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EX2 Display Controller Reference Guide

FOR USE WITH
Dome P1 System
Dome P2 System
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October 2004	020-0370-00 A
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Regulatory Compliance

FCC Compliance Statement

Note: This equipment has been tested and found to comply within the limits of 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 using one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the 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 not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Only the peripherals (digital input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this monitor. Operation with non-certified peripherals is likely to result in interference to radio and TV reception. Only shielded signal cables may be used with this system.

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About the EX2 Display Controller

The EX2 controller is an advanced workstation graphics accelerator based on a high-bandwidth, parallel pipeline geometry and rendering architecture. It supports the landscape-to-portrait rotation commonly needed for viewing medical images.

The EX2 controller fits into either an AGP 8x or an AGP 4x slot. It supports the AGP 3.0 standard for communication between the graphics subsystem and the workstation processor and can drive dual digital panels.

Suitable for Windows XP and Windows 2000 systems, the controller offers the following key features. See [controller specification](#) for more information.

- Video memory: DDR SDRAM
 - unified frame buffer, Z-buffer, texture storage
 - 256-bit memory interface
- Pixel pipeline architecture provides enhanced rendering power.
- Supports AGP 3.0 standard (AGP 4X/8X), providing a two-way, high-speed interface between the display and the computer
- DDC1/2b/2b+ display support
- Support for two digital displays

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Package Contents

The EX2 display controller ships with the display driver and the quick reference. Speak with your sales rep if any item is missing or damaged.



CD-ROM containing the display driver and installation guide



Quick reference

Unpacking and handling tips

Wear an antistatic heel or wrist strap when handling and installing the display controller to avoid damage to board components.

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Check System Requirements

Make sure your computer system has these requirements before you install the your display and EX2 controller and driver.

Hardware issue

The motherboard on your computer must have an AGP Pro slot available for the EX2 controller.

The correct AGP GART chipset driver for the motherboard must also be installed. The EX2 controller requires this chipset driver to function correctly with your motherboard.

To check the installed motherboard chipset

- 1 Right-click My Computer and select Properties.
- 2 Click the Hardware tab and select Device Manager.
- 3 Scroll the list to select System Devices.
- 4 Scroll to list to AGP controller. The name of the chipset manufacturer appears as the device name.

Operating system issue

If you are running the Windows 2000 operating system, be sure that Service Pack 1 or higher is installed. To check for this information, open the Control Panel then click-open the System tool and select the General tab on System Properties dialog box.

System requirements

Computer system

- Intel Pentium 4, Xeon AMD Athlon XP/MP/Opteron or compatible
- Motherboard with free AGP 8x/4x slot
- 256 MB RAM
- Correct AGP GART chipset driver installed for motherboard
- CD-ROM drive
- Power supply, 300 watts or greater

Operating system

Windows XP or Windows 2000 with Service Pack 1 (or higher)

AGP chipset

If you need to replace the AGP chipset driver, you must install the correct driver before you install the EX2 controller. An incorrect or missing chipset driver can result in AGP memory not being detected or a black screen after Windows starts.

Contact your supplier or chipset/motherboard manufacturer to get the latest AGP chipset driver.

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Install the EX2 Controller

Be sure to remove any existing graphics card and its driver from your computer system before you install the EX2 controller and driver. Also disable any onboard graphics capability on the motherboard.

To install the controller

- 1 Turn off your computer and all peripherals. Disconnect all cables from the back of your computer. Leave the power cord plugged in for grounding.
- 2 Remove the computer cover.
- 3 Remove any existing graphics card and video signal cable, if necessary.
- 4 Remove the blank bracket from the available AGP slot.



Warning

If you are disconnecting a peripheral or removing a component from the system board, wait 10 to 20 seconds after you turn off the computer. Make sure the standby power LED has gone out.

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

Remove the EX2 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.

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Installed EX2 controller

- 5 Insert the EX2 controller into the AGP slot, align the connector pins, and press the board down until it is firmly seated.
- 6 Use the power extension cable to connect the EX2 controller to the computer's hard drive power connector. Connect the A plug to the controller, the B plug to the computer power supply, and the C plug to the hard drive power connector.

