

# DECserver 708

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## INSTALLATION MANUAL

Part Number: IM-DSRVW-00

**April 2006**

This book describes how to install, maintain, and troubleshoot the DECserver 708.

**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 product.

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# Preface

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## Overview

### About this Manual

The manual provides an overview of the DECserver 708. This manual also describes how to install, manage, and troubleshoot the DECserver 708.

### Intended Audience

This manual is intended for the hardware installer. The installer is responsible for ensuring that the hardware is installed and tested. The *DECserver 708 Hardware Installation Manual* shows how to install the DECserver 708 when the site is verified and the cables and devices are in place. This manual shows how to verify the site, install cables and devices, and troubleshoot the DECserver 708. The person installing the DECserver 708 software can then verify the system installation.

## Organization

This manual is organized as follows:

<b>Chapter</b>	<b>Description</b>
1	Provides an overview of the DECserver 708 features.
2	Describes how to verify the site before installing the DECserver 708.
3	Describes how to cable the site.
4	Describes connector pins for the various server connectors and also describes various cables, adapters, and accessories used with the DECserver 708.
5	Shows how to update a DS708 with Flash RAM.
6	Shows how to troubleshoot the DECserver 708.

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## Conventions

This document uses the following conventions.

Convention	Description
<b>Bold Type</b>	Indicates user input.

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

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## Related Documentation

The following documents may help the user to configure and manage the DECserver 708. All documentation is on the Web and can be located at <http://www.dnpg.com/dr/npg/dsrfm-mn.html>. All documentation also resides on the 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.

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# Safety

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## Overview

Any warning or caution that appears in this document is defined as follows. The cautions that must be observed for the hardware are described in this document in English, German, French, and Spanish.

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<b>WARNING</b>	Contains information to prevent personal injury.
<b>CAUTION</b>	Contains information to prevent damage to equipment.
<b>VORSICHT</b>	Enthält Informationen, die beachtet werden müssen um den Benutzer vor Schaden zu bewahren.
<b>ACHTUNG</b>	Enthält Informationen, die beachtet werden müssen um die Geräte vor Schaden zu bewahren.
<b>DANGER</b>	Signale les informations destinées à prévenir les accidents corporels.
<b>ATTENTION</b>	Signale les informations destinées à prévenir la détérioration du matériel.
<b>AVISO</b>	Contiene información para evitar daños personales.
<b>PRECAUCIÓN</b>	Contiene información para evitar daños al equipo.

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<b>CAUTION</b>	Static electricity can damage modules and electronic components. Digital Networks recommends using a grounded antistatic wrist strap and a grounded work surface when handling any modules.
<b>ACHTUNG</b>	Module und elektronische Komponenten können durch elektrostatische Entladungen beschädigt werden. Benutzen Sie immer eine antistatische Gelenkmanschette und eine geerdete Arbeitsunterlage, wenn Sie am offenen Gerät arbeiten.
<b>ATTENTION</b>	Les charges excessives d'électricité statique peuvent endommager les modules et les composants électroniques. Digital Networks conseille l'utilisation d'un bracelet de masse et d'un plan de travail mis à la terre lors de la manipulation des modules.
<b>PRECAUCION</b>	La electricidad estática puede dañar los componentes electrónicos y los módulos. Digital Networks recomienda que se utilicen cintas de pasadores y superficies de trabajo conectadas a tierra al trabajar con cualquier módulo.

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<b>CAUTION</b>	The total weight of a fully configured MultiSwitch 900 chassis with modules and cables is approximately 36 kg. This configuration is too heavy for an office wall partition. Be sure to install the chassis on a solid wall.
<b>ACHTUNG</b>	Das Gesamtgewicht einer vollständig konfigurierten Geräts vom Typ MultiSwitch beträgt etwa 36 kg. Diese Konfiguration ist für Leichtbauwände zu schwer. Hängen Sie das Gerät nur an stabilen Wänden auf.
<b>ATTENTION</b>	La configuration totale d'un châssis MultiSwitch 900, avec modules et câbles, pèse environ 36kg. Ce poids étant trop élevé pour une cloison mobile, le châssis doit être installé contre un mur fixe.
<b>PRECAUCION</b>	El peso total des chasis de un MultiSwitch 900 plenamente configurado con módulos y cables es aproximadamente de 36 kilos. Esta configuración es demasiado pesada para una mampara de oficina, por lo cual el chasis debe instalarse en una pared resistente.

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<b>WARNING</b>	To avoid bodily injury or equipment damage, use care when connecting the power cord.
<b>VORSICHT</b>	Um mögliche Verletzungen oder Geräteschäden durch elektrischen Strom zu vermeiden, seien Sie besonders vorsichtig, wenn Sie das Netzkabel anschliessen.
<b>DANGER</b>	Lors de la connexion du cordon d'alimentation, prenez toutes les précautions nécessaires afin d'éviter tout risque corporel ou dommage matériel.
<b>AVISO</b>	Para evitar daños corporales o al equipo, póngase la debida atención al conectar el cable de alimentación.

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<b>WARNING</b>	To avoid bodily injury or equipment damage, turn the power supply locking mechanism 90 degrees to the left (clockwise) to lock the power supply into place. This prevents the power supply module from falling out of the chassis.
<b>VORSICHT</b>	Um Personen- und Sachschäden zu vermeiden, drehen Sie den Sperrmechanismus der Stromversorgung um 90 Grad nach links (im Uhrzeigersinn) und verriegeln damit die Stromversorgung. Auf diese Weise stellen Sie sicher, daß das Stromversorgungsmodul nicht aus dem Chassis fallen kann.
<b>DANGER</b>	Pour éviter tout dommage corporel ou matériel, tournez le mécanisme de verrouillage de la source d'alimentation de 90 degrés vers la gauche (sens des aiguilles d'une montre) afin de verrouiller la source d'alimentation. Ceci évite tout risque que le module d'alimentation ne se débranche du châssis.
<b>AVISO</b>	Para evitar daños corporales o de los equipos, se debe girar el mecanismo de bloqueo de la fuente de alimentación 90 grados a la izquierda (en el sentido de las agujas del reloj) para que la fuente quede bloqueada en su sitio y no se caiga fuera del chasis.

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<b>WARNING</b>	Operational power supply modules are heavy, and may be hot; use care when removing a power supply module.
<b>VORSICHT</b>	Im Betrieb befindliche Stromversorgungsmodule sind schwer und können außerdem heiß sein. Seien Sie beim Entfernen von Stromversorgungsmodulen besonders vorsichtig.
<b>DANGER</b>	Les modules d'alimentation opérationnels sont lourds et peuvent être chauds; retirez-les avec précaution.
<b>AVISO</b>	Los módulos de fuente de alimentación en funcionamiento son pesados y pueden estar calientes. Debe tenerse cuidado al retirar un módulo

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<b>CAUTION</b>	If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.
<b>ACHTUNG</b>	Solite während der Phase 3 des DLU-Prozesses eine Unterbrechung der Stromversorgung eintreten, kann das Firmwareprogramm zerstört werden. Aus diesem Grunde wird dringend empfohlen, Vorkehrungen zu treffen, daß während der Durchführung dieser Phase 3 die Systemeinheit weder ausgeschaltet noch die Stromversorgung unterbrochen werden kann.
<b>ATTENTION</b>	L'image du microprogramme risque d'être corrompue, en cas de coupure de courant au cours de l'étape 3 du processus DLU. Ne mettez pas l'unité hors tension et n'exécutez aucune action risquant d'entraîner une coupure d'alimentation au cours de cette étape.
<b>PRECAUCION</b>	Si se interrumpe el suministro eléctrico durante la Etapa 3 del proceso DLU, puede dañarse la imagen del firmware. No se debe apagar la unidad ni realizar ninguna operación que pueda causar una interrupción del suministro de la unidad durante la Etapa 3 del mencionado proceso.

