

DECsystem 3100

Installation Guide

This is a new manual.

May 1989

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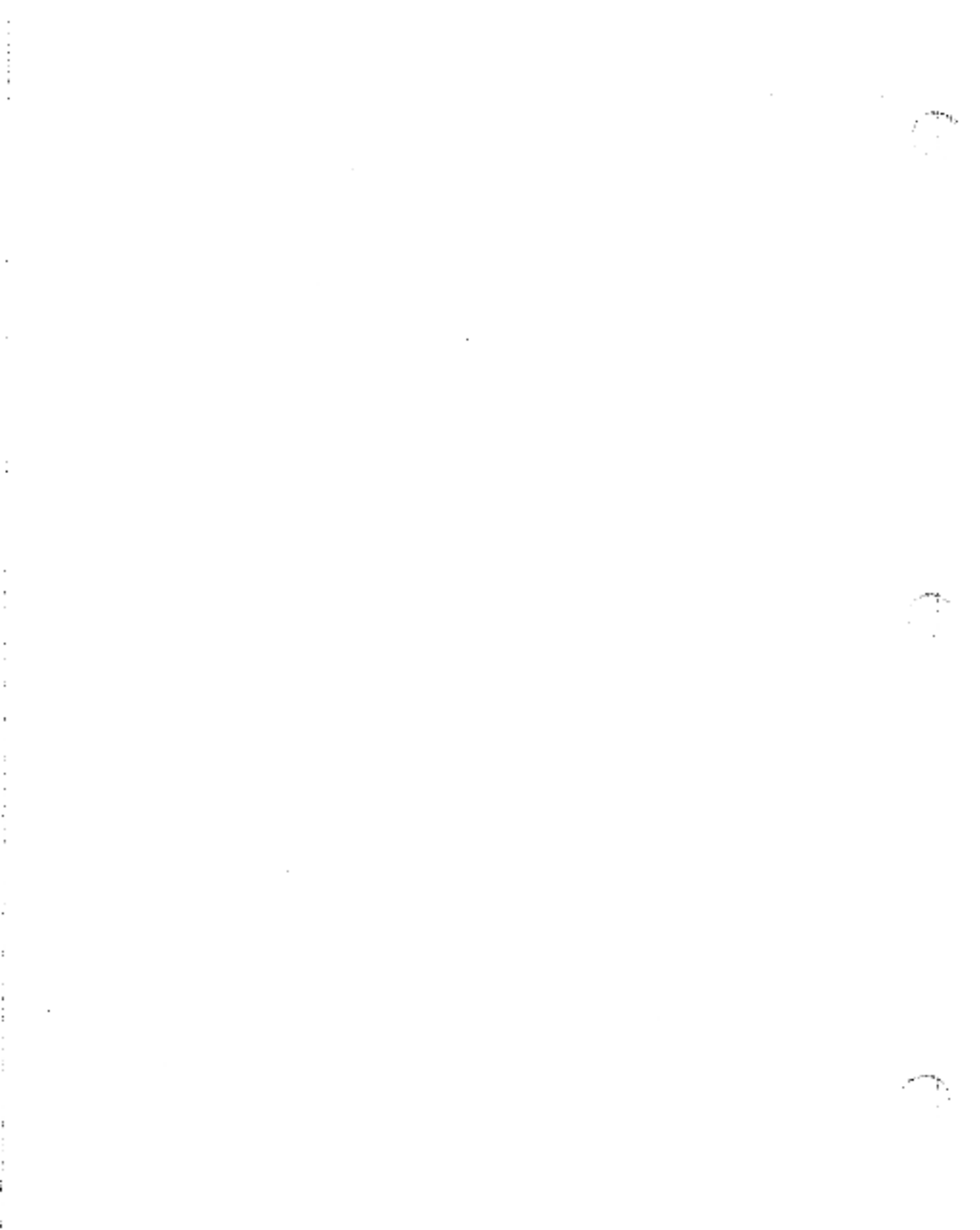
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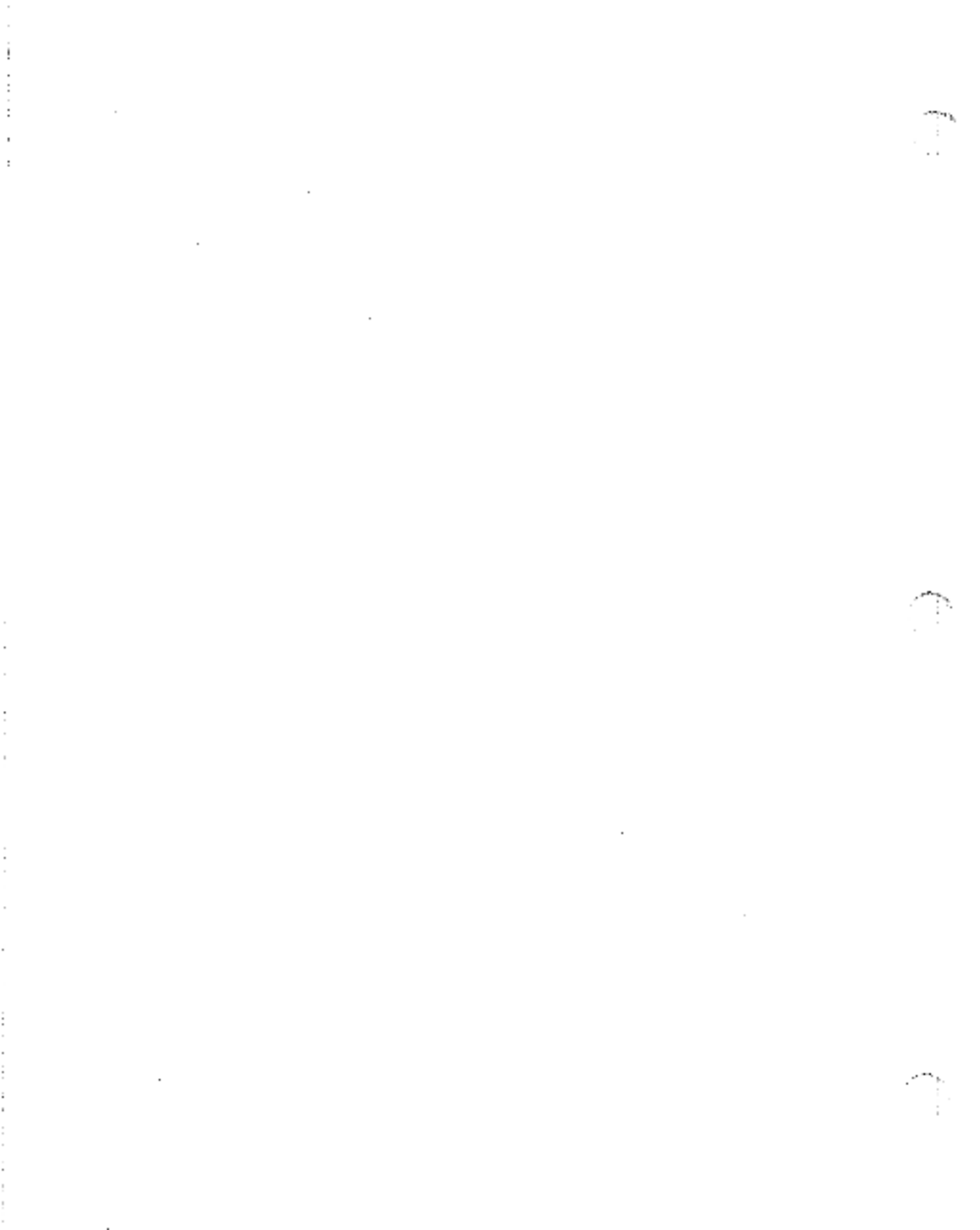
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About This Guide

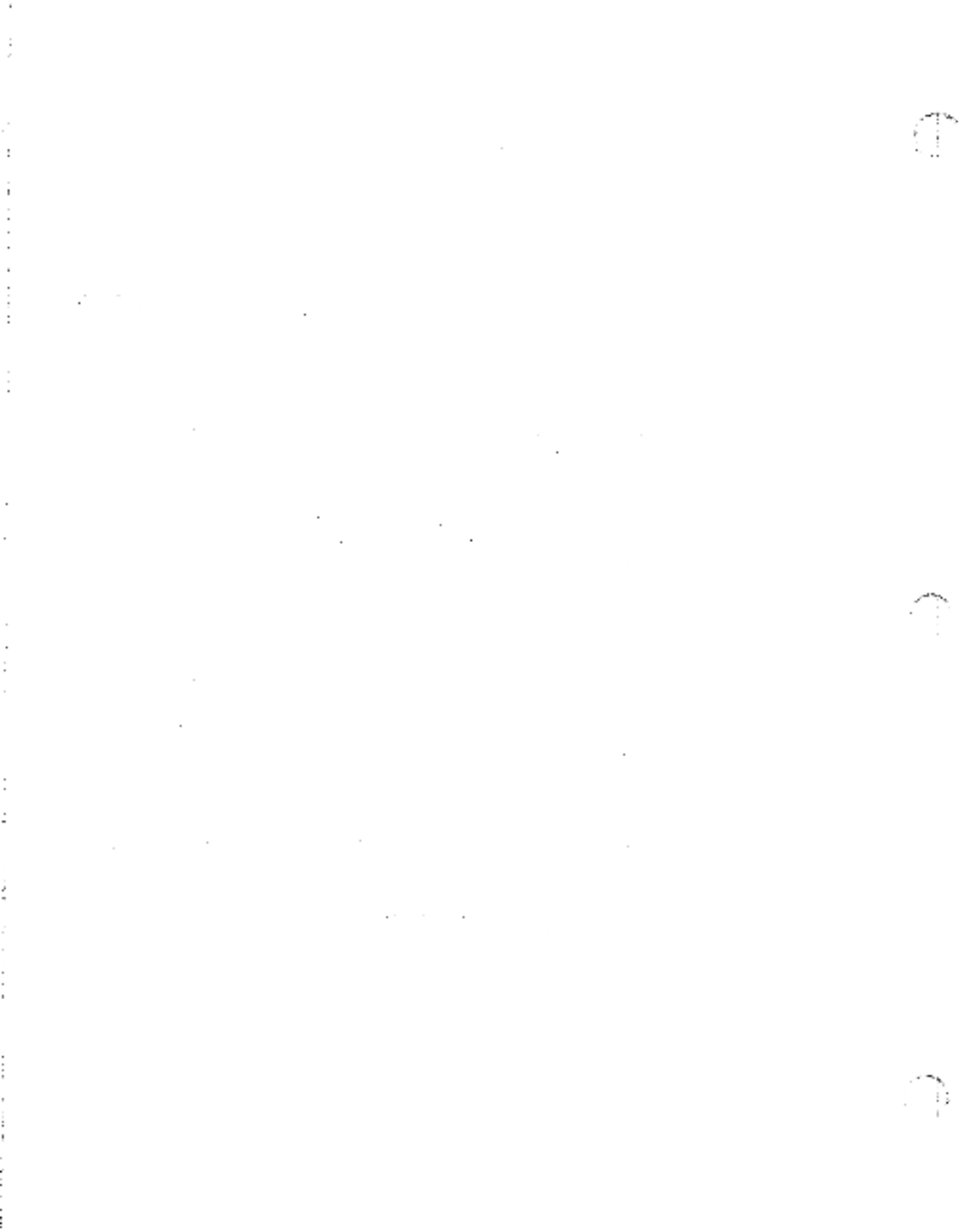
To install your new DECsystem 3100, follow the instructions in the first part of this guide.

If you are a novice installer, read Chapters 1 through 6.

If you are an experienced installer, see Chapter 7. For more detailed information about any procedure, refer to the table of contents.

Table 1 Conventions Used In This Guide

Convention	Use
Monospace type	Anything that appears on your console terminal screen is set in monospace.
Boldface type	Anything you are asked to type is set in boldface.
<i>Warning</i>	Warnings provide information to prevent personal injury. Read these carefully.
<i>Caution</i>	Cautions provide information to prevent damage to equipment or software. Read these carefully.
<i>Note</i>	Notes provide general information about the current topic.



Getting Started

This chapter tells you how to prepare for setting up your system, including how to:

- Prepare your site so your DECsystem 3100 can operate efficiently and safely.
- Make sure your shipment contains everything you need and what to do if something is missing or broken.

Reviewing Site Requirements

For your DECsystem 3100 to work efficiently, your work environment must meet the following requirements.

Caution: Failure to meet these requirements can cause damage to equipment.

Temperature

- Keep the temperature around the DECsystem 3100 between 10° and 40° Celsius (50° and 104° Fahrenheit).
 - Set up your DECsystem 3100 away from heaters, photocopiers, and other sources of heat.
 - Protect your DECsystem 3100 from sunlight.

- Allow air to flow freely around your DECsystem 3100 to keep heat from building up and damaging your equipment.
 - Leave 10 cm (4 inches) of space between system unit side vents and other objects.
 - Leave 8 cm (3 inches) of space between console terminal vents and other objects.

Humidity

- Keep relative humidity within the range of 10 to 80 percent.

Cleanliness

- Keep your work area as dust-free as possible.

Power

- Set up your DECsystem 3100 at least 90 cm (30 inches) from other terminals and monitors and other sources of electrical interference.
- Limit exposure to static electricity by setting up your DECsystem 3100 away from busy corridors and other high-traffic areas.
- Provide at least a 15-ampere branch circuit for the exclusive use of your DECsystem 3100.
- Be sure your electrical circuit is grounded properly and free from electrical noise.

CAUTION: *A common ground is required for the system unit and all expansion boxes; thus all must be on the same circuit. The console terminal is not required to be on the same circuit.*

Supplies

- Store supplies, such as tape cartridges, at the same temperature and humidity levels as your DECsystem 3100.

Unpacking and Checking Your Equipment

As you unpack your shipment, check its contents against the packing list. Save the packing materials in case you ever need to store or ship your DECsystem 3100.

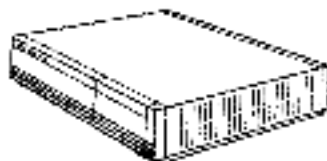
Your shipment should include all the items shown in Figure 1-1. In addition, you may have received a software package, an optional SCSI peripheral device, and the console terminal shown in Figure 1-4.

Follow the instructions included with your peripheral devices and observe all safety and operational requirements. Install the dress plate (cover) on the bottom of the box, or store it with your packing materials.

Inform the delivery agent and your Digital sales representative if any items are missing or damaged.

See Appendix B for a detailed list of items and part numbers available for your DECsystem 3100.

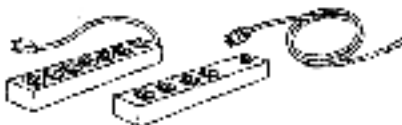
Figure 1-1 The Basic DECsystem 3100 Shipment



DECsystem 3100
system unit



Power cord



U.S. power strip or
international power
strip with cord



Screwdriver



Mouse loopback plug



One ThinWire T-connector
and two terminators



Standard Ethernet terminator



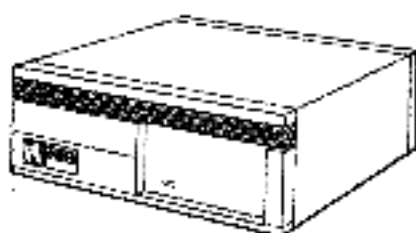
Small computer system interface
(SCSI) terminator (may already
be installed) (68-pin)



Documentation

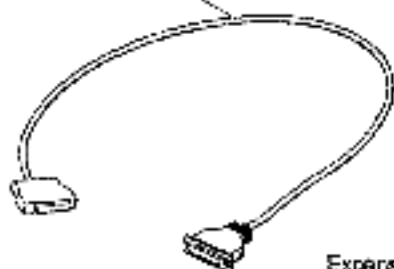
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Figure 1-2 The Single Expansion Box Shipment

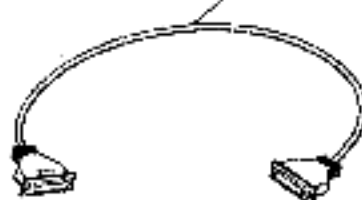


Single drive
expansion box
(50-pin)

System unit-expansion
box connector cable



18-inch expansion box
connector cable



Expansion box
power cord

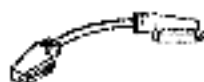


Expansion box
terminator

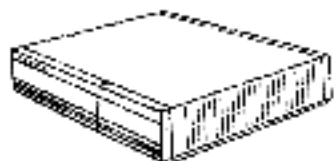


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Figure 1-3 The Dual Expansion Box Shipment



Expansion box
connector
cable (50:50)



Dual drive
expansion box



System unit-expansion
box connector cable
(58:50 pin)



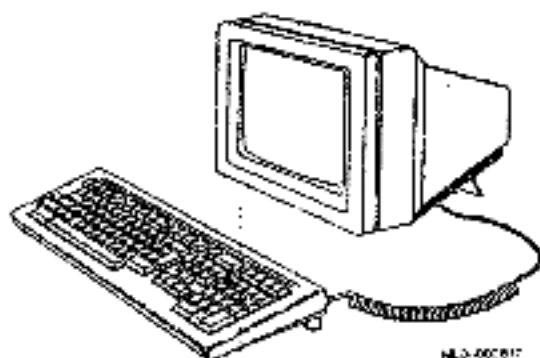
Power cord



SCSI terminator
(50-pin)

ML3-002P11

Figure 1-4 DECsystem 3100 Console Terminal





Installing the Basic DECsystem 3100

This chapter tells you how to install the DECsystem 3100 system unit and console terminal. The next chapter shows how to turn these units on and check the results of the power-up self-test.

Warning: *Plugging in power cords or turning on power before you are instructed to do so can cause injury and damage equipment.*

Follow these steps to install the DECsystem 3100:

- 1 Set up the system unit.
- 2 Install the system unit loopback plug and terminators.
- 3 Install the console terminal.
- 4 Install power cords.

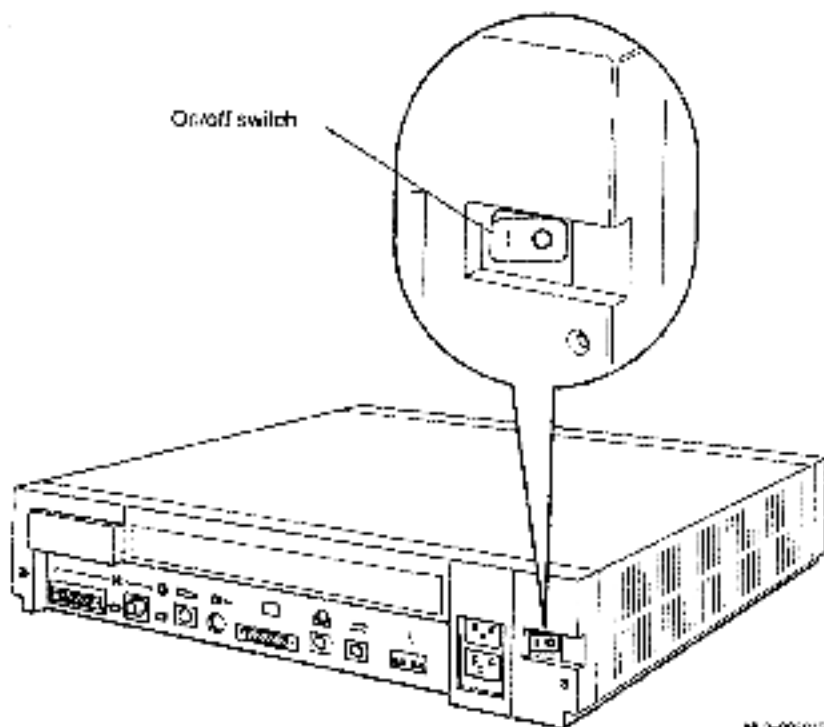
Setting Up the System Unit

Caution: *Placing the system unit on its side blocks air vents and may cause the unit to overheat.*

Place the system unit on a flat surface as near as possible to where you will use it.

- 1 Leave space at the back of the unit so you can connect the cables.
- 2 Turn the system unit off (set the on/off switch to 0) (Figure 2-1).

Figure 2-1 The On/Off Switch on the System Unit



Installing the System Unit Loopback Plug and Terminators

Find the following items that came with your shipment (all are pictured in Figure 1-1). These must be connected to the system unit for the power-up self-test to run properly.

