 1.0 single- or dual-channel digital connector
	Display control - brightness	DDC2B+
	Display identification	EDID read using DDC2B+
	USB hub	Universal Serial Bus (USB) Rev. 1.1: 1 uplink B port; 2 downlink A ports
	Display status	Dual-stack tricolor LEDs on back panel
Input formats	Landscape orientation	2048 x 1536 (8- bit per pixel)
	Portrait orientation	1536 x 2048 (8-bit per pixel)
	Screen type	AMLCD (active-matrix liquid crystal display)
Physical	Display size (without stand)	475 mm x 368 mm x 96 mm (18.7 in. x 14.5 in. x 4.0 in.)
	Display weight (without stand)	6.35 kg (<15 lb)
	Mounting options	Desktop stand with integrated USB (standard); 100-mm VESA mounting (optional)
Power	Adapter	Ault MW122KA1223F52 (CAUTION: Use only the power adapter supplied with the display unit.)

Power Supply

CAUTION: Use only the power adapter supplied with the Dome E3 display unit; Ault MW122KA1223F52.

Category	Characteristic Item	Specification
Power input requirements	Voltage selection	Auto-ranging
	Voltage	100 – 240V AC
	Current	2.0 A
	Frequency	50 to 60 Hz
Power output requirements	Voltage	12 V DC ±5%
	Current	10.0 A (120 W)
Physical	Size	228.6 mm x 76.2 mm x 50.8 mm (9 in x 3 in x 2 in)
	Weight	1.3 kg (2.75 lb)

Reliability

Characteristic item	Specification
Display	MTBF >50,000 hours
Backlight	MTBF 50,000 hours to 50% brightness with backlight on continuously

Environment

Characteristic item		Specification
EMI shielding		No emission of low-level radiation
Temperature	operating	0° C to 40° C
	storage	-10° to 60° C
Humidity	operating	10% to 80% Relative Humidity (non-condensing)
	storage	5% to 90% Relative Humidity (non-condensing)

Dome E3c Specification

In locations where 240V outlets are used, connect the Dome E3c display to only a center-tapped, 240V, single-phase supply (only for Canada and the United States).

Category	Characteristic Item	Specification
Screen	Screen size diagonal	528 mm (20.8 in.)
	Resolution	1536 x 2048 pixels (portrait) 2048 x 1536 pixels (landscape)
	Pixel pitch	0.207 x 0.207 mm
	Pixel arrangement	R,G,B vertical stripe
	Active area (mm)	423.9 (H) x 318.0 (V)
	Color supported	Native 16 M colors (RGB 8-bit data)
	Refresh rate	30 Hz
	Contrast ratio	400:1 (typical)
	Brightness	400 cd/m^2 (typical)
	Pixel rise/fall time	50 ms (typical)
	Viewing angle	170° (± 85°) horizontal/vertical
Interface	Digital Video In	DVI Rev. 1.0 single- or dual-channel digital connector
	Display control - brightness	DDC2B+
	Display identification	EDID read using DDC2B+
	USB hub	Universal Serial Bus (USB) Rev. 1.1: 1 uplink B port; 2 downlink A ports
	Display status	Dual-stack tricolor LEDs on back panel
Input formats	Landscape orientation	2048 x 1536 (24-bits per pixel, 8-bits per color)
	Portrait orientation	1536 x 2048 (24-bits per pixel, 8-bits per color)
	Screen type	AMLCD (active-matrix liquid crystal display)
Physical	Display size (without stand)	475 mm x 368 mm x 96 mm (18.7 in. x 14.5 in. x 4.0 in.)
	Display weight (without stand)	9.07 kg (<20 lb) estimated
	Mounting options	Desktop stand with integrated USB (standard); 100-mm VESA mounting (optional)
Power	Adapter	Ault MW122KA1223F52 (CAUTION: Use only the power adapter supplied with the display unit.)

Power Supply

CAUTION: Use only the power adapter supplied with the Dome E3c display unit; Ault MW122KA1223F52.

