DECrepeater 90TS

Installation and Configuration

Part Number: EK–DETMI–IN. B01

September 1995

This manual describes how to install and configure the
DECrepeater 90TS module.

Revision/Update Information: This is a revised manual.

Copyright

Contents

Contents (Cont.)

Safety ⚠

Any warning or caution that appears in this manual is defined as follows:

WARNING	Contains information to prevent personal injury.
CAUTION	Contains information to prevent damage to equipment.

VORSICHT	Enthält Informationen, die beachtet werden müssen, um den Benutzer vor Schaden zu bewahren.
ACHTUNG	Enthält Informationen, die beachtet werden müssen, um die Geräte vor Schaden zu bewahren.

DANGER	Signale les informations destinées à prévenir les accidents corporels.
ATTENTION	Signale les informations destinées à prévenir la détérioration du matériel.

AVISO	Contiene información para evitar daños personales.
PRECAUCIÓN	Contiene información para evitar daños al equipo.

Safety ⚠ (Cont.)

CAUTION ⚠

This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost. [Page 28.]

ACHTUNG

Bei diesem Vorgang werden alle Konfigurationseinstellungen gelöscht und die Werkseinstellungen wieder eingesetzt. Alle Konfigurationsdaten gehen verloren.

ATTENTION

Cette action supprime tous les paramètres de configuration et les remplace par des valeurs prédéfinies. Tous les paramètres de configuration seront perdus.

PRECAUCIÓN

Esta intervención borrará todos los parámetros de configuración y los sustituirá por valores por defecto definidos de fábrica. Se perderán todos los parámetros de configuración.

CAUTION ⚠   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. [Pages 39, 40, 42, and 44.]

ACHTUNG   Sollte 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 System-einheit weder ausgeschaltet noch die Stromversorgung unterbrochen werden kann.

ATTENTION   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.

PRECAUCIÓN   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.

Introduction

Overview

The DECrepeater 90TS (also referred to in this manual as the module) is an IEEE 802.3 10BaseT-compliant repeater for connecting PCs, workstations, or any twisted-pair device to an Ethernet[1] LAN.

The module is fully operational and manageable when configured as part of a Digital MultiStack System, as a standalone unit, when installed into the DEChub 90 Ethernet workgroup hub, or into the high-performance DEChub 900 MultiSwitch[2]. Up to eight modules can be installed into the DEChub 90 or the DEChub 900.

The module's front panel provides eight twisted-pair ports that use shielded 8-pin modular jacks (8-pin MJ) and one 8-pin MJ serial port.

The serial port can be used as an installation setup port when the module is installed into a DEChub 90, is installed as a standalone unit, or is installed as part of a Digital MultiStack System. By using the setup menu, you can enable the module's front panel serial port for out-of-band management (OBM).

> **NOTE:** When the module is installed into a DEChub 900, you must use the Hub Manager setup port, located on the DEChub 900, instead of the module's setup port.

An internal ThinWire interface is provided for connection to a ThinWire segment in a DEChub 90 or the DEChub 900. An external ThinWire coaxial port is provided on the module's side panel for connection to a ThinWire segment when the module is used as a standalone unit or as part of a Digital MultiStack System.

Used in a Digital MultiStack System

The DECrepeater 90TS can be used in Digital MultiStack System (a stackable hub), which includes a Digital 90–series module and a stacking unit. Up to 16 devices can be connected in the stack and one of these can be the stack manager (management agent). The DECrepeater 90TS can be configured to serve as a management agent for the stack. With the DECrepeater 90TS as management agent, up to 15 other devices can be managed as a single management domain. For further information refer to the Digital MultiStack System documentation.

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[1]·In this manual, the term Ethernet is Digital Equipment Corporation's term for its product compatibility with the ISO 8802-3/ANSI/IEEE 802.3 standards and the Ethernet standards for Carrier Sense Multiple Access with Collision Detection (CSMA/CD) local area networks (LANs).

[2]·Also referred to in this manual as the DEChub 900.

Introduction (Cont.)

Used as a Standalone Module

When used as a standalone, module (with attached power supply), the module includes a back cover, which has a 15-pin AUI port. This port provides the option to connect to Ethernet LANs through the ThinWire port or the AUI port, depending on your particular requirements. The ThinWire and AUI interface connect internally to the same port, allowing one or the other (but not both) to be active at any given time.