Click [here](#) to see connections for the power extension cable.
- 7 Secure the mounting bracket.
- 8 Reattach the computer cover and the peripherals.

Installation tips

The EX2 board requires connection to the computer internal power supply for operation. A 300 W power supply or greater is recommended to ensure normal operation where a number of other internal devices are installed.

Remove the power cable from the hard drive power connector before you install the power extension cable.

Note that the cable may already be connected to the controller. If so, proceed to connect the B plug to the computer power supply and the C plug to the hard drive power connector.

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Connect the Video Cables

Use only the cables supplied with your display. After you connect the video cables and the power cord, power on your display first, then the computer.

- 1 Plug one end of a video signal cable into the DVI port on the first display. Tighten the thumbscrews to secure the connection.
- 2 Plug the other end of the cable into **DVI port #1** on the installed EX2 board. You must use port #1 for the first display.
- 3 Plug one end of the other video signal cable into the DVI port on the second display. Tighten the thumbscrews to secure the connection.
- 4 Plug the other end of the cable into DVI port #2 on the installed board.



DVI port #1 for single display setup

Installation tips

Easy access to ports

For displays mounted on a desk stand, rotate the screen from landscape to portrait for easy access to the ports. If you need to place your display face down, lower it carefully on a protective cloth to protect the screen.

Restarting

Turn on your display before you turn on your computer. Failing to do so could damage the display.

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Install the Display Driver

Upon restarting your computer system, you must log on with administrator privileges. On Windows 2000 systems, Service Pack 1 or higher must be installed.

To install the display driver

- 1 Click Cancel on the Found New Hardware Wizard dialog box. Click No on the System Settings Change window when prompted to restart the computer.
- 2 Insert the Planar Installation CD to run the SETUP.EXE utility.
- 3 Click Install under Software Install, then click Next.
- 4 Click Yes to the license agreement. The installation starts.
- 5 Follow the onscreen instructions to complete the installation. Planar recommends that you select the Express installation option.
- 6 When the Setup complete message appears, select Yes, I want to restart my computer now and click Finish.

After restarting, you may see the message Digital Signature Not Found. Click Yes or Continue to complete the driver installation.

To configure the display

- 1 Right-click the desktop and select Properties > Settings.
- 2 Set the resolution to 1600 x 1200.
- 3 Click the Advanced button and select the Monitor tab.
- 4 Set the refresh rate to 60 Hz.
- 5 Click OK until you return to the desktop.

Installation tips

Restarting

Upon restart, your computer is running in a basic video mode. With a correctly installed controller, the operating displays various messages during the boot process.

If you have problems restarting, see [Troubleshooting](#).

SETUP utility

If the installation program does not start automatically, do the following:

- 1 Click Start in the Windows task bar.
- 2 Click Run.
- 3 Browse to select SETUP.EXE from the root directory of the Planar Installation CD.
- 4 Click OK.

Display setup

After you install the driver, you can use the Display Properties menu to set up the display configuration.

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Adjust the Display Properties

The display driver installs two additional tabs on the Display Properties dialog box in the Control Panel. Use the Rotation tab to select the orientation of the display. Use the Information tab to retrieve controller-specific hardware and driver information. Also use the dialog box to make changes to the video settings or to set up a dual-display configuration.

To set the display orientation

- 1 Right-click the desktop and select Properties > Settings.
- 2 Select the monitor that you want to change.
- 3 Click Advanced.
- 4 Click the Monitor tab. Make sure the check box for Hide modes that this monitor cannot display is empty (unchecked).
- 5 Click the Rotation tab.
 - Check Standard Landscape for landscape mode.
 - Check Rotate 90 Left or Right for portrait mode.
- 6 Click Yes to save the setting.
- 7 Click OK until to return to the desktop.

To retrieve controller-specific hardware and driver information

Click Display Properties > Settings > Advanced > Information.

About rotation

The orientation you select on the Rotation tab in the Display Properties dialog box directs (or changes) the output of the EX2 controller. Turn the display screen to landscape or portrait to match your selection.