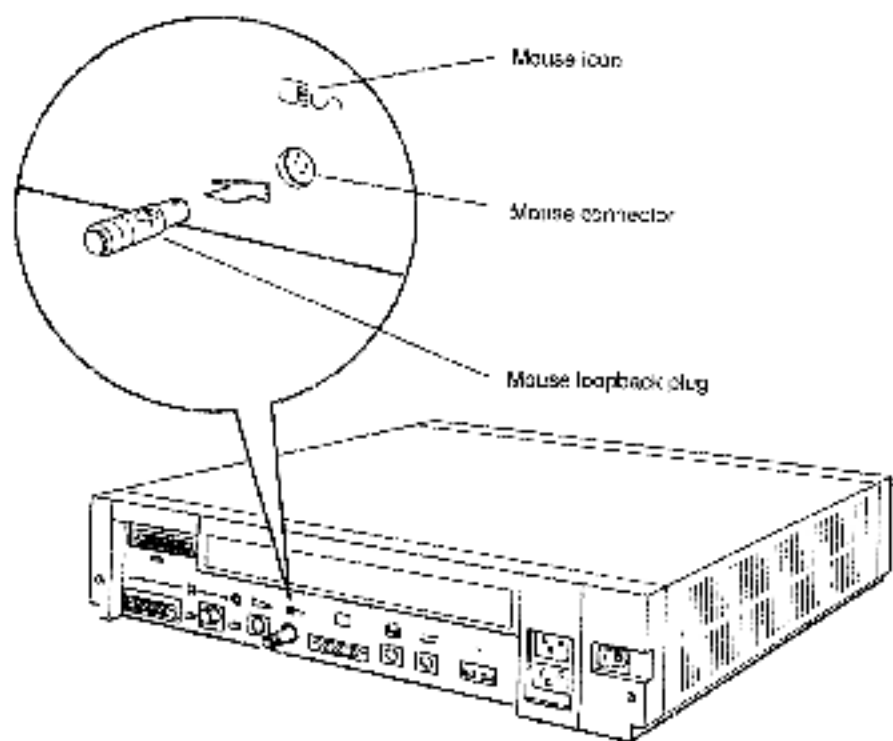
- Mouse loopback plug
- SCSI terminator (may already be connected to your system unit)
- ThinWire Ethernet T-connector and two T-connector terminators
- Standard Ethernet terminator

Connecting the Mouse Loopback Plug

Note: The Mouse Loopback connector must always be in place when the DECsystem 3100 is in use.

- 1 Carefully align the icon on top of the mouse loopback plug with the mouse icon on the back of the system unit (Figure 2-2).
- 2 Push the plug all the way into the connector on the back of the system unit.

Figure 2-2 Connecting the Mouse Loopback Plug to the System Unit



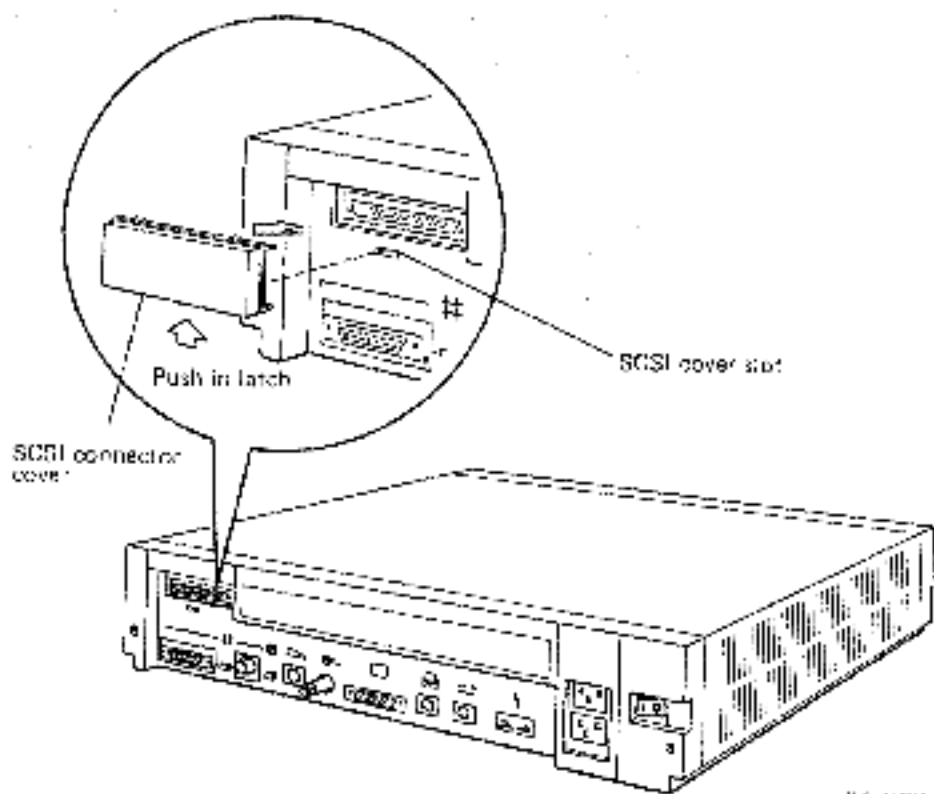
Connecting the SCSI Terminator

If you received a small computer system interface (SCSI) terminator in your accessories carton, connect it to the system unit. Note that this terminator may be installed already.

- 1 Remove the plastic cover that protects the SCSI connector on the back of the system unit (Figure 2-3).
 - a Run your finger along the bottom of the cover until you feel the latch that lies between the two holes.
 - b Push up on the latch until it releases from the back cover of the system unit.

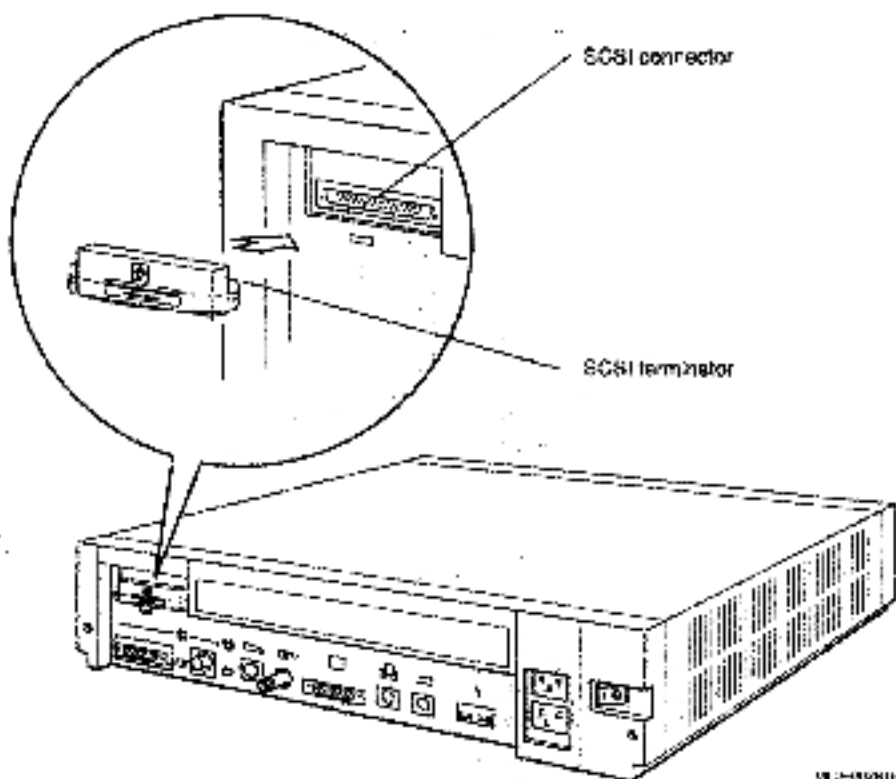
Store the cover along with your DECsystem 3100 packing materials.

Figure 2-3 Removing the Protective Plastic Cover from the SCSI Connector



- 2 Turn the SCSI terminator so the widest part of its connector aligns with the widest part of the SCSI connector on the system unit.
- 3 Push the terminator into the SCSI connector until it fits firmly in place (Figure 2-4).

Figure 2-4 Installing the SCSI Terminator

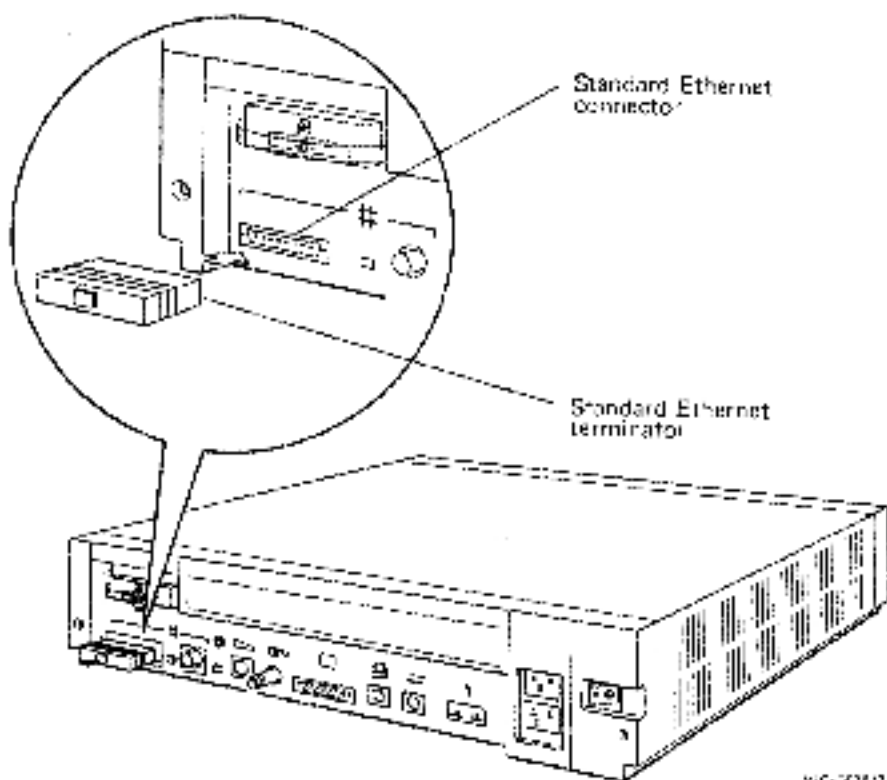


Connecting the Standard Ethernet Terminator

Find the square standard Ethernet terminator that came with your shipment.

- 1 Position the terminator so the widest part of its connector aligns with the widest part of the standard Ethernet connector on the back of the system unit (Figure 2-5).
- 2 Firmly press the terminator into the connector.

Figure 2-5 Attaching the Standard Terminator to the System Unit



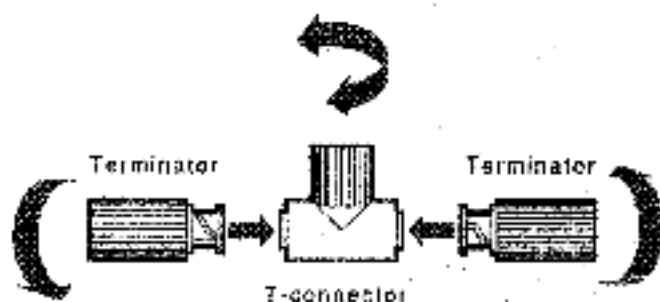
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Connecting the ThinWire Ethernet Terminator

Find the T-connector and two terminators that came with your shipment. Notice how the ribbed portion of the T-connector can be rotated.

- 1 Attach the terminators to the T-connector (Figure 2-6).
 - a Firmly push each terminator connector into the T-connector.
 - b Turn the left terminator toward you and the right terminator away from you until they slide toward the T-connector and lock into place.

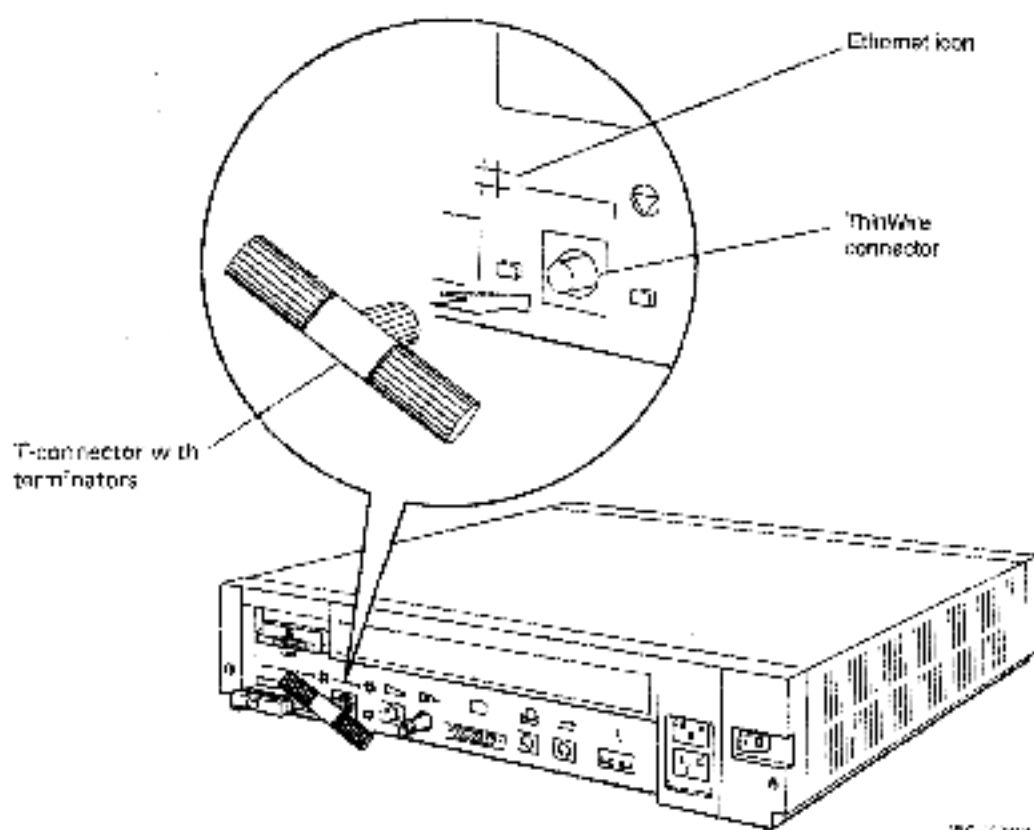
Figure 2-6 Attaching the Terminators to the T-Connector



MO-000116

- 2 Tilt the terminated T-connector slightly so it fits next to the standard Ethernet terminator.
- 3 Push the ribbed portion of the T-connector into the ThinWire Ethernet connector.
- 4 Turn the ribbed portion of the T-connector from side to side until it slips into place and you can push it onto the connector on the system unit (Figure 2-7).
- 5 Turn the ribbed portion of the T-connector to the right until it locks into place.

Figure 2-7 Attaching the Terminated T-Connector to the System Unit

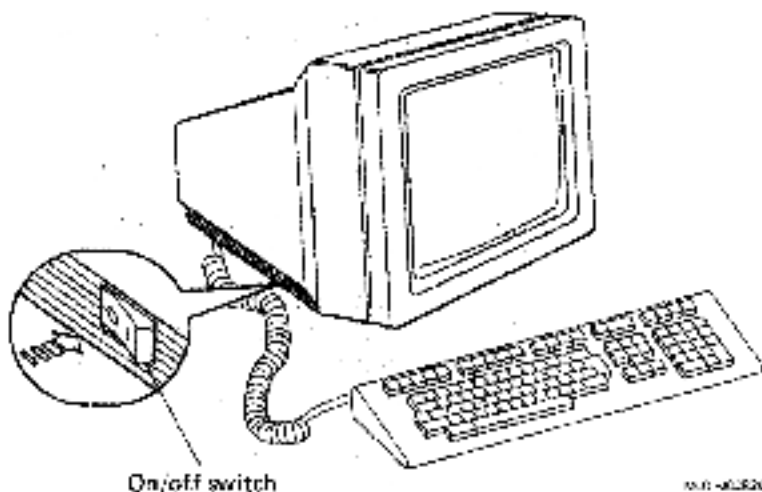


Installing the Console Terminal

To install your console terminal:

- 1 Place the console terminal on top of or next to the system unit.
- 2 Be sure the console terminal is off (Figure 2-8) (set the on/off switch to 0).

Figure 2-8 Typical Console Terminal On/Off Switch



Setting Up the Console Terminal

Follow the instructions that came with your console terminal to install the adapters, power cords, and any other components required for proper operation of the terminal.

The console terminal serial line cable has 6-pin connectors at both ends. If your console terminal communications connector is a 25-pin connector, you need to install a 25-pin to 6-pin adapter. Be sure that this adapter is firmly attached to the console terminal. You may also need to order the 6-pin to 6-pin serial line cable. See Appendix B for DECsystem 3100 part numbers.

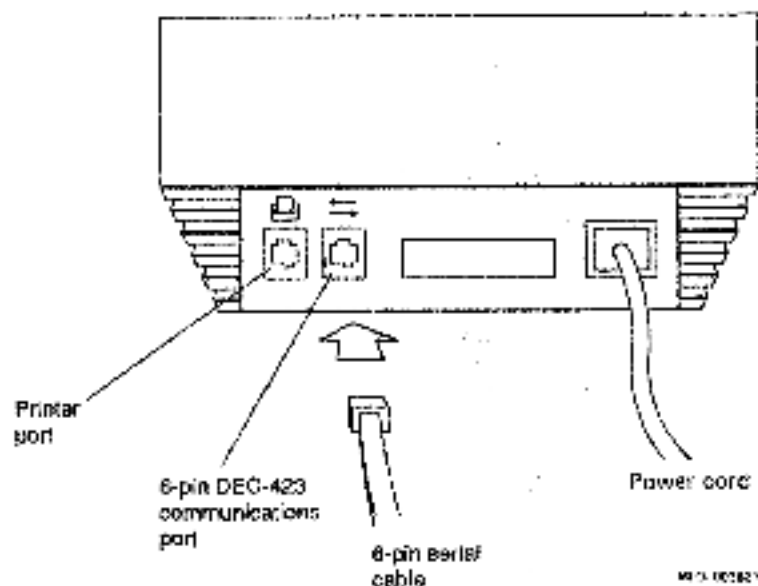
Connecting the Serial Cable to the System Unit

To connect the serial cable to the system unit, follow these steps:

- 1 Be sure that the console terminal is off (set on/off switch to 0).
- 2 Be sure that the system unit is off (set on/off switch to 0).
- 3 Position the connector on one end of the serial line cable so the clip is on the bottom.
- 4 Your console terminal may have a communications icon above the communications connector. Push the cable connector into the communications connector on the back of the console terminal until it clicks into place (see Figure 2-9).

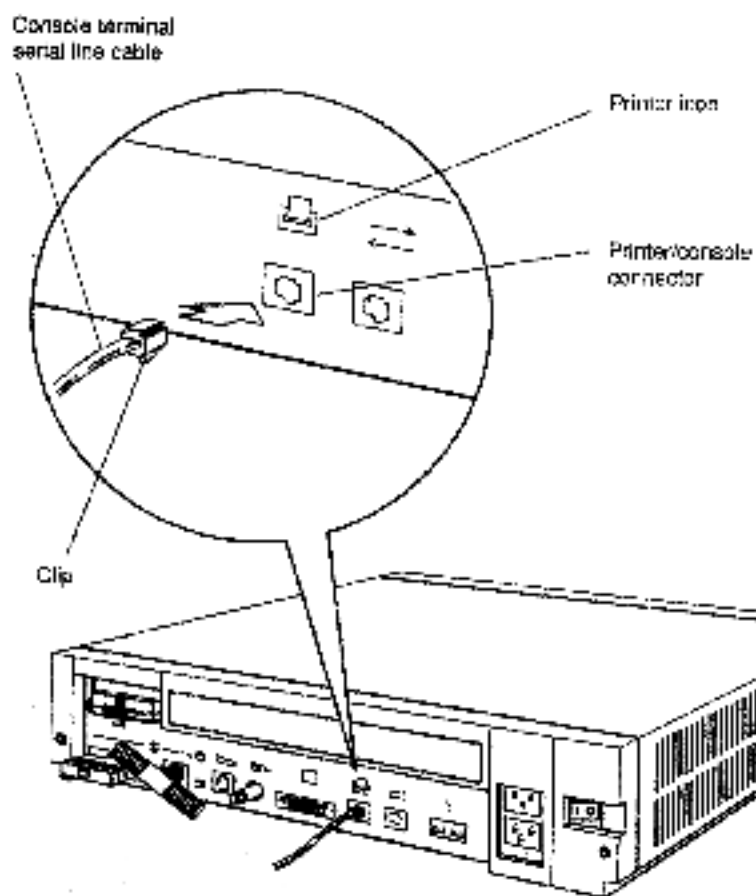
Note: *If a 6-pin to 25-pin adapter is attached to your console terminal, push the cable connector into the adapter until the connector clicks into place.*

Figure 2-9 Connecting the Serial Cable to the Back of a Typical Console Terminal



- 5** Attach the free end of the serial cable to your system unit (Figure 2-10).
 - a** Position the connector on the end of the serial line cable so the clip is on the bottom.
 - b** Push the serial line cable connector into the printer/console connector below the printer/console icon on the back of the system unit until the cable connector clicks into place. This port is configured specifically for the console terminal.

