VXT 2000 Windowing Terminal Models VX225 and VX227

Installation Information

Order Number: EK–VXT15–IN. B01

November 1992

This document describes how to

- Install the VX225 and VX227 models of the VXT 2000 windowing terminal

- Add memory to the terminal

Revision/Update Information: This is a revised document.

この装置は，第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

従って，住宅地域またはその隣接した地域で使用すると，ラジオ，テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

MA-0347-90-CPG.DG

This document was prepared using VAX DOCUMENT, Version 2.0.

Contents

A Solving Problems

B Installing Optional Memory

C Options and Documentation

D Finding a Comfortable Working Position

E Specifications

Index

About This Guide

Purpose

This guide describes how to

- Install your VXT 2000 model VX225 or VX227 windowing terminal
- Make simple video display adjustments
- Solve simple display problems

After installation, see *VXT 2000 Windowing Terminal Getting Started* to start using your terminal.

Who Should Use This Guide

This guide is for the installer and new user of the terminal.

Organization

This guide contains three chapters and five appendixes:

This Section . . .	Describes . . .
Chapter 1	How to prepare your work site before you install the terminal.
Chapter 2	How to install your terminal and connect it to a local area network.
Chapter 3	How to make simple video display adjustments, such as contrast and brightness.
Appendix A	How to correct simple display problems and determine if your terminal is at fault when you have installation problems.
Appendix B	How to install or remove optional memory modules inside the terminal.
Appendix C	Options and related documentation you can order from Digital.
Appendix D	Tips on seating positions and avoiding physical discomfort.

This Section . . .	Describes . . .
Appendix E	General, environmental, and electrical specifications for the terminal.

Conventions

The following conventions are used in this guide:

Convention	Meaning
Mouse	Refers to any pointing device, such as a mouse, a puck, or a stylus.
MB1, MB2, and MB3	MB1 indicates the left mouse button. MB2 indicates the middle mouse button. MB3 indicates the right mouse button. Users can exchange the MB1 and MB3 button assignments if desired. See *VXT 2000 Windowing Terminal User Information* to change button assignments.
Return	Keys or switches that are labeled appear in a box.
Note	Provides general information about the current topic.
Caution	Provides information to prevent damage to equipment or software.
Warning	Contains information to prevent personal injury.
Menu items . . .	Menu items followed by . . . display a dialog box when chosen.

Note to the Reader

The screens and windows shown in this guide represent the latest information available at the time of publication. Some screens and windows may not exactly match those that appear on your terminal.

1

Preparing the Site

This chapter describes your terminal's memory requirements and how to prepare a suitable working environment for the terminal.

About Your Terminal

The terminal is a compact windowing terminal that lets you display X window applications from computer systems on your network. For example, you can use DECwindows Motif applications. The terminal also provides DECterm terminal windows, compatible with VT300 series text terminals.

The terminal is one of Digital's family of X window terminals. The terminal can work with systems that use the UNIX, ULTRIX, or VMS operating system. *VXT 2000 Windowing Terminal User Information* describes the terminal's features in detail.

Memory Requirements

When you turn on the terminal, it loads its VXT software from a server (such as Digital's InfoServer) or from a host computer system. There are different memory requirements for using server-based or host-based software. The optional image accelerator board for the VX227 model also requires more memory.

If You Use...	And...	Your Terminal Needs...
Server-based VXT software	–	4 megabytes of memory
Server-based VXT software	Image accelerator board	6 megabytes
Host-based VXT software	–	10 megabytes
Host-based VXT software	Image accelerator board	12 megabytes

The standard terminal comes with 4 megabytes of memory. Appendixes B and C describe how to install and order additional memory.

Preparing the Network

Before you install your terminal, make sure your system manager has prepared your network environment to support the terminal. Special hardware and software are required to support the terminal. See your system manager to make sure these requirements are met.

Selecting a Location for Your Terminal

- Select a surface area that is large enough to hold your terminal, keyboard, mouse, and mouse pad.

- Select a location near ac power outlets and communication connectors.

- Keep your terminal away from heaters, photocopiers, direct sunlight, and abrasive particles.

- Do not block the air vents of the terminal. Blocking the air vents can cause the terminal to overheat.

- Keep the air well circulated, to prevent excess heat and dust from accumulating.

Other Suggestions

Digital's video terminals have a number of built-in features to provide a more comfortable working environment. Here are some other suggestions for preparing your site.

Arranging the Lighting

- Avoid direct lighting or sunlight on the screen, which causes glare and reflections.

- Try to place lighting behind or to the side of your working position.

- Distribute available light evenly on all work surfaces.

Eliminating Distractions

- Background noise above 65 dBA is tiring. Sound-absorbing materials (curtains, carpeting, and acoustic tile) can help reduce background noise.

- Movement around the work area can be distracting. Use curtains or partitions behind the terminal and to the sides—at least 158 cm (5 ft) for a sitting position, 183 cm (6 ft) for a standing position.

- If you install several terminals near each other, keep them a minimum of 70 cm (28 in) apart (center to center), and preferably 122 cm (48 in) to 152 cm (60 in).

Keeping the Environment Comfortable

- Keep the office temperature between 20° and 23° C (68° and 74° F), at 30 to 70 percent relative humidity.

- Provide adequate air ventilation to operate the equipment and avoid fatigue.

- Control static electricity. Some causes of static electricity are clothing and carpeting materials (such as wool and nylon), metal frame furniture, and poor grounding (two-pronged plugs).

2

Installing Your Terminal

This chapter provides step-by-step instructions on how to

- Unpack, inspect, and check the terminal's components

- Connect the mouse, keyboard, and network cable to your terminal

- Connect an optional printer or tablet

- Verify the installation

Before You Start

Carefully read all installation instructions before you turn on the power.