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# Chapter 1

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## Product Introduction

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### Overview

#### Introduction

This chapter describes the DECserver 708. It includes an overview of the components and features, and describes the controls, indicators, and connectors.

#### In This Chapter

Information is presented in this chapter as follows:

<b>Topic</b>	<b>Page</b>
<b>What is the DECserver 708?</b>	<b>1-2</b>
<b>Models</b>	<b>1-3</b>
<b>Controls, Indicators, and Connectors</b>	<b>1-5</b>
<b>Understanding the Software Loading</b>	<b>1-8</b>

What is the DECserver 708?

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## What is the DECserver 708?

The DECserver 708 connects devices (such as printers, terminals, PCs, and modems) to local area networks (LANs). The DECserver 708 is Ethernet/IEEE 802.3-based and supports standard Ethernet/IEEE 802.3 and 10BaseT Ethernet/ IEEE 802.3 directly, and ThinWire Ethernet/IEEE 802.3 through an adapter. The DECserver 708 can be installed on a desktop or in a 19-inch rack. The DECserver 708 supports Flash RAM capability and other nonvolatile forms of memory. The memory capability is factory installed on the DECserver 708. The Flash RAM is order separately.

The DECserver 708 can download the software image from the network or from the Flash RAM option if installed. The Flash RAM option allows for a boot/power up without having to download the image through the network. The DECserver 708 supports up to 4 Mbytes of memory with the use of two single-in-line memory modules (SIMMs).

There are three new DECserver 700 models:

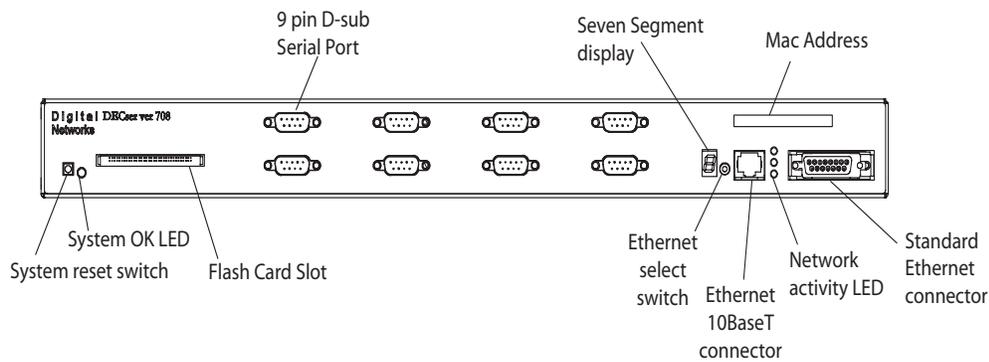
- □ DECserver 708
- □ DECserver 716
- □ DECserver 732

## Models

The DECserver 708 supports EIA-232-D/V.24/V.28 full modem control on eight 9-pin male D-connectors. Use this model to connect devices that require full duplex, asynchronous control (for example: modems).

Figure 1-1 shows a front view of the DECserver 708.

**Figure 1-1: DECserver 708 Front View**

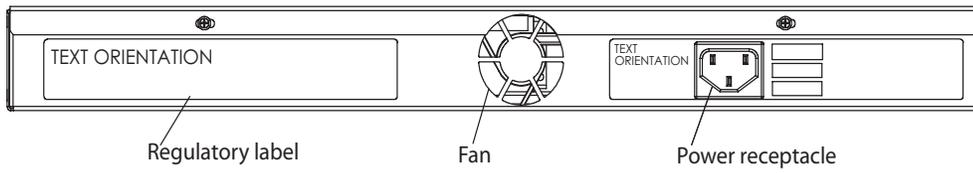


*Adapters H8585-AB and H8585-AC are not for connection to public networks in Sweden, Germany, or Japan.*

## Models

Figure 1–2 shows a rear view of the DECserver 708.

**Figure 1-2: DECserver 708 Rear View**



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## Controls, Indicators, and Connectors

The DECserver 708 controls, indicators, and connectors are located on the front of the DECserver 708 as shown in Figure 1-1, with the exception of the Power receptacle, which is on the rear of the DECserver 708 (Figure 1-2).

Table 1-1 describes the DECserver 708 controls. Table 1-2 and Table 1-3 describe the indicators, and Table 1-4 describes the connectors. For more information on the connectors, refer to Chapter 4.

## Controls, Indicators, and Connectors

**Table 1-1: DECserver 708 Controls**

Control	Description
System reset switch	On power up, press this switch until E appears on the seven-segment display. This reloads the factory set parameters. During Flash load, pressing and holding the system reset switch will abort the Flash RAM load and force a network boot. Refer to Chapter 6 for more information.
Ethernet select switch	This switch selects either standard or 10BaseT Ethernet.

**Table 1-2: DECserver 708 Indicators**

Indicator	Display
System OK LED	Lights (green) when the DECserver 708 has passed self-test. Blinks when a nonfatal error occurs on self-test. When off, indicates that the DECserver 708 has failed self-test.
Network activity LED	Refer to Table 1-3.
Seven-segment display	Provides error and status information.

**Table 1-3: Network Activity LED**

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

## Controls, Indicators, and Connectors

**Table 1-4: DECserver 700 Connectors**

<b>Connector</b>	<b>Description</b>
Serial port connectors (DECserver 708)	These eight 9-pin male D-connectors connect EIA-232-D devices to the DECserver 708.
Standard Ethernet connector	This single 15-pin female D-connector connects to a standard Ethernet/IEEE 802.3 local area network using a transceiver cable.
10BaseT Ethernet connector	This single female RJ45 connector connects to a 10BaseT Ethernet/IEEE 802.3 local area network.
Power cord receptacle	The DECserver 708 power cord plugs into this receptacle.

## Understanding the Software Loading

This section describes the two methods that the DECserver 708 accesses to load the software:

- Loading from Flash RAM
- Loading from the network

### Loading from Flash RAM

Once the DECserver 708 completes self-tests, the DECserver 708 checks for Flash RAM. If there is a valid Flash RAM, the DECserver 708 begins the boot sequence to load the software from Flash RAM. The seven-segment display will display three horizontal segments during this loading process.

If the DECserver 708 does not have Flash RAM, the DECserver 708 proceeds to a network load.

If a device is connected to the console port, the DECserver 708 can display status messages while the boot sequence is running. Status messages indicate the Ethernet address of the DECserver 708, the name of the load image it is looking for, and the stage of the boot process it is in.

### Loading from the Network

If you do not want to load the software from Flash RAM, you can press the system reset switch during load from Flash RAM. When the system reset switch is pressed, the Flash RAM load will be aborted and the software is downline loaded from a load host.

When the DECserver 708 notices the system reset switch depressed during load from Flash RAM, it will rapidly blink the LED to acknowledge the pressed system reset switch (this may take several seconds). Once the LED begins rapidly blinking, you may release the system reset switch and the firmware will go on to a network boot sequence. For more information on display codes for Flash RAM, refer to Chapter 6.

## Chapter 2

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# Checking the Site

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## Overview

### Introduction

This chapter includes descriptions of physical, environmental and electrical requirements. The DECserver 708 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 708, verify that all of the requirements in this section are met before beginning the installation.

<b>Topic</b>	<b>Page</b>
<b>Physical Requirements</b>	<b>2-2</b>
<b>Environmental Requirements</b>	<b>2-3</b>
<b>Electrical Requirements</b>	<b>2-4</b>

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## Physical Requirements

Allow for 15 cm (6 in) of airspace around the DECserver 708 air vents. Table 2–1 shows the size and weight of the DECserver 708. Table 2–2 shows the acoustic parameters.