Figure 2-10 Connecting the Console Terminal Cable to the System Unit



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Connecting the Power Strip to the Power Source

Find the power strip that came with your shipment (pictured in Figure 1-1).

If you have the *U.S.* power strip (with power cord permanently attached), go to step 1. This strip is designed for use in the United States (110 Volts).

If you have the *international* power strip (with power cord *NOT* permanently attached), go to step 2. This strip is designed for use in Europe.

1 To connect the *U.S.* power strip:

- a Plug the power strip into the power source.
 - If the light on the power strip does not glow, make sure the power switch is turned on and the circuit breaker is reset.
 - If the light on the power strip still does not glow, check the power source by plugging a lamp into the source outlet.
- b When the light on the power strip is glowing properly, turn the power switch off.

When your DECsystem 3100 is completely installed, the system unit and peripheral devices will be plugged into the *U.S.* power strip. Then you can use the switch on the power strip to turn both of these units on and off at the same time. The console terminal may be plugged into the same power strip or a separate power source.

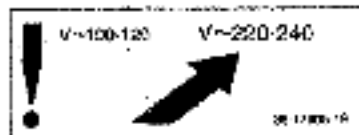
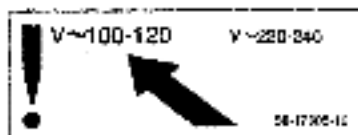
- 2 To connect the *international* power strip, follow these steps:
 - a Find the separate power cord for the *international* power strip that came with your shipment.
 - b Plug the prongless end of the power cord into the power strip.
 - c Plug the other end of the power cord (with prongs) into the power source.
 - Make sure the power strip circuit breaker is reset.
 - Check the power source by plugging a lamp into the source outlet.

When your DECsystem 3100 is completely installed, the system unit, disk drive peripheral devices, and any tape drives will be plugged into the *international* power strip. The console terminal may be plugged into either the power strip or a separate power source.

Connecting the Console Terminal Power Cord

The voltage for your console terminal must match that of your power source. It is either 110/120 or 220/240 volts. On console terminals supplied by Digital, a yellow voltage label that covers the terminal power connector tells you what voltage the terminal requires (Figure 2-11).

Figure 2-11 The Console Terminal Voltage Labels



DEP5030

Caution: *Connecting the console terminal to a power source that does not meet the voltage requirements of the terminal can damage the terminal.*

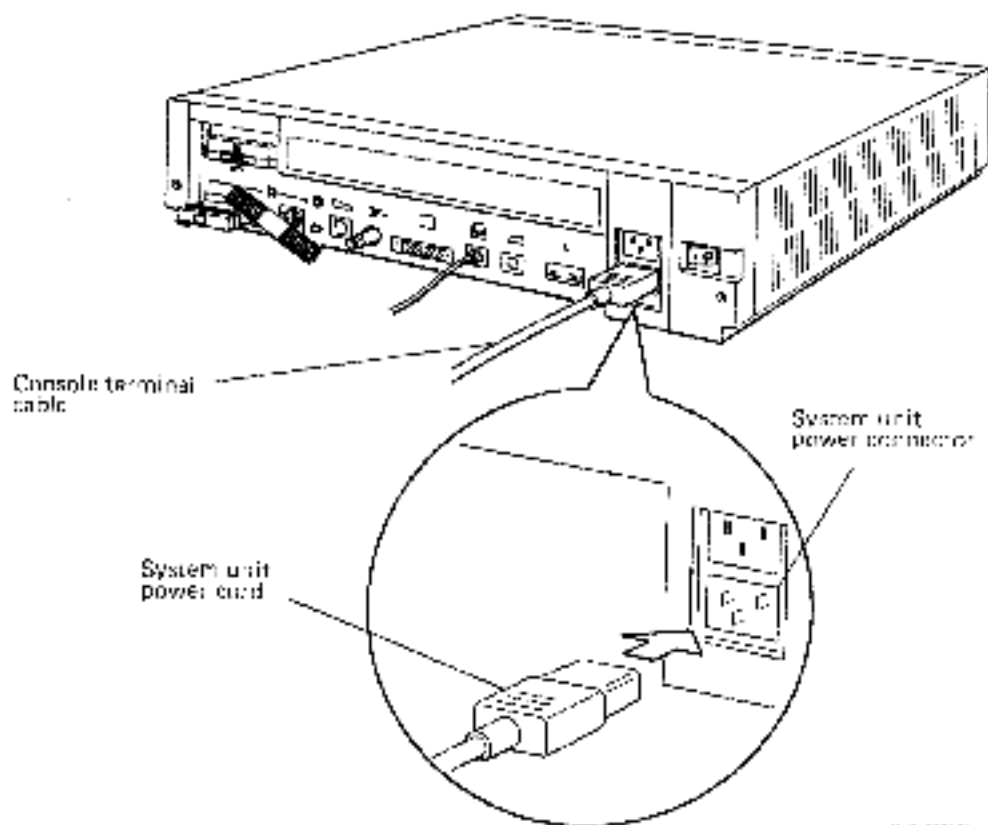
- 1 Be sure that the console terminal is off (set the on/off switch to 0).
- 2 Read and remove the yellow voltage label that covers the power connector on the back of the console terminal.
- 3 Plug the pronged end of the console terminal power cord into the power strip or a separate power source.

Installing the System Unit Power Cord

The system unit power cord is shown in Figure 1-1.

- 1 Be sure that the system unit is off (set the on/off switch to 0).
- 2 Plug the prongless end of the power cord into the system unit power connector.
- 3 Plug the pronged end of the cord into the power strip. (See Figure 2-12.)

Figure 2-12 Connecting the System Unit Power Cord



Starting and Testing the DECsystem 3100

This section tells you how to start up and test your system, including how to:

- Power up your console terminal
- Power up your system unit
- Check the results of the power-up self-test

Caution: *To avoid damaging equipment that has been moved inside from a cold environment, let it warm to room temperature before turning it on.*

Turning On the Console Terminal

The procedure for turning on the console terminal varies with the type of terminal. On some terminals, a small green light on the front panel glows when power is turned on. In all cases, a display appears on the terminal screen shortly after you turn the console terminal on (set the power switch to 1).

- 1 Find the brightness and contrast controls (Figure 3-1). Your console terminal may have icons to help you locate the controls.
- 2 Turn both controls all the way on.

Figure 3-1 Brightness and Contrast Icons on the Console Terminal



Contrast icon

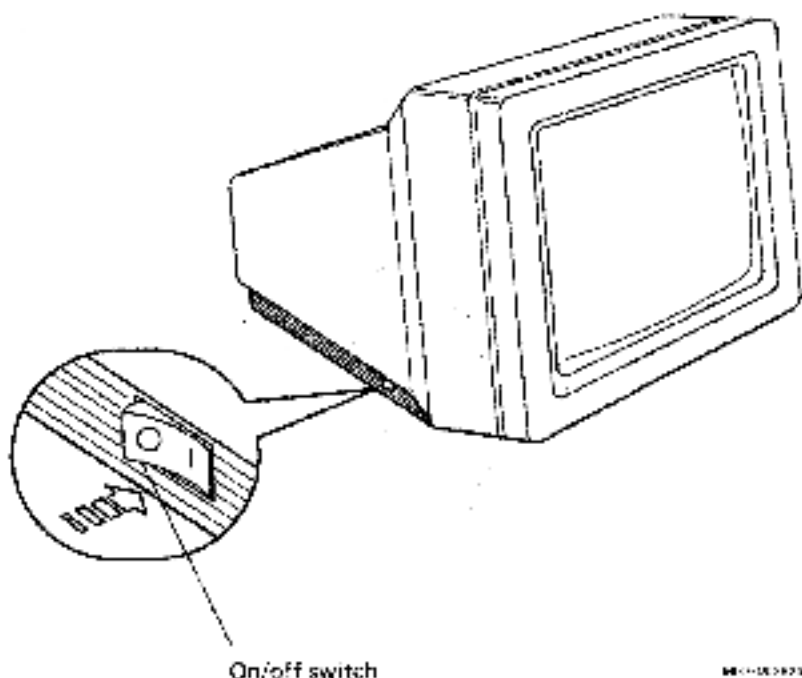


Brightness icon

- 3 Turn the console terminal on (Figure 3-2) (set the on/off switch to 1).
- 4 If your console terminal has a power indicator light on the front panel, it glows.
- 5 The console terminal self-test OK message appears on the terminal screen, indicating that the self-test succeeded.
- 6 Refer to documentation that came with your console terminal for these setup options:
 - a Set the console terminal baud rate to 9600 baud.
 - b Set the console display scroll mode to jump scroll.
 - c Save the current settings.

Leave the console terminal turned on. In the next section, you will turn on the system unit and check the results of the power-up self-test.

Figure 3-2 Turning On the Console Terminal



If nothing happens when you turn on the console terminal, check the following:

- All power cords are connected properly.
- The console terminal on/off switch is set to 1.
- The contrast and brightness controls are adjusted properly.

If the screen remains dark, contact your system manager or your Digital service representative.

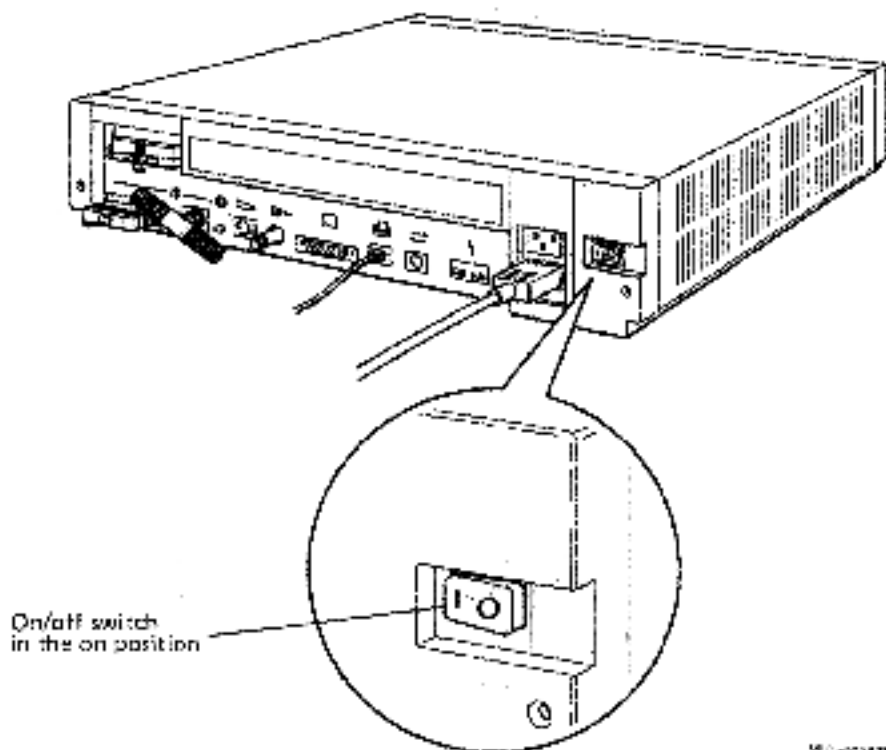
Turning On the System Unit

- 1 If you are using the U.S. power strip, turn the power strip on.
- 2 Turn the system unit on (set the on/off switch to 1, as shown in Figure 3-3).

When you turn on the system unit, the following things happen:

- The fans in the system unit turn on.
 - The green light on the front of the system unit turns on.
 - The power-up self-test messages appear on the console terminal screen.
- 3 Turn down the brightness until the screen background becomes dark.
 - 4 Adjust the contrast until you can comfortably read the display on the screen.

Figure 3-3 Turning On the System Unit



If nothing happens when you turn on the system unit, check the following:

- The power strip light glows (if you have the U.S. power strip).
- All power cords are connected properly.
- Console terminal and system unit are turned on (on/off switches are set to 1).
- The serial line cable between the console terminal and the system unit is connected properly.

If the system unit still fails to work, contact your system manager or your Digital service representative.

Checking the Results of the Power-Up Self-Test

After you turn on your system unit and console terminal, your DECsystem 3100 tests itself. This process takes about one minute. Numbers that identify the subtests appear on your terminal screen as your DECsystem 3100 runs them.

Because some of the subtests take longer than others, there are times when nothing changes on your screen. For example, the following display remains on your screen for several seconds:

```
KN01 V6.7  
7..6..5..4..
```

During testing, a display similar to the following appears on your screen:

```
KN01 V6.7  
7..6..5..4..3..2..1..0  
24Mb.....0
```

When testing has been completed successfully, a display similar to the following appears on the screen:

```
KN01 V6.7  
05-00-23 0d-f7-6a  
0x01800000  
>>
```

The symbol on line four (>>) is the console terminal system prompt.

If your DECsystem 3100 fails a subtest, testing stops and the following message flashes on the terminal screen:

```
FAILURE - RESET TO CONTINUE
```

The number of the subtest that failed is the last number displayed on your screen. In the following example, subtest 4 was unsuccessful.

```
KN01 V6.7  
7..6..5..4..  
FAILURE - RESET TO CONTINUE
```

Pushing the reset button, which is located to the right of the ThinWire T-connector, reruns the system self-test. If a subtest fails again, further testing will be bypassed. Subtests following the failed subtest will not be run.

If subtest 7, 6, 5, or 4 fails, record that number and report it to your system manager or your Digital service representative.

If subtest 3 fails,

- 1 Turn the system unit off (set the on/off switch to 0).
- 2 Check your mouse loopback plug connections.

Note: *If you use a mouse in place of the mouse loopback plug, system subtest 3 will fail.*

- 3 Turn the system unit on (set the on/off switch to 1).
If the subtest fails again, contact your system manager or your Digital service representative.

If subtest 2 fails, follow these steps:

- 1 Turn the system unit off (set the on/off switch to 0).
- 2 Be sure your ThinWire and Standard Ethernet terminators are connected properly.
- 3 Turn the system unit on (set the on/off switch to 1).
If the subtest fails again, contact your system manager or your Digital service representative.

If subtest 1 fails, follow these steps:

- 1 Turn the system unit off (set the on/off switch to 0).
- 2 Be sure your SCSI terminator is connected properly.
- 3 Turn the system unit on (set the on/off switch to 1).
If the subtest fails again, contact your system manager or your Digital service representative.

↑

↑

↑

Installing Peripheral Devices

This chapter tells you how to install the peripheral devices for your DECsystem 3100.

External peripheral devices include up to six small computer system interface (SCSI) storage devices in a maximum of three expansion boxes. Other optional external devices include a printer and a communications device.

Warning: *Turning on power before you are instructed to do so can cause personal injury and damage equipment.*

Caution: *Attaching a peripheral device to the wrong connector on the system unit can damage the system unit and peripheral device.*

Installing External Storage Devices

Your DECsystem 3100 may use the following storage devices:

- 332-megabyte RZ55 hard disk drives
- 95-megabyte TK50Z tape drives
- Other SCSI devices, as available

These devices are preinstalled in expansion boxes. Your DECsystem 3100 may include the following expansion boxes (see Figures 4-1 and 4-2):

- Single drive expansion box (BA40 enclosure)
- Dual drive expansion box (BA42 enclosure)

The DECsystem 3100 configuration may include up to six hard disk or tape drives, in up to five single expansion boxes or three dual expansion boxes. You will need at least one storage device to operate your system, however, the choice of which particular devices your system has is optional.

Note: *The system unit and all external storage devices must be powered from a common power source.*

If you have the *U.S.* power strip, you will use the power strip as the power source for the system unit and all storage devices.

If you have the *international* power strip, you will use the power strip and the power connector on the back of the system unit as the power source for the system unit and all storage devices.

Warning: *The system unit and storage devices must have a common electrical ground. Using different power sources for these devices can damage your equipment.*

Figure 4-1 Single Drive Expansion Boxes

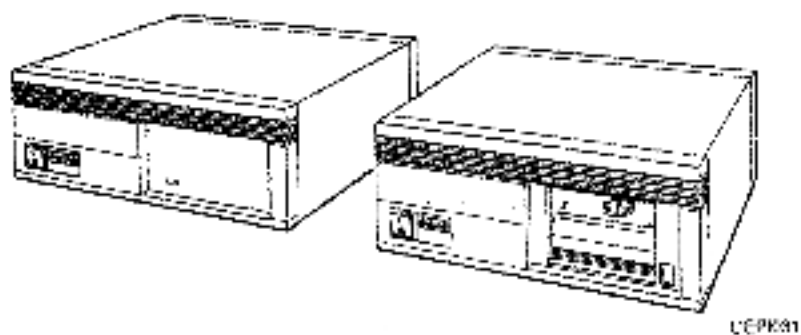
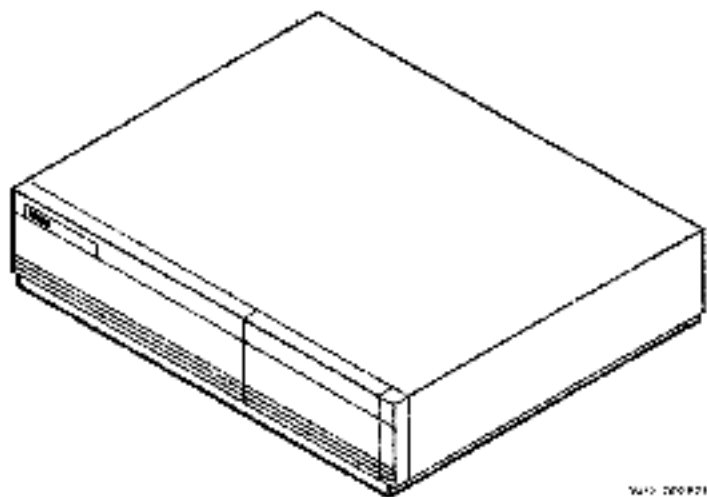


Figure 4-2 Dual Drive Expansion Box



W412 000070

Connecting Single Drive Expansion Boxes

The first box is cabled directly to the system unit. Each additional box is cabled to the previously connected box.

Connecting the first single drive expansion box

Find the following items, shown in Figure 4-3, for each box you plan to install:

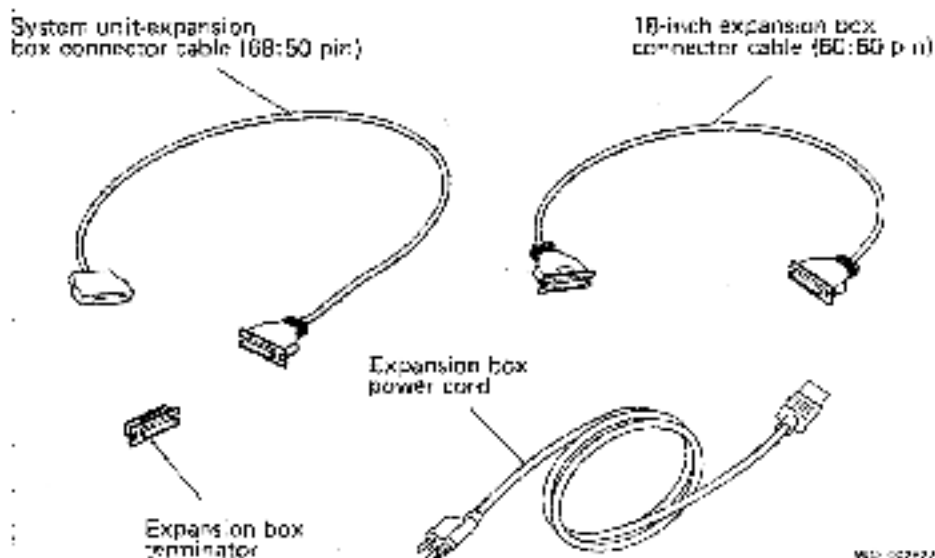
- One system unit-expansion box cable with a different connector at each end.
You use this cable only for the first box you install. If you have more than one of these cables, set the others aside.
- For each additional box, one 18-inch-long expansion box cable with identical connectors at each end.