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To change the video settings

- 1 Right-click the desktop and select Properties > Settings.
- 2 In Screen area, drag the slider to set the resolution.
- 3 Click the Advanced button and select the Monitor tab.
- 4 Under Refresh Frequency (Screen Refresh Rates in Windows XP), set the refresh rate.
- 5 Click Apply.
- 6 Click OK to preview the new setting.
- 7 Click Yes to accept the new setting.
- 8 Click OK until you return to the desktop.

To use a dual-display configuration

- 1 Right-click the desktop and select Properties > Settings.
- 2 Click the monitor icon 2.
- 3 Select Extend my Windows desktop onto this monitor.
- 4 Set resolution and color quality for the second display.
- 5 Click Apply or OK.

Dual-display setup

Make sure both displays are properly connected to the EX2 controller.

Turn on both displays before you start your computer system.

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Troubleshooting

Problem	Possible Solution
Computer does not restart properly after installation of EX2 controller	<p>Verify that the installation instructions were followed correctly.</p> <p>Check that the controller is properly connected to the display. Make sure a single display is connected to DVI port #1.</p> <p>Check the connections to the video and power cables. Secure them as necessary.</p> <p>Restart your computer in Safe mode. Upon starting, press and hold F8 until you see the Windows Advanced Options menu. Use the arrow keys to select Safe Mode, and press Enter.</p> <p>Check the system configuration of the operating system for the interrupt assignment.</p>
Display driver not found	Install the display driver from the driver CD that shipped with the display. Or download it from Planar Customer Support.
Power source warning audio signal	The EX2 controller requires an internal auxiliary DC power source. Check that the connections for the power extension cable are secure.
Controller not performing optimally	Check the Information tab on the Display Properties dialog box. The Transfer Mode information must be AGP. If it is not, install the latest chipset driver for the chipset on the motherboard, and repeat all installation procedures.
Operating system warns that the controller is not configured properly	<p>Check the driver installation and make sure that the software is correctly loaded for your operating system.</p> <p>Reinstall the driver.</p>

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Problem

Address and interrupt conflicts

Possible Solution

Ensure that the I/O and memory addresses reserved for the controller are not used by other hardware devices.

The integrated onboard VGA controller uses the following addresses (hex):

I/O Addresses:

Standard VGA I/O: 3B0-3Df

Memory Addresses:

Video RAM: A000-BFFF

Video ROM: C000-C7FF

You cannot change the addresses of the EX2 controller. In case of an address conflict, try to modify the I/O address of the add-on card that causes the conflict.

To support the special graphics processor on the controller, the system BIOS should automatically assign a system interrupt to the AGP slot where the controller is installed.

There may be problems if your controller does not receive an interrupt or if a system interrupt is used for more than one device.

Check the system configuration utility of your operating system for the interrupt assignments.

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Controller Specification

Parameter	Description
Operating environment	Windows XP, Windows 2000
System requirements	Intel Pentium 3, Pentium 4, Xeon; AMD Athlon XP/MP/Opteron or compatible
Certifications	FCC/DOC, ICES-003, CE/DOC, SMA C-Tick, MIC, BSMI, VCCI
Dimensions	Length: 228.6 mm (9.0 inches) Width: 108.0 mm (4.25 inches)
Power requirements	+ 3.3 Volts DC: 9.4 Amps + 5 Volts DC: 0.6 Amps + 12 Volts DC: 2.0 Amps maximum
Bus system	AGP 3.0, AGP Pro 50 connector
Video memory	DDR, SDRAM, unified frame buffer, Z-buffer, texture storage 256-bit memory interface
BIOS	64 Kbyte BIOS Flash ROM, reprogrammable by software, 3.3 V
Digital/analog converter	2x 30-bit palette DAC DAC speed: 400 Mhz
Data width	256 bit - graphics core 256-bit memory interface
Connectors	2x DVI-I output connectors: analog and digital output, female
H/V sync output signals	Separate horizontal and vertical sync at TTI levels
Card addresses	The display controller is 100 percent IBM VGA-compatible and occupies the same memory area and specific addresses in the I/O range. the memory range above 1 MB is automatically assigned through the PCI BIOS interface. I/O addresses: 3B0–3DF (Standard VGA I/O) Video RAM: A000–BFFF Video ROM: C000–C7FF

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Controller Video Modes

All video modes comply with VESA DMT (Discrete Monitor timing) or VESA GTF (General Timing format) standards. The display controller board supports HiColor, 16-bit modes and Truecolor, 32-bit (24 color, 8 alpha) modes. There is no support for 8-bit modes.