**Table 2-1: Physical Specifications of the DECserver 700**

Dimension	Measurement
Height	44 mm (1.73 in)
Width	438 mm (17.25 in)
Depth	254 mm (10.0 in)
Weight	3.0 kg (6.1 lbs)

**Table 2-2: Acoustics**

Parameter	Measurement
$L_{wAd}$ <sup>1</sup>	4.1 bels ( $L_{wA} = 3.8$ bels)
$L_{pAm}$ (bystander) <sup>1</sup>	27 dBA

<sup>1</sup>Preliminary declared values per ISO 9296 and ISO 7779. Current values are available from Digital Networks representatives.

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## Environmental Requirements

Environmental requirements for temperature and humidity must be within the ranges shown in Table 2-3.

**Table 2-3: Environmental Specifications of the DECserver 708**

<b>Parameter</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Temperature<sup>1</sup></b>		
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		20° C (36° F)
<b>Altitude</b>		
Operating		2438 m (8000 ft)
Nonoperating		4876 m (16000 ft)
<b>Relative Humidity</b>		
Operating (noncondensing)	10%	95%
Nonoperating (noncondensing)	10%	95%

<sup>1</sup>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.

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## Electrical Requirements

The power at the electrical outlet must match the requirements shown in Table 2–4. The instructions assume that an appropriate AC power source is within 1.8 m (6.0 ft) of the DECserver 708.

**Table 2-4: Electrical Requirements**

Parameter	DECserver 708
Line voltage <sup>1</sup>	100 – 120 V rms/220 – 240 V rms
Frequency	50/60 Hz
Line current	1.0 A rms / .5 A rms
Power	42 W

<sup>1</sup> The DECserver 708 automatically selects the voltage range.

Table 2–5 shows the electrical output from the standard Ethernet/IEEE 802.3 connector.

**Table 2-5: Standard Ethernet/IEEE 802.3 Connector Output**

Parameter	DECserver 708
Voltage	+ 12 V DC
Current	.5 A Max

# Chapter 3

---

## Cabling the Site

---

### Overview

#### Introduction

This chapter shows you how to install the cables and associated devices used by the DECserver 708.

#### In This Chapter

Topic	Page
Preinstallation Checks	3-2
Installing the Ethernet Cables and Devices	3-3
Installing Serial Cables and Devices on the DECserver 708	3-9
Cabling Requirements	3-10
Installing the DECserver 708 in a Rack	3-12
Installing the Rack-Mounting Brackets to the DECserver	3-13
Required Tools	3-14
Installation Components	3-15

## Preinstallation Checks

Before beginning the DECserver 708 installation, use the following checklist to make sure that the site preparation is complete:

- Arrangements have been made to connect the DECserver 708 Ethernet port to an Ethernet interface device (if required). For standard Ethernet, the device can be an Ethernet transceiver. For 10BaseT Ethernet, the device can be a repeater or switch.
- The Ethernet interface device is installed and the required cabling is in place, tested, and tagged.
- The rack-mount kit installed (if required) as described in the *DECserver 708 Hardware Installation Manual*. (later in this chapter)
- Cables of appropriate length are available for connecting the DECserver 708 to the Ethernet interface device.
- The devices (terminals, modems, personal computers, hosts) are ready to be connected.
- Cables of appropriate length and type are available for connection of serial devices.
- One terminal (asynchronous, DEC423 or EIA-232-D compatible) is available for hardware testing and system verification.

---

## Installing the Ethernet Cables and Devices

You can connect the DECserver 708 to:

- Standard Ethernet/IEEE 802.3 network
- 10BaseT Ethernet/IEEE 802.3 network
- ThinWire Ethernet/IEEE 802.3 network using an external media access unit (MAU) such as a DECXM-AA

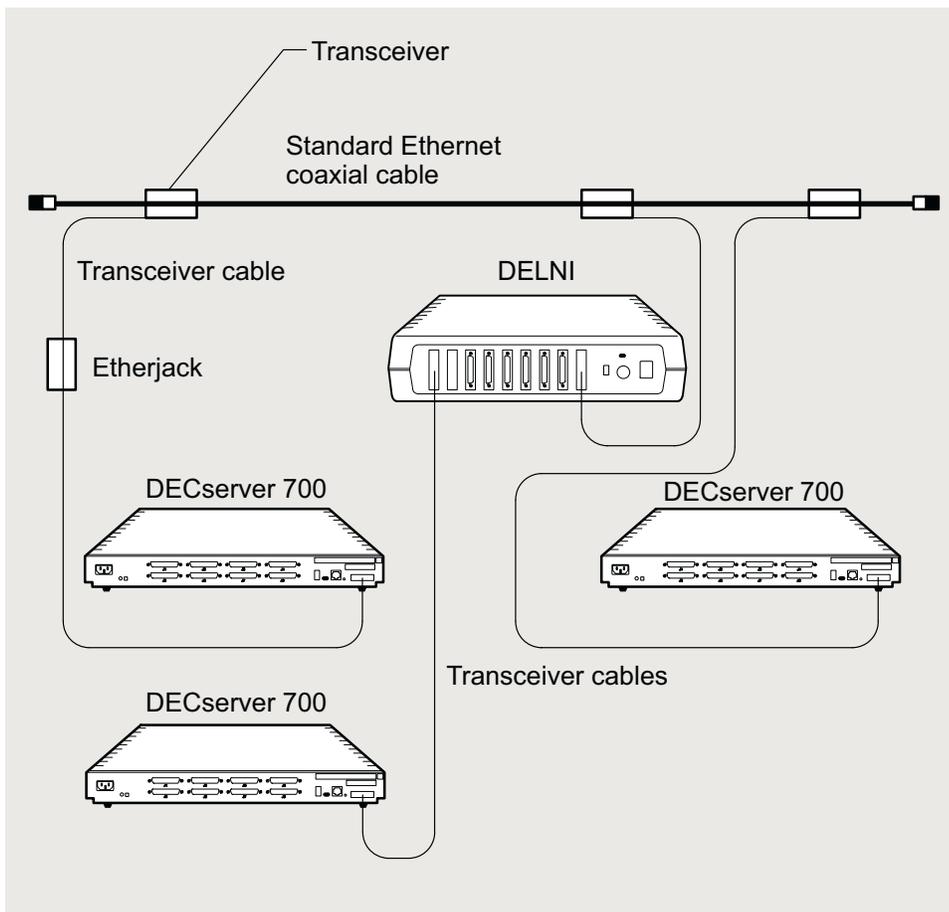
## Installing the Ethernet Cables and Devices

### Installing the Standard Ethernet Cables and Devices

You can connect the DECserver 708 to the standard Ethernet/IEEE 802.3 network (Figure 3-1) by connecting to:

- A transceiver on a standard Ethernet coaxial cable for Digital Networks baseband networks or other AUI interfaces.

