

# ZLXp-E1/E2/E3 PCI Graphics Options

---

## Owner's Guide

Order Number: EK-T2424-OG. A01

---

**First Printing, July, 1994**

Digital Equipment Corporation makes no representations that the use of its products in the manner described in this publication will not infringe on existing or future patent rights, nor do the descriptions contained in this publication imply the granting of licenses to make, use, or sell equipment or software in accordance with the description.

© Digital Equipment Corporation 1994. All rights reserved.  
Printed in U.S.A.

The following are trademarks of Digital Equipment Corporation: Alpha AXP, AXP, DEC, DEC Open3D, Digital, OpenVMS, VAX DOCUMENT, VMS, and the DIGITAL logo.

OSF/1 is a registered trademark of Open Software Foundation, Inc.

Microsoft is a registered trademark, and Windows and Windows NT, are trademarks of Microsoft Corporation.

All other trademarks and registered trademarks are the property of their respective holders.

S2529

This document was prepared using VAX DOCUMENT Version 2.1.

**FCC NOTICE:**

FCC ID: AO9-PBXGA and AO9-PBXGB

This device complies with Part 15 of the FCC Rules. Operation is subject to the following 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.

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. Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, 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 technician for help.

The video and stereo cable ports should be connected with only shielded data cables with an external ferrite bead over the cable. When either of these ports is connected with cables without such a ferrite bead, additional ferrite beads shall be clamped over these cables next to the cable connector.



---

# Contents

Guide Overview .....	1
Purpose .....	1
Contents .....	1
Conventions .....	1
Module Overview .....	2
Description .....	2
Version Information .....	2
Software .....	3
Limitations .....	3
Features .....	3
Frequency Switch .....	5
Description .....	5
Switch Settings .....	6
Switch Settings and Monitor Values .....	7
Module Installation .....	9
Procedure .....	9
Confirming Proper Installation .....	12
Procedure .....	12
Troubleshooting .....	12
Stereo Viewing .....	13
Description .....	13
Stereo Cable .....	13
Stereo Monitor .....	13
Appendix A — Module Specifications .....	14
Physical Specifications .....	14
Environmental Specifications .....	14
Appendix B — Cabling Information .....	15
Cable Options .....	15
Appendix C — For Digital Service Use .....	16
Introduction .....	16
FRU/Order Numbers .....	16

## Index

### Figures

1	ZLXp-E1 Graphics Option .....	3
2	ZLXp-E2 Graphics Option .....	4
3	ZLXp-E3 Graphics Option .....	4
4	ZLXp-E Frequency Switch .....	5
5	ZLXp-E Installation .....	11

### Tables

1	Module Versions .....	2
2	Compatible Software Versions .....	3
3	Module Features .....	4
4	Switch Settings .....	6
5	Switch Settings and Monitor Values .....	7
6	ZLXp-E1/E2/E3 PCI Graphics Options Weight and Dimensions .....	14
7	ZLXp-E1/E2/E3 PCI Graphics Options Environmental Specifications .....	14
8	Cable Options .....	15
9	Module FRUs .....	16

---

## Guide Overview

<b>Purpose</b>	This guide provides general information on the ZLXp-E1/E2/E3 PCI Graphics Options (PBXGA-AA/AN/BA/BN/CA/CN). This information is independent of the hardware platform. For specific information regarding your hardware platform, refer to your system documentation.
<b>Contents</b>	<p>The following information is included in this guide:</p> <ul style="list-style-type: none"><li>• Module description</li><li>• Frequency switch settings and monitor values</li><li>• Module installation</li><li>• Confirming proper installation</li><li>• Stereo viewing</li><li>• Module specifications</li><li>• Cabling information</li><li>• Field Replaceable Unit (FRU) order numbers</li></ul>
<b>Conventions</b>	<p>The following conventions are used in this guide:</p> <p><b>lowercase bold</b> Lowercase bold letters indicate a command that you must enter exactly as shown. For example: the <b>show config</b> command.</p> <p><b>CAUTION</b> Cautions provide information to prevent damage to equipment or software. Read these carefully.</p> <p><b>Important</b> Important notations provide information to allow your system to work properly.</p> <p><b>Note</b> Notes contain additional information that you should be aware of.</p> <p>DEC OSF/1 AXP This designation represents the DEC OSF/1 AXP operating system.</p>

---

## Module Overview

**Description** The ZLXp-E1/E2/E3 PCI graphics options are PCI Local Bus options that generate high-resolution, 2- and 3-dimensional color graphics. Application programs can utilize these graphics to render mechanical CAD, molecular modeling, scientific visualization, simulation, animation, and other graphical information.