Features:

Your DECrepeater 90TS Ethernet repeater includes the following features:

- Operates in the Digital MultiStack System, DEChub 90, DEChub 900, and as a standalone repeater

- Manageable through the built-in SNMP agent supporting the following MIBs:
  - Ethernet MIB (RFC 1398)
  - Repeater MIB (RFC 1516)
  - Digital Extended Repeater MIB
  - DEChub 900 Public Common MIB
  - MIB II (RFC 1213)

- Out-of-Band Management (OBM) by using SNMP over Serial Line Internet Protocol (SLIP) provides an additional path to the normal in-band management as follows:
  - Through the OBM connector on the DEChub 900 Hub Manager.
  - Through the front-panel serial port on the module when the module is installed in a DEChub 90 or as a standalone unit or in a stack.

- Manageable by HUBwatch, Digital's SNMP-hub management application featuring a user-friendly GUI (graphical user interface).

- Upgradeable device firmware (using the HUBloader application).

- Can serve as a stack manager and SNMP proxy agent for other repeaters.

- Eight 8-pin MJ unshielded twisted pair (UTP) station connectors.

- Built in access to ThinWire 10Base2 media segments in a DEChub900 or DEhub 90.

DECrepeater 90TS Installation and Configuration

Introduction (Cont.)

- ThinWire 10Base2 port connector (ThinWire BNC) on the side panel, or an optional AUI connector on the back cover, available as an external network connection (when the module is installed as a standalone unit or in a stack).

- When used in a DEChub 900 MultiSwitch, a second Ethernet LAN is available.

- Hot swap capability allows the module to be installed or removed from the DEChub 90 or DEChub 900 without turning off power.

- Automatic module self-test at power-up.

- Security and statistics capability.

Front Panel

1) **Power** ⦸ **LED** — Lights when the module has power.

2) **Module OK** ⟳ **LED** — Lights when the module passes self-test. Remains off if the module fails self-test.

3) **Network OK** ⌗ **A LED** — Indicates the status of the 10Base2 (ThinWire) port.

4) **Network Activity** --> **LED** — Indicates network traffic level.

5) **Network OK** ⌗ **B LED** — Indicates the status of the AUI port.

6) **Port State LEDs (1 through 8)** — Show the status of the eight ports. The port LED is on when that port has a valid port connection, is off when there is no port connection, and is flashing when the port connection is disabled by network management.

   NOTE: For more information about LED operation, refer to the section titled LED Descriptions.

7) **10BaseT (8-pin MJ) port connectors (1 through 8)** — Connectors for ports 1 to 8 that support both UTP and STP cabling.

8) **Serial port (8-pin MJ) connector** — Used as a setup port or for OBM.

9) **ThinWire port connector** — Connects through a T-connector when the module is operating as a standalone unit or in a Digital MultiStack System.

10) **Ethernet address label** — Shows the Ethernet address for the module.
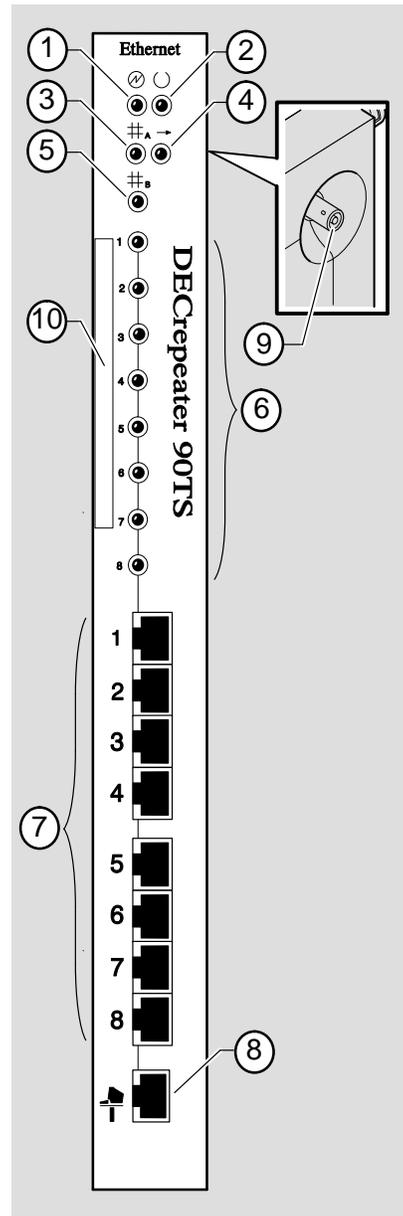
NPG-9142-95I

Back Panel

1) **Locking tab** — Locks the module into a DEChub 900 or DEChub 90 backplane.

2) **48-pin connector** — Provides network and power connections to the module when the module is installed into a DEChub 900 or a DEChub 90.