**Figure 3-1: Standard Ethernet Coaxial Cable Connection**



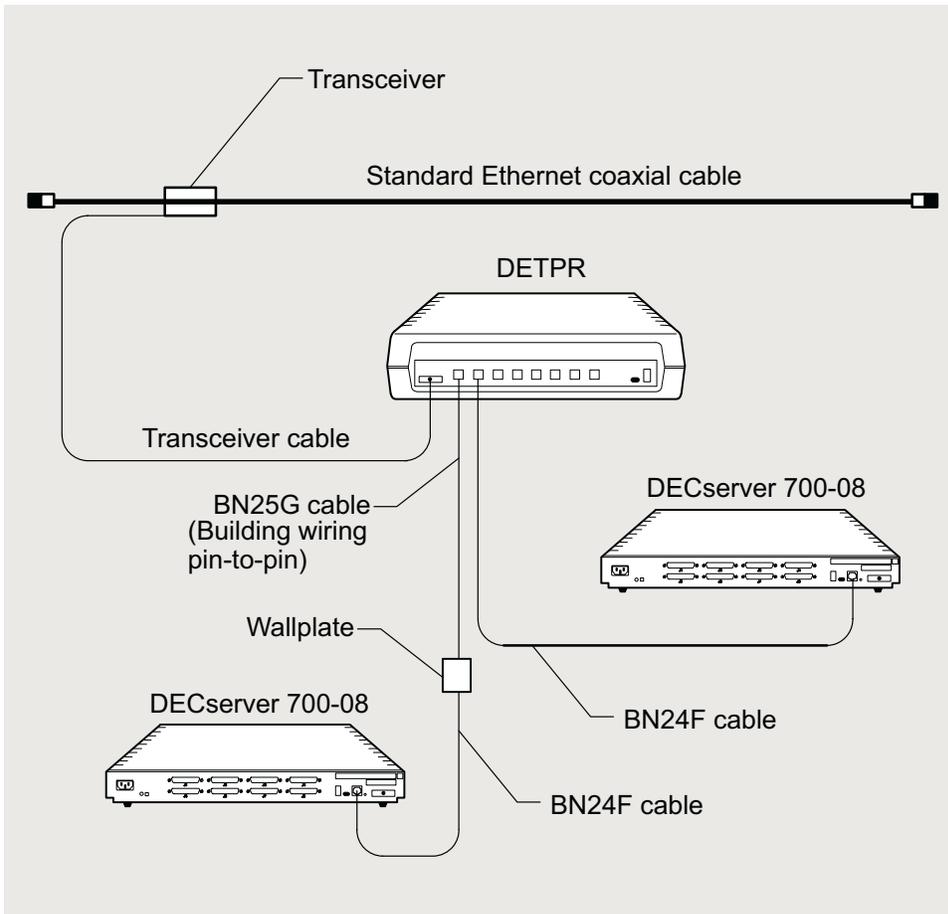
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### Installing the 10BaseT Ethernet Cables and Devices

You can connect the DECserver 708 to a Digital Network Switch (Figure 3-2) by using:

- BN25G cable for pin-to-pin building wiring

**Figure 3-2: 10BaseT Ethernet Connection**



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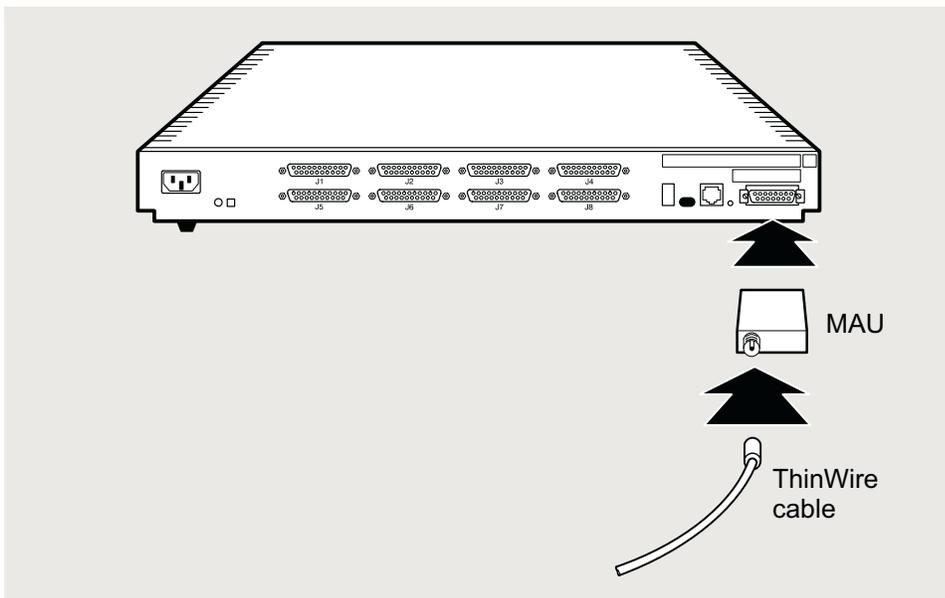
## Installing the Ethernet Cables and Devices

### Installing the ThinWire Ethernet Cables and Devices

You can connect the DECserver 708 to a ThinWire Ethernet (Figure 3-3) as follows:

- 1) Connecting the MAU to the standard Ethernet connector
- 2) Connecting the ThinWire cable to the MAU

**Figure 3-3: Connecting the DECserver 708 to ThinWire Ethernet Cable**



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Use a ThinWire coaxial cable to connect the DECserver 708 to the system in

- As part of a standalone ThinWire Ethernet coaxial cable segment

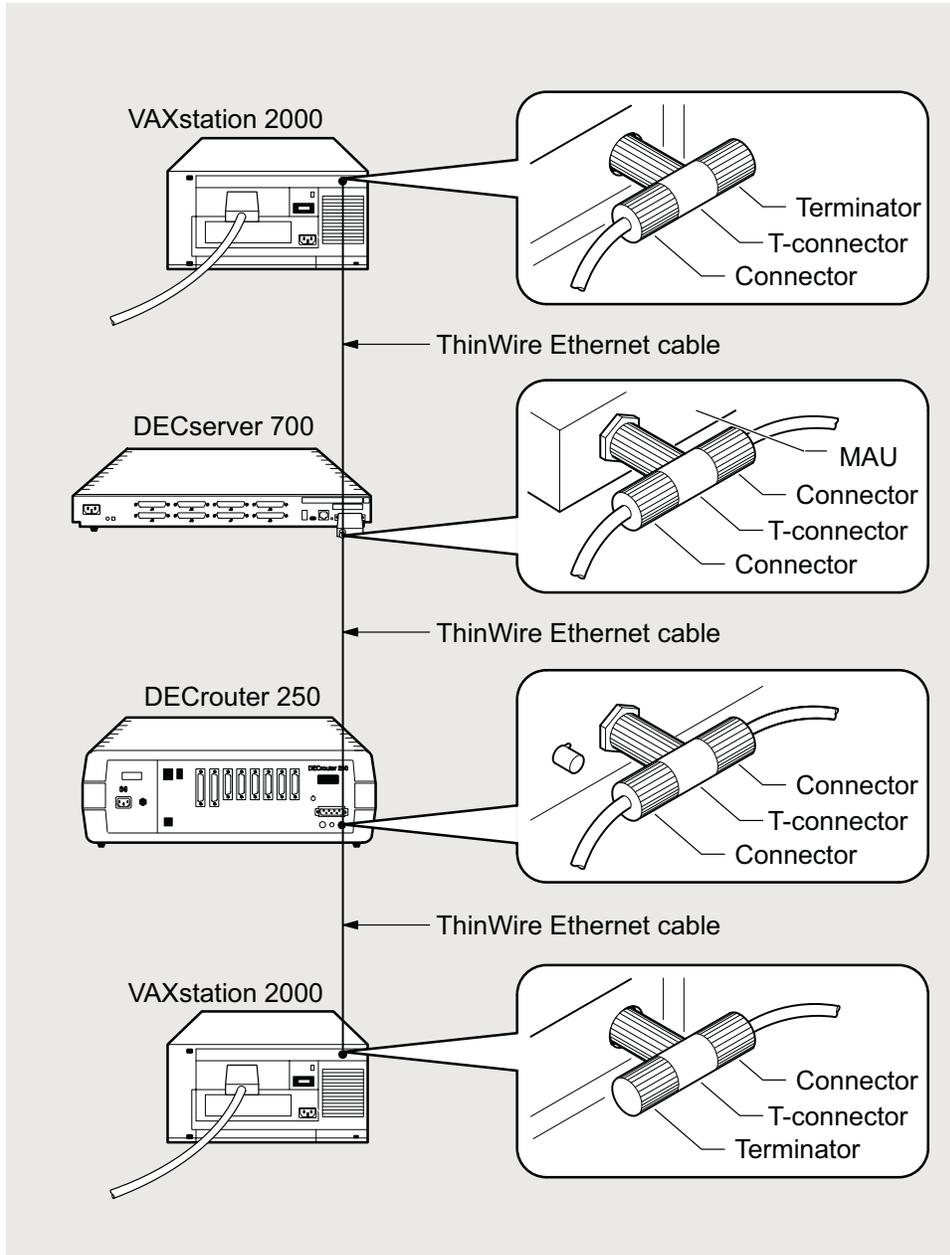
Figure 3-4 shows the DECserver 708 connected as part of a ThinWire Ethernet segment.