Installation Steps

Unpack and check the contents of each carton.

WARNING

If necessary, use two people to lift or move the terminal.

- Make sure you have all the items shown in the following **Standard Parts Checklist**.

- If you ordered optional memory, image accelerator, cables, or adapters, also refer to the **Optional Parts Checklist**.

- Carefully inspect the components for shipping damage. If you have missing or damaged items, contact your sales representative and delivery agent.

- Save the empty shipping cartons and packing material for repacking, in case you move or relocate your terminal.

Standard Parts Checklist
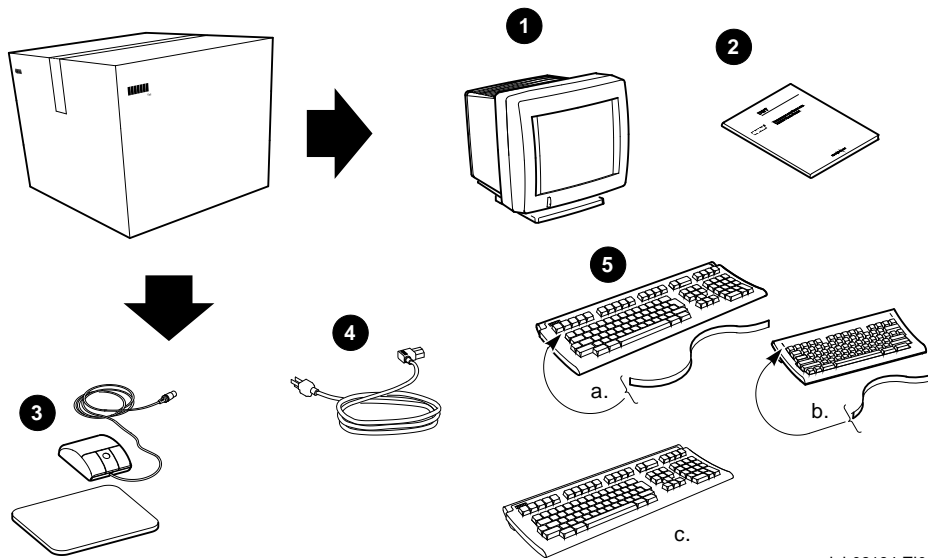
LJ-02184-TI0

❶ VXT 2000 model VX225 or VX227 windowing terminal

❷ User documentation kit

❸ Mouse and mouse pad

❹ Terminal power cord

❺ One keyboard and legend strip:

    a.   LK401/LK402 ANSI (standard or word processing style)

    b.   LK421 short ANSI (UNIX style)

    c.   LK443/LK444 PC (no legend strip)

Installing Your Terminal

Optional Parts Checklist
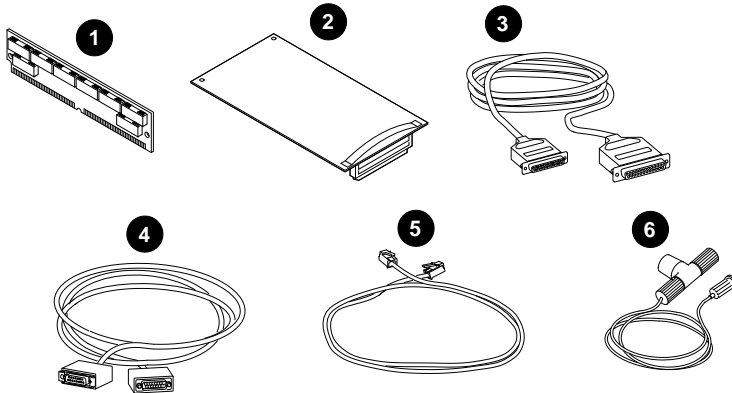
LJ-02019-TI0

_____ **Caution** _____

If you ordered memory modules or an image accelerator board, do not
remove them from the antistatic bag at this time. Static electricity can
damage these components.

❶ 2- or 4-megabyte memory module (up to three modules)

❷ Image accelerator board (VX227 model only)

❸ Serial port and parallel port cables and adapters (adapters not shown)

❹ Thickwire Ethernet network cable

❺ Twisted-pair Ethernet network cable

❻ ThinWire Ethernet network cable, T-connector, and terminator

Place the terminal in position.

Place the terminal on a level surface, following the Chapter 1 guidelines. Leave room at the rear of the terminal for connecting cables.

Install options first.

Install options in the following order:

Memory modules	Go to Appendix B.
Image accelerator board	Refer to the guide included with the board.

After you install options, return here.

Connect the cables to the rear of the terminal.

Refer to the following figure and connect cables in order. The figure shows the VX227 model, but the VX225 layout is similar.

❶ Make sure the power switch at the front of the terminal is off. You press the switch in to turn the terminal on, and out to turn the terminal off. Connect the power cord to the terminal, then to a grounded electrical outlet.

❷ Connect the keyboard to the terminal. Lower the keyboard's legs and install the legend strip for the top-row keys.

LJ-02026-TI0

Installing Your Terminal

❸ Connect the mouse or graphics tablet to the terminal. Set the mouse on the mouse pad.

❹ If you have a serial printer or secondary host computer, connect the printer or host to the terminal.

❺ If you have a parallel printer, connect the printer to the terminal.

❻ Connect your network cable to the terminal. Connect the other end of the cable to your local area network. Some terminals have (a) a thickwire connector and (b) a twisted-pair connector. Other terminals have (c) a ThinWire connector.

Check the terminal's test display.

1. Turn the terminal on by pressing in the power switch at the front of the terminal. The light on the switch should turn on.

