

DECserver 716 and 732

Installation and User's Guide

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This document describes how to install and cable the DECserver 716 and the DECserver 732.

Revision/Update Information: This is a new document.

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For complete product certification information, refer to the equipment label on the back panel of the DECserver.

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Preface

Overview

This preface defines the purpose of this guide, the intended audience, conventions, related documentation, and where to locate product-specific information on the Web.

Purpose of This Guide

This guide describes how to install and cable the DECserver 716 and the DECserver 732 hardware. It also provides problem solving information, connector pin assignments, and product specifications.

Read through this guide completely to understand the features, capabilities, and cabling requirements.

Intended Audience

This guide is intended for the hardware installer. The installer is responsible for ensuring that the hardware is installed and tested. This guide describes how to verify the site, install cables, select the correct cable length, how to connect AUI adapters and troubleshoot problems.

Structure of This Guide

This guide is organized as follows:

Chapter/ Appendix	Title	Description
Preface	Preface	Describes the purpose, audience and conventions for this guide.
Chapter 1	Product Description	Provides an overview and features of the DECserver 716 and the DECserver 732 products, and defines front panel and back panel components for both DECservers.
Chapter 2	Installing Brackets on the DECserver	Provides instructions for installing brackets on the DECserver 716 and the DECserver 732.
Chapter 3	Installing and Removing the Flash RAM Card	Provides instructions for how to install and how to remove the Flash RAM Card from the DECserver 716 or DECserver 732.
Chapter 4	Cabling Requirements	Provides communication distances and cable length requirements between associated devices and the DECserver 716 or DECserver 732.
Chapter 5	Connecting and Removing Cables and AUI adapters	Describes how to connect cables to and remove cables from the DECserver 716 or DECserver 732.
Appendix A	Problem Solving	Helps you identify and correct any problems during and after installation.
Appendix B	Connector and Pin Assignments	Describes the cable pins assignment for the DECserver 716 or DECserver 732 hardware connectors and shows the cables used to interface to the DECserver hardware.
Appendix C	Product Specifications	Provides the Physical, Environmental and Electrical specifications for the DECserver 716 or DECserver 732.

Conventions

This guide uses the following conventions.

Convention	Description
Bold Type	Indicates user input.
Monospaced Type	Indicates system output.
<Return>	Indicates that you press the Return Key.

Document Conventions

The following are used to call attention to important information throughout this document.

NOTE

Calls the reader's attention to any item of information that may be of special importance.

WARNING

Warns against an action that could result in the presence of an electrical hazard.

CAUTION

Contains information essential to avoid damage to the equipment.

Related Documentation

The following documents may help the user to configure and manage the DECserver 716 and the DECserver 732. All documentation is on the Web and can be located at <http://www.dnpg.com/dr/npg/dsrfm-mn.html>. Except for the *DECserver 716 and 732 Quick Start Card*, all documentation resides on CD-ROM (CD-DNAS0-00).

Part Number	Title	Description
QS-DSRVW-00	<i>DECserver 716 and 732 Quick Start Card</i>	Describes how to install, cable and use the DECserver 716 and DECserver 732.
RM-DSRVW-00	<i>DECserver 716 and 732 Read Me First</i>	Describes how to install and cable the DECserver 716 and DECserver 732.
MG-DNAS0-00	<i>Network Access Software Management Guide</i>	Describes how to manage the Network Access Software.
CG-DNAS0-00	<i>Network Access Software Command Reference Guide</i>	Lists commands used with the Network Access Software.
PG-DNAS0-00	<i>Network Access Software Problem Solving Guide</i>	Describes how to troubleshoot problems.
IG-DNAS0-00	<i>Network Access Software Installation Guide</i>	Describes how to install software.
RN-DNAS0-00	<i>Network Access Software Release Notes</i>	Documents any release consideration, restrictions, and conditions for Network Access Software.
IG-DRAS0-00	<i>RADIUS Software Installation Guide</i>	Describes how to install RADIUS software.
MG-DRAS0-00	<i>RADIUS Software Management Guide</i>	Describes how to manage RADIUS software.

Getting Help

Getting Help

To locate product-specific information, refer to the Digital Networks web site at:

<http://www.dnpg.com/>

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Chapter 1

Product Description

Overview

Introduction

This chapter contains brief technological definitions, an overview of the DECserver 716 and 732 and their features.

NOTE

The term DECserver is used where information is common to both the DECserver 716 and 732.

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Features	1-3
Front and Back Panel Components	1-4
Front Panel Components	1-4
Back Panel Components	1-6

What are the DECserver 716 and 732?

What are the DECserver 716 and 732?

The DECserver 716 is a 16-port standalone network access server. The DECserver 732 is a 32-port standalone network access server. The DECserver 716 and DECserver 732 provide asynchronous EIA-423 connection for terminals, printers, modems, and PC communication ports to an Ethernet Local Area Network (LAN) connection.

The DECserver 716 provides attachment for 16 asynchronous devices via 8-Pin MJ connectors (also referred to as RJ-45 connectors). The DECserver 732 provides attachment for 32 asynchronous devices via 8-Pin MJ connectors. Each port supports 16 baud rates ranging from 75 Kb/s baud rate to 115.2 Kb/s baud rate. Each DECserver includes 4 MB of standard memory.

The DECserver 716 and DECserver 732 provide Ethernet/IEEE 802.3 connection via a 10BASE-T or an AUI port connection.

The DECserver 716 or 732 can be installed on a desktop or in a NEMA 19-inch rack.

Features

The DECserver 716 and 732 provides the following features:

- Provides an Ethernet/IEEE 802.3 connection via a 10BASE-T or an AUI port connection.
- Installs on a desktop or in a NEMA 19-inch rack.
- Provides for an optional 2MB PCMCIA Flash card to locally store operational software. This removes the requirement for a load host on the LAN in case the access server requires a reboot.
- Conforms to DEC-423 electrical interface standard for local connections, and supports two user-selectable modem signaling options: CTS/RTS/DSR/DTR or RI/DCD/DSRS/DTR. DEC-423 is a superset of EIA-423-A/CCITT V1.0 with some exceptions, and supports longer cable runs and higher signaling speeds.
- Configured with 8-Pin (RJ-45) connectors.
- Provides asynchronous EIA-423 connection for terminals, printers, modems, and PC communication ports to an Ethernet LAN connection (RS 232 compatible).
- Supports 16 selectable asynchronous port baud rates from 75 baud to 115.2 Kbaud.
- Includes 4 MB of DRAM.

Front and Back Panel Components

The following sections describe the front and back panel components for both the DECserver 716 and DECserver 732.

Front Panel Components

Table 1-1 describes the front panel components, and LEDs, that are illustrated in Figure 1-1. For problem-solving information using the LEDs, refer to *Appendix A, Problem Solving*.

Figure 1-1: Front Panel LEDs and Connectors

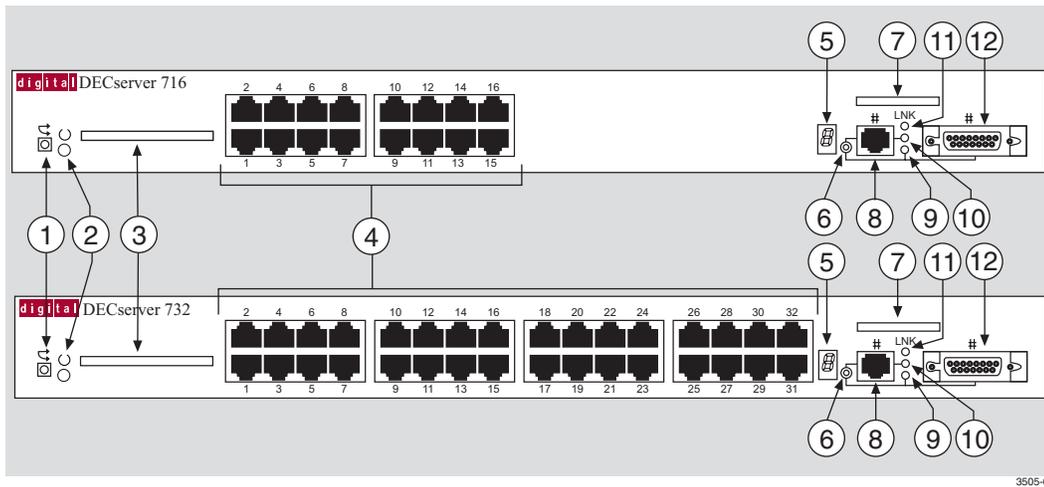


Table 1-1: Front Panel LEDs and Connector Descriptions

Item	Name	Description
1	Reset Switch	On power up: press this switch until the System OK LED blinks. This reloads the factory set parameters and all customized parameters are lost. During Flash load, pressing and holding the system reset switch will abort the Flash RAM load and force a network boot.
2	System OK LED	Lights when the DECserver has power. On: DECserver has power. Off: DECserver does not have power.
3	Flash RAM Slot	Provides an opening to insert the optional Flash RAM Card.

Front and Back Panel Components

Item	Name	Description
4	EIA/TIA 423 (Asynchronous serial ports)	DECserver 716 Only: 16 asynchronous device 8-Pin MJ ports for connections. DECserver 732 Only: 32 asynchronous device 8-Pin MJ ports for connections.
5	Seven-segment Display	Provides error and status information. Blinks: If an error occurs during self-test. Off: The DECserver 716 or 732 has failed self-test. Rotating Figure'8': Operating image loaded and running.
6	10BASE-T and AUI selector switch	Allows you to switch between the 10BASE-T and AUI port on the server. Up: 10BASE-T port is selected. Down: AUI port is selected.
7	Ethernet Address (MAC Address Label)	Used for Ethernet address label. This area is where the MAC Address Label resides.
8	10BASE-T Port connection	Ethernet connection used to connect to a 10BASE-T network via a RJ45 connector.
9	AUI Selection LED	On: AUI port selected. Off: No AUI port selected.
10	10BASE-T Selection LED	On: 10BASE-T port selected. Off: No 10BASE-T port selected.
11	LNK LED	On: Ethernet connection to a 10BASE-T connection or the AUI port is selected. Off: No Ethernet connection to a 10BASE-T connection and no AUI port selected.
12	AUI Port	Ethernet connection via an AUI port connection.

Front and Back Panel Components

Back Panel Components

Table 1-2 describes back panel components that are illustrated in Figure 1-2.