Caution: *Using a cable other than the 18-inch cable supplied by Digital between expansion boxes can cause the boxes to malfunction.*

- One expansion box terminator.
You need only one terminator. Set any others aside.
- One expansion box power cord for each box to be installed.

Warning: *The system unit and storage devices must have a **common** electrical ground. Using different power sources for these devices can damage your equipment.*

Figure 4-3 Single Drive Expansion Box Cables, Cord, and Terminator

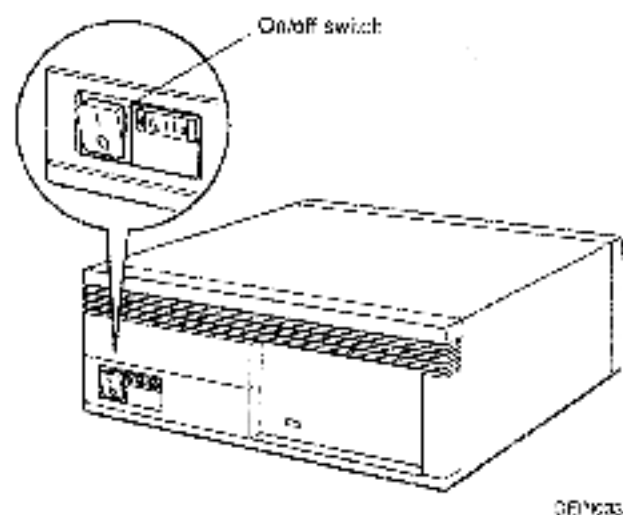


To connect single drive expansion boxes:

- 1 Turn the system unit and each expansion box off (set the on/off switch to 0) (Figure 4-4).

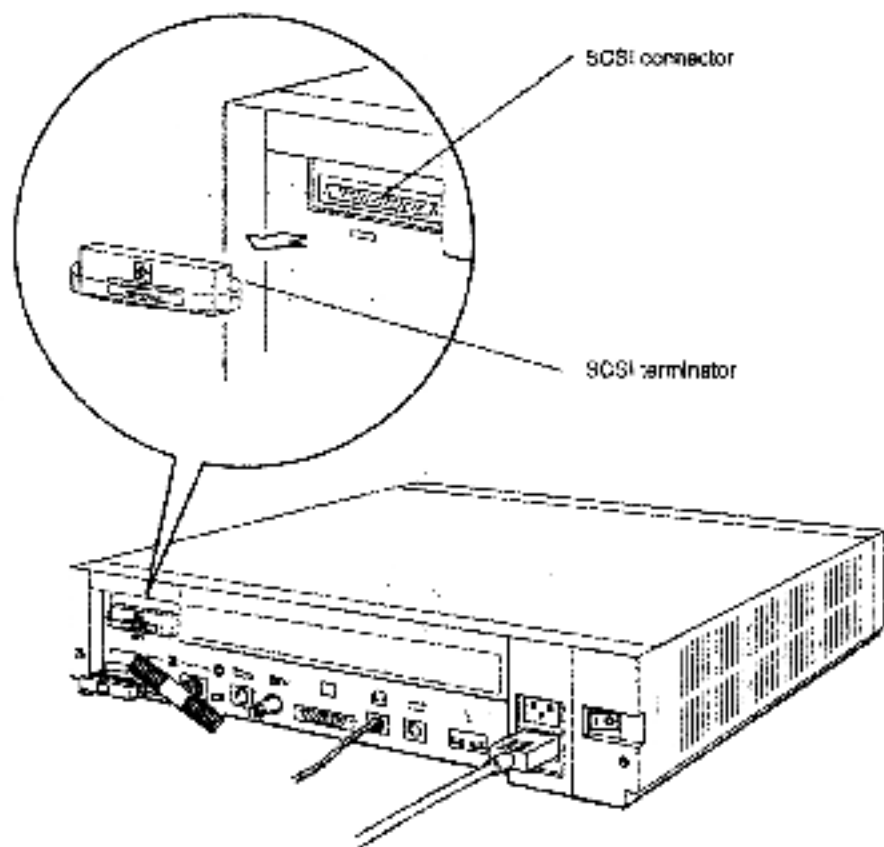
If you have the U.S. power strip, turn it off (set the on/off switch to 0). The power-on indicator light stops glowing.

Figure 4-4 Single Drive Expansion Box On/Off Switch



- 2 Remove the terminator from the SCSI connector on the back of the system unit, as shown in Figure 4-6.
Pull firmly on the plastic strap of the terminator to remove it. Be sure to save the terminator.

Figure 4-5 Removing the SCSI Terminator from the System Unit



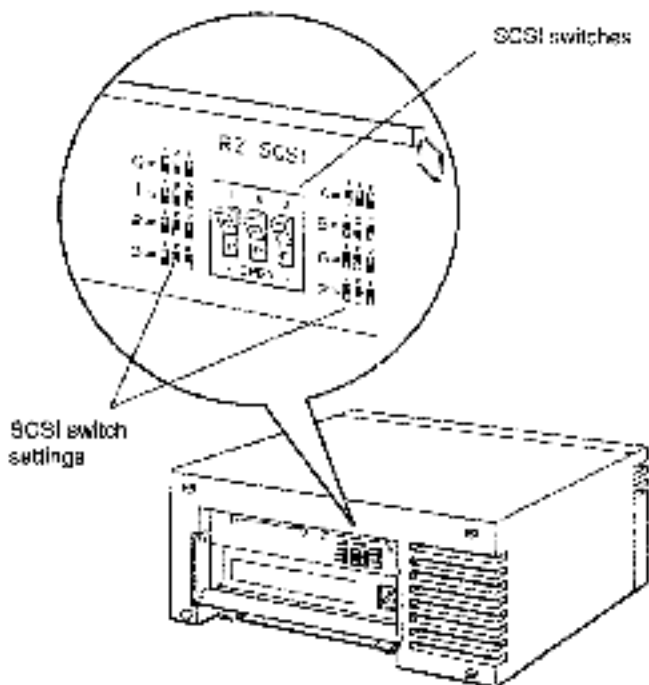
WIC 000828

- 3 Verify the switch settings on each box before installing the SCSI connectors, as the SCSI connector on the expansion box covers the SCSI switches.

- 4 Set the SCSI switches as specified in Table 4-1. The first box to be installed is a hard disk drive (Figure 4-6). "RZ SCSI" appears on the label above the switches. The SCSI switches allow you to select a distinct unit number for each SCSI device. In this installation guide, the three single drive hard disk expansion boxes are designated as unit 0, unit 1, and unit 2. Designate the first box as unit 0. The SCSI switch settings for unit 0 are:

Down Down Down

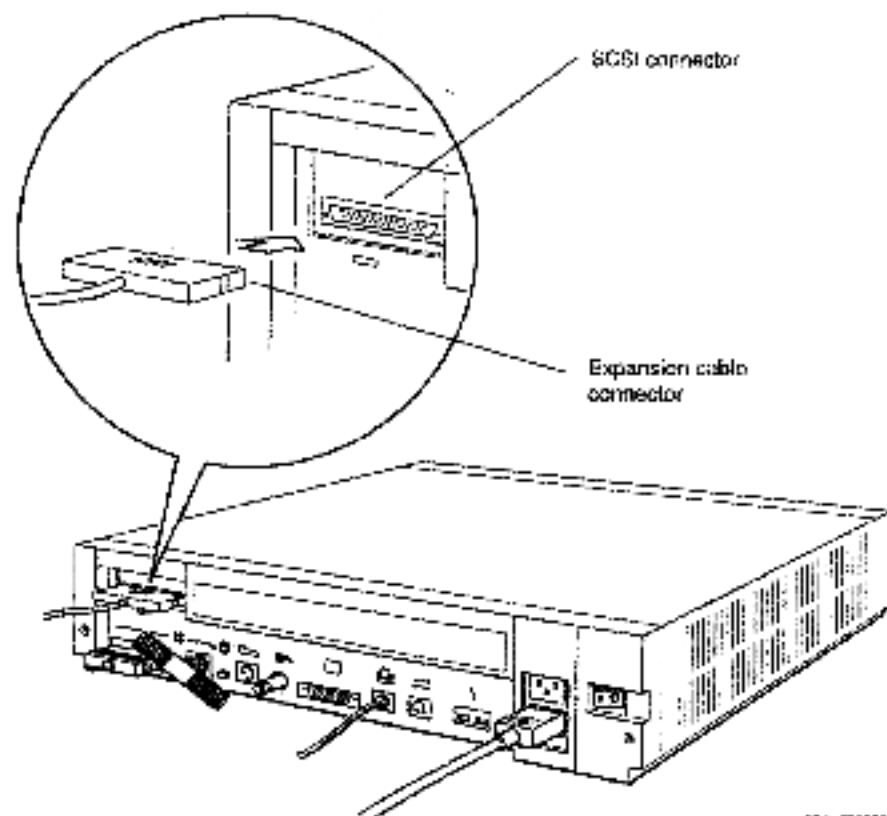
Figure 4-6 SCSI Switch Setting for the First Hard Disk Drive (single drive enclosure)



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- 5 Position the smallest of the two connectors on your system unit-expansion box cable so the widest part of the connector aligns with the widest part of the connector on the system unit.
- 6 Push the cable connector into the SCSI connector on the back of the system unit (Figure 4-7).

Figure 4-7 Attaching a System Unit-Single Drive Expansion Box Cable to the SCSI Connector on the System Unit

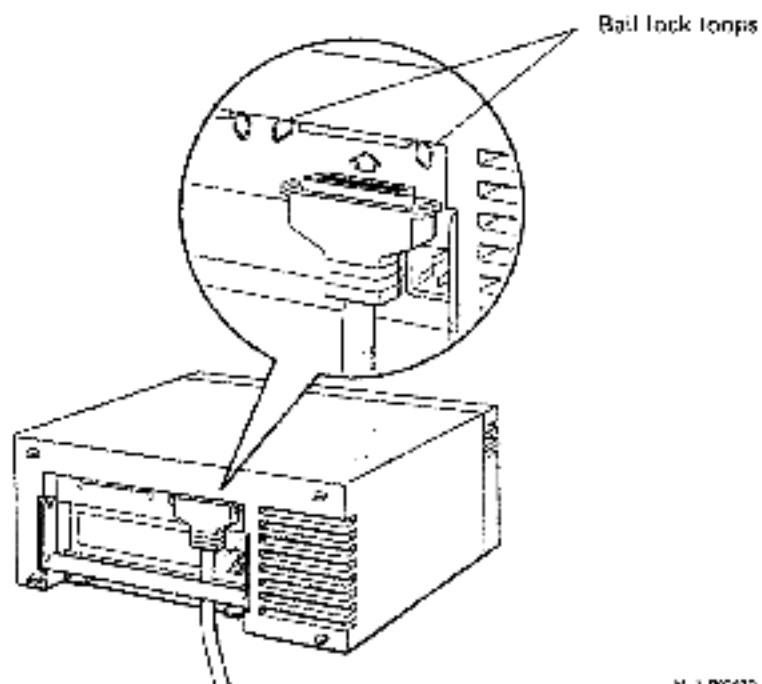


MS-107575

- 7 Attach the free end of the system unit-single drive expansion box cable to one of the connectors on the back of the single drive expansion box (Figure 4-8). Either connector can be used.
- a Press the two bail lock loops on one of the expansion box connectors away from the connector.
 - b Slide the cable connector up between the expansion box and its handle.
 - c Position the cable connector so its widest part aligns with the widest part of the expansion box connector.
 - d Push the cable connector into the expansion box connector as far as it will go.
 - e Press the two bail lock loops firmly against the sides of the connector until they click into the grooves on the connector.

Figure 4-8

Attaching a System Unit-Single Drive Expansion Box Cable to the SCSI Connector on a Single Drive Expansion Box



W-1-006820

Connecting additional single drive expansion boxes

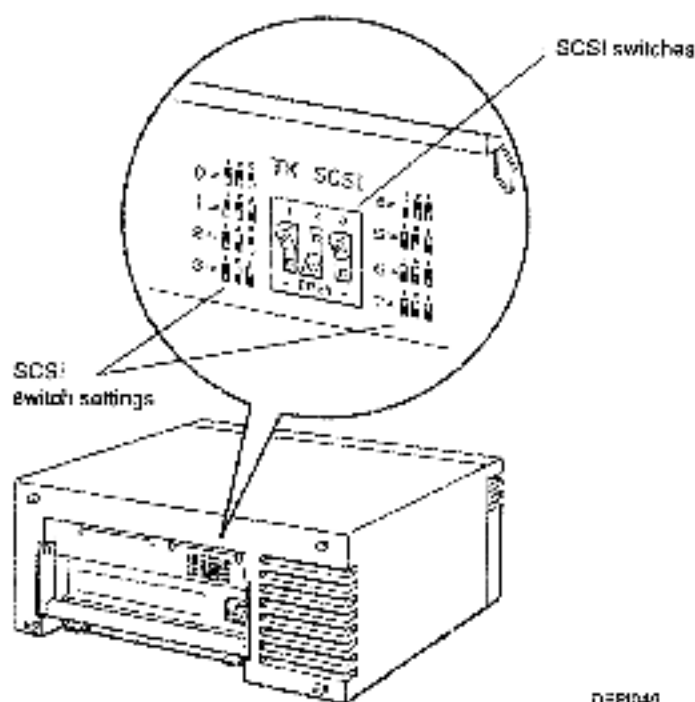
Before you connect any boxes after the first, stack them on top of the first box you connected. Then set the SCSI switches for each box. The unit numbers of the second and third hard disk drives are 1 and 2, respectively.

When installing the optional tape drive, use the SCSI switch settings in the TK Tape Drive column in Table 4-1. Note that the tape drive SCSI addresses and the disk drive SCSI addresses are different for the same unit number. For example, if you set the tape drive SCSI address to unit 5, you would set the tape drive SCSI switches as:

Down Up Down

You can see the tape drive unit number switch settings listed near the TK SCSI label on the back of the box.

Figure 4-9 SCSI Switch Setting for the Tape Drive (single drive enclosure)



DEP040

Set the SCSI switches on the back of your expansion boxes according to Table 4-1, as shown. For example, if you were installing a TK tape drive as unit 4, you would set the SCSI switches to Down Up Up.

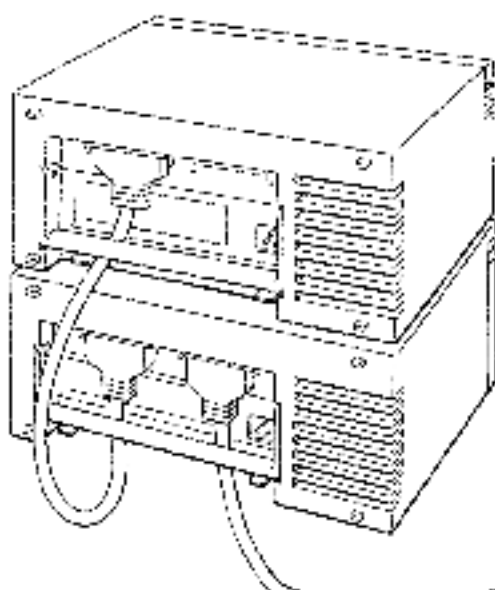
IMPORTANT: *Tape drives should be assigned to low location numbers, while hard disks should be given higher location numbers.*

Table 4-1 SCSI Switch Settings

Location	TK Tape Drive	RZ Hard Disk
Unit [7]	Not available	Not available
Unit [6]	Down Down Up	Up Up Down
Unit [5]	Down Up Down	Up Down Up
Unit [4]	Down Up Up	Up Down Down
Unit [3]	Up Down Down	Down Up Up
Unit [2]	Up Down Up	Down Up Down
Unit [1]	Up Up Down	Down Down Up
Unit [0]	Up Up Up	Down Down Down

- 1 Plug one end of the 18-inch expansion box cable into the free connector on the back of the previously connected single drive expansion box.
- 2 Slide the free end of the cable up between the next single drive expansion box and its handle.
- 3 Plug the other end of the cable into one of the connectors on the next box, as shown in Figure 4-10.

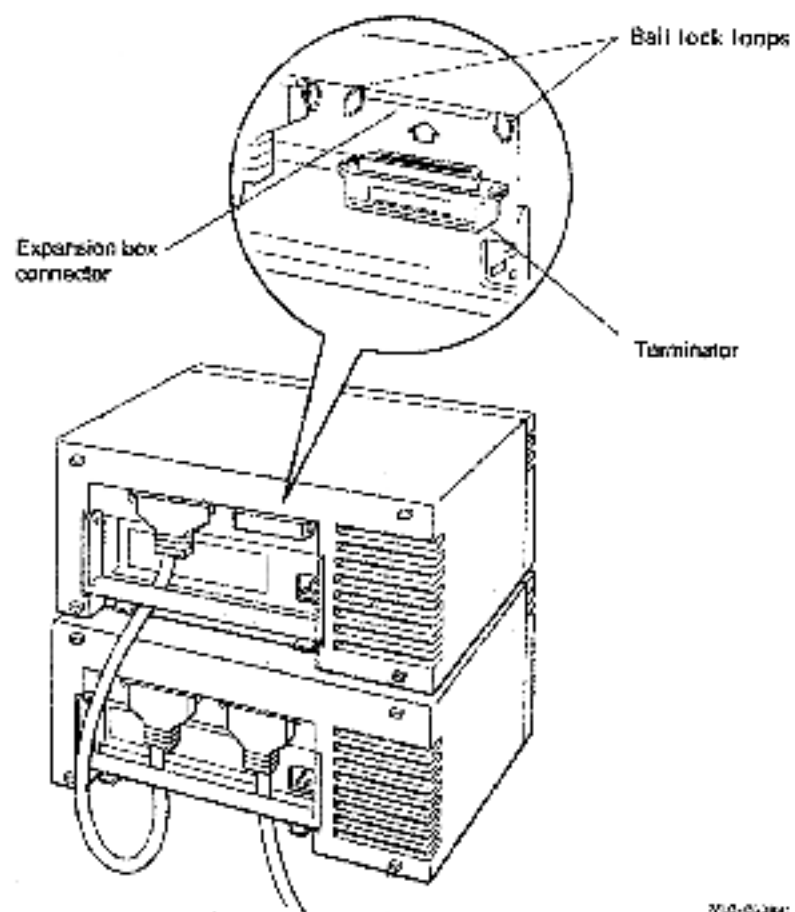
Figure 4-10 Connecting a Single Drive Expansion Box to Another Single Drive Expansion Box



DEP042

- 4 Repeat steps 1, 2, and 3 for each additional box.
- 5 Attach the terminator that came with your single drive expansion boxes to the empty connector on your final box, as shown in Figure 4-11.
 - a Press the two bail lock loops on the empty connector away from the connector.
 - b Position the terminator so the widest part of its connector aligns with the widest part of the connector on the box.
 - c Push the terminator into the expansion box connector as far as it will go.
 - d Press the two bail lock loops firmly against the sides of the terminator until they click into the grooves on the terminator.

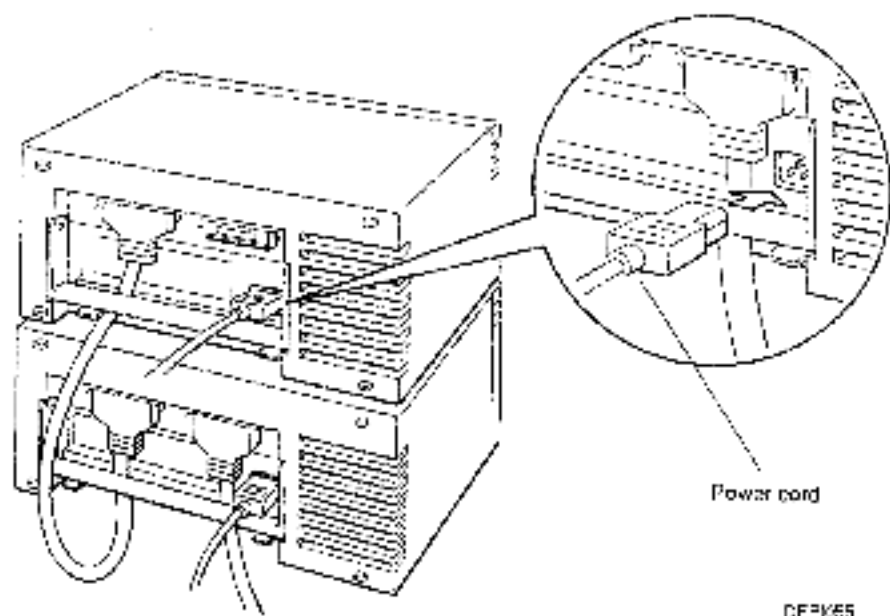
Figure 4-11 Terminating the Final Single Drive Expansion Box



770-02300

- 6 Plug the prongless end of the power cord into the power connector on each single drive expansion box (Figure 4-12).