3) **Grounding bolt** — Provides a chassis grounding connection to the module when the module is installed into a DEChub 900 or a DEChub 90.

4) **Power connector** — Receives dc current from the power supply. This feature is used for standalone operation only.

5) **Manufacturing label** — Lists the module part number, serial number, revision level, and power requirements.

6) **Mounting tab** — Secures the module to the backplane when the module is installed into a DEChub 900 or a DEChub 90.

7) **Back cover** — The back cover is used only when the module is a standalone unit. The AUI port connector is incorporated into the standalone back cover.

8) **AUI (15-pin D-Sub) port connector** (Used only when the module is installed as a standalone unit.) — Ethernet 15-pin D-Sub connector connects to an external medium attachment unit (MAU) directly or using an AUI cable. Refer to the *Open DECconnect Applications Guide* for a list of MAUs that are compatible with the module.

   NOTE: To view the stackable backplane back cover used in a stackable refer to the *Digital MultiStack System Stacking Unit Installation and Configuration* manual.
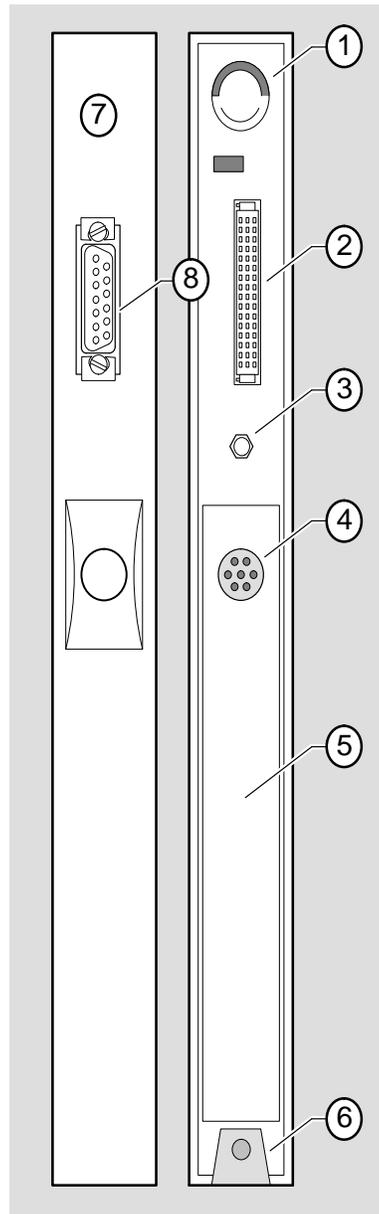
NPG-9143-

Installing the Module

You can install the DECrepeater 90TS in the Digital MultiStack System, as a standalone unit, in the DEChub 900 Multiswitch or in the DEChub 90. Before beginning the installation procedures provided in this section, become familiar with the following installation features of the module:

- If you are using the DECrepeater 90TS as a standalone unit — you can place it on a table, mount it onto a wall, or install it into a standard 19-inch rack by using a shelf assembly kit (Digital Part Number: H9544–MS).

- You can operate your module with or without a back cover — If the back cover is installed, either the ThinWire port or the AUI port can be used to connect the module to the network. If the back cover is removed, only the ThinWire port is available.

- Autoselection of ThinWire/AUI port — the module's factory default settings automatically select either the ThinWire port or the AUI port when in standalone mode, depending on which one is connected. If you connect both the ThinWire port and the AUI port to the network, the module selects the AUI port by default. Using HUBwatch, you can change the module's port selection to use either the ThinWire port or the AUI port.

For installation instructions, refer to the following table:

If...	And...	Then...
You are installing the module into a Digital MultiStack System	—	Go to the section titled Installing the Module into a Digital MultiStack System
You are installing the module as a standalone unit	—	Go to the section titled Installing the Module as a Standalone Unit
You are installing the module into a DEChub 900 or a DEChub 90	Your module has a standalone back cover	Go to the section titled Removing the Back Cover
You are installing the module into a DEChub 900	The standalone back cover is not installed	Go to the section titled Installing the Module into a DEChub 900
You are installing the module into a DEChub 90	The standalone back cover is not installed	Go to the section titled Installing the Module into a DEChub 90

Installing the Module (Cont.)

Installing the Module into a Digital MultiStack System

The Digital MultiStack System provides a flexible low-cost networking solution without sacrificing network performance and functionality. The system consists of a stackable hub which includes a Digital-90-series module and a stacking unit.