Figure 1-2: Back Panel Components

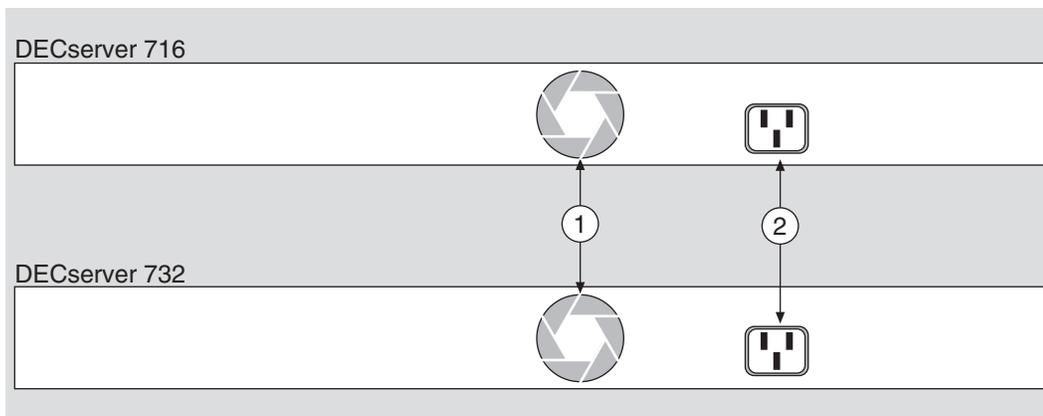


Table 1-2: Back Panel Component Descriptions

Item	Name	Description
1	Fan	Expels hot air from inside the DECserver.
2	Power Connector	Receives ac current from an outlet (115/230 Vac, 50/60 Hz).

Chapter 2

Installing Brackets on the DECserver

Overview

Introduction

This chapter describes how to install the DECserver 716 and DECserver 732 in a rack-mount cabinet and how to cable the front panel.

NOTE

The term DECserver is used where information is common to both the DECserver 716 and the DECserver 732.

In This Chapter

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Installing the Rack-Mounting Brackets to the DECserver	2-3
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Required Tools

Required Tools

The following item is necessary to install the rack-mounting brackets:

- Phillips-head screwdriver

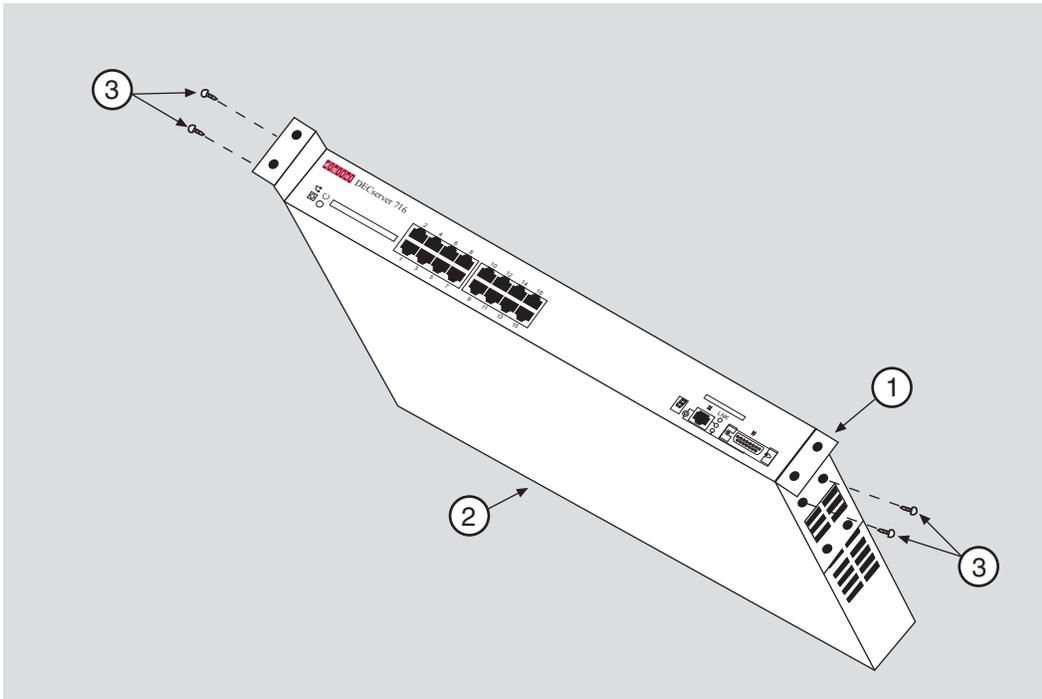
Complete the following steps prior to installation:

Step	Action
1	Remove the contents from the box and be sure to keep all original packing materials.
<hr/> CAUTION <i>Static electricity can damage servers and electronic components. Digital Networks recommends using a grounded antistatic wrist strap and a grounded work surface when handling any servers.</i> <hr/>	
2	Check the shipment for damaged and missing parts. In case of damaged or missing parts, contact your delivery agent and your sales representative.

Installing the Rack-Mounting Brackets to the DECserver

The DECservers can be used as standalone devices or installed in a standard 19-inch rack using the rack-mounting kit part number 9061218. Table 2-1 describes how to assemble the rack-mounting kit as illustrated in Figure 2-1.

Figure 2-1: Rack-Mounting Brackets



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Table 2-1: Rack-Mounting Bracket Description

Step	Action
1	Attach (either flush or recessed) the two rack-mount brackets (1) by inserting the tab on the bracket into the slots on the side of the DECserver (2).
2	Secure the bracket using two #6-32 screws (3).

Installation Components

The following lists installation components including the connecting cables.

- **Brackets.** For optional wall-mounting hardware, refer to *Wiring and Connectivity* selection on the web page: www.dnpg.com/products.
- **Serial line connection.** For a list of supported cables refer to *Chapter 4* or *Appendix B*.
- **Patch cable.** Cat 5 UTP 8MP-8MP patch cable, **BN25G-xx**. For a list of supported cables refer to *Chapter 4* or *Appendix B*.

Chapter 3

Installing and Removing the Flash RAM Card

Overview

Introduction

This chapter describes how to install and how to remove the Flash RAM card from a DECserver 716 or DECserver 732.

NOTE

The term DECserver is used where information is common to both the DECserver 716 and the DECserver 732.

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About the Flash RAM Card

Use the Flash RAM card to store the DECserver operational software, which can then be used to load the DECserver rather than using a load host available on the LAN. The Flash RAM may be updated with later releases of operational software. For instructions on how to update the operational software in Flash RAM, refer to the *Network Access Software Management Guide*.

The Flash RAM card is keyed and cannot be inserted improperly.

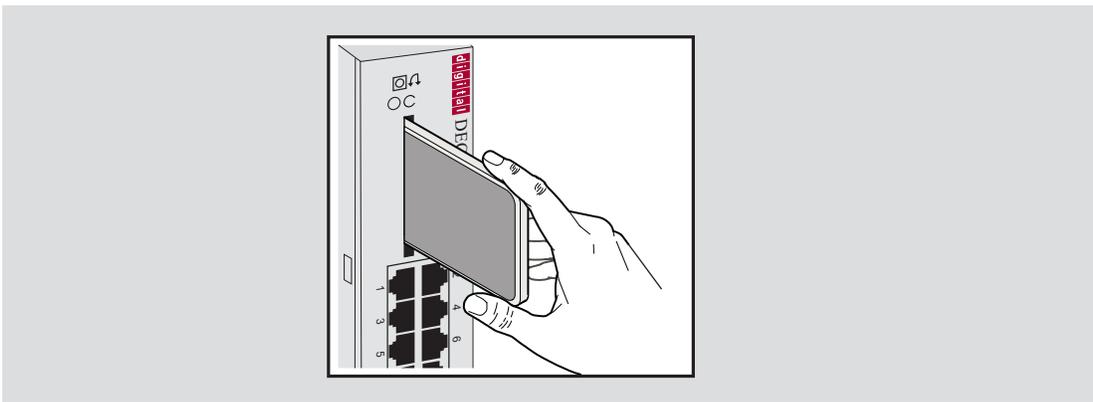
The card can be hot swapped and may be inserted or removed at anytime.

After you load the DECserver software, the card may be left in place or removed. Unless there is a load host available on the network, we recommend leaving the Flash RAM card in place in case the DECserver software needs to be reloaded.

Installing the Flash RAM Card in the DECserver

Figure 3-1 shows the Flash RAM card being inserted into the DECserver. Table 3-1 describes how to insert the Flash RAM card.

Figure 3-1: Flash RAM Card Installation



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Table 3-1: Flash RAM Card Installation Procedures

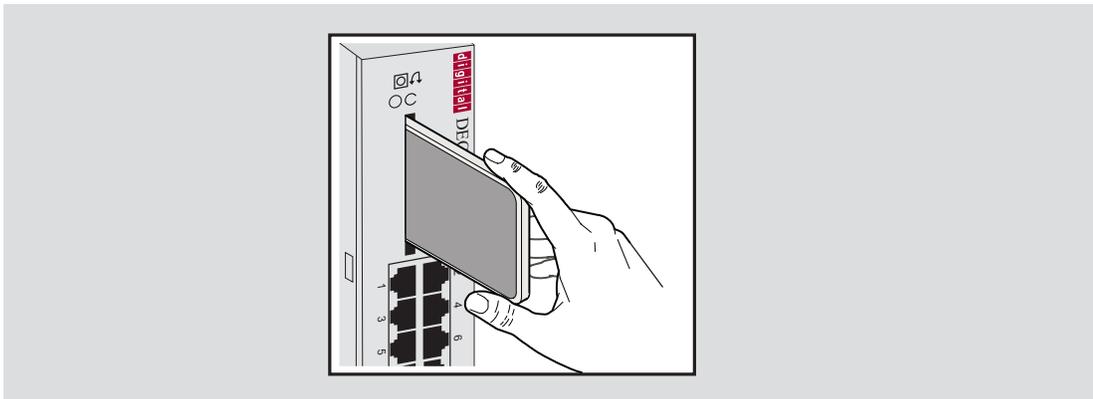
Step	Action
1	Insert the Flash RAM card into the Flash RAM slot located on the front of the DECserver.
2	The write protect switch should be on the right side.
3	When the Flash RAM card protrudes from the front panel about 1/4 inch, it is properly inserted. After you load the DECserver software, the card may be left in place or removed.