*A ThinWire segment must begin and end in a 50-ohm terminator (H8225) as shown in Figure 3-4.*

Installing the Ethernet Cables and Devices

Figure 3-4: ThinWire Ethernet Standalone Segment

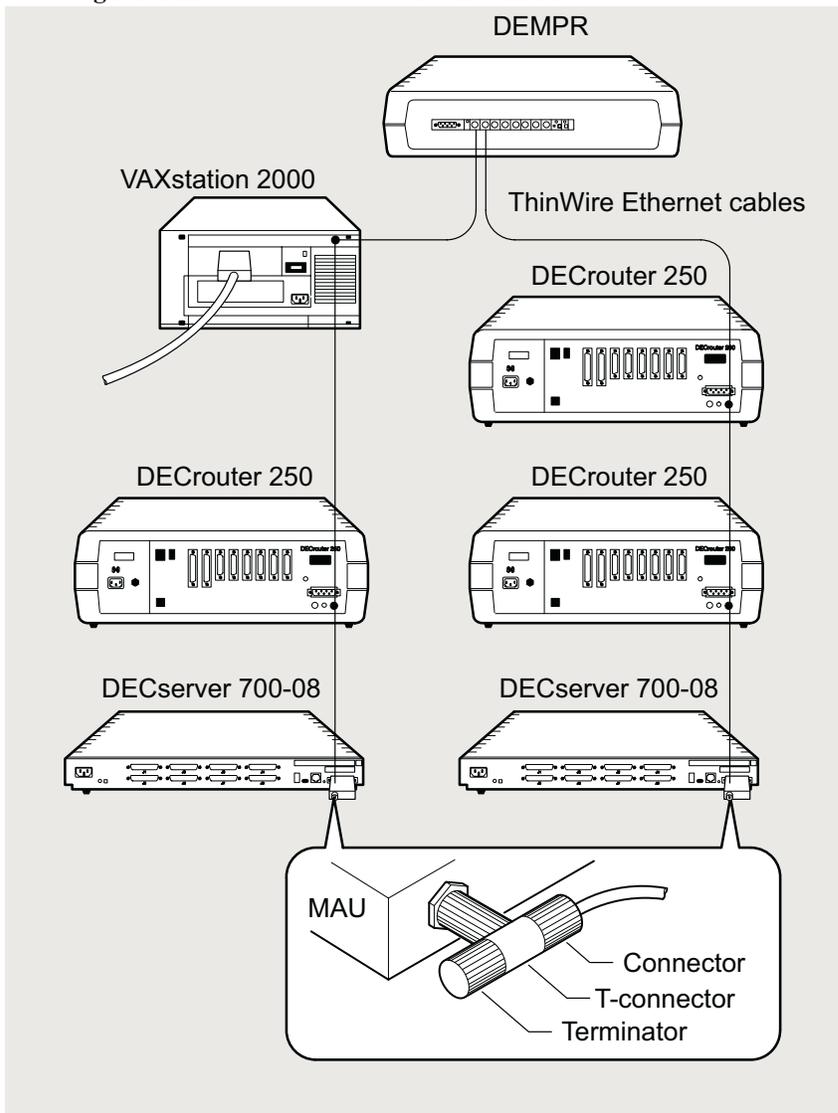


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## Installing the Ethernet Cables and Devices

Figure 3-5 shows the DECserver 708 connected as part of a DEMPR ThinWire Ethernet segment.

**Figure 3-5: DEMPR ThinWire Connection**



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## Installing Serial Cables and Devices on the DECserver 708

Use the following cables to connect EIA-232-D devices to the DECserver 708 9-pin D-connectors:

**Table 3-1: Cables and Adapters for the DECserver 708**

Cable and Adapters	Description
H8585-AA Adapter	Use this adapter to connect to the Serial port 9 -pin D-sub male connectors.
BN25G	Use this cable to connect asynchronous, also used to connect the 10BaseT to Ethernet.
BN24Q	Use this cable to connect serial port to serial port, through H8585-AA connectors.
H8575-A (EIA-423-A to EIA-232-D) Adapter	Use this adapter to connect to 25-pin D-sub male connectors (for example: printers).

- 
- Industry standard 9-pin female cable assemblies with 9-pin (male / female) or ( 25-pin (male / female) D-connector as required.
  - To connect to RJ45 connectors use an H8585-AA adapter. Note: H8585-AA is a cross adapter for transmitt & receive.

## Cabling Requirements

Table 3–2 shows the maximum communication distances for different types of cable used between the DECserver 708 and the Ethernet device. Table 3–3 shows the maximum cable lengths for a number of data rates using DECserver 708 supported line protocols.

The cabling requirements of the DECserver 708 are shown in the following sections. Further information on cabling and configuring of local area networks and using DECconnect system products, is provided in the *DECconnect System Planning and Configuration Guide*.

**Table 3-2: Maximum Communications Distances — Ethernet**

From	To	Maximum Distance	Cable Type
DECserver 708	Transceiver	50 m (164 ft)	BNE3x-xx standard transceiver cable
DECserver 708	Transceiver	12.5 m (41 ft)	BNE4x-xx office transceiver cable
DECserver 708	DETPR	100 m (328 ft)	BN24F cable
<sup>1</sup> DECserver 708	DESPR/DEMPR	185 m (606 ft)	H8243-A cable

<sup>1</sup> No other device in ThinWire segment.

**Table 3-3: Maximum Cable Lengths<sup>1</sup> — DECserver 708 to Devices**

Line Protocol	Data Rate (b/s)	Cable Length
EIA-232-E/V.28	9.6 K	60 m (200 ft)
	19.2 K	30 m (100 ft)
	38.4 K	15 m (50 ft)
	57.6 K	6 m (20 ft)
	115.2 K	3 m (10 ft)

### **Standard Ethernet Connection**

The transceiver cable must not exceed the maximum distances listed in Table 3-2.

### **10BaseT Ethernet Connection**

The 10BaseT Ethernet installation must conform to the following configuration rules:

- The twisted-pair cable must not exceed the maximum distance listed in Table 3-2.
- 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.

### **ThinWire Ethernet Connection**

The ThinWire cable segment must conform to the following configuration rules:

- The maximum cable segment length must not exceed 185 m (606 ft).
- There must be a 50-ohm terminator at each end of the cable segment, unless the cable ends in a DEMPR or DESPR. Both these devices have built in 50-ohm terminators.
- There must be only one ground per cable segment.
- There must be at least 0.5 m (19 in) between T-connectors.
- The maximum number of stations, between terminators, must not exceed 30 stations.
- ThinWire cable segments must not be configured in a loop.
- ThinWire cable segments must not have any branch segments.

---

## Installing the DECserver 708 in a Rack

You can rack mount the DECserver 708 in one of two ways (Table 3–4) depending on how you install the brackets.

**Table 3-4: Installing the DECserver 708 Brackets**

DECserver 700 Installation	Bracket Installation
1. Flush with front facing outward	Flush with front
2. Recessed (2.375 in) with front facing outward	Forward (2.375 in) from the front



*The DECserver 708 can be wall mounted. If the DECserver is installed on a wall, the DECserver 708 must be installed with the port connectors pointing up or pointing down. Digital Networks does not supply wall mounting hardware for the DECserver 708.*



*To prevent damage to the DECserver 708, it is recommended that you not ship the DECserver 708 mounted in a rack mounted cabinet.*

## Installing the Rack-Mounting Brackets to the DECserver

Figure 3-6 shows how to install the brackets in the DECserver 708. The DECserver 716 is shown in this illustration.