Category	Characteristic Item	Specification
Power input requirements	Voltage selection	Auto-ranging
	Voltage	100 – 240V AC
	Current	2.0 A
	Frequency	50 to 60 Hz
Power output requirements	Voltage	12 V DC ±5%
	Current	10.0 A (120 W)
Physical	Size	228.6 mm x 76.2 mm x 50.8 mm (9 in x 3 in x 2 in)
	Weight	1.3 kg (2.75 lb)

Reliability

Characteristic item	Specification
Display	MTBF 30,000 hours
Backlight	MTBF 30,000 hours to 25% brightness with backlight on continuously

Environment

Characteristic item		Specification
EMI shielding		No emission of low-level radiation
Temperature	operating	0° C to 50° C
	storage	-10° to 60° C
Humidity	operating	8% to 80% Relative Humidity (non-condensing)
	storage	5% to 90% Relative Humidity (non-condensing)

Dome E5 Specification

In locations where 240V outlets are used, connect the Dome E5 display to only a center-tapped, 240V, single-phase supply (only for Canada and the United States).

Category	Characteristic Item	Specification
Screen	Screen size diagonal	541 mm (21.3 in.)
	Resolution	2048 x 2560 pixels (portrait) 2560 x 2048 pixels (landscape)
	Pixel pitch	0.165 x 0.165 mm
	Pixel arrangement	LCR vertical stripe
	Active area	422.40 (H) x 337.92 (V) mm
	Grayscale supported	256 shades of gray, programmable gamma from palette of up to 3061shades of gray
	Refresh rate	50 Hz
	Contrast ratio	600:1 (typical)
	Brightness	750 cd/m^2 (typical), 600 cd/m^2 min.(when new)
	Pixel rise/fall time	50 ms typical (25 ms Tr/25 ms Tf)
	Viewing angle	170° (± 85°) horizontal/vertical
Interface	Digital Video In	DVI Rev. 1.0 single-channel digital connector
	Display control - brightness	DDC2B+
	Display identification	EDID read using DDC2B+
	USB hub	Universal Serial Bus (USB) Rev. 1.1: 1 uplink B port; 2 downlink A ports
	Display status	Dual-stack tricolor LEDs on back panel
Input formats	Landscape orientation	2560 x 2048 (8-bit per pixel)
	Portrait orientation	2048 x 2560 (8- bit per pixel)
	Screen type	AMLCD (active-matrix liquid crystal display)
Physical	Display size (without stand)	387 mm x 470 mm x 103 mm (15.2 in. x 18.5 in. x 4.1 in.)
	Display weight, typical	6.6 kg (14.5 lb) without stand 10.2 kg (22.5 lb) with stand
	Mounting options	Desktop stand (standard); 100-mm VESA mounting (optional)
Power	Adapter	Ault MW122KA1223F52 (CAUTION: Use only the power adapter supplied with the display unit.)

Power Supply

CAUTION: Use only the power adapter supplied with the Dome E5 display unit;
Ault MW122KA1223F52.

Category	Characteristic Item	Specification
Power input requirements	Voltage selection	Auto-ranging
	Voltage	100 – 240V AC
	Current	2.0 A
	Frequency	50 to 60 Hz
Power output requirements	Voltage	12 V DC ±5%
	Current	10.0 A (120 W)
Physical	Size	228.6 mm x 76.2 mm x 50.8 mm (9 in x 3 in x 2 in)
	Weight	1.3 kg (2.75 lb)

Reliability

Characteristic item	Specification
Display	MTBF >50,000 hours
Backlight	MTBF 50,000 hours to 50% brightness with backlight on continuously

Environment

Characteristic item		Specification
EMI shielding		No emission of low-level radiation
Temperature	operating	0° C to 40° C
	storage	-10° to 60° C
Humidity	operating	10% to 80% Relative Humidity (non-condensing)
	storage	5% to 90% Relative Humidity (non-condensing)

Video Modes

Use this table to modify the `OWconfig` file.

Display	Mode	Pre-Adjusted Timing Name[*]	Resolution[†]
Dome C3i	Grayscale (monitor="domegray.vda")	"1536x2048i Panel"	1536 x 2048
		"2048x1536i Panel"	2048 x 1536
Dome E2	Grayscale (monitor="domegray.vda")	"1200x1600e Panel"	1200 x 1600
		"1600x1200e Panel"	1600 x 1200
Dome E3	Grayscale (monitor="domegray.vda")	"1536x2048e Panel"	1536 x 2048
		"2048x1536e Panel"	2048 x 1536
Dome E3c	Color (monitor="domecolr.vda")	"1536x2048eTC Panel"	1536 x 2048
		"2048x1536eTC Panel"	2048 x 1536
Dome E5	Grayscale (monitor="domegray.vda")	"2048x2560e Panel"	2048 x 2560
		"2560x2048e Panel"	2560 x 2048

* You must use the exact name and either the domegray.vda file (for grayscale panels) or domecolr.vda (for color panels) to specify the flat panel you are using when you edit the OWconfig file for OpenWindow or CDE.
† In pixels (width x height).