2. The terminal performs its self-tests. During the tests, you should see the following display on your terminal:

Display	Meaning
VXT V0*n.nnn*	VXT boot ROM version number
08-00-2B-11-22-33	Terminal's Ethernet address
*nn*MB	Megabytes of memory installed (4 to 16)
▆▆▆▆▆□□□□	Self-test progress indicator (Fills in as tests are completed.)
IMG	Image accelerator board (if installed)

If you installed additional memory: While the self-tests are running, make sure the amount of memory listed in the self-test display (*nn*MB) equals the total number of megabytes installed in your terminal.

The standard terminal comes with 4 megabytes of memory. You can install up to three 2- or 4-megabyte optional memory modules.

If you installed an image accelerator board: While the self-tests are running, make sure the board is listed in the self-test display, (IMG).

3. When the self-tests are done, the terminal loads its software from a supporting host system or server (such as Digital's InfoServer). Then the terminal displays the Terminal Manager window, unless your system manager has changed the terminal's settings.

Terminal Manager Window

```
┌─────────────────────────────────────────────────────────────────┐
│ ─                         VXT Terminal Manager              ─     │
├─────────────────────────────────────────────────────────────────┤
│  Session  Create  Customize  Print Screen                 Help    │
│  ┌───────────────────────────────────────────────────────────┐   │
│  │  Messages                                                 ▲│   │
│  │  ┌──────────────────────────────────────────────────────┐ │   │
│  │  │                                                      │ │   │
│  │  │                                                      │ │   │
│  │  │                                                      │ │   │
│  │  └──────────────────────────────────────────────────────┘ │   │
│  │  ◄                                                    ►    │   │
│  └───────────────────────────────────────────────────────────┘   │
│  ┌───────────────────────────────────────────────────────────┐   │
│  │  Ethernet Address      LAT Host Name      IP Address        DECnet Address │
│  │  08-00-2B-11-CD-46   LAT_08002B11CD46   12.122.123.123      12.123 │
│  └───────────────────────────────────────────────────────────┘   │
└─────────────────────────────────────────────────────────────────┘
```

LJ–01140A–RAGS

You may also see a log-in box from your host system, if your system manager has set up the terminal's AutoStart feature.

Final Steps...

- This is a good time to set the brightness, contrast, and viewing angle of your terminal. See Chapter 3.

- To start using your terminal, see *VXT 2000 Windowing Terminal Getting Started*.

Installation Problem?

If the Terminal Manager window does not appear or you have other problems, review the installation steps carefully. If the problem continues, refer to Appendix A in this manual. The Help menu at the upper right of the Terminal Manager window only appears on server-based terminals.

3

Making Adjustments

This chapter describes the terminal's controls and indicators. The chapter describes how to adjust the controls so you can set up screen display.

The figures in this chapter show the VX225 model. The VX227 controls are in the same location.

The chapter covers the following topics:

- Identifying Controls and Indicators
- Turning On the Terminal
- Adjusting the Contrast and Brightness Controls
- Adjusting the Tilt-Swivel Stand
- Adjusting the VX225 Rotation and Centering Controls
- Adjusting the VX227 Rotation and Centering Controls

Identifying Controls and Indicators

The terminal has the following controls and indicators:
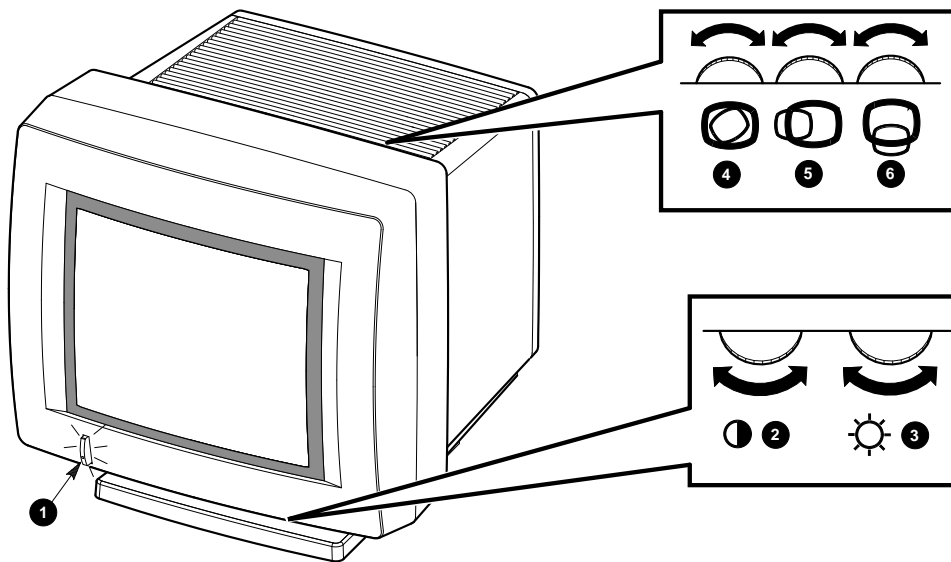
LJ-01705-TI0

Item	Control or Indicator	Function
❶	Power switch and indicator light (VX225 shown)	Turns the terminal's power on and off. When the power is on, the indicator light is on. For extended monitor life, turn the power off when not in use.
❷	Contrast	Adjusts the video display intensity.
❸	Brightness	Adjusts the video background intensity.
❹	Rotation	Lets you rotate the VX225 screen display if it is tilted.
❺	Horizontal centering	Adjusts the VX225 screen display to the left or right.
❻	Vertical centering	Adjusts the VX225 screen display up or down.

On the VX227 model, you can center or rotate the screen display from the keyboard. See "Adjusting the VX227 Rotation and Centering Controls" in this chapter.