**Figure 3-6: How to Fit the Brackets to the DECserver 708**

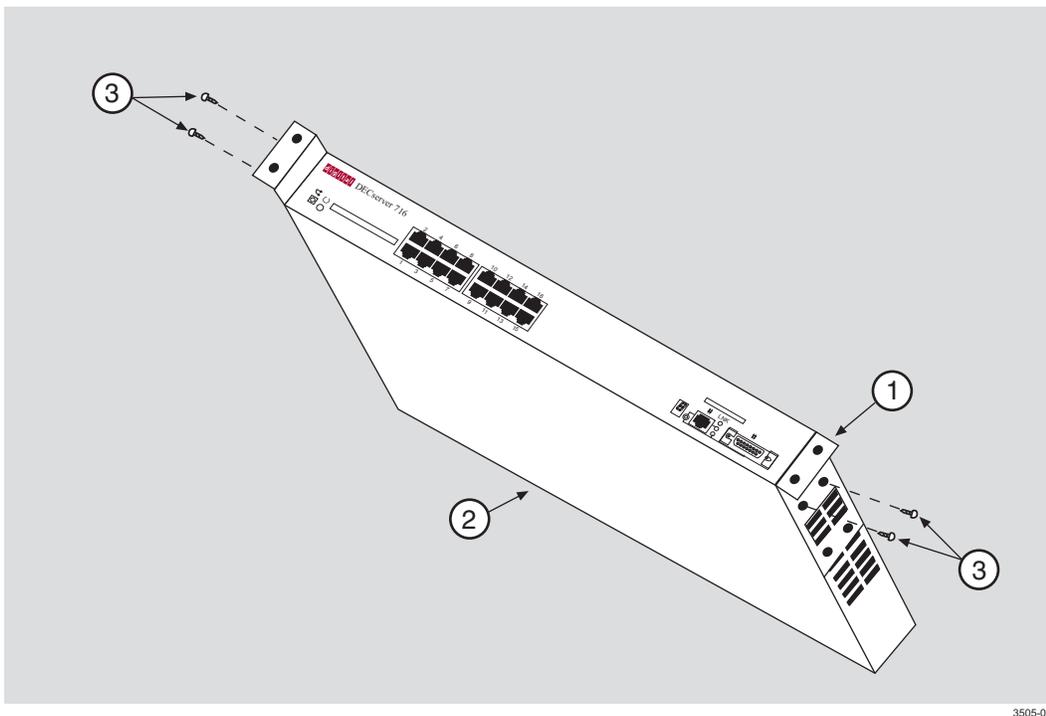


Table 3-5: describes how to assemble the rack-mounting kit as illustrated in Figure 3-6.

**Table 3-5: 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).

## Required Tools

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## 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/> <b>CAUTION</b> <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.

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## 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](http://www.dnpg.com/products).
- **Serial line connection.** For a list of supported cables refer to *Table 3-1* in this *Chapter*.
- **Patch cable.** Cat 5 UTP 8MP-8MP patch cable, **BN25G-xx**. For a list of supported cables and adapters refer to *Table 3-1* in this chapter.

## Installation Components

## Chapter 4

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# Connector and Cable Pin Descriptions

---

## Overview

### Introduction

This chapter describes the pins of the DECserver 708 hardware connectors and the cables used to interface to the DECserver 708 hardware. Wiring diagrams of the individual cables are included to help you in troubleshooting and cable building.

### In This Chapter

Topic	Page
Connector Pin Descriptions	4-2
Cable Connections	4-6

## Connector Pin Descriptions

This section describes the pins for the following DECserver 708 connectors:

- Standard Ethernet/IEEE 802.3 transceiver interface
- 10BaseT Ethernet/IEEE 802.3 transceiver interface
- DECserver 708 serial port connectors

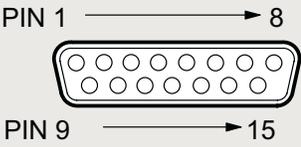
### Standard Ethernet

The standard Ethernet connector matches the signal specifications described in *The Ethernet: A Local Area Network: Data Link Layer and Physical Layer Specification*.

## Connector Pin Descriptions

Figure 4-1 shows a standard Ethernet transceiver interface connector.

**Figure 4-1: Pin Numbers and Signals for Standard Ethernet Connector**



The diagram shows a standard Ethernet transceiver interface connector with 15 pins. The top row of pins is numbered 1 through 8, and the bottom row is numbered 9 through 15. An arrow points from PIN 1 to PIN 8, and another arrow points from PIN 9 to PIN 15.

Pin Number	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

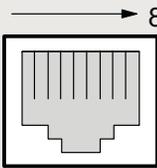
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## Connector Pin Descriptions

### 10BaseT Ethernet

The 10BaseT Ethernet connector is an 8-pin modular jack (RJ45). Figure 4-2 shows a 10BaseT Ethernet connector.

**Figure 4-2: Pin Numbers and Signals for 10BaseT Ethernet Connector**



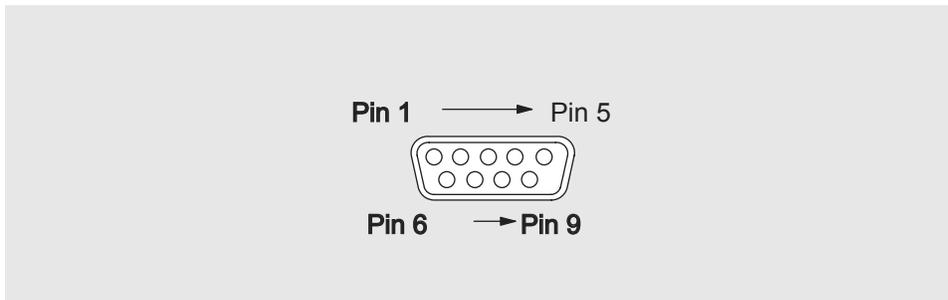
Pin Number	Signal Name
1	Transmit +
2	Transmit –
3	Receive +
4	Reserved
5	Reserved
6	Receive –
7	Reserved
8	Reserved

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### DECserver 708 Serial Line Ports

The DECserver 708 uses a 9-pin D-sub connector on the serial line ports. Figure 4-3 shows a 9-Pin D-sub Connector.

**Figure 4-3: Pin Numbers and Signals for 9-Pin D-sub Connector**



Part Number	Signal Description	Signal name	EIA-232-D	V2.4
1	Data channel received line signal detector	DCD	CF	109
2	Received data	RXD	BB	104
3	Transmitted data	TXD	BA	103
4	Data terminal ready	DTR	CD	108/2
5	Signal ground	GND	AB	102
6	Data set ready	DSR	CC	107
7	Request to send	RTS	CA	105
8	Clear to send	CTS	CB	106
9	Ring indicator	RI	CE	125

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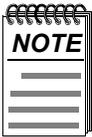
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## Cable Connections

The following table describes the cable connections that are compatible with the DECserver 708 Ethernet and serial line connectors. Wiring diagrams of individual cables are provided for use in troubleshooting and cable building.