Removing the Flash RAM Card from the DECserver

The Flash RAM card can be hot swapped and may be removed at anytime.

Figure 3-2 shows the Flash RAM card being removed from the DECserver. Table 3-2 describes how to remove the Flash RAM card.

Figure 3-2: Flash RAM Card Removal



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Table 3-2: Flash RAM Card Removal Procedures

Step	Action
1	The Flash RAM card protrudes from the front panel about 1/4 inch. Grasp the sides of the Flash RAM card and remove the card from the slot on the front of the DECserver.
2	Place the Flash RAM card in a safe location.

Chapter 4

Cabling Requirements

Overview

Introduction

This chapter describes communication distances and cable length requirements between associated devices and the DECserver 716 or DECserver 732.

NOTE

The term DECserver is used where information is common to both the DECserver 716 and the DECserver 732.

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Connecting the Ethernet Cables and Devices

You can connect the DECserver to:

- Standard Ethernet/IEEE 802.3 network
- 10BASE-T Ethernet/IEEE 802.3 network

Connecting Serial Cables and Devices on the DECserver

The DECserver can be configured by the software to support one of the two sets of modem signals. One modem set consists of:

- Clear to send (CTS)-This is the default setting.
- Request to send (RTS)-This is the default setting.
- Data set ready (DSR)-This is the default setting.
- Data terminal ready (DTR)-This is the default setting.

The second set consists of:

- Ring indicator (RI)
- Data signal rate selector (DSRS)
- Data carrier detect (DCD)
- Data terminal ready (DTR)

Before installing cables to the DECserver, you must find out which modem signals are supported from the person managing the DECserver. This information is necessary to determine which cables to use. For more information on the signals, refer to the *Network Access Software Management Guide*.

Cable and Adapter Connections

Table 4-1 describes the cable connections that are compatible with the DECserver Ethernet and serial line connectors. Wiring diagrams of individual cables are provided for use in troubleshooting and cable building.

Table 4-1: Cables and Adapters for the DECserver

Cable and Adapters	Description
BN24H 8-Pin MJ to 6-Pin MMP Office Cable	The BN24H is a three twisted-pair cable with a standard 8-Pin modular plug (DEC-423) on one end and a 6-Pin MMP (modified modular plug) on the other.
BN25G 8-Pin MJ to 8-Pin MJ Equipment Cable	The BN25G is a four twisted-pair cable with standard 8-Pin modular plugs.
H8575-A (EIA 423-B to EIA-232-D) Adapter	Use this adapter and the BN24H cable to connect to 25-Pin D-sub plug connectors (for example: printers).
H8575-D (E1A423-B to EIA- 232-D) Adapter	Use this adapter and the BN24H cable to connect to 25-Pin D-sub socket connectors.
H8585-AA 8-Pin MJ to DB9 Null-Modem Adapter	The H8585-AA 8-Pin MJ to DB9 (socket) null-modem adapter is used to convert the serial port to a DB9 socket connector for asynchronous connection to a PC port.
H8585-AB 8-Pin MJ to DB25 Modem Adapter	The H8585-AB 8-Pin MJ to DB25 (plug) low-speed modem adapter is used to convert a serial port to the DB25 configuration. Used for older styles of modems.
H8585-AC 8-Pin MJ to DB25 Modem Adapter	The H8585-AC 8-Pin MJ to DB25 (plug) high-speed modem adapter is used to convert a serial port to the DB25 configuration.
H8585-AF Console Port Adapter, 9-Pin "D" subminiature plug to 8-Pin MJ. Requires use of a BN25G-xx cable.	The universal adapter connects the DECserver ports to any standard 9-Pin "D" subminiature socket console port cable kit. <i>Note: This adapter requires a BN25G-xx cable to connect from the 8-Pin MJ port to the DECserver port.</i>

NOTE

Adapters H8585-AB and H8585-AC are not for connection to public networks in Sweden, Germany, or Japan.

Cabling Requirements

Table 4-2 shows the maximum communication distances for different types of cables used between the DECserver and the Ethernet device. Table 4-3 shows the maximum cable lengths for a number of data rates using DECserver supported line protocols.

The cabling requirements of the DECserver are shown in the following sections.

Table 4-2: Maximum Communications Distances—Ethernet

From	To	Maximum Distance	Cable Type
DECserver	Transceiver	50 m (164 ft)	BNE3x-xx standard transceiver cable
DECserver	Transceiver	12.5 m (41 ft)	BNE4x-xx office transceiver cable
DECserver	Repeater/Server	100 m (328 ft)	BN24Q cable (crossover type) BN25G (straight-through type)

Table 4-3: Maximum Cable Lengths for Data Rates

Line Protocol	Data Rate (S/B)	Cable Length
EIA/TIA-432-A/V.10	4.8K	500 m (1500 ft)
	9.6K	280 m (900 ft)
	19.2K	150 m (500 ft)
	38.4K	85 m (280 ft)
	57.6K	30 m (100 ft)
	115.2K	12 m (40 ft)
EIA/TIA 423	9.6K	900 m (3000 ft)
	19.2K	300 m (1000 ft)
	38.4K	150 m (500 ft)
	57.6K	60 m (200 ft)
	115.2K	30 m (100 ft)
EIA/TIA-232-E/V.28	9.6K	60 m (200 ft)
	19.2K	30 m (100 ft)
	38.4K	15 m (50 ft)
	57.6K	6 m (20 ft)
	115.2K	3 m (10 ft)

CAUTION

Do not use structured building wiring or bundled type breakout cables at baud rates above 38.4K. Separate point to point cables are recommended at baud rates above 38.4K.

Standard Ethernet Connection Requirements

The transceiver cable must not exceed the maximum distances listed in Table 4-2.

10BASE-T Ethernet Connection Requirements

The 10BASE-T Ethernet installation must conform to the following configuration rules:

- The twisted-pair cable must not exceed the maximum distance listed in Table 4-3.
- No other signal should be used in the same cable sheath. For example, voice and data signals cannot be run within the same sheath.
- Unshielded twisted-pair cable must remain at least 30.48 cm (12 in) from any type of high-voltage power device or electrical noise source.

Chapter 5

Connecting and Removing Cables and Adapters

Overview

Introduction

This chapter describes how to connect cables to and remove cables from the DECserver 716 or DECserver 732.

For cable lengths, refer to Chapter 4, *Cabling Requirements*. For information on connectors, refer to Appendix B, *Connector and Pin Assignments*.

NOTE

The term DECserver is used where information is common to both the DECserver 716 and the DECserver 732.

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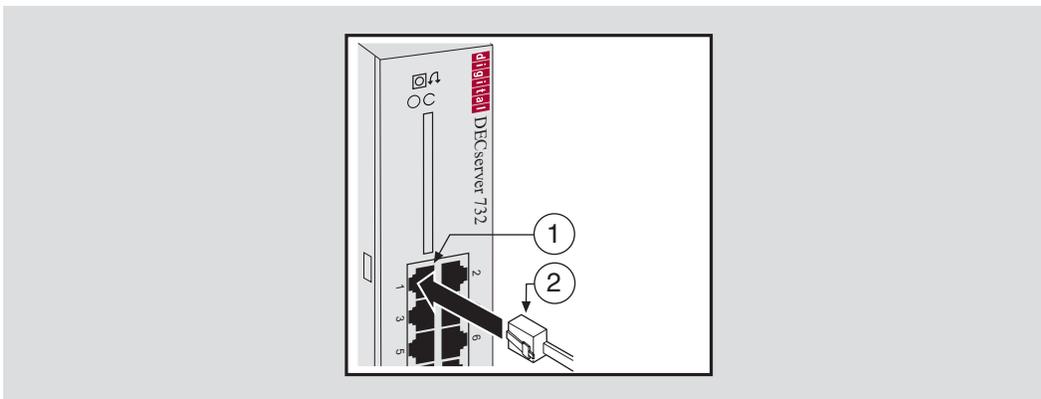
Connecting the Console Cable

This section describes how to connect the console cable to the DECserver.

Connecting the 8-Pin MJ Console Cable

Figure 5-1 shows how to connect the 8-Pin MJ console cable to Port 1 on the DECserver.

Figure 5-1: Connecting the 8-Pin MJ Console Cable



3505-10

To connect the 8-Pin MJ console cable, complete the following steps:

Step	Action
1	Align the release tab (2) on the cable plug with the Port 1 connector (1) on the DECserver.
2	Insert the plug into the port 1 connector (1) until the release tab snaps into the locked position.
3	Connect the other end of the cable to a H8585-AA adapter on a PC communication port with a DB9 plug port.

For cable lengths, refer to Chapter 4, *Cabling Requirements*. For information on connectors, refer to Appendix B, *Connector and Pin Assignments*.

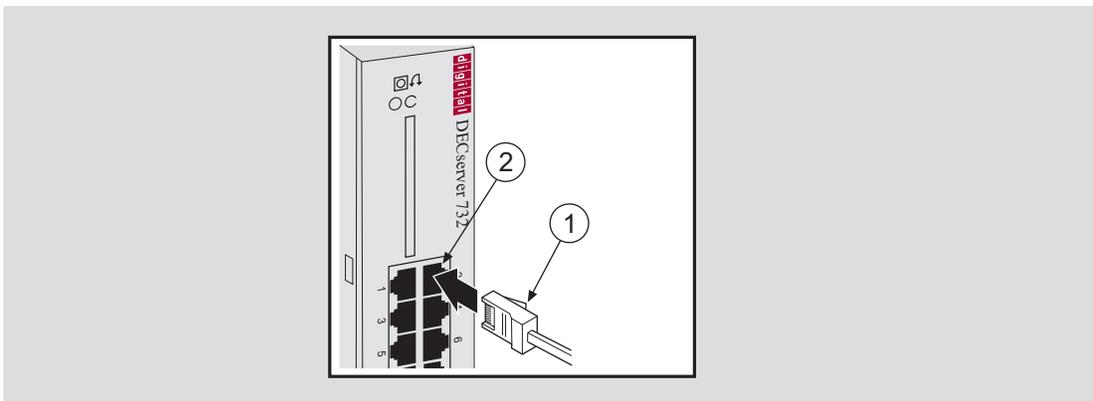
Connecting Cables

This section describes how to connect cables to the DECserver.

Connecting the 8-Pin RJ45 Cable

Figure 5-2 shows how to connect the 8-Pin MJ cable to ports on the DECserver.