Turning On the Terminal

—————————————— **Caution** ——————————————

To avoid damage to the terminal, allow a cold terminal to warm to room temperature before turning it on.

————————————————————————————————————

Push in the power switch. The switch's indicator light should turn on. Wait about 20 seconds for a video display.

If the video display does not appear or the light does not turn on, refer to Appendix A.

Adjusting the Contrast and Brightness Controls

1. Set the contrast ❷ and brightness ❸ controls to their maximum level by turning them all the way to the right.

2. Decrease the brightness until the background intensity or raster just disappears.

3. Adjust the contrast to your viewing preference.
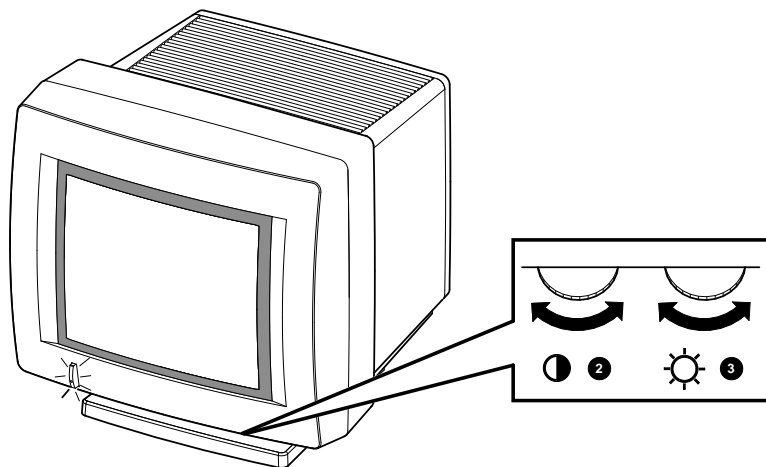
MA-1297-89.DG

Adjusting the Tilt-Swivel Stand

You can swivel the terminal about its base and still maintain the tilt angle.

───────────────── **Caution** ─────────────────

The terminal does not swivel in a complete circle. If you try to swivel
the terminal in a complete circle, you could damage the base.

──

To adjust the tilt angle, hold the base and either pull up or push down on the
bottom of the bezel. Use a side-to-side swivel motion to aid the tilting effort.
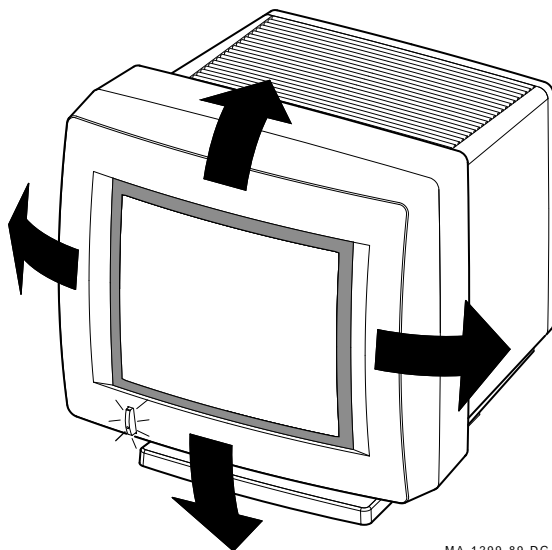
MA-1299-89.DG

Adjusting the VX225 Rotation and Centering Controls
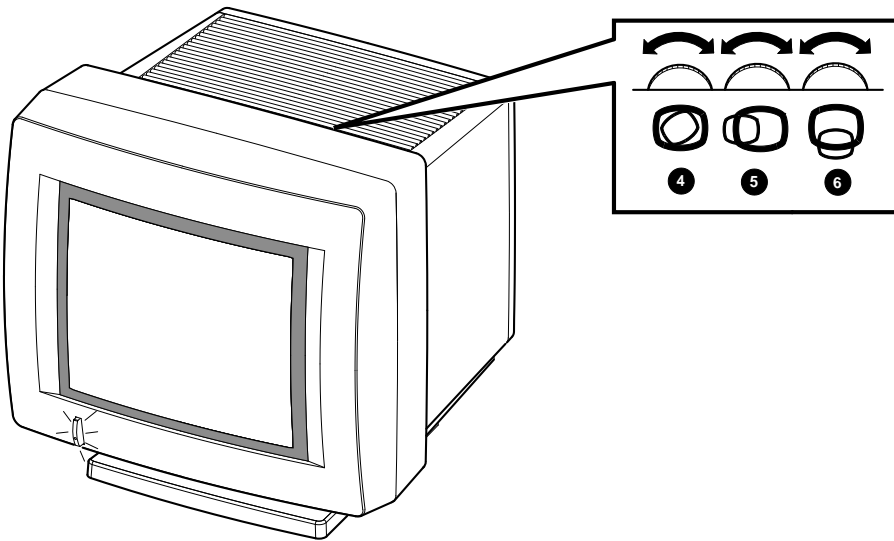
MA-1298-89.DG

- If the display is tilted, adjust the rotation control ❹.
- If the display is off-center, adjust the horizontal ❺ or vertical centering ❻ controls.

_____ **Note** _____

Due to the earth's magnetic field, the video display may shift slightly when the terminal is rotated or moved from one place to another.

Adjusting the VX227 Rotation and Centering Controls

To center or rotate the screen display, you use your keyboard and a simple setup screen accessed from the Customize pull-down menu in the Terminal Manager window. To view the video alignment screen:

1. Turn on the terminal. The terminal performs its self-tests, then displays the Terminal Manager window.

    If the Terminal Manager window is not displayed, your system manager may have changed the terminal's default settings.