For detailed information about installing a DECrepeater 90TS in the MultiStack System refer to the *Digital MultiStack System Stacking Unit Installation and Configuration* manual.

Configuring the Module as a Stack Manager

When the DECrepeater 90TS is installed in the Digital MultiStack System it can be configured as the stack manager.

1 To configure the module as the stack manager, perform the following steps from the DECrepeater 90TS Installation Menu:

    a. Set the IP address for the module (Option `[4] Set-In-Band Interface IP Address`).

    b. Enable Hub Mastership for the module (Option `[8] Module-Specific Options`, Submenu Option `[2] Enable Hub Mastership`).

    c. Set the Hub Mastership Configuration (Option `[8] Module-Specific Options`, Submenu Option `[3] Set Hub Mastership Configuration`, Submenu Option `[4] Set Configuration to DECstack 90`).

    d. Reset the module to activate the changes (Option `[2] Reset with Current Settings`).

Installing the Module (Cont.)

Installing the Module as a Standalone Unit

> **NOTE:** In the standalone mode, connections are normally made to **either** the ThinWire port or the AUI port, **not both**. Only one of the two ports can be active at a time. It is not necessary to place a terminator or loopback connector on the nonactive port. To connect to the AUI port refer to the section titled Connecting the AUI cable.

① Connect the ThinWire T-connector:

a. Attach the ThinWire T-connector to the BNC connector, and turn the connector one-quarter turn to the right until the connector locks into place.

b. Attach the ThinWire backbone cable segment to one of the BNC connectors on the T-connector.

c. Attach either a terminator or a ThinWire cable to the other BNC connector. (The illustration shows a terminator attached to the BNC connector.)

If you attach a ThinWire cable, ensure that the cable is properly terminated or connected to a 10Base2 device.
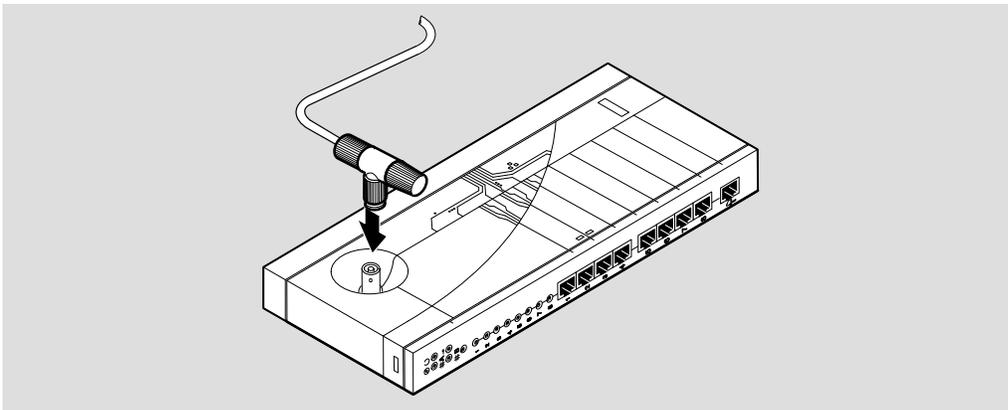
NPG-0214-95I

> **NOTE:** To disconnect the ThinWire T-connector, turn the connector one-quarter turn to the left until the connector clears the BNC connector stem; then disconnect the cable or cables.

Installing the Module (Cont.)

2 **Connect the power supply:**

    a. Connect the cable (1) from the power supply (Digital Part Number: H7867-AA or H7827-BA) to the power connector on the back of the module.