Connector Ports

The video signal connector is a standard DVI connector, driving data to the display.

The Dome E2 display uses a 4-pin DIN connector. The power input is 12V ±5% (80 W).

The Dome C3i, Dome E3, Dome E3c, and Dome E5 displays use a 8-pin DIN connector. The power input is 12V ±5% (120 W).
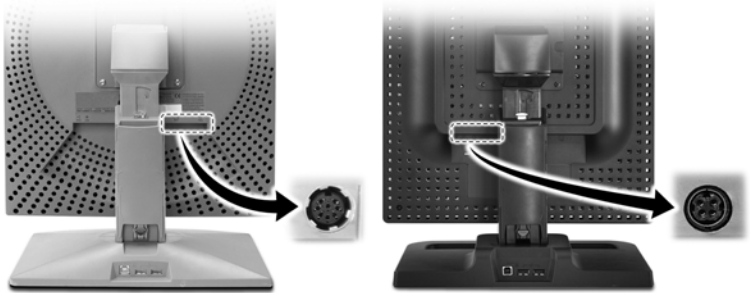
Power port on Dome C3i display   *Power port on Dome EX displays*

Details of DIN connectors	
VCC 1 — 2 GND / GND 3 — 4 VCC	*4-pin connector on Dome E2 display*
VCC 8 / VCC 7 — 1 GND / VCC 6 — 2 GND / VCC 5 — 3 GND / 4 GND	*8-pin connector on Dome C3i, Dome E3, Dome E3c, and Dome E5 displays*
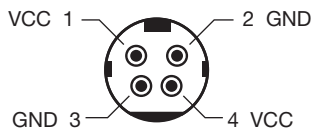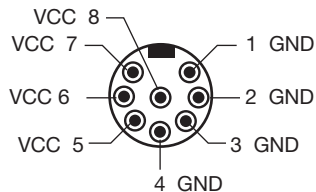
LED Status Lights

NOTE: LEDs are in the same location on the interface plate of both the Dome C3i and Dome EX displays.

The two LEDs on the back panel provide information about the display.

- LED A describes the digital-link status between the display controller and the interface.
- LED B describes the display-panel status. it shows any faults currently in the panel.

Reset button (left) and LEDs on interface plate
LED A, top
LED B

Power-up sequence information from LED

LED A	Action/Sequence	LED B	Action/Sequence
Dark	Initial power-on	Flashing yellow	Initial power-on
Blink yellow	Self test	Solid yellow	Power-on self test
Dark	One (1) second after power -on	Flashing green	Self test pass

LED A status information after initial power-on

LED Status	Description
Solid green	Functional link – normal operation
Flashing yellow	Link working, unrecognized sync information
Solid yellow	Receiving DDC information

LED B status information after initial power-on

LED Status	Description
Solid green	Functional system – normal operation
Flashing green	Fault
Solid yellow	DDC power-on, 12V power not detected
Alternating green/yellow	POST failure

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Regulatory Compliance

Canada, European Union, United States

Dome CX/Dome EX displays have been tested and found to comply with IEC/EN 60601-1 and IEC/EN 60601-1-2 standards, and is certified to meet medical standard C22.2 No. 601.1-M1990 (C US Mark).

WITH RESPECT TO ELECTRIC SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH UL 60601-1 CAN/CSA C22.2 NO. 601.1

LR53545
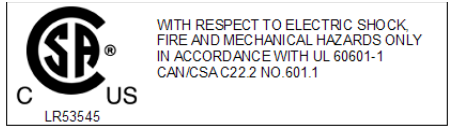
The medical display, in addition to meeting medical requirements, has been tested and found to comply with the limits for Federal Communications Commission (FCC) Class B computing devices in a typically configured system since many medical offices are located in residential areas. It is the system integrator's responsibility to test and ensure that the entire system complies with applicable electromagnetic compatibility (EMC) laws.