2. Point to the **Customize** menu name in the Terminal Manager window's menu bar. Click mouse button 1 (MB1) to display the Customize menu.

3. Point to the **Video Alignment . . .** menu item and click MB1 to display the video alignment dialog box.

4. If the display is off-center, use the video centering arrows displayed in the dialog box. Each time you click MB1 on a centering arrow, the display shifts in the direction of the arrow.

5. If the display is tilted, use one of the rotation arrows displayed in the dialog box. Each time you click on a rotation arrow, the display rotates in the direction of the arrow.

6. Click on the **OK** button to save your new settings and dismiss the video alignment dialog box.

    Click on the **Cancel** button to dismiss the dialog box without saving your new settings.

For more information on the video alignment dialog box, see *VXT 2000 Windowing Terminal User Information*.

A
Solving Problems

This appendix provides you with information to determine the source of an installation failure and correct simple problems.

This appendix covers the following topics:

- Correcting Display Problems
- If the Terminal Window Is Not Displayed

Correcting Display Problems

If you screen display is blank, distorted, or not aligned, try the following:

If the . . .	Then . . .
Screen is blank and the power indicator light is off	Check all power cord and cable connections.
	Check that the power switch is on.
	Check that the power outlet is okay by plugging in another piece of equipment that you know is working.
Screen is blank and the power indicator light is on	Check the brightness and contrast adjustment controls.
	Press any key to reactivate the display.
Screen display is distorted or rolling	Move any electromechanical device, such as a fan, a motor, or an electric pencil sharpener, away from the terminal, or move the terminal.
Display area is not centered on the screen	Use the horizontal, vertical, and rotation controls to adjust the display area.

If you perform all the suggested solutions and the problem still exists, contact your system manager or Digital service representative.

If the Terminal Window Is Not Displayed

When you turn on the terminal, it performs its self-tests. Then the terminal displays the Terminal Manager window, unless your system manager has set up the terminal differently. If the Terminal Manager window is not displayed, you may have a problem with the terminal, the network, or your server.

To see if the problem is in the terminal:

1. Turn the terminal's power switch off.

2. Disconnect your network cable from the terminal.

3. Turn the terminal's power switch on.

   The terminal performs its self-tests. You should see the following display with the network cable disconnected:

Display	Meaning
VXT V0*n.nnn*	VXT boot ROM version number
08-00-2B-11-22-33	Terminal's Ethernet address
❶*nn*MB	Megabytes of memory installed
▉▉▉▉▉☐☐☐☐	Self-test progress indicator
?? 001 9 VNI 0168	Error for disconnected network cable
❷ (any other error code...)	
>>>	

❶ Make sure the memory size listed equals the amount of memory installed in the terminal. If not, remove and reinstall optional memory modules (Appendix B). If there is still a problem, contact your system manager.

❷ If you see another error code here, the problem is in the terminal. Here are some errors you can correct:

Error Code	Solution
?MOP 255	Add terminal memory to load the VXT system image.
?? 003 3 QDZ 0096	Check that the mouse is plugged in correctly.
?? 002 3 QDZ 0080	Check that the keyboard is plugged in correctly.
?? 020 12 IMG 0016	Check that the image accelerator module is seated correctly.

If you do not see another error code, the problem is related to your network, host system, or server. In any case, provide the results to your system manager.

Solving Problems

Other Problems?

VXT 2000 Windowing Terminal User Information contains an appendix on solving problems and getting service.

B

Installing Optional Memory

The appendix covers the following topics:

- Installing Memory Modules
- Removing Memory Modules

Before You Start

To install optional memory in the terminal, you must open the terminal's rear cover. Before you open the terminal's rear cover or remove parts from their antistatic shipping bag, read through the steps for installing your memory option. Static electricity can cause damage to some components.

Installing Memory Modules

If you ordered additional memory for your terminal, you should install it before connecting the cables. You may receive up to three memory modules.

VX227 model: Install any memory modules before installing an optional image accelerator board.

Use a grounding wrist strap and an antistatic mat to perform the installation, if available. Otherwise, frequently touch the metal chassis of the terminal during installation, to equalize any existing static charges.

_____ **Caution** _____

Memory modules can be damaged by electrostatic discharge. Handle the modules by their edges. Avoid contact with the gold contact fingers on the module.

_____

Installing Optional Memory

Open the terminal's rear cover.

1. If the terminal is already installed, turn the terminal off. Disconnect the power cord at the rear right of the terminal. Also disconnect the power cord from the power outlet.

2. Disconnect all remaining cables. Refer to Chapter 2 for more information.

3. Release the terminal's rear cover by pressing in the two locking tabs ❶ with your thumbs.

4. **VX225 model:** Slowly lower the cover toward you ❷.

   VX227 model: Remove the cover by pulling the cover's slotted tabs straight out of their slots ❸.
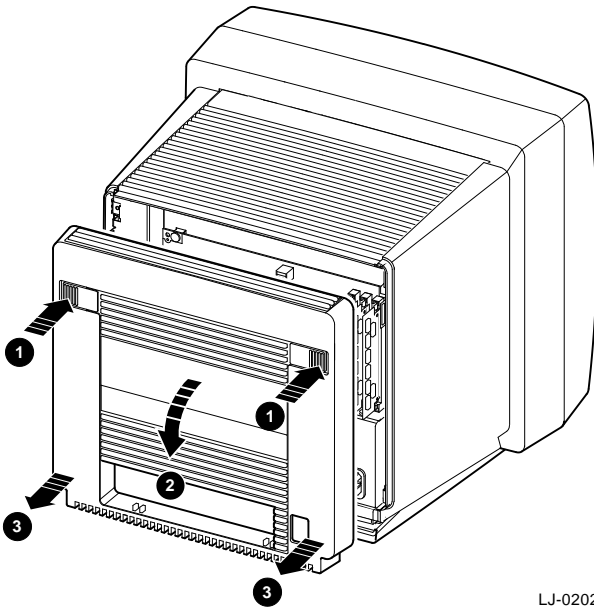
LJ-02022-TI0

To close the VX225 cover, press in the two locking tabs ❶ with your thumbs and push the cover into place. Release the tabs to lock the cover in place.