**Version Information** Table 1 provides information about this version of the ZLXp-E1/E2/E3 PCI graphics options.

**Table 1 Module Versions**

Designation	OpenVMS AXP DEC OSF/1 AXP Order No.	Microsoft® Windows NT™ Order No.	Planes	Memory
ZLXp-E1	PBXGA-AA	PBXGA-AN	8	2MB
ZLXp-E2	PBXGA-BA	PBXGA-BN	24	8MB
ZLXp-E3	PBXGA-CA	PBXGA-CN	24Z	16MB

Each order includes the following items:

- ZLXp-E Option Module
- *ZLXp-E1/E2/E3 PCI Graphics Options Owner's Guide*
- ZLXp-E Support Services Software Version 1.0 for Microsoft® Windows NT™ (PBXGA-AN/BN/CN only)
- Antistatic wrist strap

---

**Note**

---

There are two order numbers for the ZLXp-E1/E2/E3 PCI graphics options: one for OpenVMS AXP and DEC OSF/1 AXP, and one for Microsoft® Windows NT™ operating systems. Check your order invoice to ensure that you have received the proper hardware kit for the operating system that you are using.

---



**Software**

The ZLXp-E1/E2/E3 PCI graphics options are compatible with the minimum software revisions shown in Table 2.

**Table 2 Compatible Software Versions**

Designation	Open3D	DEC OSF/1 AXP	OpenVMS AXP	Microsoft® Windows NT™	ZLXp-E Support Services
ZLXp-E1	V2.4	V3.0	V6.1-1H1	V3.5	V1.0
ZLXp-E2	V2.4	V3.0	V6.1-1H1	V3.5	V2.0
ZLXp-E3	V2.4	V3.0	V6.1-1H1	V3.5	V2.0

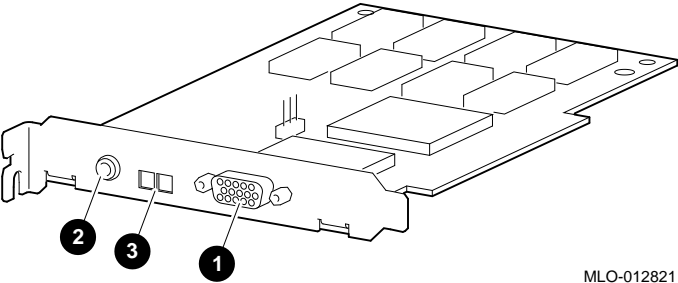
**Limitations**

The number of modules you can install is limited only by the number of PCI Local Bus slots and the operating system software that you are using. Refer to your operating system documentation, and the Open3D software release notes, for information on the maximum supported multi-head configurations.

**Features**

The ZLXp-E1 Graphics option is shown in Figure 1. Table 3 describes the features.

**Figure 1 ZLXp-E1 Graphics Option**

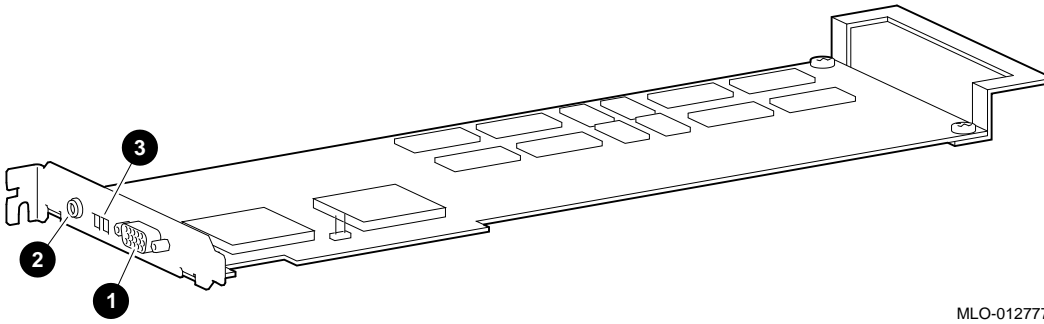


MLO-012821

## Module Overview

The ZLXp-E2 graphics option is shown in Figure 2. Table 3 describes the features.