Figure 5-2: Connecting the 8-Pin RJ45 Cable



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To connect the 8-Pin MJ cable, complete the following steps:

Step	Action
1	Align the release tab (1) on the cable plug with the connector (2) on the module's serial port.
2	Insert the plug into the port connector (2) until the release tab snaps into the locked position.
3	Connect the other end of the cable to an asynchronous device (PC comm port, terminal, or modem).

For cable lengths, refer to Chapter 4, *Cabling Requirements*. For information on connectors, refer to Appendix B, *Connector and Pin Assignments*.

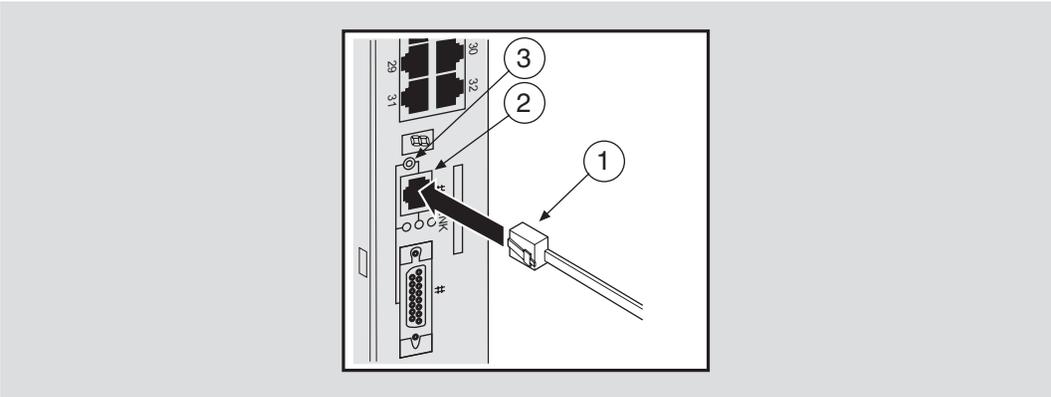
Connecting the 10BASE-T (UTP) Cable

The DECserver 10BASE-T uses an 8-pin MJ connector. Select the appropriate cable type, crossover or straight-through, to ensure that the server's transmit/receive signals connect correctly to the transmitter/receiver of the connected device. Before connecting the cables to the server (Figure 5-3), note the following:

Device	Cable
Crossover connectors ¹	Straight-through cables
Straight-through connectors	Crossover cables

1. The sum of the crossovers must always equal an odd number.

Figure 5-3: Connecting the 10BASE-T Cable



3505-18

To connect the 10BASE-T cable, complete the following steps:

Step	Action
1	Align the release tab on the cable plug (1), with 10BASE-T port connector on the DECserver (2).
2	Insert the plug into the connector (2), ensuring that the release tab snaps into the locked position.
3	Check the setting on the selection switch (3). This switch allows you to switch between 10BASE-T and AUI ports on the server: Up: 10BASE-T port is selected. Down: AUI port is selected.

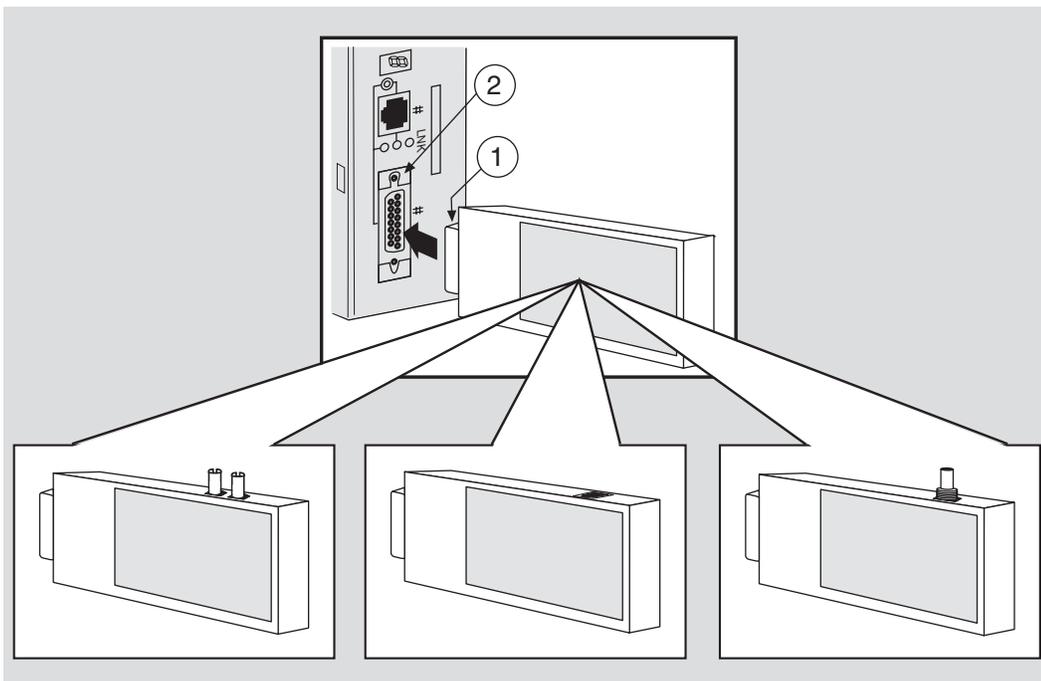
For cable lengths, refer to Chapter 4, *Cabling Requirements*. For information on connectors, refer to Appendix B, *Connector and Pin Assignments*.

Connecting Cables

Connecting the Ethernet AUI Adapters

Figure 5-4 shows how to connect a 15-Pin AUI adapter to the AUI port on the DECserver.

Figure 5-4: Connecting the AUI Adapters



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To connect an adapter, complete the following steps:

Step	Action
1	Align the AUI adapter (1) with the AUI port (2).
2	Insert the AUI adapter connector into the AUI port (2).
3	Slide the locking tab down (if server is in a vertical position or to the right (if server is in a horizontal position) to lock the AUI adapter to the port.

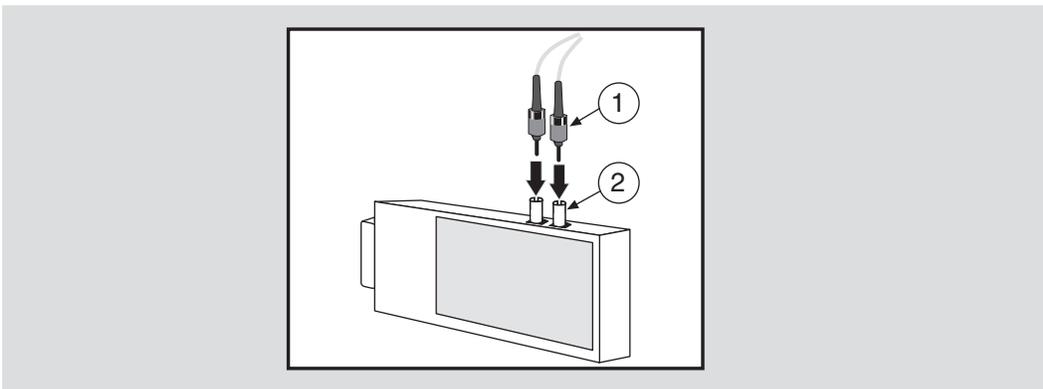
Cabling the Ethernet AUI Adapters

This section describes how to connect the 15-Pin AUI adapters.

Cabling the AUI Fiber Port Adapter

Figure 5-5 shows how to cable the 15-Pin AUI fiber port adapters.

Figure 5-5: Cabling the AUI Fiber Port Adapter



3505-28

To cable an adapter, complete the following steps:

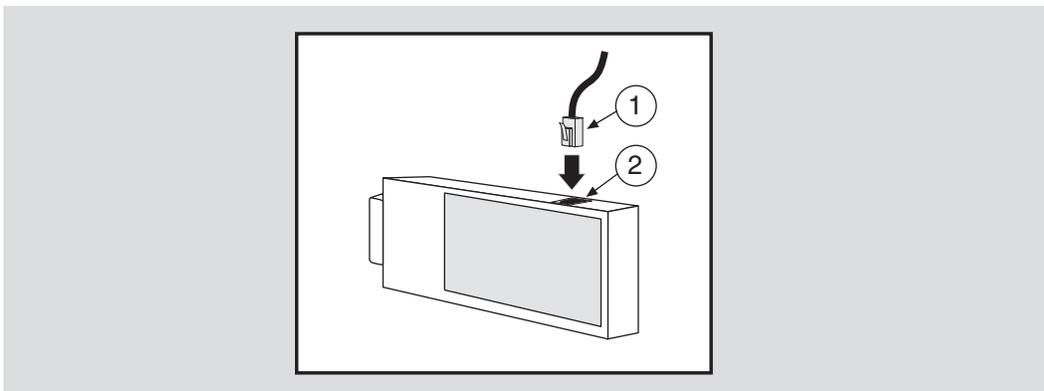
Step	Action
1	Align the fiber connectors (1) with the port on the AUI adapter.
2	Insert the fiber connectors (1) with the port on the AUI adapter (2).
3	Push in and turn the fiber connector (1) to the right to lock it in position.
4	Connect the other end of the cable to a repeater.

Connecting Cables

Cabling the AUI 10BASE-T Port Adapter

Figure 5-6 shows how to cable the 15-Pin AUI 10BASE-T port adapters.

Figure 5-6: Cabling the AUI 10BASE-T Port Adapter



3505-29

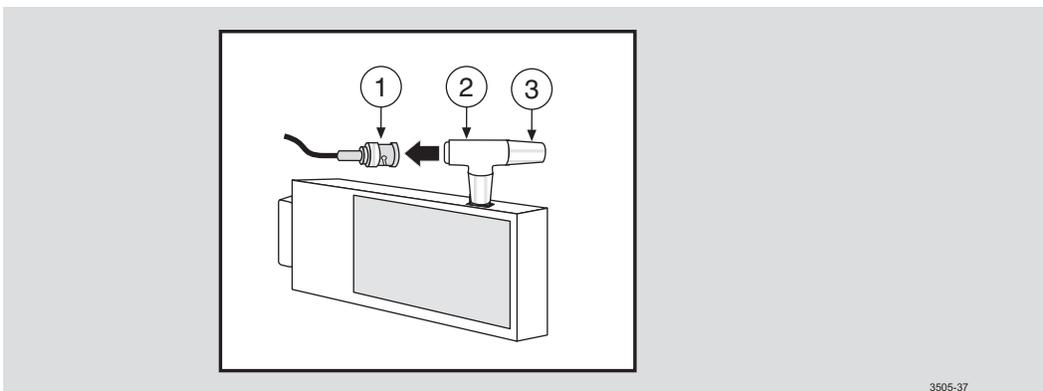
To cable an adapter, complete the following steps:

Step	Action
1	Align the 10BASE-T connector (1) with the port on the AUI adapter (2). Ensure that the locking tab is positioned properly in relation to the 10BASE-T connector on the AUI adapter.
2	Insert the 10BASE-T connector (1) into the port on the AUI adapter (2) until the locking tab snaps into position.
3	Connect the other end of the cable to a repeater.