To close the VX227 cover, first insert the lower tabs in their slots. Then press in the two locking tabs ❶ with your thumbs and push the cover into place. Release the tabs to lock the cover in place.

Discharge the electrostatic charge.

1. After you open the rear cover, touch the terminal's metal chassis, to equalize any static charge.

2. Remove the memory modules from their antistatic bags.

Install the memory modules.

Refer to the following figure.

1. Find the slot labeled J1 at the right edge of the system logic board.

2. Place the first memory module into slot J1 at a 45-degree angle. The notch on the bottom corner of the memory module should fit into the bottom of the slot for the connector.

3. While pushing in on the memory module, move the memory module into a standup position. Both sides of the module lock into the metal connector clips. Make sure the plastic tabs go into the holes on the memory module. Also make sure the metal connector clips return to their original position.
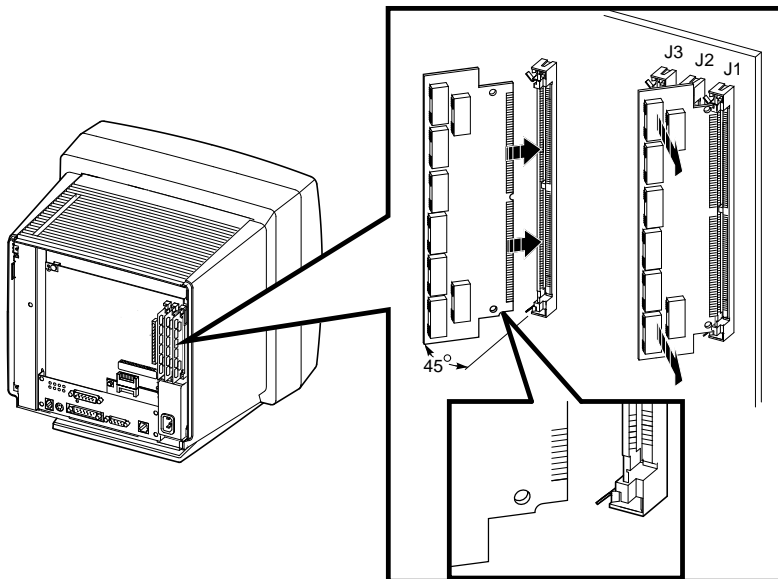
LJ-02169-TI0

VX227 model: If there is an image accelerator board installed to the left of slot J3, temporarily remove the image accelerator board before trying to install a memory module in slot J3.

4. Repeat these steps for a second and third memory module, if you ordered them. Insert the second module in slot J2 and the third module in slot J3.

Connect the cables to the terminal.

Return to Chapter 2 to complete the installation.

Removing Memory Modules

To remove memory modules from the terminal:

1. Open the rear cover. See the "Installing Memory Modules" section.

    VX227 model: If there is a image accelerator board installed to the left of slot J3, temporarily remove the image accelerator board before trying to remove the memory module in slot J3.

2. Remove the memory modules, starting with the module in slot J3.

    a. Release both sides of the memory module from the connector by gently pushing each clip away from the sides of the module.

    b. Grasp the edges of the memory module firmly and lift up to remove it from the connector.

3. Repeat these steps for each module you want to remove. Remove the module in slot J2, then the module in slot J1.
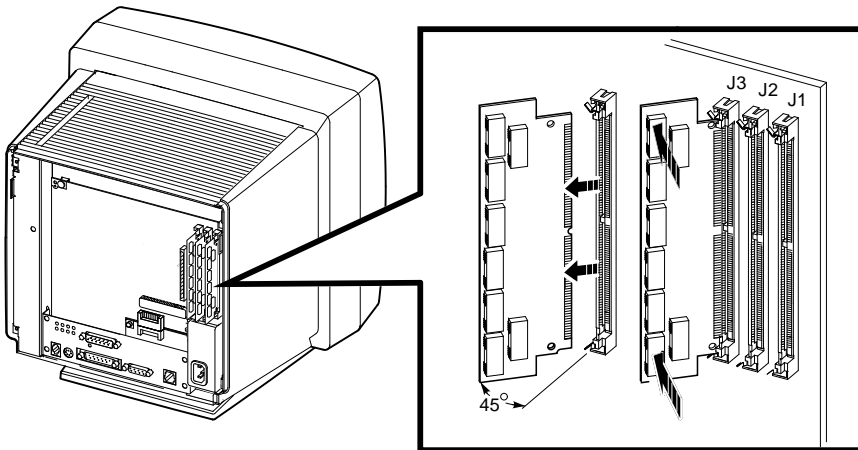
LJ-02168-TI0

C

Options and Documentation

This appendix lists some options and related documentation available from Digital for the VXT 2000 model VX225 and VX227 windowing terminals.