    b. Plug the ac power supply cable (2) into the power supply, then into a wall outlet.
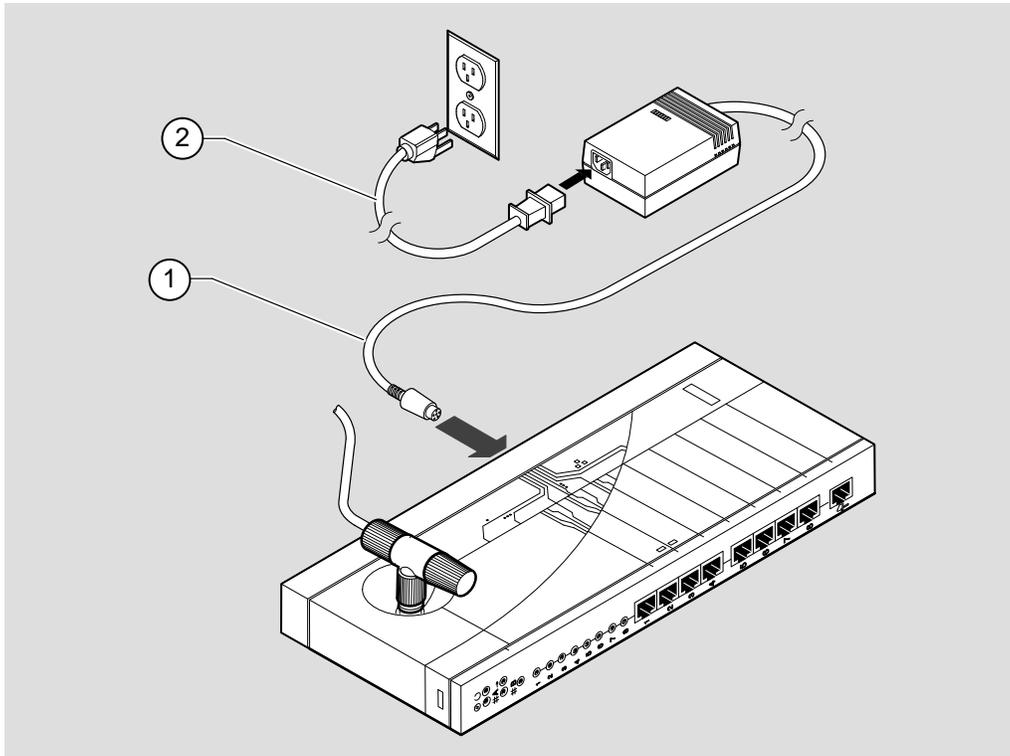
NPG-0215-95I

Installing the Module (Cont.)

3 **Verify that the module's Power ⊘ LED lights immediately and that the Module OK ☉ LED lights within 1 minute**

    a. The Power ⊘ LED lights when power is applied; then the module performs a self-test.

    b. After the module completes the self-test, the Module OK ☉ LED lights and remains lit.

    c. Go to the section titled Connecting the UTP/STP Cables.
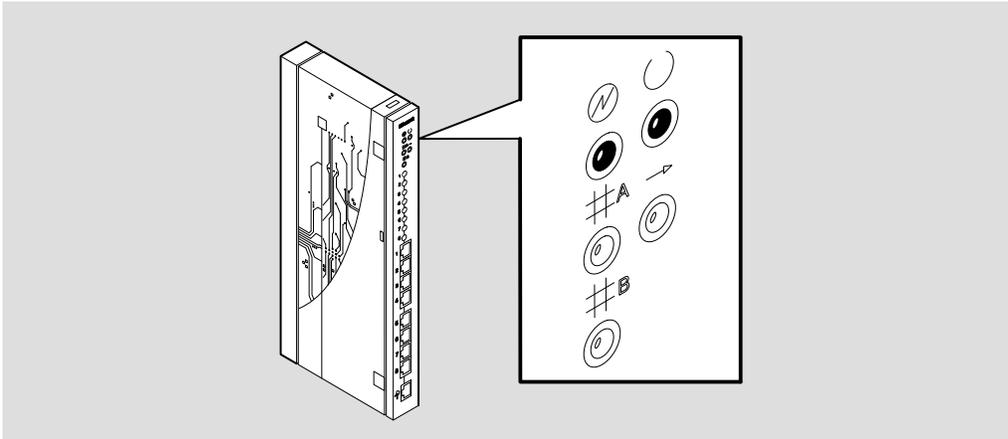
NPG-0216-95I

    NOTE: If the LEDs do not operate as described, refer to the section titled Problem Solving Using the LEDs .

Installing the Module (Cont.)

Removing the Back Cover

Remove the back cover if you are installing a module into a DEChub 900 into a DEChub 90, or into a Digital MultiStack System.

1 **Remove the back cover**

    a. Lift up the latch on the back cover by inserting a flat-blade screwdriver into the top mounting hole.