**Table 4-1: Cable Connections**

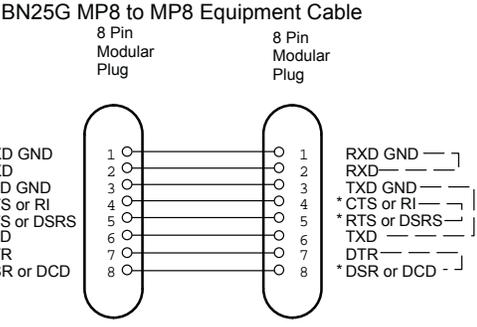
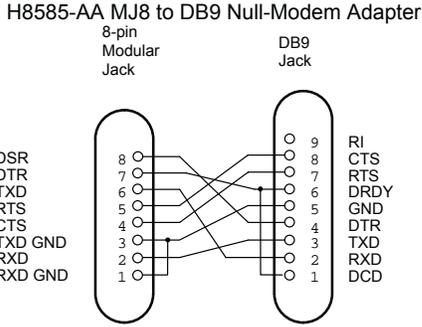
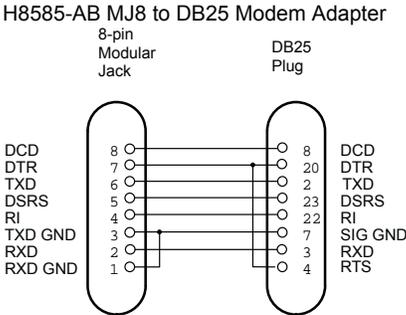
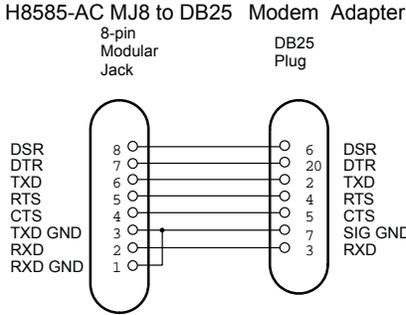
Cable Type	Description
10BaseT Ethernet Cable	The 10BaseT Ethernet cable uses a 8-pin modular plug on each end.
BN25G MP8 to MP8 Equipment Cable	The BN25G is a four twisted-pair cable with standard 8-pin modular plugs. Can be used with the DECserver 708
H8585-AA MJ8 to DB9 Null-Modem Adapter	The H8585-AA MJ8 to DB9 null-modem adapter is used to convert the serial port from a DB9 female connector for asynchronous connection to a MJ8 PC port. Can be used with the DECserver 708.
BN24Q 10BaseT or 100BaseT cable	The BN24Q 8-pin MP to 8-pin MP UTP crossover office cable.



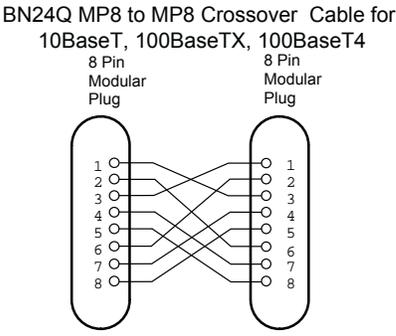
*Adapters H8585-AB and H8585-AC are not for connection to public networks in Sweden, Germany, or Japan. For a list of signals supported by the DECserver 708, refer to Chapter 3.*

Cable Connections

Figure 4-4: Adapters and Connectors Used with the DECserver 708



\*Software Selectable  
 --- Twisted Pairs



## Cable Connections

## Chapter 5

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# 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 708.

### In This Chapter

Topic	Page
About the Flash RAM Card	5-2
Installing the Flash RAM Card in the DECserver	5-3
Removing the Flash RAM Card from the DECserver	5-4

## 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 from a running unit after an installation.

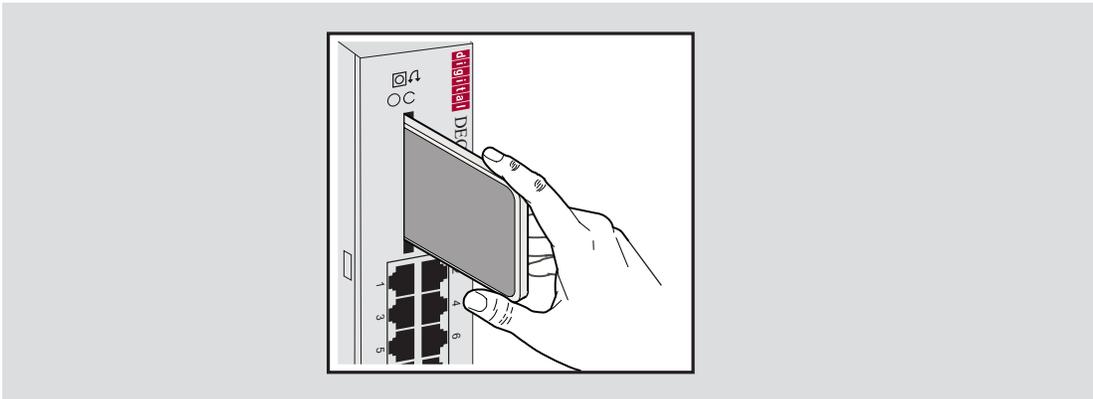
After you load the DECserver software, the card may be left in place or removed. Unless there is a load host available on the network, we recommend leaving the Flash RAM card in place in case the DECserver software needs to be reloaded.

---

## Installing the Flash RAM Card in the DECserver

Figure 5-1 shows the Flash RAM card being inserted into the DECserver. Table 5-1 describes how to insert the Flash RAM card.

**Figure 5-1: Flash RAM Card Installation**



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**Table 5-1: 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.

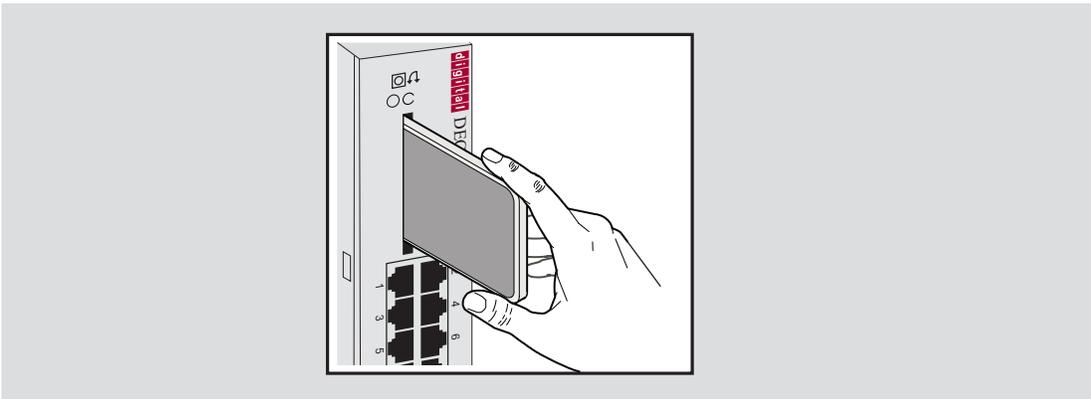
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## Removing the Flash RAM Card from the DECserver

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

Figure 5-2 shows the Flash RAM card being removed from the DECserver. Table 5-2 describes how to remove the Flash RAM card.

**Figure 5-2: Flash RAM Card Removal**



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**Table 5-2: 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 6

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# What to Do If You Have Problems

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## Overview

### Introduction

This chapter helps you identify and correct problems you may encounter during and after the installation of the DECserver 708 hardware. The troubleshooting procedures are for diagnosing and correcting hardware-related problems only.

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 Server Problem Solving* manual.

Use the following to diagnose and troubleshoot the DECserver 708 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 Server Management* manual for the procedure to configure a terminal to receive console port messages.

## In This Chapter

<b>Topic</b>	<b>Page</b>
<b>Diagnosing DECserver 708 Problems</b>	<b>6-3</b>
<b>Seven-Segment Display Off and System OK LED Off</b>	<b>6-5</b>
<b>System OK LED Off/Seven-Segment Display Flashing “C”, “d”, or “n”</b>	<b>6-6</b>
<b>System OK LED Off/Seven-Segment Display Flashing</b>	<b>6-7</b>
<b>System OK LED Flashing</b>	<b>6-8</b>
<b>Seven-Segment Display Has a “3”</b>	<b>6-11</b>
<b>Seven-Segment Display Codes</b>	<b>6-13</b>
<b>Network Activity LED</b>	<b>6-15</b>

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## Diagnosing DECserver 708 Problems

Compare the state of the seven-segment display and the System OK LED with those shown in Table 6-1 and go to the section indicated for information on corrective action.