Options

Memory Modules

Module	Part Number
2 MB memory module	MS200–AA
4 MB memory module	MS200–BA
Image accelerator board (VX227 model only)	54–22339–01

Cables

Cable	Length	Part Number
Network Cables		
Thickwire	2 m (6.5 ft)	BNE4C–02
Twisted pair, uncrossed (| |)	3 m (10 ft)	BN24G–03
Twisted pair, crossed (x)	3 m (10 ft)	BN24F–03
ThinWire	3.6 m (12 ft)	BC16M–12
	9 m (30 ft)	BC16M–30
T-connector	–	H8223
Terminator	–	H8225
LAN kit	Includes 3.6 m (12 ft) cable, T-connector, and terminator	BC16T–12

Options and Documentation

Cable	Length	Part Number
AC Power Cables		
Australia, New Zealand		BN25R–2E
Austria, Belgium, Finland, France, Germany, Netherlands, Norway, Portugal, Spain, Sweden		BN25V–2E
Canada		BN19R–1K
Denmark		BN22H–2E
Ireland, United Kingdom		BN26C–2E
Italy		BN24Z–2E
Switzerland		BN22A–2E

For parallel and serial port cables and adapters, contact your Digital sales representative.

Related Documentation

This document is part of the terminal's user documentation kit.

Document	Part Number
VXT 2000 Models VX225 and VX227 User Documentation Kit	EK–VXT15–DK
VXT 2000 Windowing Terminal Models VX225 and VX227 Installation Information	EK–VXT15–IN
VXT 2000 Windowing Terminal Getting Started	EK–VXT20–GS
VXT 2000 Windowing Terminal User Information	EK–VXT20–UG
VXT 2000 Windowing Terminal Release Notes	EK–VXT20–RN

You can also order the following related documents from Digital. Check with your Digital sales representative for availability in your country.

Software and Service Documentation	Part Number
VXT Software System Management Information	AA–PPSAB–TE
VXT Software Version 1.2 Installation Information	AA–PJHFC–TE
VXT Software Release Notes	AV–PKWSC–TE
VXT 2000 Model VX225 Windowing Terminal Service Information	EK–VXT15–SV

Software and Service Documentation	Part Number
VXT 2000 Model VX227 Windowing Terminal Service Information	EK–VXT17–SV

Ordering Information

You can order options and documentation by mail, phone, or electronically.

Need Help?

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

Electronic Orders

To place an order through your account at the Electronic Store, dial 800–234–1998, using a modem set to 2400 or 9600 baud. If you need help, call 800–DIGITAL (800–344–4825) and ask for an Electronic Store specialist.

Telephone or Direct Mail Orders

If You Are From . . .	Call . . .	Or Write . . .
U.S.A.	DECdirect Phone: 800–DIGITAL (800–344–4825) FAX: (603) 884–5597	Digital Equipment Corporation P.O. Box CS2008 Nashua, New Hampshire 03061
Puerto Rico	Phone: 809–754–7575 FAX: (613) 592–1946	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) 592–61946	Digital Equipment of Canada Ltd. 100 Herzberg Road Kanata, Ontario, Canada K2K 2A6 Attn: DECdirect Sales
International	–	Local Digital subsidiary or approved distributor

Options and Documentation

Digital Personnel

You can order documentation by electronic mail. Contact the following organizations for instructions:

If You Need . . .	Call . . .	Contact . . .
Software documentation[1]	DTN: 241–3023	Software Supply Business Digital Equipment Corporation 1 Digital Drive Westminster, MA 01473
Hardware documentation	DTN: 234–4325 (508) 351–4325 FAX: (508) 351–4467	Publishing & Circulation Services NRO2-2/I5 444 Whitney Street Digital Equipment Corporation Northboro, MA 01532

[1]You must request an electronic Internal Software Order Form.

D

Finding a Comfortable Working Position

Eyesight

- There is no evidence that eye damage can be caused by working at video terminals. Eye fatigue can be caused by a number of factors, such as glare, the image quality of the video display, uncomfortable furniture, and uncorrected eyesight.

- If your eyes cannot focus easily to read at different distances, you may need special glasses to focus at the distance between your working position and the screen.

- When working at the terminal, relax your eyes periodically by looking at distant objects.

Physical Discomforts

- Neck, shoulder, back, and arm discomfort may occur after working for prolonged periods at the terminal. These problems are related to posture and furniture rather than the terminal.

- Take periodic work breaks. Morning, lunch, and afternoon breaks meet most recommendations. Take advantage of work breaks to move around and do simple muscle-relaxing exercises.

Seating Position

- Use a seat that promotes proper posture, with adjustments for seat height and lower back support. Use a headrest, if needed.

- Place feet flat on the floor or footrest, with lower legs approximately vertical and thighs approximately horizontal. Place your weight on the buttocks, not thighs. Avoid compressing the area behind the knees, which could restrict blood flow.

- Keep your upper body erect and support your lower back with a backrest.

Finding a Comfortable Working Position

- Your upper arms should hang comfortably from your shoulder joints and straight down at the sides. Place your forearms within a 70 to 90 degree angle, so your elbows support your arm weight. Do not flex or extend your wrists more than 15 degrees.

- Incline your head downward, but no more than 15 to 20 degrees.

- *If you use a mouse:* Rest your hand on the mouse so that your wrist does not drag along the work surface. Operate the mouse close to your body's centerline. Leaning over to operate a mouse can be tiring.

E

Specifications

This appendix lists general, environmental, and electrical specifications for the terminal.