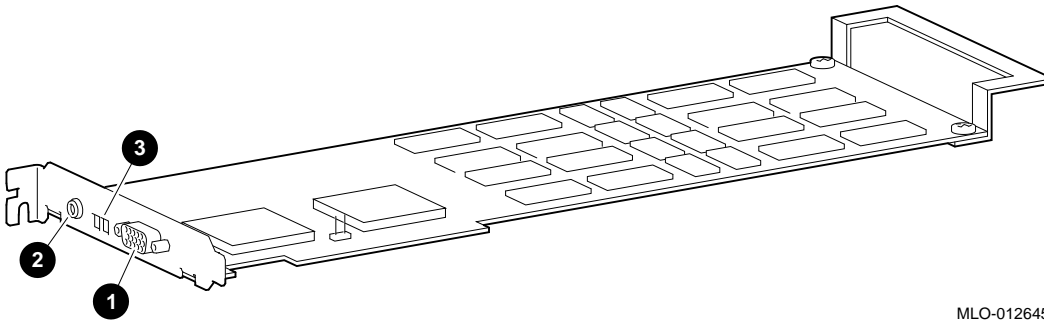
**Figure 2 ZLXp-E2 Graphics Option**



MLO-012777

The ZLXp-E3 Graphics option is shown in Figure 3. Table 3 describes the features.

**Figure 3 ZLXp-E3 Graphics Option**



MLO-012645

**Table 3 Module Features**

Reference Number	Description
①	Video cable port
②	Stereo cable port
③	Frequency switch

---

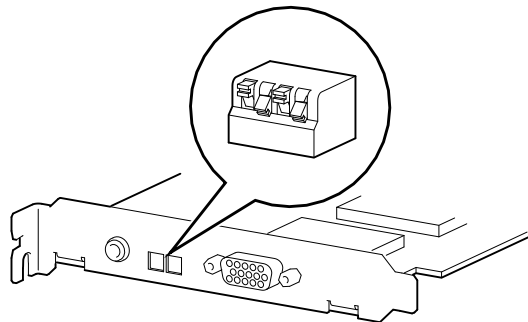
## Frequency Switch

### Description

Each module has piano-style switches; when set, the four up/down switches select the frequency and resolution of the video signal that the module produces.

In Figure 4, the frequency switch is set to a value of 5.

**Figure 4 ZLXp-E Frequency Switch**



MLO-012778

## Frequency Switch

### Switch Settings

Table 4 lists the ZLXp-E1/E2/E3 PCI graphics options switch settings.

---

#### Note

---

SW1 is the up/down switch closest to the stereo cable port. The up/down orientation of the switches is shown in Figure 4.

The switch setting is not dynamic and is read-only upon initialization, power up, or system reset.

---

**Table 4 Switch Settings**

Switch Setting	Positions			
	SW1	SW2	SW3	SW4
0	Down	Down	Down	Down
1	Up	Down	Down	Down
2	Down	Up	Down	Down
3	Up	Up	Down	Down
4	Down	Down	Up	Down
5	Up	Down	Up	Down
6	Down	Up	Up	Down
7	Up	Up	Up	Down
8	Down	Down	Down	Up
9	Up	Down	Down	Up
10	Down	Up	Down	Up
11	Up	Up	Down	Up
12	Down	Down	Up	Up
13	Up	Down	Up	Up
14	Down	Up	Up	Up
15	Up	Up	Up	Up

**Switch Settings and Monitor Values**

Table 5 lists the ZLXp-E1/E2/E3 PCI graphics options switch settings and their corresponding frequencies, monitor resolutions, refresh rates, and monitor model numbers.