Figure 4-12 Connecting the Single Drive Expansion Box Power Card



- 7 Plug the pronged end of the power cord into the power strip. Because you are installing more than one box, the power source for your system unit and all expansion boxes should be one common power strip.

Note: If you have the *international* power strip and you are installing the optional tape drive, plug the pronged end of the tape drive power cord into the power strip or the power connector on the back of the system unit.

- 8 Turn each single drive expansion box on (set each on/off switch to 1).
- 9 Turn the console terminal on (set the on/off switch to 1).
- 10 Turn the system unit on (set the on/off switch on the back to 1).

If you have the *U.S.* power strip, turn your system unit and expansion boxes on (set the power strip on/off switch to 1).

Your system unit runs its self-test and displays the console prompt (>>) when the test is completed successfully.

If a subtest fails:

- a If you have the *U.S.* power strip, turn your system unit and expansion boxes off (set the power strip on/off switch to 0).
If you have the *international* power strip, turn your system unit and expansion boxes off (set the on/off switch on each unit to 0).
- b Check your expansion box connections.
Be sure to inspect your connectors for damaged pins.
- c If you have the *U.S.* power strip, turn your system unit and expansion boxes on (set the power strip on/off switch to 1).
If you have the *international* power strip, turn your system unit and expansion boxes on (set the on/off switch on each unit to 1).

If the subtest still fails, contact your Digital service representative.

- 11 Check your configuration display to be sure each device is recognized by your system.

Connecting Dual Drive Expansion Boxes

The first expansion box is cabled directly to the system unit. Each additional box is cabled to the previously connected box. A terminator is connected to the unused connection on the last expansion box.

Connecting the first dual drive expansion box

Locate the following items, shown in Figure 4-18, for each box you plan to install:

- One system unit-expansion box cable identifiable by a different connector at each end.

You use this cable for only the first box you install. If you have more than one of these cables, set the others aside.

- For each additional box, one 12-inch-long expansion box cable with identical connectors at each end.

Caution: *Using a cable other than the 12-inch cable supplied by Digital between expansion boxes can cause the boxes to malfunction.*

- One expansion box terminator.

You need only one terminator. Set any others aside.

- One expansion box power cord for each box to be installed.

Warning: *The system unit and storage devices must have a **common** electrical ground. Using different power sources for these devices can cause damage your equipment.*

Figure 4-13 Dual Drive Expansion Box Cables, Cord, and Terminator

System unit-expansion
box connector cable (68:50 pin)



SCSI terminator



Expansion box
power cord



12-inch expansion box
connector cable (50:50 pin)



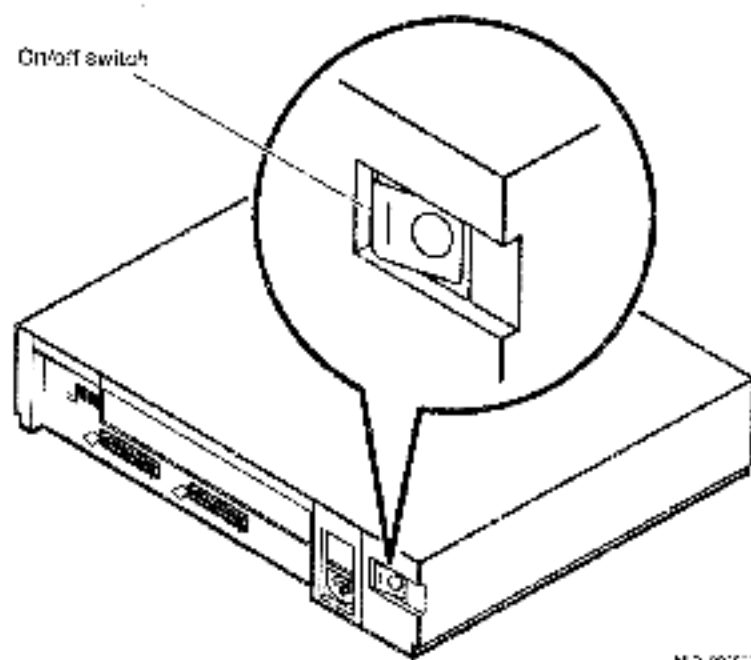
MA-3-002572

To connect expansion boxes:

- 1 Turn the system unit and each expansion box off (Figure 4-14) (set the on/off switch to 0).

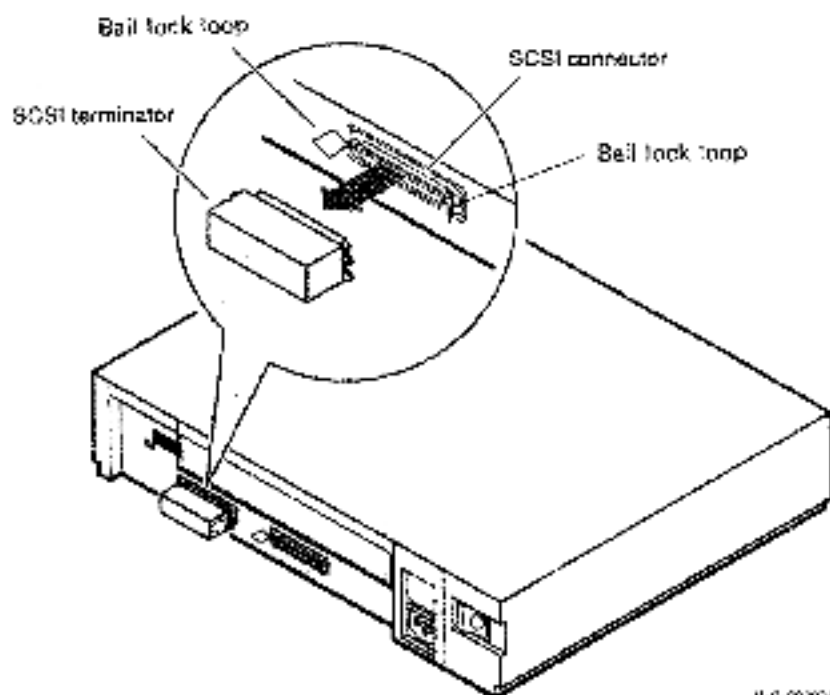
If you have the U.S. power strip, turn it off (set the on/off switch to 0). The power-on indicator light stops glowing.

Figure 4-14 Dual Drive Expansion Box On/Off Switch



- 2 Remove the terminator from the SCSI connector on the back of the system unit, as shown in Figure 4-15. Pull firmly on the plastic strap of the terminator to remove it. Be sure to save the terminator.

Figure 4-15 Removing the SCSI Terminator from the Expansion Box



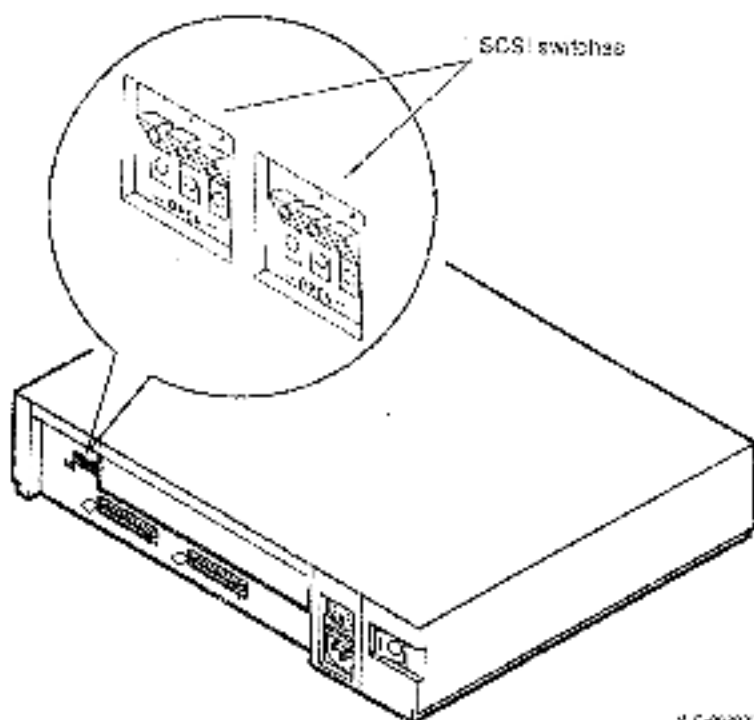
11-21-90/2024

Note: The SCSI connector or terminator on the expansion box covers the SCSI switches. Make sure the switches are set correctly on each box before installing the SCSI connectors or terminator. See Table 4-1.

- 3 Set the SCSI switches on the back of the first box (Figure 4-16). The first box to be installed contains two hard disk drives. The SCSI switches allow you to select a distinct unit number for each SCSI device. In this installation guide, the six devices in the three dual drive hard disk expansion boxes are designated as unit 0, unit 1, unit 2, unit 3, unit 4, and unit 5. Designate the first device as unit 0. (See Table 4-1.) The SCSI switch settings for unit 0 are:

Down Down Down

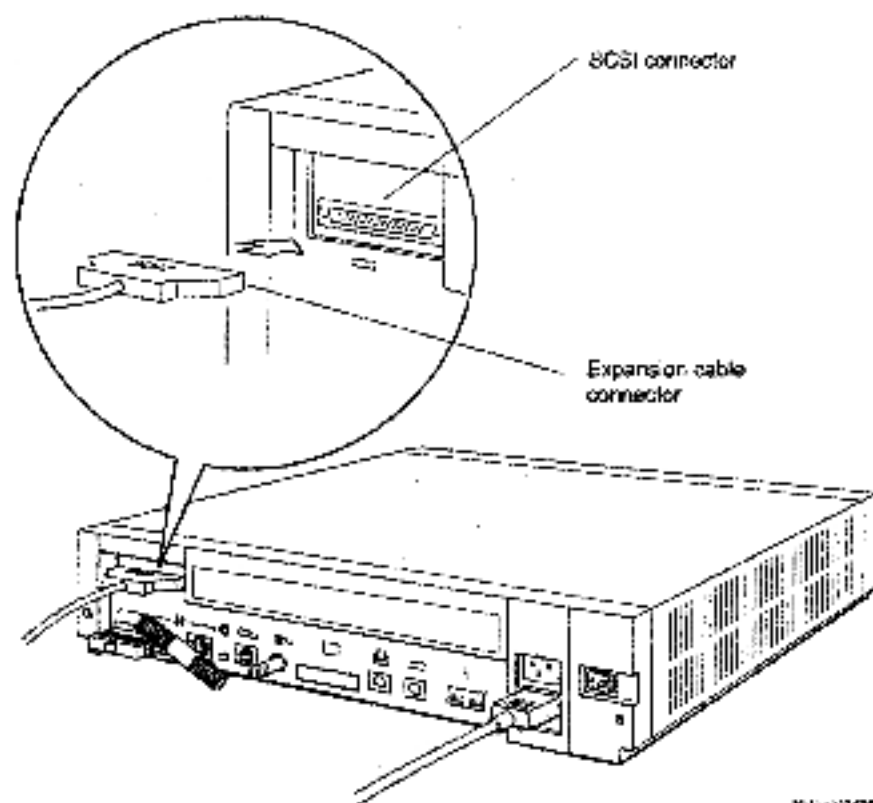
Figure 4-16 SCSI Switch Setting for the First Hard Disk Drive (dual drive enclosure)



4-16-00000

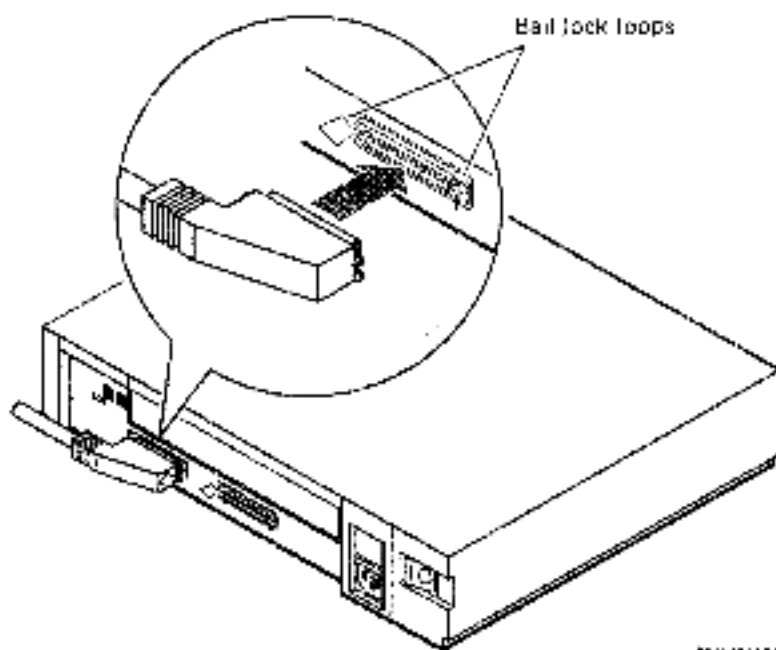
- 4 Orient the smallest of the two connectors on your system unit-expansion box cable properly, and push the cable connector into the SCSI connector on the back of the system unit (Figure 4-17).

Figure 4-17 Attaching a System Unit-Dual Drive Expansion Box Cable to the SCSI Connector on the System Unit



- 5 Attach the free end of the system unit-dual drive expansion box cable to one of the connectors on the back of the dual drive expansion box (Figure 4-18). Either connector can be used.
- a Press the two bail lock loops on one of the expansion box connectors away from the connector.
 - b Orient the cable connector properly and push the cable connector into the expansion box connector as far as it will go.
 - c Press the two bail lock loops firmly against the sides of the connector until they click into the grooves on the connector.

Figure 4-18 Attaching a System Unit-Dual Drive Expansion Box Cable to the SCSI Connector on a Dual Drive Expansion Box



PA-7180-007

Connecting additional dual drive expansion boxes

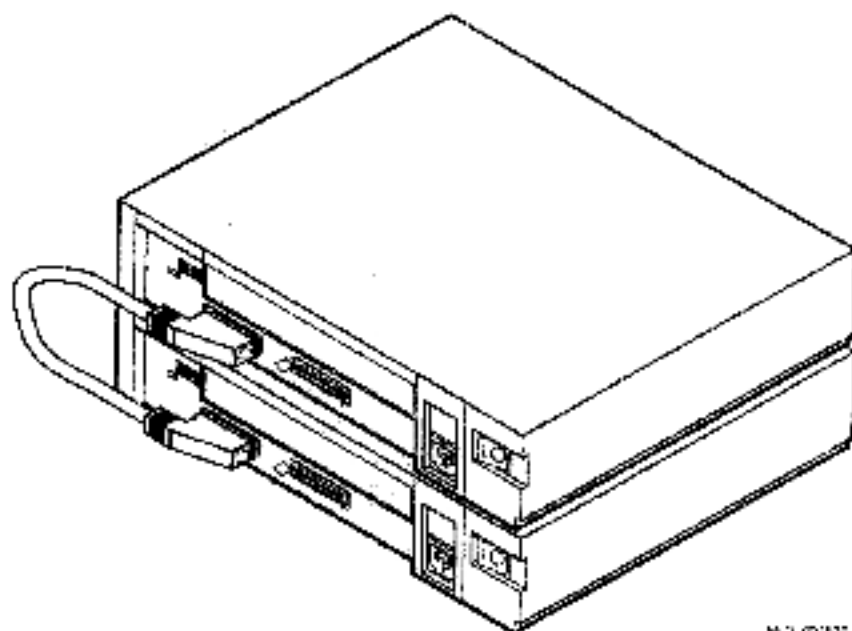
Before you connect any boxes after the first, stack them on top of the first box you connected. Then set the SCSI switches for each box. The unit numbers of the third and fourth hard disk drives are 2 and 3, respectively, and the numbers of the fifth and sixth drives are 4 and 5, respectively. Refer to Table 4-1 for SCSI switch settings.

Important: *You must have a unique SCSI switch setting for each device.*

Set the SCSI switches on the back of your expansion boxes according to Table 4-1.

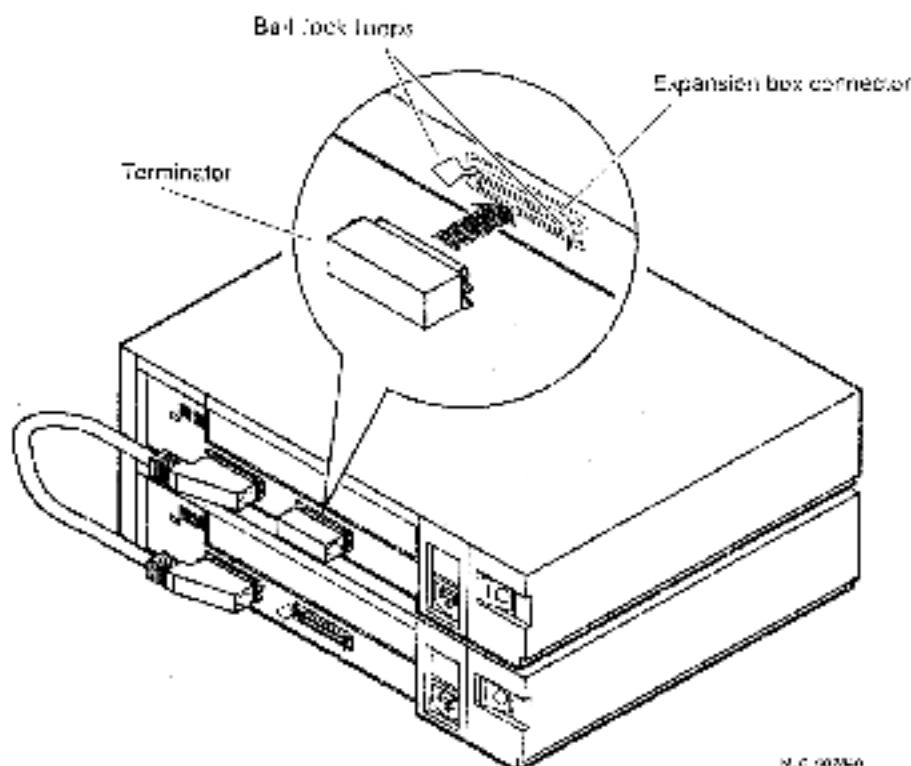
- 1 Plug one end of the 12-inch expansion box cable into the free connector on the back of the previously connected dual drive expansion box.
- 2 Plug the other end of the cable into one of the connectors on the next box, as shown in Figure 4-19.