Planar Systems, Inc. has made great efforts to support the medical device industry, in particular, medical device manufacturers and medical device system integrators. We offer state-of-the-art color displays that are compliant with worldwide accepted medical device safety standards, and for the European market, CE-marked displays based on compliance with counsel directive 93/42/EEC—commonly referred to as the Medical Device Directive (MDD). The following summarizes our qualification of these displays as it relates to compliance with the MDD.

The European Medical Device Directive requires that the intended use of the device be defined. The intended use of these displays is "to display alphanumeric, graphic, and image data as inputted from any type of medical device." These displays do not provide a measurement function in any way, and it is the device and systems manufacturer's responsibility to verify its function in the integrated device or system.

The display was classified as required by the MDD according to Annex IX of the directive and the medical device (MEDDEV) guidance available at the time of classification. Because the display uses electrical energy and has no direct patient connections and—by itself—no medical utility, the display is classified according to Rule 12 as an MDD Class I device, component, or accessory. The MDD states that manufacturers of Class I medical devices or accessories shall satisfy the requirements in regard to design and manufacturing controls, that is, the applicable assessment route to be used for CE-marking under the MDD, and it shall carry the CE mark according to Annex XII of the directive, with no notified body annotation.

The applicable safety standards for an MDD Class I display are IEC/EN 60601-1:1990 along with Amendments 1 and 2. To help the medical device designer evaluate the suitability of these displays, Planar has also conducted EMC testing to IEC 60601-1-2 as it can be applied. The display with its power supply alone does not represent a functional medical device. Hence, Planar configured a minimal operating system to exercise the display. The resulting data are made available to interested parties.

This is informative data, not certification data. Certification data must be obtained by the device or system integrator according to Article 12 of the MDD titled "Particular procedure for systems and procedure packs." Paragraph 2 clearly outlines the device or system integrator's responsibility in this matter.

In summary, Planar Systems, Inc. is CE-marking these displays under the Medical Device Directive, which establishes compliance to the basic medical safety standards. However, EMC compliance can only be accomplished in the configured medical device or system and is the responsibility of the device or system manufacturer. Planar has the necessary documentation such as IEC 60601-1 notified body and other third-party test reports and certifications, a risk/hazard analysis, an essential requirements checklist, and the Planar International Electrotechnical Commission (IEC) declaration of conformity.

Planar Systems, Inc., located in Beaverton, Oregon, USA, is the manufacturer of these displays in the meaning of the directive. As required by the MDD in Article 14, Planar Systems, Inc., not residing in the European Economic Area (EEA), has a European representative, Planar Systems, Inc.—Olarinluoma 9, P. O. Box 46, FIN-02201 Espoo, Finland (phone + 358 9 420 01; fax + 358 9 420 0200).

In the opinion of Planar Systems, Inc. registration required to put this device into commerce is the responsibility of the medical device/system manufacturer, and Planar supports this requirement by providing a European Commission (EC) declaration of conformity. If Planar supplies a display to an end user, rather than a device manufacturer, it is the end user's responsibility to ensure continued compliance with the MDD of the system in which the display is integrated.

The supplier will make available on request, circuit diagrams, component part lists, etc.

For vigilance reporting as required under Article 10 of the MDD, Planar Systems, Inc. will provide any information requested by competent authority to support any reported incident investigation by such an authority.

EU Declaration of Conformity for Medical Application

A Declaration of Conformity has been filed for this product. For additional copies of the Declaration of Conformity document, contact Planar Systems.

Dome CX/Dome EX digital flat-panel displays meet the essential health and safety requirements, is in conformity with, and the CE marking has been applied according to the relevant EU Directives listed below, using the relevant section of the following EU standards and other normative documents;

EU EMC Directive 89/336/EEC

EU Electromagnetic Compatibility Directive

EN 60601-1-2 (2001) Medical Electrical Equipment	Section 1.2. Collateral standard electromagnetic compatibility requirements
EN 55011 (Class B)	Limits and methods of measurements for radio interference characteristics of industrial, scientific, and medical equipment
IEC 1000-3-2	Harmonic emissions
IEC 1000-3-3	Voltage fluctuations/flicker emissions
IEC 1000-4-2	Electrostatic discharge requirements for industrial process measurement and control equipment
IEC 1000-4-3	Radiated electromagnetic field requirements for industrial process measurement and control equipment
IEC 1000-4-4	Electrically fast transients for industrial process measurement and control equipment
IEC 1000-4-5	Surge requirements
IEC 1000-4-11	Voltage variations/dips/interrupts
IEC 1000-4-6	Conducted immunity
IEC 1000-4-8	Magnetic field immunity
CE	Conformance to the Medical Device Directive 93/42/EEC
EN 60601-1 Medical Electrical Equipment	Part 1: General requirements for safety

U.S. FCC Compliance Statement

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: 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 instruction, 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 the dealer or an experienced radio/TV technical for help.