**Table 5 Switch Settings and Monitor Values**

Switch Setting	Pixel Frequency (MHz)	Monitor Resolution (Pixels)	Refresh Rate (Hz)	Monitor Model
0	130	1280x1024	72	VRC16-HA/H4, PCXAV-EA/EC/ED/HA/H4, VRC21-HA/H4
1	119	1280x1024	66	VRC16-CA/C4/HA/H4, PCXAV-EA/EC/ED/HA/H4, VRC21-HA/H4
2	108	1280x1024	60	
3	104	1152x900	72	
4	93	1152x900	66	PCXAV-HA/H4, VRC21-HA/H4
5	75	1024x768	70	VRC16-HA/H4, PCXAV-EA/EC/ED, PCXBV-PC/PD
6	74	1024x768	72	VRC16-CA/C4/HA/H4, PCXBV-PC/PD, PCXAV-EA/EC/ED/HA/H4, VRC21-HA/H4
7	69	1024x864	60	PCXAV-EC/ED/HA/H4, VRC21-HA/H4, PCXBV-PC/PD
8	65	1024x768	60	VRC16-CA/C4/HA/H4, PCXAV-EA, PCXBV-PC/PD
9	50	800x600	72	VRC16-CA/C4/HA/H4, PCXBV-PC/PD, PCXAV-EA/EC/ED/HA/H4, VRC21-HA/H4

(continued on next page)

Frequency Switch

**Table 5 (Cont.) Switch Settings and Monitor Values**

<b>Switch Setting</b>	<b>Pixel Frequency (MHz)</b>	<b>Monitor Resolution (Pixels)</b>	<b>Refresh Rate (Hz)</b>	<b>Monitor Model</b>
10	40	800x600	60	VRC16-CA/C4/HA/H4, PCXAV-EA/HA/H4, VRC21-HA/H4, PCXBV-PC/PD
11	32	640x480	72	VRC16-CA/C4/HA/H4, PCXBV-PC/PD, PCXAV-EA/EC/ED/HA/H4, VRC21-HA/H4
12	25	640x480	60	VRC16-CA/C4/HA/H4, PCXBV-PC/PD, PCXAV-EA/EC/ED/HA/H4, VRC21-HA/H4
13	135	1280x1024	75	PCXAV-EC/ED
14	110	1280X1024	60	PCXAV-EC/ED/HA/H4, VRC21-HA/H4
15	Reserved			

---

## Module Installation

### Procedure

The installation of the ZLXp-E1/E2/E3 PCI graphics options can be accomplished in a few easy-to-do steps. Each step presumes that you are familiar with your hardware platform. For specific information regarding your hardware platform, refer to your system documentation.

1. Turn off the system and any external devices. Disconnect any external devices and unplug the power cord from the wall outlet.
2. Remove the system unit cover, unscrew and remove the metal filler plate that may be present for the PCI slot you have selected. Save the screw that secured the metal filler plate; you will need this screw later to secure the adapter to the enclosure.
3. Set the frequency switch using Table 3 (Switch Settings and Monitor Values) as reference. Then, follow these steps:
  - a. Insert the ZLXp-E1/E2/E3 PCI graphics options into the option slot. See Figure 5, reference numbers ❶ and ❸, and reference number ❹.
  - b. Push the adapter firmly into the socket. Replace the screw to secure the adapter to the enclosure. See Figure 5, reference number ❷.
  - c. Check and see that the ISA extender bracket (ZLXp-E2/E3 modules) is located in the system ISA card guide. See Figure 5, reference number ❺.
4. Replace and secure the cover to the system unit. Attach all external devices and cables that were previously removed.

## Module Installation

5. Connect the video cable to the ZLXp-E video cable port. The video cable port is reference number ❶ in Figure 1, Figure 2, and Figure 3.
6. Connect the optional stereo cable to the stereo cable port. The stereo cable port is reference number ❷ in Figure 1, Figure 2, and Figure 3.
7. Connect your video monitor as described in your system documentation.

---

### Important

---

The installed orientation of the module varies from system to system; therefore, set the frequency switch properly prior to installation to ensure that the desired setting is attained.