Figure 4-19 Connecting a Dual Drive Expansion Box to Another Dual Drive Expansion Box



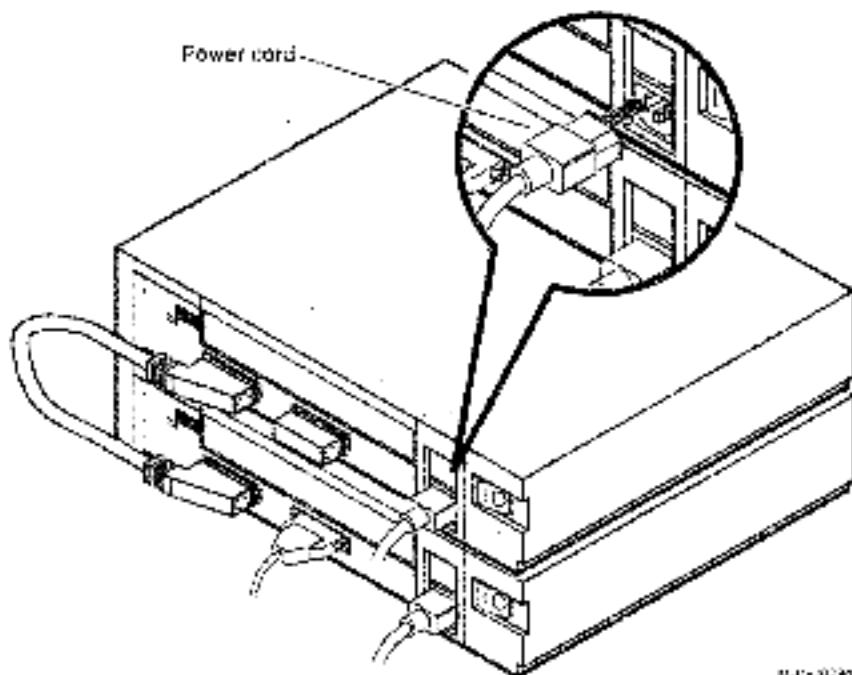
- 3 Repeat steps 1 and 2 for each additional box.
- 4 Attach the terminator that came with your dual drive expansion boxes to the empty connector on your final box, as shown in Figure 4-20.
 - a Press the two ball lock loops on the empty connector away from the connector.
 - b Position the terminator so the widest part of its connector aligns with the widest part of the connector on the box.
 - c Push the terminator into the expansion box connector as far as it will go.
 - d Press the two ball lock loops firmly against the sides of the terminator until they click into the grooves on the terminator.

Figure 4-20 Terminating the Final Dual Drive Expansion Box



- 5 Plug the prongless end of the power cord into the power connector on each dual drive expansion box (Figure 4-21).

Figure 4-21 Connecting the Dual Drive Expansion Box Power Cord



- 6 Plug the pronged end of the power cord into the power strip. Because you are installing more than one box, the power source for your system unit and all expansion boxes should be one common power strip.
- 7 Turn each dual drive expansion box on (set the on/off switch to 1).
- 8 Turn the console terminal on (set the on/off switch to 1).
- 9 Turn the system unit on (set the on/off switch on the back of the unit to 1).

If you have the U.S. power strip, turn your system unit and expansion boxes on (set the power strip on/off switch to 1).

Your system unit runs its self-test and displays the console prompt (>>) when the test is completed successfully.

If a subtest fails;

- a If you have the *U.S.* power strip, turn your system unit and expansion boxes off (set the power strip on/off switch to 0).

If you have the *international* power strip, turn your system unit and expansion boxes off (set the on/off switch on each unit to 0).

- b Check your expansion box connections.

Be sure to inspect your connectors for damaged pins.

- c If you have the *U.S.* power strip, turn your system unit and expansion boxes on (set the power strip on/off switch to 1).

If you have the *international* power strip, turn your system unit and expansion boxes on (set the on/off switch on each unit to 1).

If the subtest still fails, contact your Digital service representative.

- 10 Check your configuration display to be sure each device is recognized by your system.

Connecting Both Single and Dual Drive Expansion Boxes

When connecting both single and dual drive expansion boxes, remember that the number of expansion boxes is limited by the length of the SCSI bus (the internal data path). The maximum number of storage devices is six. The maximum number of expansion boxes varies with the type of box used. Examples of acceptable combinations are:

- Five single drive boxes (total of 5 devices)
- Two single drive boxes plus 2 dual drive boxes (total of 6 devices)
- Three dual drive boxes (total of 6 devices)

IMPORTANT: *Tape drives should be assigned to low location numbers, while hard disks should be given higher location numbers.*

Reading the Configuration Table

Type `test -c` at the console prompt (`>>`) and press RETURN to display your configuration table.

A display similar to that in Figure 4-22 should appear on your screen.

Note: *If the display scrolls off the screen before you can read it, type `control/s` to stop scrolling and `control/q` to resume scrolling. You can type `control/s` and `control/q` by pressing and holding the control (Ctrl) key and typing `s` or `q`.*

Figure 4-22 Sample Configuration Display

```
MEMORY: 24 Megs
VIDEO: NONE
ETHERNET STATION ADDRESS: C8-00-2b-0a-17-6a
SCSI DEVICES:
Unit[7]
Unit[6] SCSI--SII
Unit[5] Device type 1 TAPE
          RMS                      Cxd0 removable media C2K50
          Version                   1
          Response data format     0
          Additional length        0
Unit[4]
Unit[3]
Unit[2] Device type 0 DISK
          RMS                      0x0
          Version                   1
          Response data format     1 CCS
          Additional length        31
          Vendor                   DEC
          Product identification   R255      (C) DEC
          Firmware revision level  0700
Unit[1] Device type 0 DISK
          RMS                      0x0
          Version                   1
          Response data format     1 CCS
          Additional length        31
          Vendor                   DEC
          Product identification   R255      (C) DEC
          Firmware revision level  0700
Unit[0] Device type 0 DISK
          RMS                      0x0
          Version                   1
          Response data format     1 CCS
          Additional length        31
          Vendor                   DEC
          Product identification   R255      (C) DEC
          Firmware revision level  0700
>>
```

From the configuration display in Figure 4-22, you learn the following:

Line 1 — Tells you how much memory you have. The DECsystem 3100 comes with 24 megabytes of memory.

Line 3 — Tells you your Ethernet station address. The address for the system described in the figure is 08-00-2b-0d-f7-6a.

Line 4 — Introduces the list of storage-device locations available in your system. These storage devices are called small computer system interface (SCSI) devices. The remaining lines of this display describe any SCSI devices assigned to Units [7] through [0].

Line 5 — Tells you that the system described in the figure has nothing assigned to Unit [7]. Note that you cannot add a device here.

Line 6 — Tells you that Unit [6] contains the controller that directs the operation of your SCSI devices.

Lines 7 - 11 — Tell you that the system described in the figure has a tape drive assigned to Unit [5]. The words Device type 1 TAPE appear on the unit-number line.

Line 12 — Tells you that the system described in the figure has nothing assigned to Unit [4]. You could add a device here.

Line 13 — Tells you that the system described in the figure has nothing assigned to Unit [3]. You could add a device here.

Lines 14 - 21 — The system in the figure has a hard disk drive assigned to Unit [2]. The words Device type 0 DISK appear on the unit-number line for any unit that contains a hard disk.

Lines 22 - 29 — The system in the figure has a hard disk drive assigned to Unit [1].

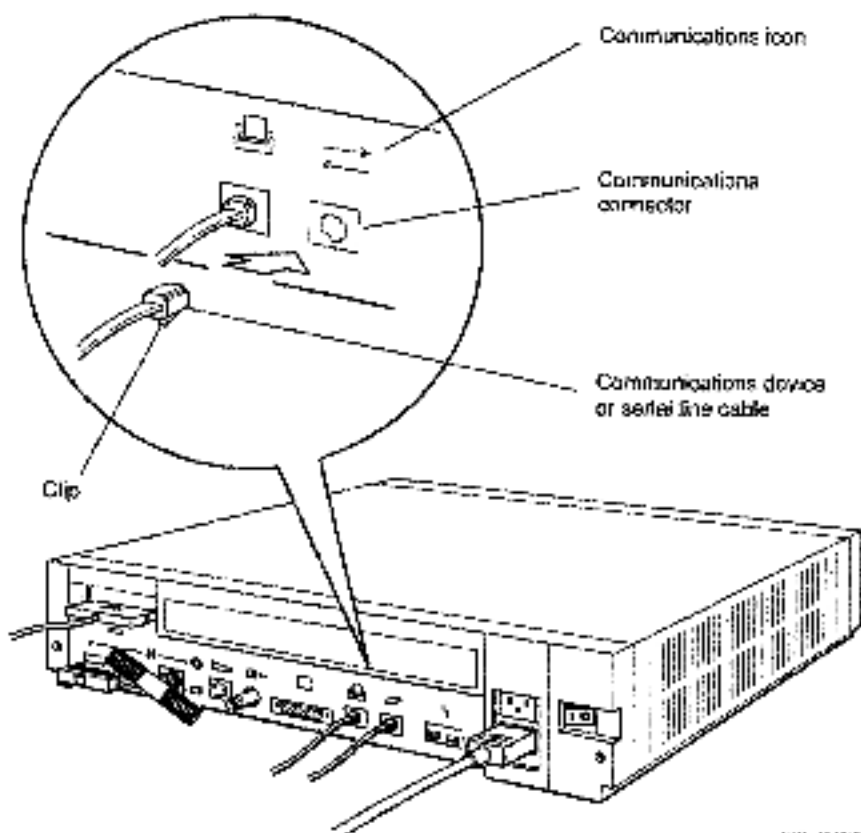
Lines 30 - 37 — The system in the figure has a hard disk drive assigned to Unit [0].

Installing a Printer or Communications Device

You will need a serial line cable to connect the printer or communications device to your system unit.

- 1 Find the serial line cable that came with your shipment.
 - 2 Follow the instructions that came with your device to perform these tasks:
 - Set up and attach the device to the cable that came with it.
 - Be sure the device is turned off (on/off switch set to 0).
 - Set the proper baud rate and control settings.
 - 3 Turn the system unit off (set the on/off switch to 0).
 - 4 Attach one end of the serial line cable to the communications connector of the device.
 - 5 Position the connector on your device cable, or on the free end of your serial line cable, so the clip is down.
 - 6 Push the cable connector into the connector under the communications icon on the back of the system unit, as shown in Figure 4-23.
 - 7 Plug the power cord into the power source.
 - 8 Turn the device on (set the on/off switch to 1).
 - 9 Turn the system unit on (set the on/off switch to 1).
- Your system unit runs its self-test and displays the console prompt (>>) when the test is completed successfully.

Figure 4-23 Connecting a Printer or Communications Device



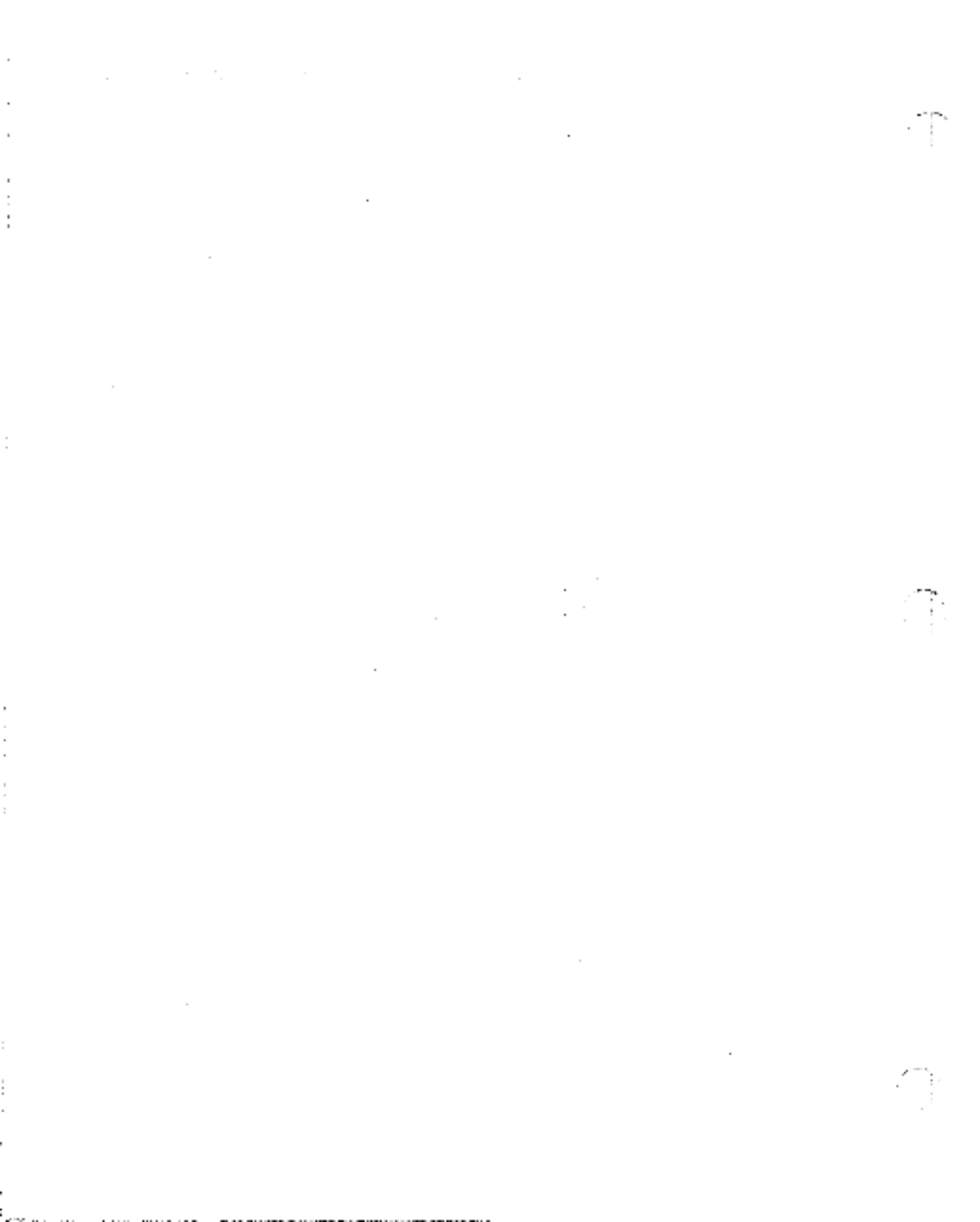
9000-007-000

If a subtest fails:

- a Turn off your device and system unit (set on/off switches to 0).
- b Check your device connections.
- c Turn your device and system unit on again.

If the system test still fails, contact your Digital service representative.

See the *DECsystem 3100 Operator's Guide* or the documentation that came with your ULTRIX-32 (RISC) software for instructions on setting the correct baud rate in the DECsystem 3100 environment variables.



Installing Ethernet

You can connect your DECsystem 3100 to an *existing* Ethernet network. This allows you to down-line load worksystem software from the host computer.

You can also *create* a network by connecting your DECsystem 3100 to client workstations.

Caution: *Do not disconnect a cable or a terminator from an operating system. This will disrupt network operation.*

See Appendix C for additional guidelines on planning and installing Ethernet networks.

This chapter tells you how to:

- Select your Ethernet option
- Install ThinWire Ethernet
- Install Standard Ethernet
- Test for successful installation

Selecting Your Ethernet Option

All Ethernet connections are either ThinWire or standard Ethernet. ThinWire Ethernet is generally used for geographically small (local area) networks. Standard Ethernet is generally used for geographically large networks.

You have the following Ethernet connection options:

- You can connect ThinWire Ethernet at the end of a cable segment.
 - Requires one cable connection
 - Requires one terminator installation
- You can connect ThinWire Ethernet within a cable segment.
 - Requires two cable connections
 - Requires no terminator installation
- You can connect standard Ethernet.
 - Requires one cable connection
 - Requires no terminator installation

You must know your Ethernet station address to successfully use any of these options. To find your Ethernet station address, follow the procedure in the next section, "Finding Your Ethernet Station Address."

Finding Your Ethernet Station Address

To find your Ethernet station address:

- 1 Type **init** at the console prompt (**>>**). A display similar to the following should appear on the screen. The second line of the display shows your Ethernet station address.

```
xc01 v6.7  
06-02-2b-0d-f7-6a  
Cxc0100000  
>>
```

- 2 Record your Ethernet station address and report it to your system manager.

Connecting ThinWire Ethernet

ThinWire Ethernet cables are connected to the Ethernet T-connector on the back of the system unit. You installed two terminators on the Ethernet T-connector before turning on the system to run the system self-test (see "Connecting the ThinWire Ethernet Terminator" in Chapter 2).

The difference between the two ThinWire installations is the number of cables and terminators installed on the T-connector:

- If you install ThinWire Ethernet at the end of a cable segment, you need one cable and one terminator.
- If you install ThinWire Ethernet within a cable segment, you need two cables and no terminators.

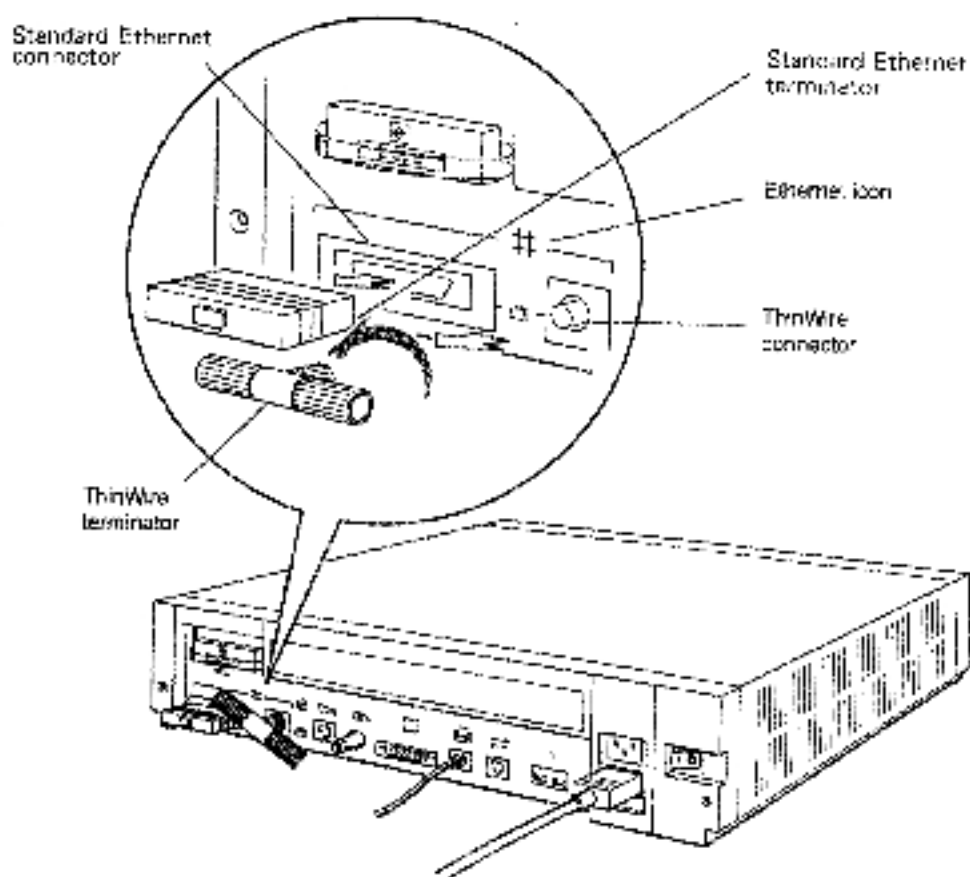
To install either type of ThinWire Ethernet, find the ThinWire Ethernet cable(s) that came with your shipment or were provided by your system manager.

- 1 Turn the system unit off (set the on/off switch on the back to 0).
- 2 Remove the standard Ethernet terminator and the ThinWire terminated T-connector from the back of the system unit, as shown in Figure 5-1.

If you are installing ThinWire Ethernet at the *end of a cable segment*, go to step 3.

If you are installing ThinWire Ethernet *within a cable segment*, go to step 4.

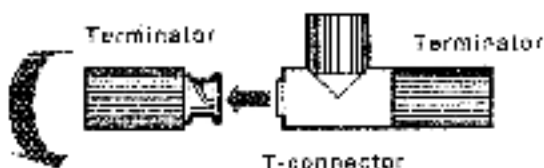
Figure 5-1 Removing the Standard Ethernet Terminator and ThinWire T-Connector



12-01-102843

- 3 For installation of the *end of cable segment*:
- Remove one terminator from the T-connector (Figure 5-2).
 - Turn the terminator to the left until you can pull it away from the T-connector.

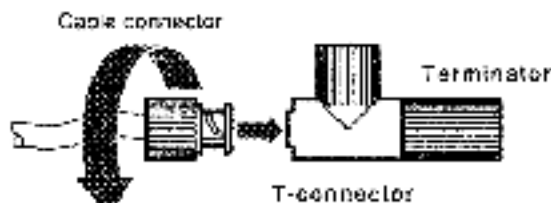
Figure 5-2 Removing One Terminator from the T-Connector



WIC-00264

- Attach the cable connector to the free end of the T-connector (Figure 5-3).
- Firmly push the cable connector into the T-connector. Turn the cable connector to the right until it slides forward and locks into place.