Cabling the AUI BNC Port Adapter

Figure 5-7 shows how to cable the 15-Pin AUI BNC port adapters.

Figure 5-7: Cabling the AUI BNC Port Adapter



3505-37

To cable an adapter, complete the following steps:

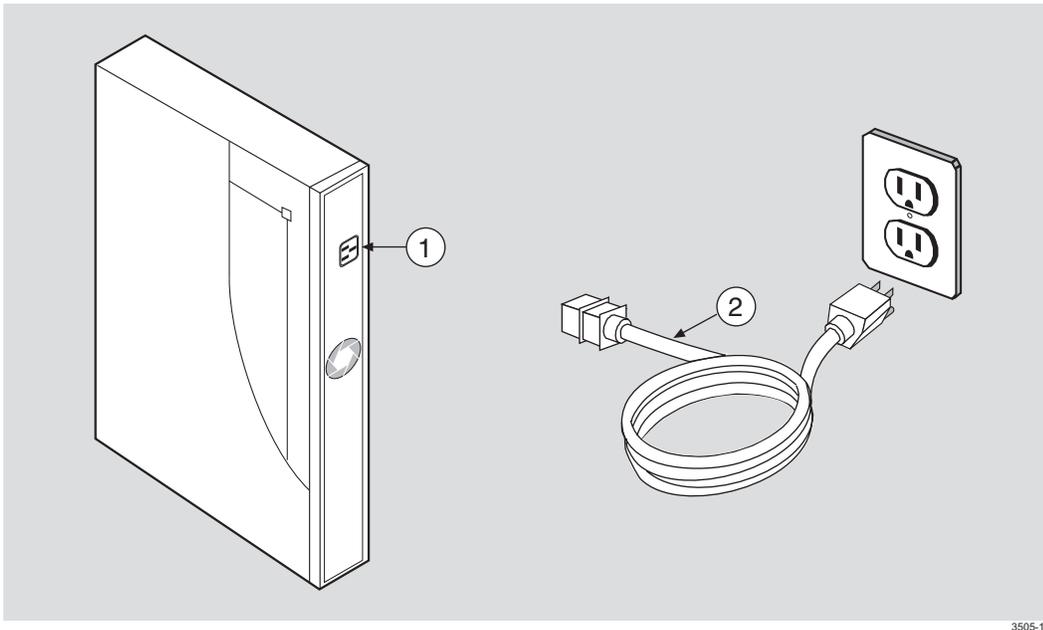
Step	Action
1	To install the T-connector (2): <ol style="list-style-type: none"> Align the T-connector (2) as shown in Figure 5-7. Attached the T-connector to the connector on the AUI port. Turn the T-connector to the right to lock it in position.
2	Align the BNC connector (1) with the T-connector (2) on the AUI port.
3	Insert the BNC connector onto the T-connector.
4	Turn the BNC connector to the right to lock it in position.
5	Ensure that the T-connector has a terminator (3) on the opposite end of the BNC connector.
6	Connect the other end of the cable to a repeater.

Connecting Cables

Connecting the Power Cable

Figure 5-8 shows how to apply power to the DECserver.

Figure 5-8: Connecting Power Cable



To connect the power cable on the DECserver, complete the following steps:

Step	Action
1	Plug the ac power supply cable (2) into the server power cable receptacle (1).
2	Plug the other end of the ac power supply cable (2) into a wall outlet.

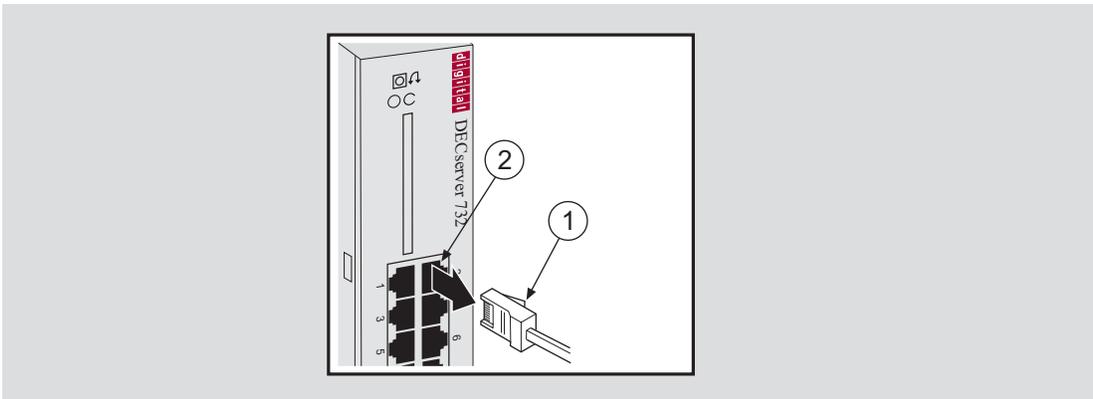
Removing the Cables

This section describes how to remove cables attached to the DECserver.

Removing the 8-Pin RJ45 Cable

Figure 5-9 shows how to remove 8-Pin MJ cables from ports on the DECserver.

Figure 5-9: Removing the 8-Pin RJ45 Connector



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To remove the 8-Pin MJ cable, complete the following steps:

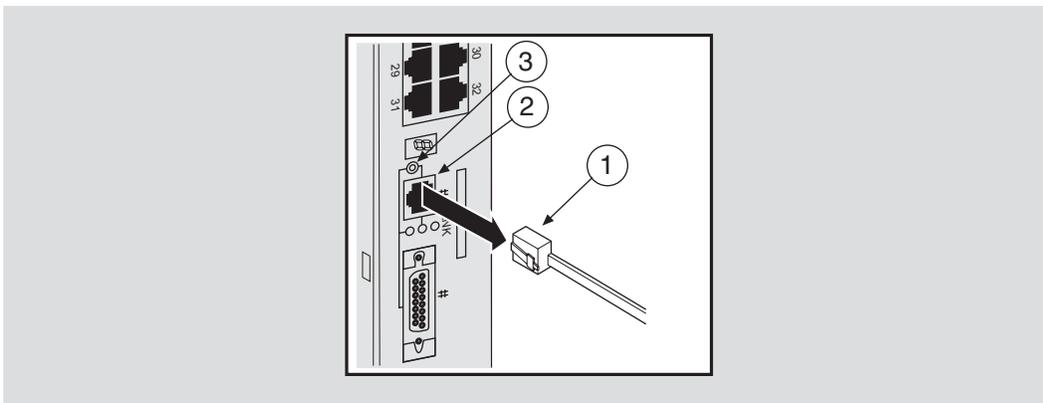
Step	Action
1	With the release tab (1) on the cable plug pushed in, pull the plug from the port (2).
2	If necessary, remove the other end of the cable to an asynchronous device (PC comm port, terminal or modem).

Removing the Cables

Removing the 10BASE-T Cable

Figure 5-10 shows how to remove the 10BASE-T cable from the DECserver.

Figure 5-10: Removing the 10BASE-T Cable



3505-19

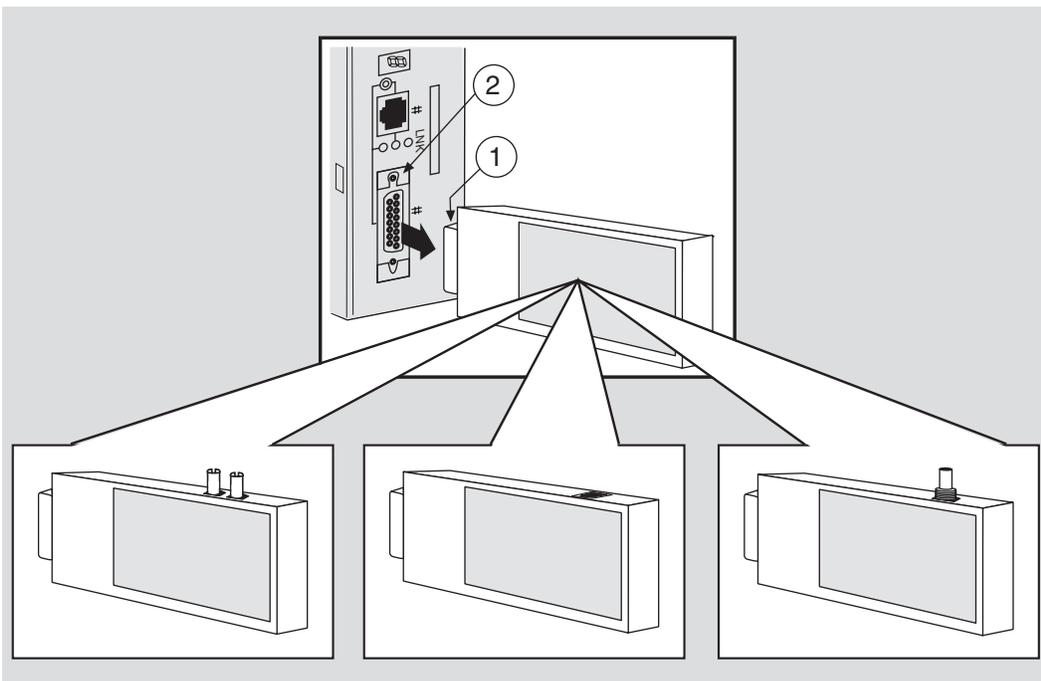
To remove the 10BASE-T cable, complete the following steps:

Step	Action
1	Press in the release tab on the cable plug (1), remove the connector from the DECserver 10BASE-T port connector (2).
2	Check the setting on the selection switch (3). This switch allows you to switch between 10BASE-T and AUI ports on the server: Up: 10BASE-T port is selected. Down: AUI port is selected.