---

---

### CAUTION

---

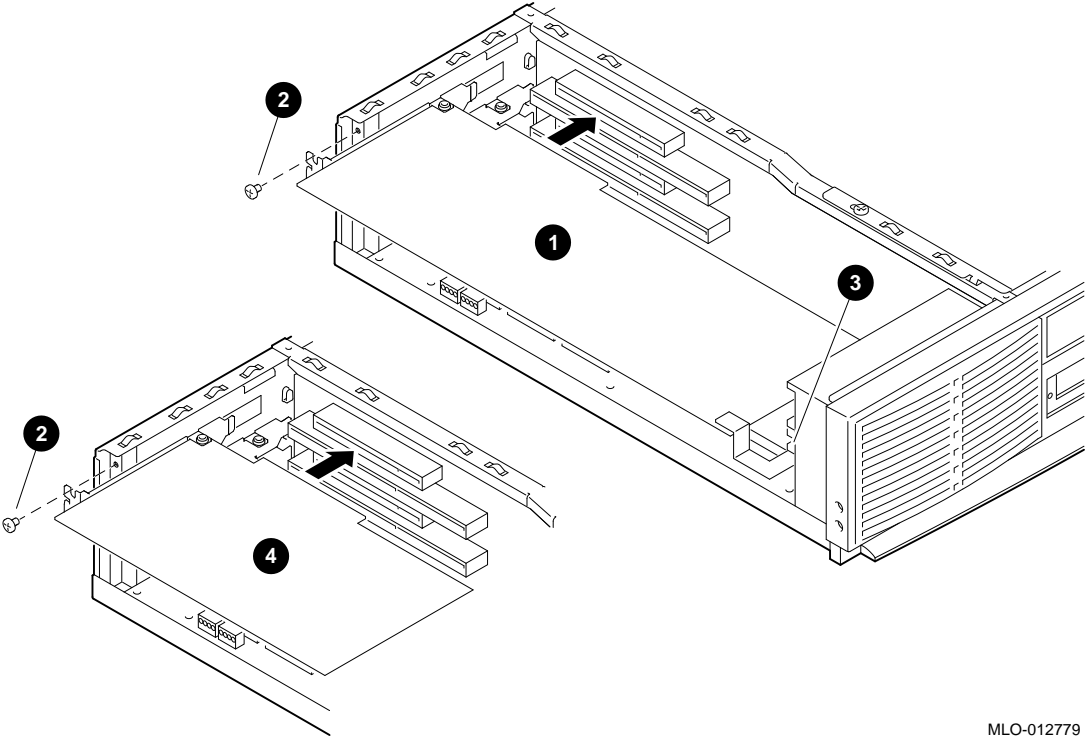
To avoid damage to the module from static discharge, wear an antistatic wrist strap (part number 12-36175-01) when handling the module. Instructions for use are on the strap's envelope.

---



Figure 5 shows the ZLXp-E module being installed.

Figure 5 ZLXp-E Installation



MLO-012779

## Confirming Proper Installation

### Procedure

To confirm that the module is installed properly, do the following:

1. Turn on the monitor and any other devices connected to the system unit.
2. Turn on the system unit.
3. Verify that the console display is available and legible on the monitor screen.

### Troubleshooting

If the console display does not appear on the monitor screen, do the following:

1. Verify that the power cord for the system and all related devices is plugged into a live wall socket and that all devices are on.
2. Ensure that the video and optional stereo cables and connections are secure.
3. Verify that the video cable is properly secured to the ZLXp-E video cable port and video monitor.
4. Verify that the module is seated correctly in the PCI slot.
5. Verify that the frequency switch has been set to the proper position for the video monitor that you are using.
6. Verify that the video monitor brightness and contrast controls are properly set.

If a problem persists, contact your Digital service representative.