Figure 5-3 Connecting One ThinWire Cable to the T-Connector

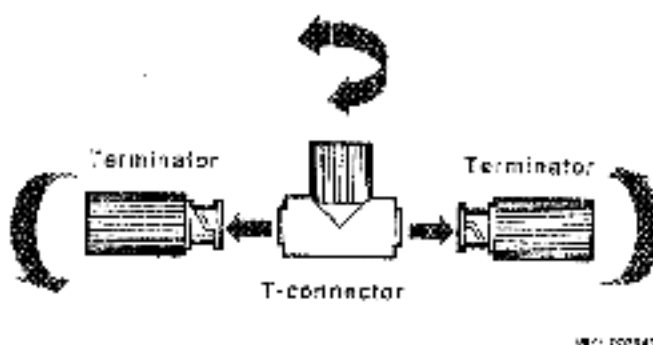


WIC-00265

- Attach the T-connector to the system unit.

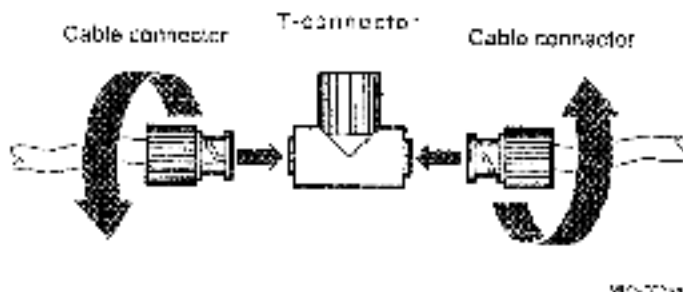
- 4 For installation of a *within a cable segment*:
 - a Remove both terminators from the T-connector (Figure 5-4).
 - b Turn each terminator to the left until you can pull it away from the T-connector.

Figure 5-4 Removing Two Terminators from the T-Connector



- c Attach the cable connectors to the T-connector (Figure 5-5).
 - d Firmly push each cable connector into the T-connector. Turn each cable connector to the right until it slides forward and locks into place.

Figure 5-5 Connecting Two ThinWire Cables to the T-Connector



- e Attach the T-connector to the system unit.

Completing the ThinWire Ethernet Installation

- 1 Turn the system unit on (set the on/off switch to 1).
The ThinWire selector light to the left of the T-connector should glow green.
 - If the light fails to glow, use the point of a pen or some similar tool to press and release the Ethernet selector button. The button is located to the left of the ThinWire connector.
 - If the light still fails to glow, contact your Digital service representative.
- 2 When your system runs its self-test again, it will stop at subtest 2 to indicate that the Ethernet test has failed. This subtest will succeed when you (or your system manager) connect your DECsystem 3100 to the network.
- 3 Press the reset button on the back of the system unit and continue your installation when the console prompt (>>) appears on the screen.
- 4 Type init at the console prompt (>>). A display similar to the following should appear on the screen. The second line of the display shows your Ethernet station address.

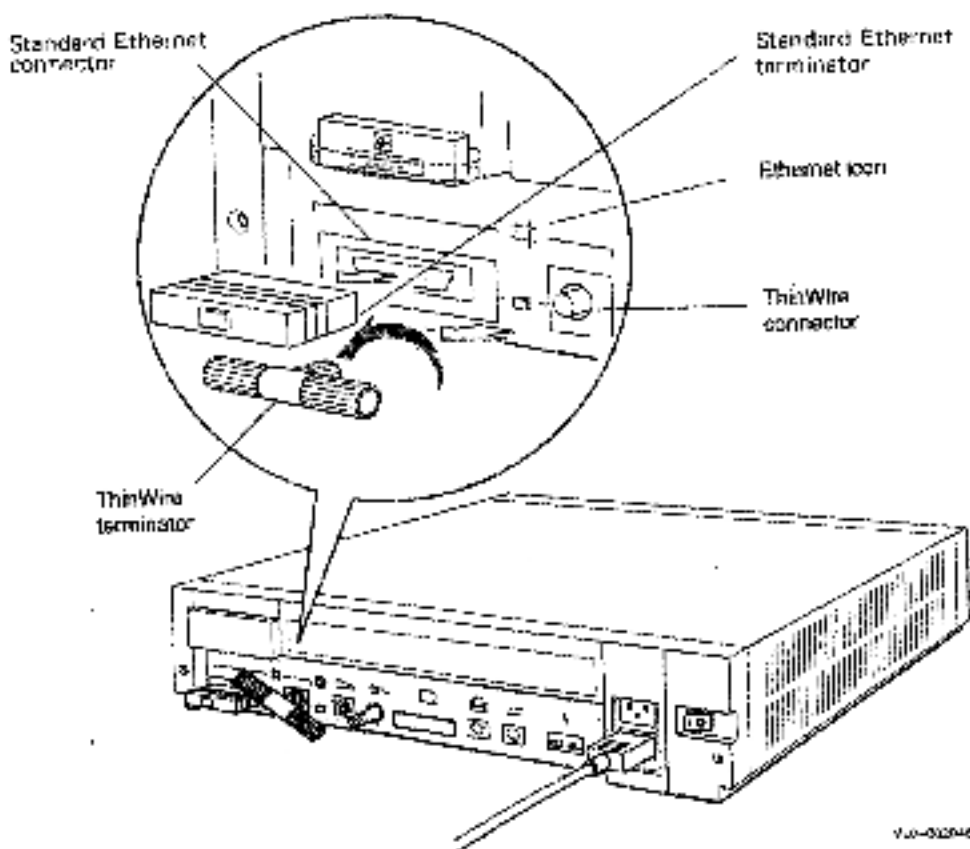

```
KN01 V6.7  
05-C0-2b-Cd-f7-8a  
0x01800000  
>>
```
- 5 Give your Ethernet station address to your system manager.

Connecting Standard Ethernet

Find the Ethernet cable with the 15-pin connectors that came with your shipment or was provided by your system manager.

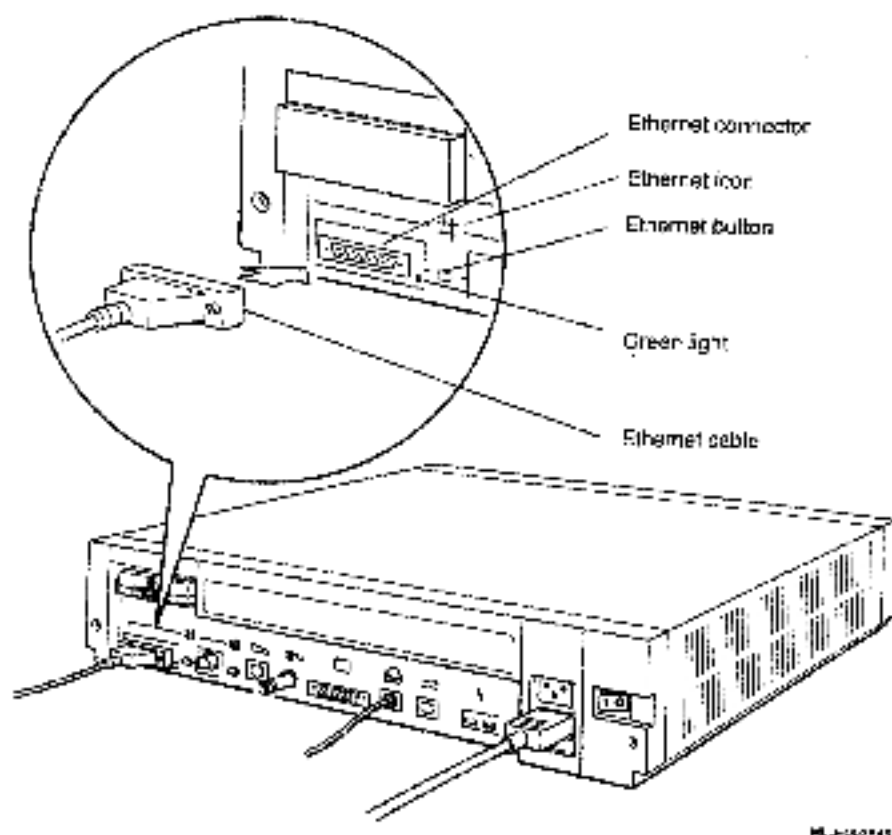
- 1 Turn the system unit off (set the on/off switch to 0).
- 2 Remove the standard Ethernet terminator from the Ethernet connector.
- 3 Turn the ribbed portion of the terminated T-connector to the left and pull the T-connector out of the ThinWire connector on the back of the system unit, as shown in Figure 5-6.

Figure 5-6 Removing the Standard Ethernet Terminator and ThinWire T-Connector



- 4 Position the standard Ethernet cable connector so the widest part of the connector aligns with the widest part of the connector on the system unit, as shown in Figure 5-7.
- 5 Push the cable connector into the standard Ethernet connector on the system unit.
- 6 Find the slide latch, located at one side of the standard Ethernet connector on the system unit.
- 7 Push the latch all the way to the other side to lock the standard Ethernet cable connector in place.

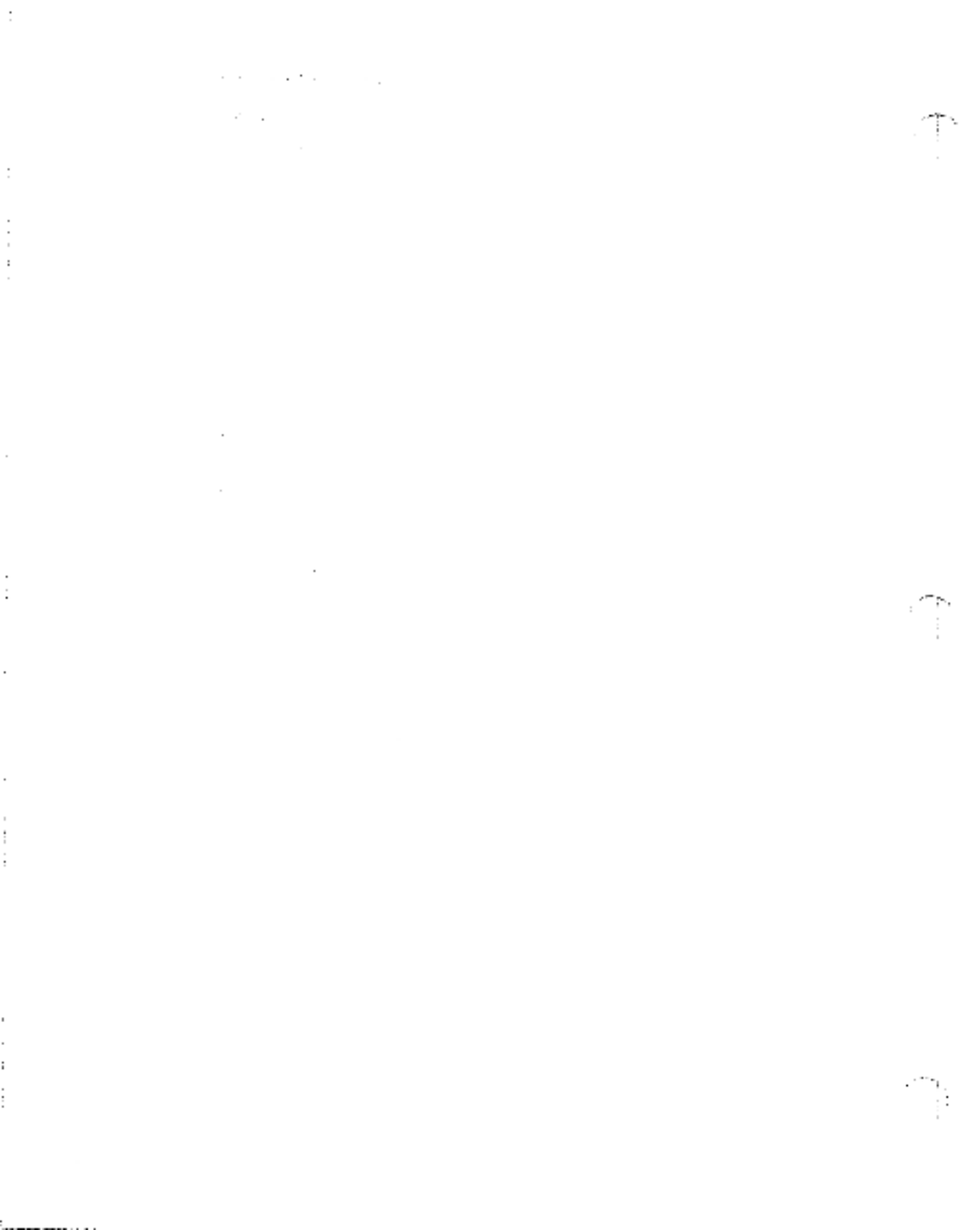
Figure 5-7 Connecting Standard Ethernet



Completing the Standard Ethernet Installation

- 1 Turn the system unit on (set the on/off switch to 1).
The Ethernet selector light between the standard Ethernet connector and the Ethernet selector button should glow green.
 - If the light fails to glow, use the point of a pen or some similar tool to press and release the Ethernet button. The button is located to the left of the ThinWire connector.
 - If the light still fails to glow, contact your Digital service representative.
- 2 When your system runs its self-test again, it will stop at subtest 2 to indicate that the Ethernet test has failed. This subtest will succeed when you (or your system manager) connects your DECsystem 3100 to the network.
- 3 Press the reset button on the back of the system unit and continue your installation when the console prompt (>>) appears on the screen.
- 4 Type `init` at the console prompt (>>). A display similar to the following should appear on the screen. The second line of the display shows your Ethernet station address.

```
RN01 V6.7
04-00-2b-0d-f7-65
0x01800000
>>
```
- 5 Give your Ethernet station address to your system manager and request connection to the network.



Completing the Hardware Installation

This chapter tells you how to:

- Gather the information you need to begin installing your DECsystem 3100 ULTRIX-32 software
- Install your applications software

Important: *If line 1 of your power-up display shows KN01 V6.5 or a lower version number, and you issue any diagnostic command, you must first issue a hardware reset or an init command before attempting a boot or an auto command.*

Installing Your DECsystem 3100 Software on a Hard Disk

Using a Tape Drive

When using a tape drive to install your DECsystem 3100 software on a hard disk, you need:

- A TK50Z tape drive
- The *ULTRIX TK50Z Tape Cartridge Kit*
- An RZ55 hard disk drive

Note: *Your hard disk drive is formatted (ready to receive information) when you receive it from the factory.*

In addition, you need to know

- The unit number of your tape drive
- How to use tape cartridges

See the *DECsystem 3100 Operator's Guide* or the documentation that came with your tape drive for instructions on using tape cartridges.

To find the unit number of your tape drive:

Type **test -c** at the console prompt (**>>**) and press the RETURN key.

A display similar to the one shown in Figure 6-1 appears on the screen.

Note: If the display scrolls off the screen before you can read it, type **control/s** to stop scrolling and **control/q** to resume scrolling. You can type **control/s** and **control/q** by pressing and holding the control (Ctrl) key and typing **s** or **q**.

Figure 6-1 Sample Configuration Display

```
MEMORY: 24 Megs
VIDEO: NONE
ETHERNET STATION ADDRESS: 05-00-20-0d-r7-0a
SCSI DEVICES:
Unit[7]
Unit[6]KRM1--SFI
Unit[5] Device type 1 TAPE
          RMB                      0xd0 removable media T2K50
          Version                    1
          Response data format      0
          Additional length         0
Unit[4]
Unit[3]
Unit[2]
Unit[1]
Unit[0]
>>
```

Line 4 of this display introduces the list of hard disk and tape drives installed as part of your system.

- For hard disk drives, the following appears on the line that contains the unit number:
Device type 0 DISK
- For tape drives, the following appears on the line that contains the unit number:
Device type 1 TAPE

In the sample display in Figure 6-1, you can see that Unit [5] contains a tape drive.

To install your ULTRIX-32 software, turn to "Where to Go from Here" later in this chapter.

Using Ethernet

When using Ethernet to install your ULTRIX-32 software on a hard disk, you need to have the following:

- A connection to Ethernet
- An RZ55 hard disk drive

Note: Your hard disk drive is formatted (ready to receive information) when you receive it from the factory.

To install your ULTRIX-32 software, see "Where to Go from Here," which follows this section.

Where to Go from Here

The *ULTRIX Documentation Overview for RISC Processors* describes the documentation kits available for your DECsystem 3100.

Installing the ULTRIX-32 (RISC) Software

Read the release notes and follow the instructions provided in the installation guides that came with the software product.

Installing Application Software Products

Follow the instructions provided in the installation guides that came with the software product.

Installing the DECsystem 3100 for Experienced Installers

This summary of installation procedures is intended for experienced installers. For complete instructions, read Chapters 2 through 6.

The instructions given here assume that all power cords remain unplugged until step 10 and that power switches remain in the off (O) position until step 12.

Warning: *Turning on power before you are instructed to do so can cause personal injury and damage equipment.*

Note: *Use of a console terminal is recommended. See Chapter 2 for installation of a console terminal.*

Installing the Basic DECsystem 3100

Follow these steps for installing the DECsystem 3100:

- 1 Review site requirements.
- 2 Unpack and check your shipment.
- 3 Set up the system unit.
- 4 Attach the mouse loopback plug to the back of the system unit at the mouse icon.
- 5 Connect the SCSI terminator to the SCSI connector on the system unit.
- 6 Terminate ThinWire and standard Ethernet.

- 7 Set up the console terminal.
- 8 Connect the console terminal cable to the communications connector on the console terminal.
- 9 Connect the console terminal cable to the printer/console connector on the system unit.
- 10 Connect the console terminal to a power source.
- 11 Connect the system unit power cord to the power strip.
- 12 Turn the console terminal on and check the console terminal self-test.
- 13 Turn the DECsystem 3100 system unit on.
- 14 Check the results of the power-up self-test.
 - If the test is successful, the terminal shows a display similar to the following:

```
KN01 V6.7
DE-00-2b-04-17-6a
Dx0L#00000
>>
```
 - If the terminal screen remains blank, contact your system manager or refer to the *DECsystem 3100 Operator's Guide*.
- 15 Type **init** at the console prompt to find your Ethernet address. Give your Ethernet station address to your system manager.
- 16 Install any peripheral devices according to the instructions given in "Installing Peripheral Devices," the next section of this chapter.
- 17 Install the software.

Installing Peripheral Devices

Caution: *Attaching a peripheral device to the wrong connector on the system unit can damage the system unit and peripheral devices.*

Installing External Storage Devices

To install external storage devices, such as devices mounted in the single drive or dual drive expansion boxes:

Connect all external storage devices to the same power strip as your DECsystem 3100.

Note: *If you are installing the optional tape drive, plug the power cord into the power strip or into the power connector on the back of the system unit.*

Caution: *Using different power sources for different storage devices can damage your equipment.*

Connecting an expansion box to the system unit

- 1 Set up the device and be sure the SCSI switches on the back of the box are set correctly.
 - Your first hard disk drive SCSI switch settings are:
Down Down Down
- 2 Attach the cable with two different connectors on it to the SCSI connector on the system unit and to one of the connectors on the back of the box.

Connecting additional expansion boxes

- 1 Stack the boxes on top of the first box.
- 2 Set the SCSI switches for each box. Use the SCSI switch settings listed in Table 4-1.
- 3 Use the 12-inch (for dual drive) or 18-inch (for single drive) expansion box cable with identical connectors at each end to connect the next expansion box to the installed box.
Repeat this step for each additional box.

Caution: *Using a cable other than the one supplied by Digital between expansion boxes may cause the boxes to malfunction.*

- 4 Plug the expansion box terminator into the empty connector on your final box.

Installing a Printer or Communications Device

To install a printer or communications device:

1. Set up the device and its cable according to the instructions that came with it.
2. Attach the device connector to the back of the system unit at the communications icon.

See the *DECsystem 3100 Operator's Guide* or the documentation that came with your ULTRIX-S2 (RISC) software for instructions on setting the baud rate in the DECsystem 3100 environment variables.

Installing Ethernet

To install Ethernet:

1 Select your Ethernet option:

- ThinWire Ethernet
 - At the end of a cable segment
 - Within a cable segment
- Standard Ethernet

2 Find your Ethernet address.

3 Connect ThinWire Ethernet.

- End of a cable segment:
 - a Remove one terminator from the T-connector and connect a cable in its place.

Caution: *Because of the graphite in pencil lead, using the point of a pencil to press the Ethernet button can damage the system unit. This caution refers to the next step.*

- b Use a pen point or similar object to press the Ethernet button to get the ThinWire setting. See previous caution.
 - c Turn your system on.
- Within a cable segment:
 - a Remove both terminators from the T-connector and connect the ThinWire cable connectors.
 - b Use a pen point or similar object to press the Ethernet button to get the ThinWire setting.
 - c Turn your system on.