Removing the Ethernet AUI Adapters

Figure 5-11 shows how to remove a 15-Pin AUI adapter from the AUI port on the DECserver.

Figure 5-11: Removing the AUI Adapters



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To remove the adapters, complete the following steps:

Step	Action
1	Slide the locking tab (2) up (if the server is in the vertical position) or to the left (if the server is in the horizontal position) to unlock the AUI adapter.
2	Pull the AUI adapter (1) straight-out from the AUI port (2).

Removing the Cables

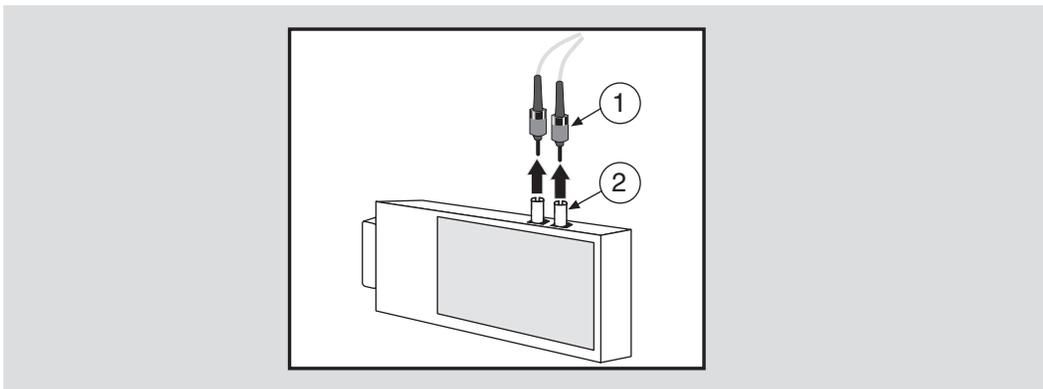
Removing Cables from the Ethernet AUI Adapters

This section describes how to remove the various cables from the 15-pin AUI adapters.

Removing Cables from the AUI Fiber Port Adapter

Figure 5-12 shows how to remove cables from the 15-Pin AUI fiber port adapters.

Figure 5-12: Removing AUI Fiber Port Adapter Cables



3505-31

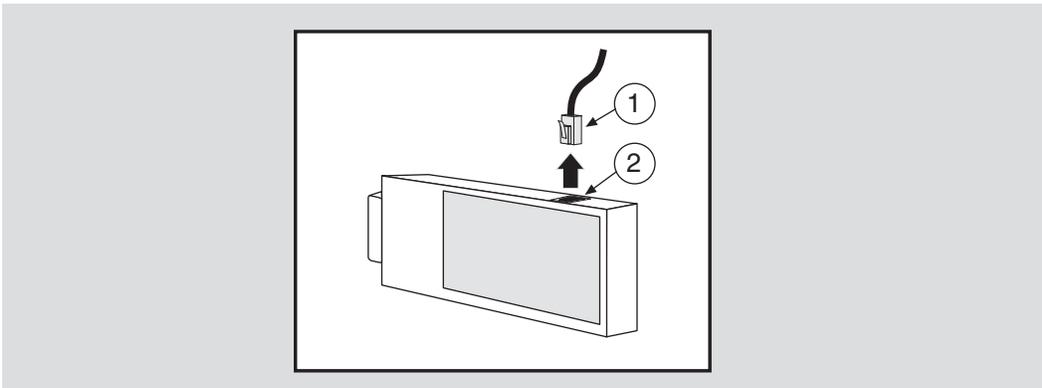
To remove the cable from an adapter, complete the following steps:

Step	Action
1	Push in and turn the fiber connector (1) to the left to unlock it.
2	Pull the fiber connectors (1) from the ports on the AUI adapter (2).
3	Remove the other end of the cable from the repeater (Optional).

Removing Cables from the AUI 10BASE-T Port Adapter

Figure 5-13 shows how to remove cables from the 15-Pin AUI 10BASE-T port adapters.

Figure 5-13: Removing AUI 10BASE-T Port Adapter Cables



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To remove the cable from the adapter, complete the following steps:

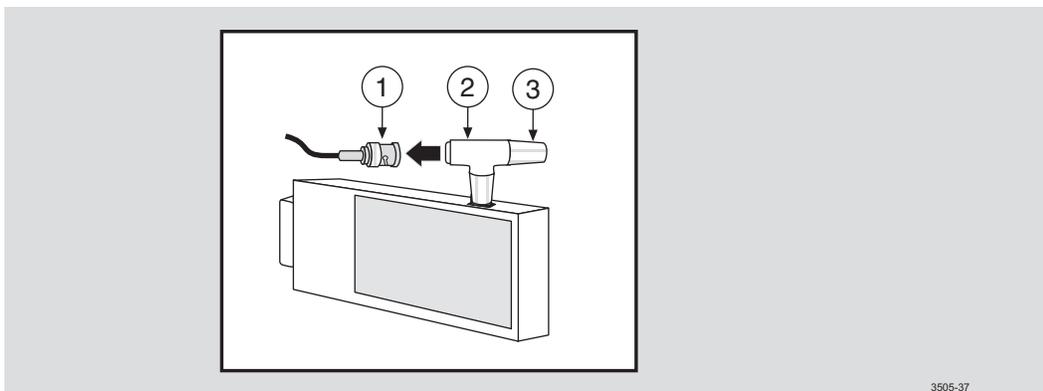
Step	Action
1	Press in the release tab on the 10BASE-T connector (1), remove the connector from the port on the AUI adapter (2).
2	Remove the other end of the cable from the repeater (Optional).

Removing the Cables

Removing Cables from the AUI BNC Port Adapter

Figure 5-14 shows how to remove cables from the 15-Pin AUI BNC port adapters.

Figure 5-14: Removing AUI BNC Port Adapter Cables



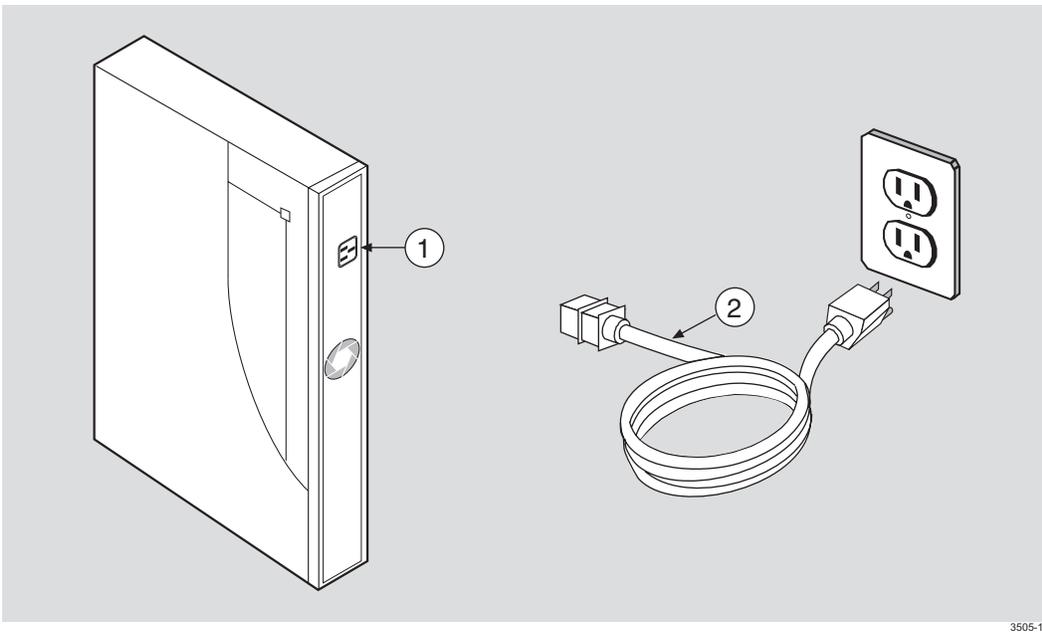
To remove the cable from the adapter, complete the following steps:

Step	Action
1	Turn the BNC connector (1) to the left to unlock the connector from the T-connector (2) on the AUI port.
2	Remove the BNC connector (1) from the terminator (3).
3	Remove the other end of the cable from the repeater (Optional).
4	To remove the T-connector (2): a. Turn the T-connector to the left to unlock it from the AUI port. b. Pull the T-connector from the AUI port.

Removing the Power Cable

Figure 5-15 shows how to remove power from the DECserver.

Figure 5-15: Removing Power Cable



3505-15

To remove the power cable on the DECserver, complete the following steps:

Step	Action
1	Remove the ac power supply cable (2) from the wall outlet.
2	Remove the ac power supply cable from the DECserver power connector (1).

Appendix A

Problem Solving

Overview

Introduction

This appendix helps you identify and correct problems you may encounter during and after the installation of the DECserver 716 or DECserver 732 hardware. The troubleshooting procedures are for diagnosing and correcting hardware-related problems only.

NOTE

The term DECserver is used where information is common to both the DECserver 716 and the DECserver 732.

In This Chapter

Topic	Page
Diagnosing Problems	A-2
Seven-Segment Display Off and System OK LED Off	A-4
System OK LED Off/Seven-Segment Display Flashing “C”, “d”, or “n”	A-5
System OK LED Off/Seven-Segment Display Flashing	A-6
System OK LED Flashing	A-7
Seven-Segment Display Shows a “3”	A-10
Seven-Segment Display Codes	A-12
Network Activity LED	A-13

Diagnosing Problems

Notify the network manager if the troubleshooting procedures indicate the problem is software related or if the procedures do not correct the problem. Additional software troubleshooting information is provided in the *Network Access Software Problem Solving Guide*.

Use the following to diagnose and troubleshoot the DECserver problems:

- Seven-segment display
- System OK LED
- Console port messages

A full list of seven-segment display codes are shown at the end of this chapter. Refer to the *Network Access Software Management Guide* for the procedure to configure a terminal to receive console port messages.

Compare the state of the Seven-Segment Display and the System OK LED with those shown in Table A-1 and go to the section indicated for information on corrective action.

NOTES

On power up, the seven-segment display will show an "8". Allow about 3 minutes to elapse before determining the state of the display.