---

## Stereo Viewing

- Description** StereoGraphics, a leading manufacturer of true stereo viewing systems, produces equipment to allow stereo viewing applications to work with your ZLXp-E1/E2/E3 PCI graphics options.
- For more information, contact:
- StereoGraphics  
2171 East Francisco Boulevard  
San Raphael, California 94901  
U.S.A.  
Telephone: (415) 459-4500  
FAX: (415) 459-3020
- Stereo Cable** A special 3-meter (10-foot) stereo cable is required for the ZLXp-E1/E2/E3 PCI graphics options. The StereoGraphics order number for this cable is DEC 69990 and has the following description: DEC EMITTER CABLE MINI-STEREO TO BNC MST-BNC.
- StereoGraphics is currently shipping a cable with a metal housing that can interfere with the system bulkhead, thus not allowing the cable to make full contact. Please contact StereoGraphics for the plastic-molded housing version of this connector.
- Stereo Monitor** Stereo viewing requires that the video monitor support a special stereo frequency mode. The PCXAV-HA/H4 and VRC21-HA/H4 video monitors support this stereo mode as well as video monitors available from other vendors.

---

## Appendix A — Module Specifications

### Physical Specifications

The physical specifications of the module are listed in Table 6.

**Table 6 ZLXp-E1/E2/E3 PCI Graphics Options Weight and Dimensions**

Module	Weight	Length	Width	Height (Side 1)	Height (Side 2)
ZLXp-E1	134 gm (4.8 oz)	174.63 mm (6.875 in.)	106.68 mm (4.2 in.)	14.48 mm (0.570 in.)	2.67 mm (0.105 in.)
ZLXp-E2	201 gm (7.2 oz)	312 mm (12.283 in.)	106.68 mm (4.2 in.)	14.48 mm (0.570 in.)	2.67 mm (0.105 in.)
ZLXp-E3	246 gm (8.8 oz)	312 mm (12.283 in.)	106.68 mm (4.2 in.)	14.48 mm (0.570 in.)	2.67 mm (0.105 in.)

### Environmental Specifications

The environmental specifications are listed in Table 7.

**Table 7 ZLXp-E1/E2/E3 PCI Graphics Options Environmental Specifications**

Temperature range	10°C to 40°C (50°F to 104°F)
Temperature change rate	11°C/hr (20°F/hr) maximum
Relative humidity	5% to 95% noncondensing
Maximum wet bulb temperature	28°C (82°F)
Minimum dew point	2°C (36°F)
Altitude	2400 m (8000 ft) at 36°C (96°F)

---

## Appendix B — Cabling Information

### Cable Options

Table 8 lists the cables that you can use with the ZLXp-E1/E2/E3 PCI graphics options.

**Table 8 Cable Options**

Designation	Order Number	Length
BC13L-10	30-34761-03	3 meters (10 feet)

---

**Note**

The BC13L-10 cable is normally shipped with the video monitor from Digital Equipment Corporation. However, it does *not* ship with the VRC16 or VRC21 video monitors. Installations using any of these monitors *must* order the BC13L-10 video cable separately.

---

---

## Appendix C — For Digital Service Use

**Introduction**            The information in this section is for Digital service representatives.

**FRU/Order Numbers**        See Table 9 to order field replaceable units (FRUs) for the customer.

**Table 9 Module FRUs**

<b>FRU</b>	<b>Order Number</b>
ZLXp-E1 Module	54-23184-01
ZLXp-E2 Module	54-21733-02
ZLXp-E3 Module	54-21733-01
Antistatic wrist strap	12-36175-01

---

# Index

## C

---

- Cable options, 15
- Conventions
  - used in this guide, 1

## F

---

- Frequency switch
  - description of, 5
- FRUs
  - order numbers for, 16

## I

---

- Installation
  - confirmation of, 12
  - figure of, 11
  - step-by-step, 9
  - troubleshooting problems, 12

## M

---

- Modules
  - description of, 2
  - figure of D2 option, 4
  - figure of E1 option, 3
  - figure of E3 option, 4
  - installation limitations, 3
  - software compatibility, 3
  - version, 2

## O

---

- Overview
  - conventions used, 1
  - purpose of document, 1

## P

---

- Problems
  - suggestions for solving, 12

## S

---

- Service information
  - for Digital service representative, 16
  - FRU order numbers, 16
- Specifications
  - environmental, 14
  - hardware, 14
  - physical, 14
- Stereo cable
  - use with graphics option, 13
- Stereo monitor
  - use with graphics option, 13
- Stereo viewing
  - description of, 13
  - stereo cable, 13
- Switch
  - frequency, 5
- Switch settings
  - monitor values, 7
  - see ZLXp-E1/E2/E3 PCI graphics options, 6
  - see Table 5, 7

## **T**

---

Troubleshooting  
installation problems, 12

## **V**

---

Version  
of modules, 2



## How to Order Additional Documentation

---

### Technical Support

If you need help deciding which documentation best meets your needs, call 800-DIGITAL (800-344-4825) and press 2 for technical assistance.