    b. With the latch up, pull the top of the back cover away, pivoting at the bottom of the module.
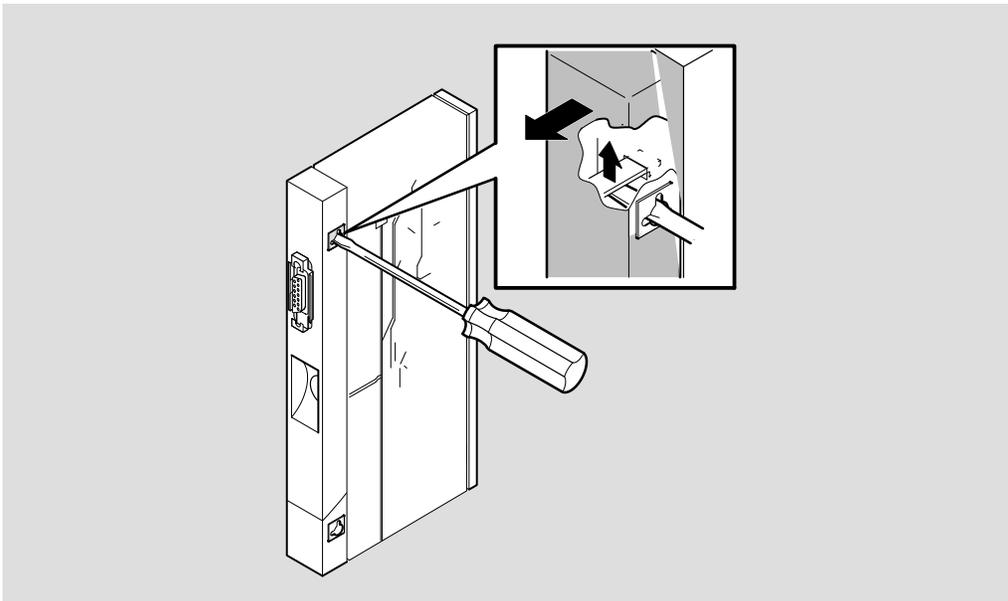
NPG-0217-95I

2 **To install the module:**

    a. Into a DEChub 900, go to the section titled Installing the Module into a DEChub 900.

    b. Into a DEChub 90, go to the section titled Installing the Module into a DEChub 90.

    c. Into a Digital MultiStack System, go to the section titled Installing the Module into a Digital MultiStack System

Installing the Module into a DEChub 900

The DECrepeater 90TS hot-swap feature allows you to install the module into the DEChub 900 without turning off power. Seating the module initiates the power-up sequence.

1 **Compare your module's power ratings (1) with the values shown in the Hub Manager status display (2) as shown below.**

> **NOTE:** The 12V power in the DEChub 900 is derived from the 15V power source. Although 12V current requirements are listed separately in the product specifications, all 12V current is drawn from the 15V power supply.

If any of the module's power requirements exceed the values shown in the status display, add another power supply (see the *DEChub 900 MultiSwitch Owner's Manual).*

Module's Manufacturing Label (Example)

PN	−DETMI
REV	B01
SN	AS41601069
FTZ	C−208/90
5Vdc,1.5A, 12Vdc 0.0A, 6.0W

Hub Manager Status Display (Example)

Available: 90.5 W
5V: 13.0 A, 15V: 3.5 A
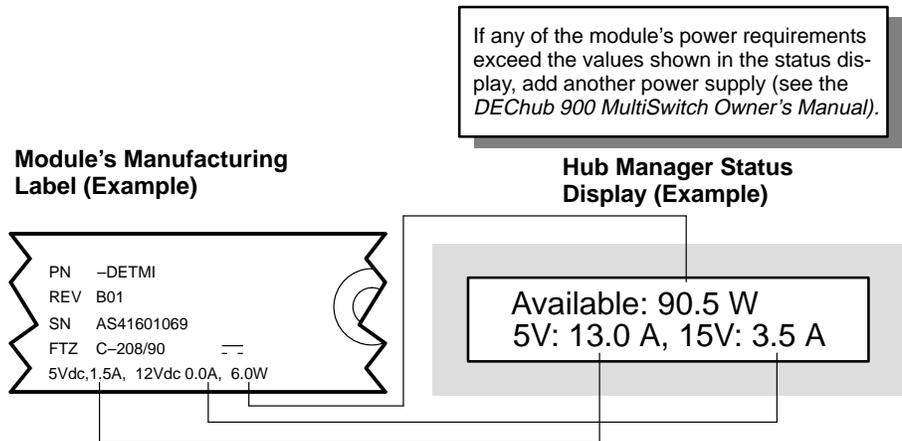
LKG−9540−94I

Installing the Module (Cont.)

Installing the Module into a DEChub 900 (Cont.)