Resolution	Refresh Rate (Hz)	Color Depth (bits)
640 x 480	60, 75	16/32
800 x 600	60, 75	16/32
1024 x 768	60, 75	16/32
1152 x 864	60, 75	16/32
1280 x 1024	60, 75	16/32
1600 x 1000	60	16/32
1600 x 1024	60	16/32
1600 x 1200	60	16/32

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Driver Removal

You need to log on with administrator privileges to remove the display driver. Before removing the driver, close all open applications and temporarily disable any anti-virus software that is running on your computer system.

To remove the display driver:

- 1 Open the Control Panel.
- 2 Open the Add/Remove Programs tool.
- 3 Select the EX2 Display Driver from the list of software programs.
- 4 Click Remove. The Planar uninstall dialog box appears.
- 5 Click Yes to remove the EX2 display driver.
- 6 Click Yes to restart your computer.

Follow the safety instructions to remove the controller from your computer.

See the “Warning” on [page 4](#).

Removing the controller

When removing the controller from your computer, follow the same safety precautions you use to install it.

To remove the controller

- 1 Shut down the computer.
- 2 Detach video cable.
- 3 Remove the cover.
- 4 Ground yourself by touching the power supply box.
- 5 Remove screws for the mounting bracket.
- 6 Remove the controller.
- 7 Detach the power extension cable.
- 8 Reassemble your computer.

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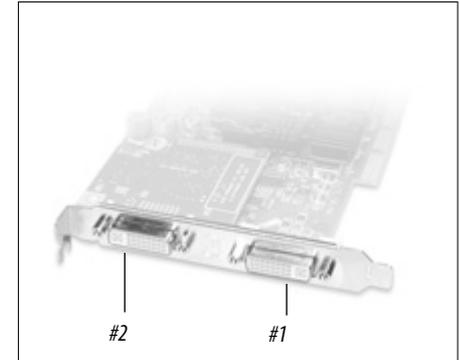
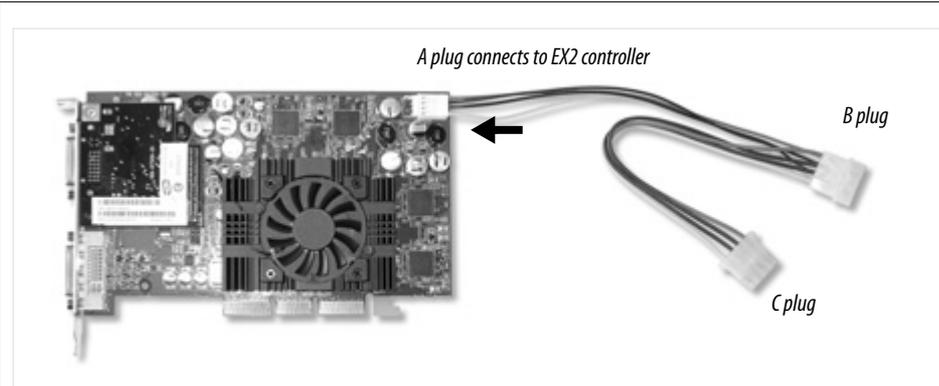
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DVI ports on EX2 controller



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Standard Warranty Overview

Summary

- Standard 1-year “repair and return” warranty
- 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 EX2 display controller. 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. You must 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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Summary Limitations and Exclusions

- 1 The 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 the Planar 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.

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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.

Technical assistance

In North America, call 1 (866) PLANAR1 between 8 A.M. and 5 P.M. Pacific time, Monday through Friday, or send a description of your technical issues and e-mail address to medicalsupport@planar.com.

In Europe, call +358 9 420 01 between 8 A.M. and 4 P.M. Finnish time (Eastern European time), Monday through Friday, or send a description of your technical issues and e-mail address to medicalsupport@planar.com.