### Electronic Orders

If you wish to place an order through your account at the Electronic Store, dial 800-234-1998, using a modem set to 2400- or 9600-baud. You must be using a VT terminal or terminal emulator set at 8 bits, no parity. If you need assistance using the Electronic Store, call 800-DIGITAL (800-344-4825) and ask for an Electronic Store specialist.

### Telephone and Direct Mail Orders

<b>From</b>	<b>Call</b>	<b>Write</b>
U.S.A.	DECdirect Phone: 800-DIGITAL (800-344-4825) FAX: (603) 884-5597	Digital Equipment Corporation P.O. Box CS2008 Nashua, NH 03061
Puerto Rico	Phone: (809) 781-0505 FAX: (809) 749-8377	Digital Equipment Caribbean, Inc. 3 Digital Plaza, 1st Street Suite 200 Metro Office Park San Juan, Puerto Rico 00920
Canada	Phone: 800-267-6215 FAX: (613) 592-1946	Digital Equipment of Canada Ltd. 100 Herzberg Road Kanata, Ontario, Canada K2K 2A6 Attn: DECdirect Sales
International	-----	Local Digital subsidiary or approved distributor
Internal Orders <sup>1</sup> (for software documentation)	DTN: 241-3023 (508) 874-3023	Software Supply Business (SSB) Digital Equipment Corporation 1 Digital Drive Westminster, MA 01473
Internal Orders (for hardware documentation)	DTN: 234-4325 (508) 351-4325 FAX: (508) 351-4467	Publishing & Circulation Services Digital Equipment Corporation NR02-2 444 Whitney Street Northboro, MA 01532

---

<sup>1</sup>Call to request an Internal Software Order Form (EN-01740-07).



## Reader's Comments

ZLXp-E1/E2/E3 PCI Graphics Options  
Owner's Guide

EK-T2424-OG

---

Your comments and suggestions help us improve the quality of our publications.

Thank you for your assistance.

<b>I rate this manual's:</b>	<b>Excellent</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>
Accuracy (product works as manual says)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Completeness (enough information)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clarity (easy to understand)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organization (structure of subject matter)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Figures (useful)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Examples (useful)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Index (ability to find topic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Page layout (easy to find information)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I would like to see more/less \_\_\_\_\_

\_\_\_\_\_

What I like best about this manual is \_\_\_\_\_

\_\_\_\_\_

What I like least about this manual is \_\_\_\_\_

\_\_\_\_\_

I found the following errors in this manual:

Page	Description
------	-------------

_____	_____
-------	-------

_____	_____
-------	-------

_____	_____
-------	-------

Additional comments or suggestions to improve this manual:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

For software manuals, please indicate which version of the software you are using: \_\_\_\_\_

\_\_\_\_\_

Name/Title \_\_\_\_\_ Dept. \_\_\_\_\_

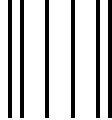
Company \_\_\_\_\_ Date \_\_\_\_\_

Mailing Address \_\_\_\_\_

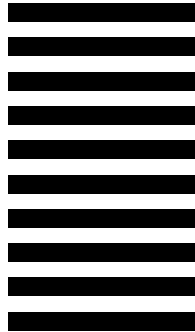
\_\_\_\_\_ Phone \_\_\_\_\_

Do Not Tear - Fold Here and Tape

**digital**™



No Postage  
Necessary  
If Mailed  
in the  
United States



**BUSINESS REPLY MAIL**  
FIRST CLASS PERMIT NO. 33 MAYNARD MASS.

POSTAGE WILL BE PAID BY ADDRESSEE

DIGITAL EQUIPMENT CORPORATION  
Information Design and Consulting  
MRO1-3/J10  
200 FOREST STREET  
MARLBORO, MA 01752-3011



Do Not Tear - Fold Here