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

## Diagnosing DECserver 708 Problems

**Table 6-1: Display/Indications**

Device	Definition	State	Indication	Corrective Action
System OK LED	Diagnostic	On	Self-test passed	
		Off	<sup>1</sup> Fatal error	See System OK LED Off/ Seven-Segment section.
		Flashing	<sup>1</sup> Nonfatal error	See System OK LED Flashing section.
Seven-segment display	Status/ diagnostic	Off	No power or display broken	See Seven-Segment Display Off section.
		"C", "d", "n"	SIMM failure	See System OK LED Off/ Seven-Segment Display Flashing "C", etc. section.
		Flashing	Fatal error	See System OK LED Off/ Seven-Segment section.
		"3"	Load request backoff	See Seven-Segment Display Has a "3" section.
		Rotating segment pattern	DECserver 708 software executing	

<sup>1</sup> A fatal error means that the network access server cannot function. A nonfatal error means that the network access server can function with reduced capability (for example, one serial port not working).

## Seven-Segment Display Off and System OK LED Off

### Problem

Power is not reaching the DECserver 708 hardware.

### Correction

- Secure the power cable at the DECserver 708 and at the wall outlet and check the fuse in the power cable plug (if applicable).
- 708 power cord into another outlet. If power is not available at the wall outlet, check the wall outlet's circuit breaker.
- Check the power cord by substituting another one. If the first power cord is defective, replace it.

### Problem

The DECserver 708 hardware is defective.

### Correction

Notify the network manager that the DECserver 708 must be returned to Digital Networks for repair or replacement. Refer to the *Network Access Server Problem Solving* manual for information about returning the unit to Digital Networks.

---

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

### Problem

The DECserver 708 single-in-line memory (SIMM) is faulty.

### Correction

If the seven-segment display is flashing “C”, replace the SIMM in connector 1.

- If the seven-segment display is flashing “d”, replace the SIMM in connector 2.
- If no SIMM or the wrong type of SIMM is installed, the seven-segment display flashes “n”.



*If the SIMM is found to be faulty, return the DECserver708 to Digital Networks.*

## **System OK LED Off/Seven-Segment Display Flashing**

### **Problem**

A hardware error occurred that makes the DECserver 708 nonoperational.

### **Correction**

There is no corrective procedure for this problem except for SIMM failure (refer to note). Notify the network manager that the DECserver 708 must be returned to Digital Networks for repair or replacement. Refer to the *Network Access Server Problem Solving* manual for information about returning the unit to Digital Networks.

## System OK LED Flashing

If the System OK LED is flashing after power up, it indicates that the DECserver 708 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:

- 1) Connect a console terminal to the console port (default port is port 1) of the DECserver 708, then power up the terminal. Refer to the *Network Access Server Management* manual 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 708 power cord at the wall outlet, then reinsert it.
- 4) Read the error message that appears on the terminal display.

The following sections list the error messages that occur in conjunction with System OK LED flashing. Locate the section that describes the displayed error message and follow the recommended corrective action.

### Error Message 952

Local -952- Enter ^P to repeat self-test

#### Problem

An error was detected on the Ethernet port.

#### Correction

The DECserver 708 displays this error message with error message 941.

## Error Message 922

Local -922- Port hardware error on port *n*

### Problem

The specified port has failed self-test.

### Correction

There is no corrective procedure for this condition. Notify the network manager that the DECserver 708 must be returned to Digital Networks for repair or for replacement. Refer to the *Network Access Server Problem Solving* manual for information about returning the unit to Digital Networks.

## Error Message 941

Local -941- Transceiver loopback error

### Problem

The Ethernet port has failed self-test.

### Correction

- Standard Ethernet/ ThinWire Ethernet – Disconnect the cables or MAU from the standard Ethernet connector and insert a loopback connector part number 12-22196-02. Test the hardware again by pulling out the power cord and reinserting it. If this corrects the problem, the fault is external to the DECserver 708. If this fails to correct the problem, notify the network manager that the DECserver 708 must be returned to Digital Networks for repair or for replacement. Refer to the *Network Access Server Problem Solving* manual for information about returning the unit to Digital Networks. If the DECserver 708 passes self-test, then the problem lies in the cables or equipment connected to the DECserver 708.
- 10BaseT Ethernet – 10BaseT Ethernet cannot be checked by using a loopback connector on the DECserver 708. Replace the cables and device that is connected to the DECserver 708. If this corrects the problem, the fault is external to the DECserver 708. If this fails to correct the problem, notify the network manager that the DECserver 708 must be returned to Digital Networks for repair or for replacement. Refer to the *Network Access Server Problem Solving* manual for information about returning the unit to Digital Networks. If the DECserver 708 passes self-test, then the problem lies in the cables or equipment connected to the DECserver 708.

System OK LED Flashing

## **Error Message 967**

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 708 to the factory settings by pulling out the power cord and reinserting it while pressing the system reset switch until E shows on the seven-segment display. If this fails to correct the problem, notify the network manager that the DECserver 708 must be returned to Digital Networks for repair or for replacement. Refer to the *Network Access Server Problem Solving* manual for information about returning the unit to Digital Networks.

---

## Seven-Segment Display Has a “3”

If the seven-segment display has a “3” after power up, the DECserver 708 has a downline loading problem. To isolate and diagnose the problem, do the following:

- 1) Connect a terminal to the console port of the DECserver 708, 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) Initialize the DECserver 708 by pressing Ctrl/P on your console terminal.
- 4) Read the message that appears on the terminal display.

### Downline Load Starts, Then Fails

The following sequence of messages appears on the console terminal at various time intervals:

```
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
Local -912- [MOP] Load failure, timeout
```

#### Problem

The host system failed to complete the downline load to the DECserver 708.

#### 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 *Network Access Server Problem Solving* manual.

### Downline Load Does Not Start

The following sequence of messages appears on the console terminal at various time intervals:

```
Local -953- [IP] Attempting to locate load host, [ETHERNET]
Local -953- [MOP] Attempting to locate load host, [ISO8802]
```

### Seven-Segment Display Has a “3”

```
Local -953- [MOP] Attempting to locate load host, [ETHERNET]
Local -951- network access server will retry operation in n
seconds
```

#### **Problem**

Load hosts not responding to the DECserver 708 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 *Network Access Server Problem Solving* manual.

---

## Seven-Segment Display Codes

This section shows the codes that appear on the seven-segment display during the server internal self-test when the module goes through a power up and initialization. The first column indicates a vertical (hub) view of the codes. The second column describes the codes.

## Seven-Segment Display Codes

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Off	No power or display broken
<b>8</b>	Initial power on
<b>F</b>	Initialization
<b>E</b>	DECserver 708 internal test
<b>d</b>	SIMM 1 test
<b>C</b>	SIMM 2 test
<b>b</b>	DECserver 708 internal test
<b>A</b>	DECserver 708 internal test
<b>9</b>	DECserver 708 internal test
<b>7</b>	DECserver 708 internal test
<b>5</b>	NI external test
<b>≡</b>	Firmware loading from Flash RAM
<b>4</b>	Requesting load
<b>3</b>	Load request backoff
<b>2</b>	Loading
<b>1</b>	Requesting dump
<b>0</b>	Dumping
<b>H</b>	Hardware revision number incompatible with firmware revision number
<b>n</b>	No SIMMS or wrong type SIMMs installed
ROTATING	DECserver 708 is operating correctly

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## Network Activity LED

Table 6-2 shows the Network Activity LED.

**Table 6-2: Network Activity LED**

<b>Ethernet Selected</b>	<b>Connection Status</b>	<b>LED Display</b>
10BaseT	Open/incorrectly terminated	OFF
	Correctly terminated / no network activity	ON
	Correctly terminated / network activity	FLASHING (rate independent of network activity)
Standard Ethernet	Open	OFF
	Correctly connected / no network activity	OFF
	Correctly connected / network activity	Flashing or ON, depending on network activity

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Network Activity LED