2 **Seat the module into the DEChub 900.**

    a. Place the module's mounting tab into a mounting slot on the DEChub 900 (1).

    b. Pull up on the release lever to its unlocked position (2).

    c. Pivot the module on the mounting tab and align the connectors.

    d. Firmly push the module onto the backplane connectors.

    e. Press down on the release lever to ensure that the module is locked (3).
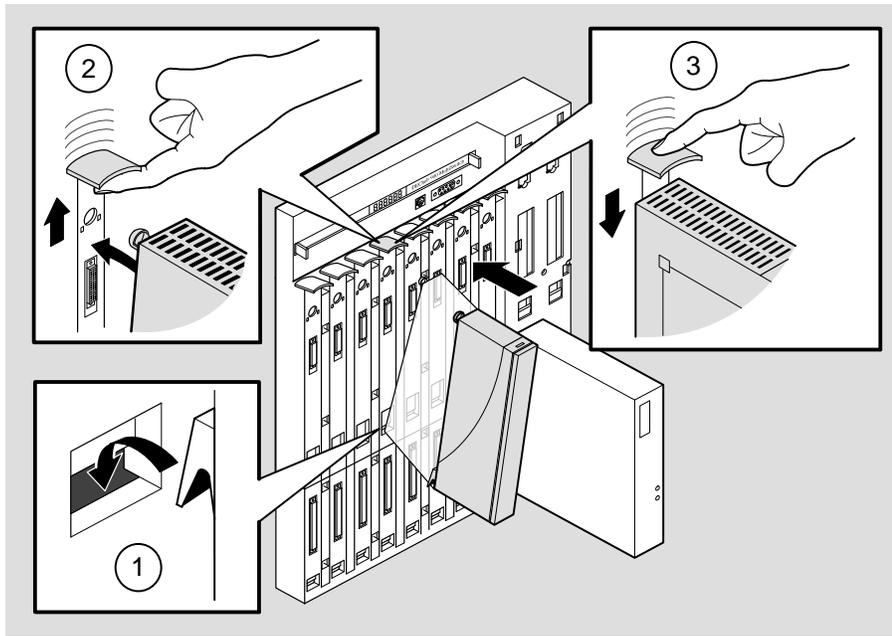
NPG-0026-95I

Installing the Module (Cont.)

Installing the Module into a DEChub 900 (Cont.)

3 **Verify that the module's Power ⊘ LED and the Module OK ☼ LED light (within 1 minute).**

    a. The Power ⊘ LED lights when power is applied; then the module performs a self-test.

    b. After the module completes self-test, the Module OK ☼ LED lights and remains lit; then the Hub Manager status display shows:

```
DECrepeater 90TS
up.
```

    NOTE: Refer to the section titled Problem Solving Using the LEDs if the LEDs do not operate as described.
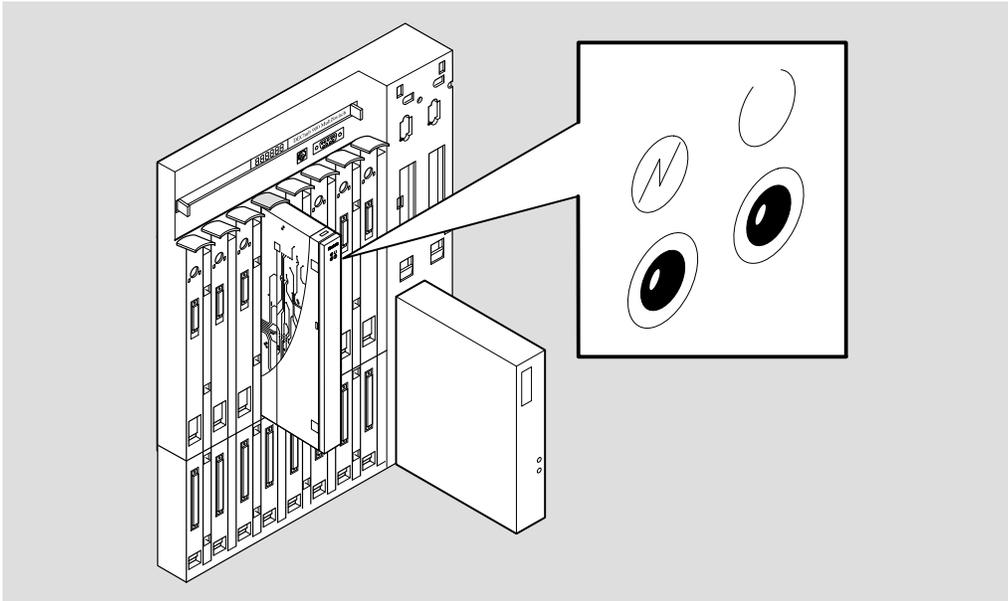
NPG-0224-95I

Installing the Module (Cont.)

Installing the Module into a DEChub 90

The DECrepeater 90TS hot-swap feature allows you to install the module into the DEChub 90 without turning off power. Seating the module initiates the power-up sequence.