CAUTION: Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Australian

C-Tick   Australian Communications Authority regulating product EMC compliance.

China

CCC   China Compulsory Certification regulating safety and EMC.

GB4943-2001

GB9254-1998 (Class A)

CB17625.1-2003

Japan

VCCI   Voluntary Control Council for Interference by information technology equipment sold in Japan.

Korea

MIC Mark   Ministry of Information and Communications.

Standard Warranty

Summary

- Standard 1-year "repair and return" warranty
- Industry-leading 10-year backlight warranty on grayscale displays[*]
- A 2-year backlight warranty on color displays[†]
- Typical repair turnaround time of 10 business days

Standard Warranty Return Procedure

As a Planar Standard Warranty customer, you must follow the procedure below if you have a non-functioning Dome EX display. The Planar customer service staff will attempt to correct any minor issues that may be causing the problem. Once Planar has determined that you have a non-functioning product, Planar will arrange for return and repair of the non-functioning product.

1   Contact Planar via the web at http://www.planar.com/support. In North America, call (866) PLANAR1 (866.752.6271). In Europe, call +358 9 420 01 or send your info by fax to +358 9 420 0200. Have the model number, serial number, and proof-of-purchase available.

2   Planar customer service staff will attempt to correct any minor issues that may be causing the problem. If we are unable to correct the problem to your satisfaction, we will issue a Return Material Authorization (RMA).

3   You must return the product, as specified, to Planar Systems. Planar will validate the defect, repair the unit, and return the unit to you. The typical turnaround time is 10 business days.

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   * If, within 10 years of initial purchase, the maximum output of the Dome C3i or the Dome EX grayscale display is determined by Planar Systems to be less than 300 cd/m^2, Planar will repair or replace the display at the its sole discretion.

   † If, within 2 years of initial purchase, the maximum output of the Dome E3c color display is determined by Planar Systems to be less than 200 cd/m^2, Planar will repair or replace the display at the its sole discretion.

Summary Limitations and Exclusions of Dome Displays

1   Customer must provide original proof of purchase of the display system.

2   Warranty is void on any product with a defaced, modified, or removed serial number.

3   Warranty is void on any product with damage, deterioration, or malfunction resulting from the following:

   a) Accident, misuse, neglect, fire, water, lightning, or other acts of nature, unauthorized product modification, or failure to follow instructions supplied with the product.

   b) Repair or attempted repair by anyone not authorized by Planar.

   c) Any damage of the product due to shipment.

   d) Removal or installation of the product.

   e) Causes external to the product, such as electric power fluctuations or failure.

   f) Use of supplies or parts not meeting Planar's specifications.

   g) Normal wear and tear.

   h) Any other cause, which does not relate to a product defect.

4   Warranty excludes removal, installation, and setup service charges.

Limitation of Implied Warranties

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION CONTAINED HEREIN INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Exclusion of Damages

THE LIABILITY OF PLANAR IS LIMITED TO THE COST OF REPAIR OR REPLACEMENT OF THE PRODUCT. PLANAR SHALL NOT BE LIABLE FOR THE FOLLOWING:

1 DAMAGE TO OTHER PROPERTY CAUSED BY ANY DEFECTS IN THE PRODUCT, DAMAGES BASED UPON INCONVENIENCE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, LOSS OF PROFITS, LOSS OF BUSINESS OPPORTUNITY, LOSS OF GOODWILL, INTERFERENCE WITH BUSINESS RELATIONSHIPS, OR OTHER COMMERCIAL LOSS, EVEN IF ADVISED OF THEIR POSSIBILITY OF SUCH DAMAGES.

2 ANY OTHER DAMAGES, WHETHER INCIDENTAL, INDIRECT, CONSEQUENTIAL OR OTHERWISE.

3 ANY CLAIM AGAINST THE CUSTOMER BY ANY OTHER PARTY.

Effect of Local Law

This warranty gives you specific legal rights, and you may have other rights, which vary from locality to locality. Some localities do not allow limitations on implied warranties and/or do not allow the exclusion of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

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