Dimensions

	Weight	Height	Width	Depth
VX225 terminal	15 kg	400 mm	400 mm	400 mm
	(33 lb)	(16 in)	(16 in)	(16 in)
VX227 terminal	18 kg	419 mm	406 mm	394 mm
	(40 lb)	(17 in)	(16 in)	(16 in)
LK401/LK402 ANSI keyboard	1.4 kg	45 mm	478 mm	191 mm
	(3.1 lb)	(1.75 in)	(18.8 in)	(7.5 in)
LK421 Short ANSI keyboard	1.0 kg	51 mm	335 mm	165 mm
(UNIX style)	(2.2 lb)	(2.0 in)	(13.5 in)	(6.5 in)
LK443/LK444 PC keyboard	1.4 kg	50 mm	450 mm	180 mm
	(3.1 lb)	(2.0 in)	(18.25 in)	(7.25 in)
Mouse	97 g	32.5 mm	60.9 mm	99.1 mm
	(3.4 oz)	(1.28 in)	(2.4 in)	(3.4 in)

Environment

	Operating	Storage
Temperature	10° to 40° C	−40° to 66° C
	(50° to 104° F)	(−40° to 151° F)
Relative humidity	10% to 90%	0% to 95%
Maximum wet bulb	28° C (82° F)	
Minimum dew point	2° C (36° F)	
Maximum altitude	4.9 km (16,000 ft)	9.1 km (30,000 ft)

Specifications

Electrical

Line voltage (U.S.)	100 V to 120 V ac nominal
	single-phase, 3-wire
Line voltage (Europe)	200 V to 240 V ac nominal
	single phase, 3-wire
Line frequency	50 Hz to 60 Hz
VX225 input power	130 W maximum
VX227 input power	170 W maximum
Power cord	Detachable, 3-conductor, grounded
Power cord receptacle	EIA specified, CEE22-6A

Monitor (Screen Size and Resolution)

VX225 CRT	380 mm (15 in)
Resolution	100 dots/in (1024 pixels × 768 lines)
VX227 CRT	425 mm (17 in)
Resolution	110 dots/in (1080 pixels × 1024 lines)

LK401 or LK402 ANSI Keyboard

Item	Description
Number of keys	108 sculptured keys with matte finish
Models	Available in many language dialects, including English
Cord	1.8 m (6 ft) coiled cord with a 4-pin telephone-type modular connector
Indicator lights	2 keyboard indicators:

 Hold

 Lock

Keys	Approximate Size
Home row	30 mm (1.18 in) above desktop
Key size (top)	13 mm (0.50 in) square

Keys	Approximate Size
Key spacing	19 mm (0.75 in) center to center (for single-width keys)
Numeric keypad	18 keys
Function keys	5 predefined keys, 15 user-definable keys

Audible Indicators	If enabled . . .
Keyclick	Sounds after each keystroke.
Margin bell	Rings once when cursor approaches right margin
Warning bell	Rings for compose errors and system messages.

LK421 Short ANSI Keyboard (UNIX Style)

Item	Description
General	74 sculptured keys with matte finish
	Available in North American/UK version only
Cord	1.8 m (6 ft) coiled cord with a 4-pin telephone-type modular connector

Keys	Approximate Size or Number
Home row	30 mm (1.18 in) above desktop
Key size (top)	13 mm (0.50 in) square
Key spacing	19 mm (0.75 in) center to center (for single-width keys)
Function keys	5 predefined keys, 15 user-definable keys (including 10 Extend key sequences, to emulate the full set of ANSI keyboard keys)

Audible Indicators	If enabled . . .
Keyclick	Sounds after each keystroke.
Margin bell	Rings once when cursor approaches right margin.
Warning bell	Rings for compose errors and system messages.

Specifications

LK443 or LK444 PC Keyboard

Item	Description
Number of keys	101 or 102 sculptured keys with matte finish
Models	Available in many language dialects, including English
Cord	1.8 m (6 ft) coiled cord with a 4-pin telephone-type modular connector
Indicator lights	3 keyboard indicators:
	Num Lock Caps Lock Scroll Lock

Keys	Approximate Size
Home row	30 mm (1.18 in) above desktop
Key size (top)	13 mm (0.50 in) square
Key spacing	19 mm (0.75 in) center to center (for single-width keys)
Numeric keypad	17 keys
Function keys	3 predefined key, 16 user-definable keys

Audible Indicators	
Keyclick	Sounds after each keystroke.
Margin bell	Rings once when cursor approaches right margin.
Warning bell	Rings twice for errors in set-up.

Mouse

Item	Description
Switches	Three tactile-feel type switches with an actuating force of 85 grams (3 ounces) ±25%
Surface	Nonglare textured finish
Cable	1.5 m (5 ft) round, 0.375 cm (0.15 in) diameter 6-conductor, number 26 stranded, shielded, high-flexibility design
Connector	7-pin micro-DIN type (male)

Index

K

Keyboard
   specifications, 29, 30, 31, 32
Keyboard connector, 7

L

Lighting, 2

M

Memory
   installing, 19 to 22
   removing, 22
   requirements, 1
   verifying the installation of, 8
Monitors
   controls, 10
   specifications, 30
Mouse
   specifications, 29, 32
Mouse connector, 7

N

Network cables, 6
Network connectors, 7

O

On/off switch, 11
Operation
   overview, 10
Options
   ordering, 25
   part numbers, 23 to 24

P

Parts
   optional parts checklist, 6
   standard parts checklist, 5
Power indicator light, 11

Power switch, 7, 11
Problems, 16

R

Rear cover
   removing, 20
Rotation control, 11
   VX225, 14
   VX227, 15

S

Seating position, 27
Self-test display, 8
   checking for an error message, 17
Serial communications
   cable, 6
   connector, 7
Site preparation, 1 to 3, 29
Solving problems, 16
Specifications, 29 to 32

T

Temperature, 3
Terminal
   connectors, 7
   optional parts checklist, 6
   standard parts checklist, 5
Terminal cover
   removing, 20
Terminal Manager window, 9
Thickwire Ethernet
   cable, 6
   connector, 7
ThinWire Ethernet
   cable, 6
   connector, 7
Tilt-swivel stand, 13
Troubleshooting, 16
Twisted-pair Ethernet
   cable, 6
   connector, 7