Table A-1: Display/Indications

Device	Definition	State	Indication	Corrective Action Page #
System OK LED	Diagnostic	On	Self-test passed	–
		Off	Fatal error ^a	A-5 A-6
		Flashing	Nonfatal error ^b	A-7
Seven-Segment Display	Status/Diagnostic	Off	No power or display broken	A-4
		“C”, “d”, “n”	DRAM failure	A-5
		Flashing	Fatal error	A-5 A-6
		“3”	Load request backoff	A-10
		Rotating segment pattern	DECserver software executing	–

a. A fatal error means that the network DECserver cannot function.

b. A nonfatal error means that the network DECserver can function with reduced capability (for example, one serial port not working).

Seven-Segment Display Off and System OK LED Off

Ethernet Selected	LED Display
Power is not reaching the DECserver hardware.	<ol style="list-style-type: none"><li data-bbox="500 741 1133 835">1. Secure the power cable at the DECserver and at the wall outlet and check the fuse in the power cable plug (if applicable).<li data-bbox="500 856 1133 982">2. Check the wall outlet using another appliance or light, or plug the DECserver power cord into another outlet. If power is not available at the wall outlet, check the wall outlet's circuit breaker.<li data-bbox="500 1003 1133 1066">3. Check the power cord by substituting another one. If the first power cord is defective, replace it.
The DECserver hardware is defective.	Notify the network manager that the DECserver must be returned to Digital Networks for repair or replacement. Refer to the <i>Network Access Software Problem Solving Guide</i> for information about returning the DECserver.

System OK LED Off/Seven-Segment Display Flashing “C”, “d”, or “n”

System OK LED Off/Seven-Segment Display Flashing “C”, “d”, or “n”

Problem:	The DECserver DRAM is faulty.
Correction:	There is no corrective procedure for this problem. Notify the network manager that the DECserver must be returned to Digital Networks for repair or replacement. Refer to the <i>Network Access Software Problem Solving Guide</i> for information about returning the DECserver.

System OK LED Off/Seven-Segment Display Flashing

Problem: A hardware error occurred that makes the DECserver nonoperational.

Correction: There is no corrective procedure for this problem. Notify the network manager that the DECserver must be returned to Digital Networks for repair or replacement. Refer to the *Network Access Software Problem Solving Guide* for information about returning the DECserver.

System OK LED Flashing

If the System OK LED is flashing after power up, it indicates that the DECserver has a nonfatal problem detected during self-test. The error message on the console terminal shows the primary problem.

To isolate and diagnose the problem, do the following:

Step	Action
1	Connect a console terminal to the console port (default port is port 1) of the DECserver, then power up the terminal. Refer to the <i>Network Access Software Management Guide</i> for procedure to set up the console port.
2	Configure the terminal to operate with a speed of 9600 bits per second and a character size of 8 bits (no parity). (Refer to the specific terminal user's guide if you need help setting up the terminal parameters.)
3	Unplug the DECserver power cord at the wall outlet, then reinsert it.
4	Read the error message that appears on the terminal display.

Error Messages

This section lists and describes the error messages that occur with the System OK LED flashing. The section also describes the recommended corrective action.

Message:	Local—922—Port hardware error on port <i>n</i>
Problem:	The specified port has failed self-test.
Correction:	There is no corrective procedure for this condition. Notify the network manager that the DECserver must be returned to Digital Networks for repair or replacement. Refer to the <i>Network Access Software Problem Solving Guide</i> for information about returning the DECserver.

System OK LED Flashing

Message:	Local—941—Transceiver loopback error
Problem:	The Ethernet port has failed self-test.
Correction:	<p>Determine which of the following corrections applies to your situation:</p> <p>Check to ensure that the Ethernet selector switch is selecting the appropriate connector.</p> <p>Standard Ethernet/ThinWire – Replace the cables or MAU. Test again by pulling out the power cord and reinserting. If this corrects the problem, the fault is external to the DECserver. If this fails to correct the problem, notify the network manager to return the DECserver to Digital Networks for repair or replacement. Refer to the <i>Network Access Software Problem Solving Guide</i> for information about returning the DECserver.</p> <p>10BASE-T Ethernet – Replace the cables and device that is connected to the DECserver. If this corrects the problem, the fault is external to the DECserver. If this fails to correct the problem, notify the network manager to return the DECserver to Digital Networks for repair or replacement. Refer to the <i>Network Access Software Problem Solving Guide</i> for information about returning the DECserver.</p>

Message:	Local—952—Enter ^P to repeat self-test
Problem:	An error was detected on the Ethernet port.
Correction:	The DECserver displays this message with message 941. Refer to message 941 for the correction.

System OK LED Flashing

Message:	Local—967—Parameter checksum error detected in NVRAM
Problem:	Self-test has detected a checksum error in nonvolatile random-access memory (NVRAM) parameters.
Correction:	Reset the DECserver to the factory settings by pulling out the power cord and reinserting it while pressing the system reset switch until the System OK LED flashes. If this fails to correct the problem, notify the network manager that the DECserver must be returned to Digital Networks for repair or for replacement. Refer to the <i>Network Access Software Problem Solving Guide</i> for information about returning the DECserver.

Seven-Segment Display Shows a “3”

If the seven-segment display has a “3” after power up, the DECserver has a downline loading problem.

To isolate and diagnose the problem, do the following:

Step	Action
1	Connect a terminal to the console port of the DECserver, then power up the terminal.
2	Configure the terminal to operate with a speed of 9600 bits per second and a character size of 8 bits (no parity). (Refer to the specific terminal user's guide if you need help setting up the terminal parameters.)
3	Read the message that appears on the terminal display.

The conditions under which a “3” may appear in the seven-segment display, and the messages associated with each condition, are described in the following sections.

Downline Load Starts, Then Fails

Message:	The following messages may appear on the console terminal at various time intervals: Local—912—[MOP] Load failure, timeout Local—953—[IP] Attempting to locate load host, [ETHERNET] Local—953—[MOP] Attempting to locate load host, [ISO8802] Local—953—[MOP] Attempting to locate load host, [ETHERNET] Local—955—[MOP] Host xx-xx-xx-xx-xx-xx LOCATED [ETHERNET] Local—956—[MOP] Requesting load from host xx-xx-xx-xx-xx-xx
Problem:	The host system failed to complete the downline load to the DECserver.
Correction:	Copy the error message exactly as it appears on the console terminal display and notify the network manager. For more information, refer to the <i>Network Access Software Problem Solving Guide</i> .

Downline Load Does Not Start

Message:	The following sequence of messages appears on the console terminal at various time intervals: Local—951—Network DECserver will retry operation in <i>n</i> seconds Local—953—[IP] Attempting to locate load host, [ETHERNET] Local—953—[MOP] Attempting to locate load host, [ISO8802] Local—953—[MOP] Attempting to locate load host, [ETHERNET]
Problem:	Load hosts are not responding to the DECserver downline load request within the allotted timeout period.
Correction:	Copy the error message exactly as it appears on the console terminal display and notify the network manager. For more information, refer to the <i>Network Access Software Problem Solving Guide</i> .

Seven-Segment Display Codes

Table A-2 defines the seven-segment display codes (in approximate font type) and describes the codes that will be displayed during the server internal self-test when the DECserver goes through a power up and initialization.

Table A-2: Seven-Segment Display Codes

Off	Off	No power or display broken
8	0	Initial power on
F	4	Initialization
E	3	DECserver internal test
d	7	SIM 1 test
[7	SIM 2 test
b	9	DECserver internal test
A	8	DECserver internal test
9	6	DECserver internal test
7	7	DECserver internal test
5	5	Network interface external test
≡	≡	Software loading from Flash RAM
4	4	Requesting load
3	3	Load request backoff
2	2	Loading
1	1	Requesting dump
0	0	Dumping
H	H	Hardware revision # incompatible with firmware revision #
∩	∩	No SIMs, or wrong type SIMs installed
Rotating	Rotating	DECserver is operating correctly. The rotating code is referred to as the "race track" pattern.

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Network Activity LED

Table A-3 shows the connection status for the Network Activity LED display.

Table A-3: Network Activity LED

Ethernet Selected	Connection Status	LED Display
10BASE-T	Open/incorrectly terminated	OFF
	Correctly terminated	ON
Standard Ethernet	Any	ON

Appendix B

Connector and Pin Assignments

Overview

Introduction

This chapter describes the cable pins of the DECserver 716 or DECserver 732. It also describes the hardware connectors and the cables used to interface to the DECserver hardware . Wiring diagrams of the individual cables are included to help you troubleshoot and in cable building.

NOTE

The term DECserver is used where information is common to both the DECserver 716 and the DECserver 732.

In This Chapter

Topic	Page
Connector Pin Descriptions	B-2
Cabling and Adapters Used with DECserver	B-6

Connector Pin Descriptions

This section describes the pins for the following DECserver connectors:

- Standard Ethernet/IEEE 802.3 transceiver interface
- 10BASE-T Ethernet/IEEE 802.3 transceiver interface
- DECserver serial port connectors

Standard Ethernet

Figure B-1 shows how the pins are numbered on a standard Ethernet transceiver interface connector. Table B-1 lists the signals for the standard Ethernet connector pins.

Figure B-1: Pin Numbers and Signals for Standard Ethernet Connector

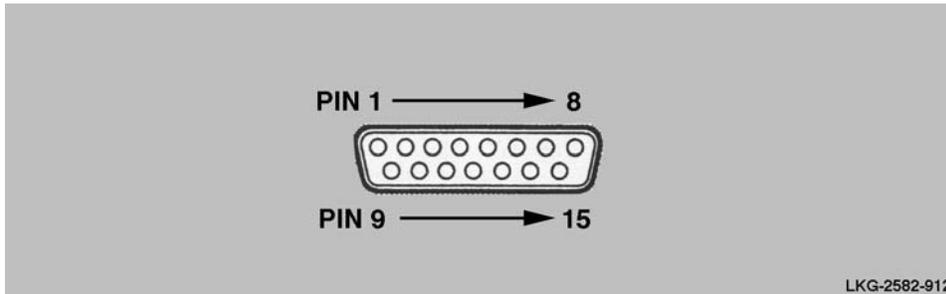


Table B-1: Signal Names for Standard Ethernet Connector Pins

Pin No.	Signal Name
1	Shield
2	Collision Presence +
3	Transmit +
4	Reserved
5	Receive +
6	+ 12 Volt Power Return
7	Reserved
8	Reserved
9	Collision Presence –
10	Transmit –
11	Reserved
12	Receive –
13	+12 Volt Power
14	Reserved
15	Reserved

Connector Pin Descriptions

10BASE-T Ethernet

The 10BASE-T Ethernet connector is an 8-Pin modular jack (MJ8). Figure B-2 shows how the pins are numbered on a 10BASE-T Ethernet connector and Table B-2 lists the signals for the 10BASE-T Ethernet connector.