4 Connect standard Ethernet

- a Plug the cable connector into the Ethernet connector on the system unit.
- b Use a pen point or similar object to press the Ethernet button to get the standard Ethernet setting.
- c Turn your system on.

7

8

9

A

Environmental Requirements

This appendix lists the physical description, nonoperating conditions, and operating conditions for these units:

- System unit (Tables A-1 to A-3)
- RZ55 Hard Disk (Tables A-4 to A-6)
- TK50Z Tape Drive (Tables A-7 to A-9)

Table A-1 System Unit Description

	Weight	Height	Width	Depth
System Unit	17.8 kg	14.90 cm	46.38 cm	10.00 cm
	39 lb	6.90 in	18.36 in	15.75 in

Table A-2 System Unit Nonoperating Conditions

Temperature range	-40°C to 66°C (-40°F to 151°F)
Relative humidity	10% to 95% at 66°C (151°F)
Altitude	4900 m (16000 ft)
Maximum wet bulb temperature	28°C (82°F)
Minimum dew point	2°C (36°F)

Table A-3 System Unit Operating Conditions

Temperature range ¹	10°C to 40°C (50°F to 104°F)
Temperature change rate	11°C (20°F) per hour maximum
Relative humidity	10% to 90% (noncondensing)
Altitude	2400 m (8000 ft) at 38°C
Maximum wet bulb temperature	28°C (82°F)
Minimum dew point	2°C (36°F)
Input voltage	Auto adjust 100-120 VAC to 220-240 VAC
Input current	2.8 Amps at 100 to 120 VAC 1.5 Amps at 220 to 240 VAC
Power	190 Watts
Frequency	47 to 68 Hz
Heat dissipation	155 Watts maximum

¹Reduce maximum temperature by 1.9°C (3.24°F) for each 1000-meter increase in altitude

Table A-4 RZ55 SCSI Hard Disk Drive Description

	Weight	Height	Width	Depth
RZ55 Expansion Box	18.2 kg	14 cm	33 cm	29 cm
	29 lb	5.5	12.75 in	11.25 in

Table A-5 RZ55 SCSI Hard Disk Drive Nonoperating Conditions

Temperature range	-40°C to 66°C (-40°F to 151°F)
Temperature change rate	20°C (36°F) per hour maximum
Relative humidity	8% to 95% (packaged)
Altitude	-304 to 12300 m (-1000 ft to 40000 ft)
Maximum wet bulb temperature	46°C (115°F) (packaged)

Table A-6 RZ55 SCSI Hard Disk Drive Operating Conditions

Temperature range ¹	10°C to 55°C (50°F to 131°F)
Relative humidity	8% to 80% (noncondensing)
Altitude	-304 to 4600 m (-1000 to 15000 ft)
Maximum wet bulb temperature	25.6°C (78°F)
Input current	2.4 Amps at 100 to 120 VAC 1.9 Amps at 220 to 240 VAC
Power	160 Watts
Frequency	50 to 60 Hz
Heat dissipation	32 Watts maximum

¹Reduce maximum temperature by 1.8°C (3.24°F) for each 1000-meter increase in altitude.

Table A-7 TK50Z Tape Drive Description

	Weight	Height	Width	Depth
TK50Z Expansion Box	12.7 kg 28 lb	14 cm 5.5	23 cm 12.75 in	29 cm 11.25 in

Table A-8 TK50Z Tape Drive Nonoperating Conditions

Temperature range	-30°C to 66°C (-22°F to 151°F)
Relative humidity	10% to 95% (noncondensing)
Maximum wet bulb temperature	28°C (82°F)
Minimum dew point	2°C (36°F)

Table A-9 TK50Z Tape Drive Operating Conditions

Temperature range ¹	10°C to 40°C (50°F to 104°F)
Relative humidity	10% to 90% (noncondensing)
Maximum wet bulb temperature	28°C (82°F)
Minimum dew point	2°C (36°F)
Input current	2.4 Amps at 100 to 120 VAC 1.3 Amps at 220 to 240 VAC
Power	160 Watts
Frequency	50 to 60 Hz
Heat dissipation	32 Watts maximum

¹Reduce maximum temperature by 1.5°C (3.24°F) for each 1000-meter increase in altitude.

B

DECsystem 3100 Part Numbers

Table B-1 Loopback and Terminator Connectors

Item	Part Number
Internal SCSI loopback connector	12-31188-01
MMI loopback connector	12-25083-01
Mouse loopback plug	12-25628-01
Standard loopback connector	12-22196-01
ThinWire T-connector	12-25869-01
ThinWire terminators	12-28318-01
REJ40 test disc	30-23507-03

Table B-2 Basic Components

Item	Order Number
External disk drive, 325-Mbyte, 120 volts	RZ55-FA
External disk drive, 325-Mbyte, 240 volts	RZ55-F3
Internal disk drive, 100-Mbyte	RZ23-EF
Memory expansion	MS01-AA
Tape drive, 95-Mbyte, 120 volts	TK502-GA
Tape drive, 95-Mbyte, 240 volts	TK502-G3

Table B-3 Cords, Cables, and Connectors

Item	Part Number	Order Number
Expansion box power cord	17-00606-10	—
Monitor-system unit cable (U.S.)	17-00442-26	—
Internal SCSI cable	17-002868-02	—
SCSI cover	74-38189-01	—
SCSI 68-pin terminator	12-29635-01	—
System unit power cord (U.S.)	17-00806-10	—
Standard Ethernet cable	—	BNE4C-02
Standard Ethernet terminator (loopback connector)	12-22196-01	—
ThinWire T-connector	12-26534-01	H8223
ThinWire terminator	12-26535-01	H8225
ThinWire cable (12 ft)	17-01241-09	BC16M-12
ThinWire LAN assembly kit	22-00112-01	BC16T-12
Video cable, monochrome	17-01992-01	BC23K-03
Video cable, color	17-01992-01	BC23J-03
68-pin to 50-pin system unit-expansion box connector cable	17-02008-01	BC56H-03-B01
12-inch 50-pin to 50-pin connector cable	—	BC09K-DE
18-inch 50-pin to 50-pin connector cable	17-01351-04	BC19J-1E
50-pin SCSI terminator for expansion box	12-30552-01	—
25-pin (F) to 6-pin (F) MMJ adapter or	12-23590-01	H8571-A
6-pin (MD) to 6-pin (M) MMJ cable	17-00813	BC16E-16

Table B-4 Documentation

Item	Order Number
DECsystem 3100 Documentation Kit	EK-D3100-DE-001
<i>DECsystem 3100 Installation Guide</i>	EK-D3100-IN-001
<i>DECsystem 3100 Operator's Guide</i>	EK-D3100-OG-001
<i>DECsystem 3100 Maintenance Guide</i>	EK-332AA-MG
ULTRIX Software	
The ULTRIX Worksystem User Kit	QA-VV1AD-GZ
The ULTRIX Worksystem Programming Kit	QA-VV1AE-GZ
The ULTRIX Worksystem Full Kit	QA-VV1AA-GZ
<i>Release Notes for RISC Processors</i>	AA-ML77A-TE
<i>Technical Summary for RISC Processors</i>	AA-MM36A-TE
<i>Documentation Overview for RISC Processors</i>	AA-MM05A-TE
<i>Guide to Server Kit Installation for RISC Processors</i>	AA-ML74A-TE
<i>The Little Gray Book: An ULTRIX Primer</i>	AA-MG64A-TE
RZ55 Disk Drive	
<i>The RZ55 Disk Drive Service Manual</i>	EK-RZ55D-SV
LN03 Printer	
<i>Installing and Using the LN03</i>	EK-MLN03-UG
LN03 PLUS Printer	
<i>LN03 PLUS User Guide</i>	EK-LN03S-UG
LN03R ScriptPrinter	
<i>ScriptPrinter Installation Guide</i>	EK-LN03R-UG
<i>ScriptPrinter Operator Guide</i>	EK-LN03R-OG
LA100 Printer	
<i>LA100 Letterwriter User Documentation Kit</i>	EK-LW100-UG

(continued on next page)

Table B-4 (Cont.) Documentation

Item	Order Number
LA75 Printer	
<i>Installing and Using the LA75 Companion Printer</i>	EK-0LA75-UG
LJ250/252 Printer	
<i>Installing and Using the LJ250/252 Companion Color Printer</i>	EK-LJ250-DK
TK50Z Tape Drive	
<i>TK50Z Tape Drive Subsystem Owner's Manual</i>	EK-LEP05-OM
<i>TK50Z User's Guide</i>	EK-OTK50-UG
<i>Technical Manual</i>	EK-OTK50-TM
DECconnect and Standard Ethernet	
<i>DECconnect System General Description</i>	EK-DECSY-GD
<i>DECconnect System Requirements Evaluation Workbook</i>	EK-DECSY-RG
<i>DECconnect System Installation and Verification Guide</i>	EK-DECSY-VG
<i>DECconnect System Standalone ThinWire Networks: Planning and Installation Guide</i>	EK-DECSY-TG
<i>DECconnect System Planning and Configuration Guide</i>	EK-DECSY-CG
<i>Remote System Manager Server Documentation Kit</i>	QU013-GZ
<i>Remote System Manager Client Documentation Kit</i>	QU014-GZ
<i>Ethernet ThinWire Repeaters (DUMPR/DESPR) Installation and User's Guide</i>	EK-THNRP-UG

Ethernet Configuration Guidelines

This appendix summarizes configuration guidelines from the *DECconnect Planning and Configuration Guide*. Refer to that manual for more detailed information about planning and installing networks.

General guidelines in this appendix describe these:

- Standalone ThinWire Ethernet
- Standalone DEMPR ThinWire Ethernet
- Standalone Cascading DEMPR ThinWire Ethernet
- Connections to standard Ethernet
- Combining ThinWire and standard Ethernet

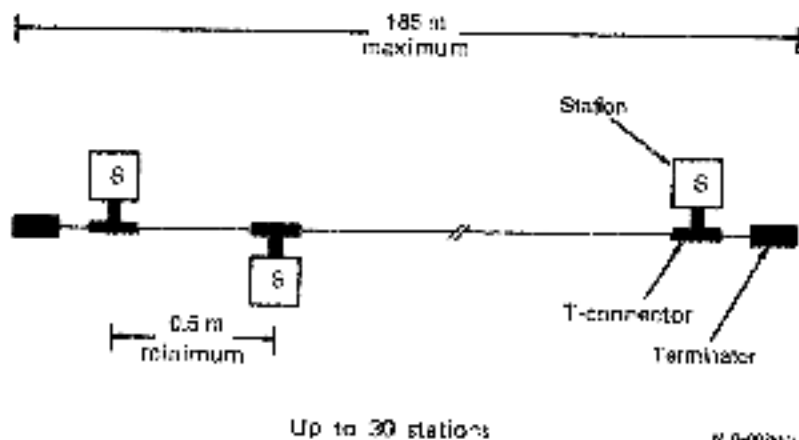
In addition, a glossary of useful terms is included at the end of this appendix.

ThinWire Ethernet

Standalone ThinWire Ethernet Configuration

- The cable can be up to 185 meters (606 feet) long.
- Clients (stations) attach to the cable using T-connectors. T-connectors plug directly into the station.
- There must be at least 0.5 meters (1.6 feet) between stations.
- There can be up to 30 stations on a cable with terminators plugged into the T-connectors on each end station. (See Figure C-1.)

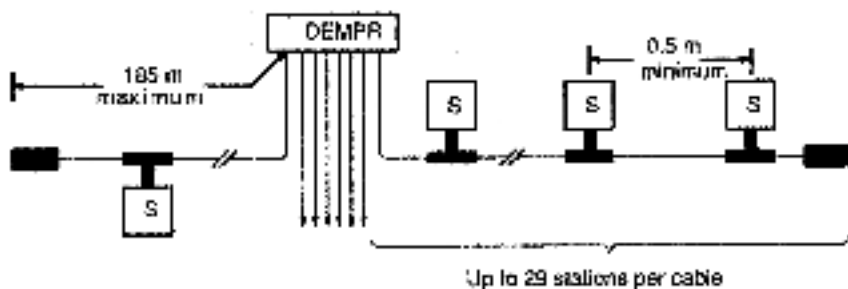
Figure C-1 Standalone ThinWire Ethernet Configuration



Standalone DEMPR Configuration

- One to eight ThinWire cables can be attached to a DEMPR (Digital Ethernet Multiport Repeater).
- Each cable can be up to 185 meters (606 feet) long.
- Stations attach to the cable using T-connectors. T-connectors plug directly into the station.
- There must be at least 0.5 meters (1.6 feet) between stations.
- There can be up to 29 stations per cable. (See Figure C-2.)

Figure C-2 Standalone DEMPR (Repeater) Configuration

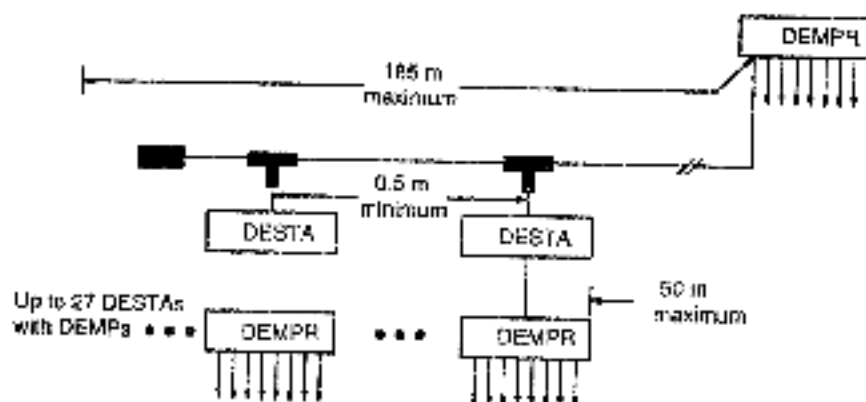


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Standalone Cascading DEMPRs Configuration

- Cascading DEMPRs cannot be connected to a standard Ethernet LAN.
- There can be up to two DEMPRs between stations. Therefore, you can cascade DEMPRs on one of the ThinWire cables attached to a DEMPR.
- The ThinWire cable with the cascading DEMPRs can be up to 185 meters (606 feet) long.
- DEMPRs are connected to the ThinWire cable using DESTA transceivers. A DESTA is connected directly to ThinWire Ethernet with a T-connector and is connected to the DEMPR with 5 to 60 meters (16.5 to 165 feet) of transceiver cable.
- There can be up to 29 DESTAs (with their corresponding DEMPRs) on the cable.
- There must be at least 0.5 meters (1.6 feet) between DESTAs or stations. (See Figure C-3.)

Figure C-3 Standalone Cascading DEMPR (Repeater) Configuration



ThinWire Ethernet Troubleshooting

Use this checklist to troubleshoot a ThinWire Ethernet segment:

- Make sure all connections are secure.
- Make sure there is a T-connector between the connector on the ThinWire cable and the system unit.
- Ensure there is no ThinWire segment between the system unit and the T-connector. The T-connector must attach directly to the system unit.
- Be sure there are no branches off a ThinWire segment except through a DEMPR.

A DEMPR provides eight ThinWire Ethernet nodes from a single standard Ethernet connection.

- Make sure that a ThinWire segment is not looped from one port on the DEMPR to another port on the DEMPR.
- Ensure that a T-connector has not been disconnected from an operating ThinWire Ethernet segment.

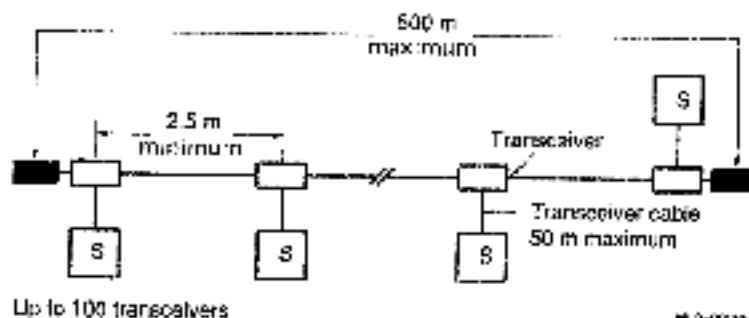
To remove a system from an active ThinWire segment, disconnect the center of the T-connector from the system.

Standard Ethernet

Connections to Standard Ethernet

- The cable can be up to 500 meters (1640 feet) long.
- Stations are attached to the cable using transceivers and approximately 5 to 50 meters (approximately 16.5 to 165 feet) of transceiver cable. Refer to the *DECconnect System Planning and Configuration Guide* for full details.
- There must be at least 2.5 meters (8.2 feet) between stations.
- There can be up to 100 transceivers with stations on a cable. (See Figure C-4.)

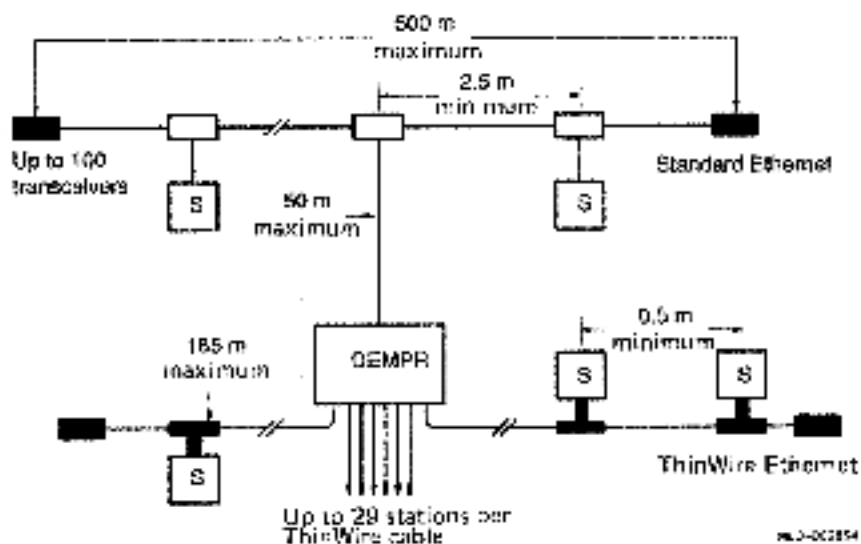
Figure C-4 Connections to Standard Ethernet



Combining ThinWire and Standard Ethernet

- A DEMPR can be connected to a standard Ethernet coaxial cable by a 5 to 50 meter (16.5 to 165 foot) transceiver cable and a transceiver.
- One to eight ThinWire cables can be attached to the DEMPR.
- Configuration rules for ThinWire Ethernet coaxial cables and standard Ethernet coaxial cables are applicable. (See Figure C-5.)

Figure C-5 Combining ThinWire and Standard Ethernet



Some Terms You Should Know

Client. Hardware or software that obtains a specific set of services from a server.

Coaxial cable. Two-conductor, concentric, constant impedance transmission cable.

DEMPR. A multiport repeater that provides eight ThinWire Ethernet drops from a single standard Ethernet connection.

DESTA. A station adapter that acts as a ThinWire Ethernet transceiver.

Drop. The physical location of the end of an Ethernet transceiver cable.

Ethernet. A type of local area network (LAN) based on Carrier Sense Multiple Access with Collision Detection (CSMA/CD).

Multiport Repeater. A repeater that is used to connect more than two cable segments.

Port. The physical connector in an office drop that allows a connection to be made.

Repeater. A device used to extend the length, topology, or interconnectivity of the physical network medium beyond the limits imposed by a single segment. Repeaters perform the basic actions of restoring signal amplitude, waveform, and timing applied to normal data and collision signals.

Segment. A length of coaxial cable made up of one or more cable sections connected with barrel connectors or T-connectors.

Server. Hardware or software that provides a specific set of services to a client.

Standard Ethernet. An IEEE 802.3 compliant Ethernet network composed of standard Ethernet cable as opposed to thin Ethernet cable.

Station. A single addressable device on a local area network.

T-connectors. Connectors used to join ThinWire Ethernet cable sections. The connectors also have a connector that is attached directly to a station.

Terminator. A special connector used on both ends of an Ethernet segment. This connector provides the 50-ohm termination resistance needed for the cable.

ThinWire. A Digital trademark used to describe its IEEE 802.3 compliant products used for local distribution of data communication.

Transceiver. A device that provides a single physical connection between standard Ethernet and Ethernet communication equipment.

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