Figure B-2: Pin Numbers and Signals for 10BASE-T Ethernet Connector

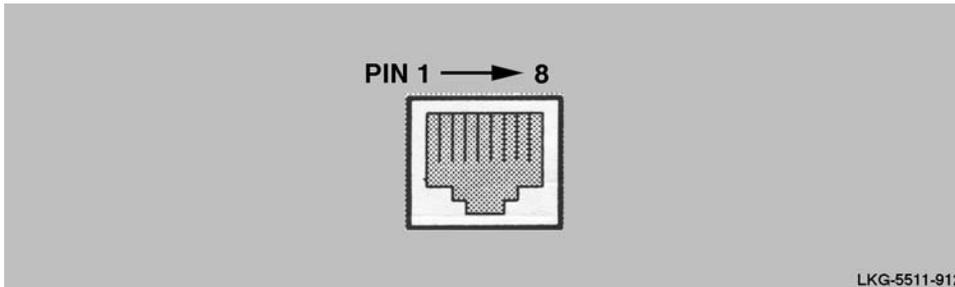


Table B-2: Signal Names for 10BASE-T Ethernet Connector Pins

Pin No.	Signal Name
1	Transmit +
2	Transmit –
3	Receive +
4	Reserved
5	Reserved
6	Receive –
7	Reserved
8	Reserved

DECserver 8-Pin RJ45 Ports

The DECserver uses an 8-Pin RJ45 connector on the serial ports. Figure B-3 shows how the pins are numbered on the 8-Pin RJ45 connector and Table B-3 lists the signals on the pins. You can set pins 4, 5, and 8 to either CTS, RTS, DSR or RI, DSRS, DCD.

Figure B-3: Pin Numbers and Signals for the 8-Pin RJ45 Connector

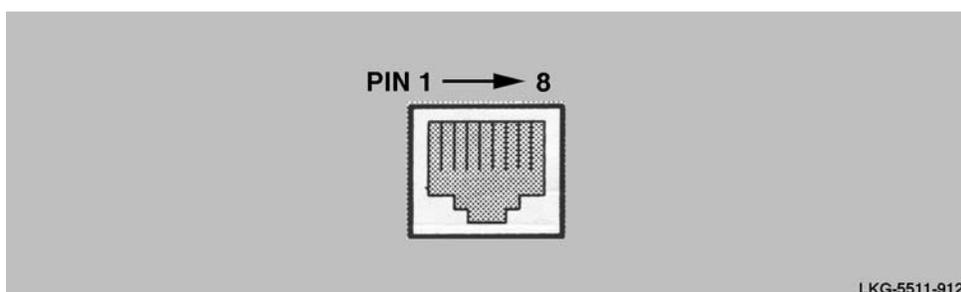


Table B-3: Signal Names and Default Values for 8-Pin RJ45 Connector Pins

Pin No.	Signal Name	Software Default	Software Alternative ^a
1	RXD GND		
2	RXD		
3	TXD GND		
4	CTS or RI (selected by software)	CTS	RI
5	RTS or DSRS (selected by software)	RTS	DSRS
6	TXD		
7	DTR		
8	DSR or DCD (selected by software)	DSR	DCD

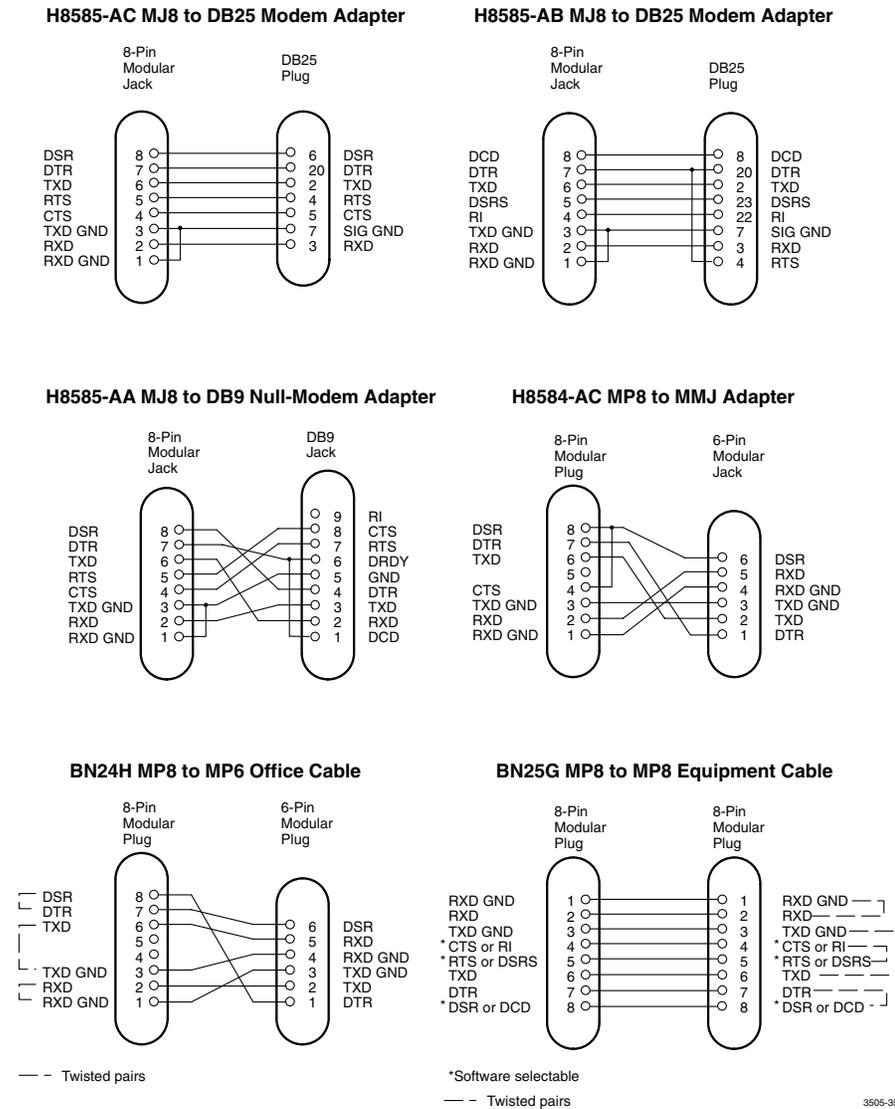
a. To change default values, refer to the *Network Access Software Management Guide*.

Cabling and Adapters Used with DECserver

Figure B-4 illustrates cabling (and adapters) that can be used with the DECserver.

Note: For cables and adapters connections refer to Table 4-1 in Chapter 4.

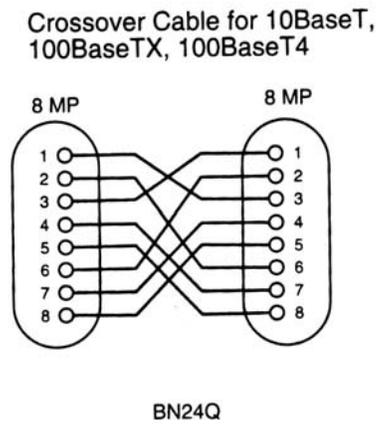
Figure B-4: Crossover and Straight-Through Cable Connections.



Cabling and Adapters Used with DECserver

Figure B-5 shows the crossover cable connection that can be used when cabling the 10BASE-T or 8-Pin MJ to the DECserver.

Figure B-5: 10BASE-T and 8-Pin MJ Crossover Cable Connection.



LKG-7293-912

Appendix C

Product Specifications

Overview

Introduction

The DECserver 716 or DECserver 732 can operate in an office environment and in a standard equipment rack located in a computer room or satellite equipment room. Regardless of where you install the DECserver, verify that all of the requirements in this section are met before beginning the installation.

NOTE

The term DECserver is used where information is common to both the DECserver 716 and the DECserver 732.

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Physical Requirements

Allow for 15 cm (6 in) of airspace around the DECserver air vents. Table C-1 shows the size and weight of the DECserver.

Table C-1: Physical Specifications of the DECserver

Dimension	Measurement
Height	43.69 mm (1.72 in)
Width	438.15 mm (17.25 in)
Depth	254.0 mm (10.0 in)
Weight	3.0 kg (6.1 lbs)

Table C-2 shows the acoustic parameters.

Table C-2: Acoustical Parameters

Parameter	Measurement
LWAd ^a	4.1 bels (LWA = 3.8 bels)
Lpam (bystander)	27 dBA

a. Preliminary declared values per ISO 9296 and ISO 7779. Current values are available from representatives.

Environmental Requirements

Environmental requirements for temperature and humidity must be within the ranges shown in Table C-3.

Table C-3: Environmental Specifications of the DECserver

Parameter	Minimum	Maximum
Temperature^a		
Operating	5° C (41° F)	50° C (122° F)
Nonoperating	- 40° C (- 40° F)	66° C (151° F)
Maximum rate of temperature change per hour	N/A	20° C (36° F)
Altitude		
Operating	N/A	2438 m (8000 ft)
Nonoperating	N/A	4876 m (16000 ft)
Relative Humidity		
Operating (noncondensing)	10%	95%
Nonoperating (noncondensing)	10%	95%

a. For high-altitude sites, decrease the operating temperature specification by 1.8° C for each 1000 m (1° F for each 1000 ft) above sea level.

Electrical Requirements

The power at the electrical outlet must match the requirements shown in Table C-4.

The instructions assume that an appropriate ac power source is within 1.8 m (6.0 ft) of DECserver.

Table C-4: Electrical Requirements

Parameter	DECserver
Line voltage ^a	100–120 V rms/220–240 V rms
Frequency	50/60 Hz
Line current	1.0 A rms/.5 A rms
Power	42W

a. The DECserver automatically selects the voltage range.

Table C-5 shows the electrical output from the standard Ethernet/IEEE 802.3 connector.

Table C-5: Standard Ethernet/IEEE 802.3 Connector Output

Parameter	DECserver
Voltage	+ 12 V DC
Current	0.5 A Max

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