1 **Seat the module into the DEChub 90.**

    a. Place the module's mounting tab into a mounting slot on the DEChub 90 (1).

    b. Pull up on the release lever to its unlocked position (2).

    c. Pivot the module on the mounting tab and align the connectors.

    d. Firmly push the module onto the backplane connectors.

    e. Press down on the release lever to ensure that the module is locked (3).
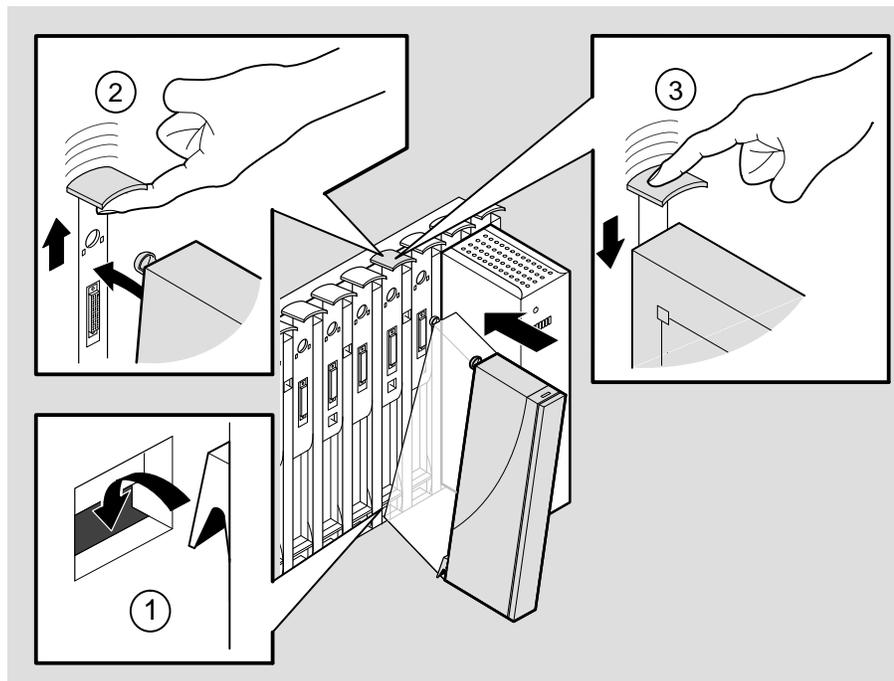
NPG-0056-95I

Installing the Module into a DEChub 90 (Cont.)

2 **Verify that the module's Power ⊘ LED lights immediately and that the Module OK ⟳ LED lights within 1 minute**

   a. The Power ⊘ LED lights when power is applied, then the module performs a self-test.

   b. After the module completes self-test, the Module OK ⟳ LED lights and remains lit .

   NOTE: If the LEDs do not operate as described, refer to the section titled Problem Solving Using the LEDs.
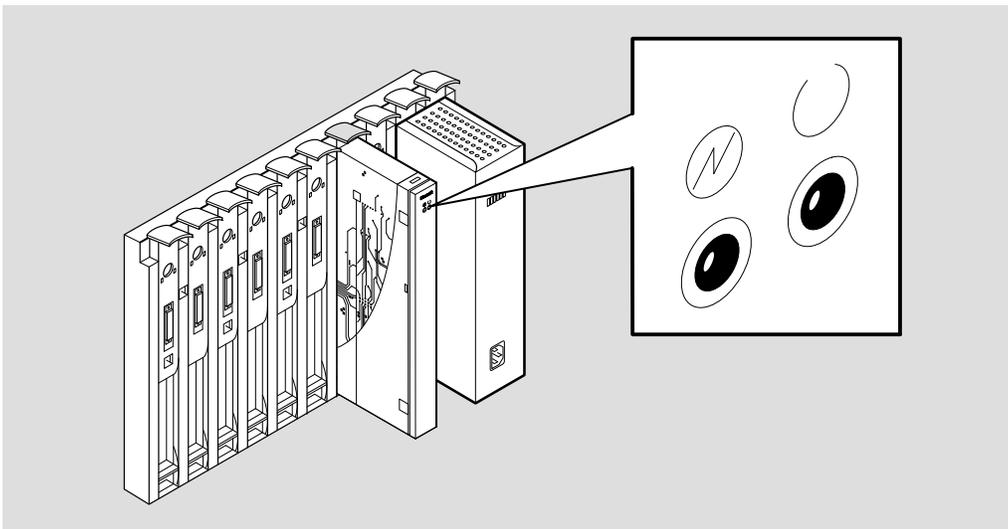
NPG-0225-95I

Go to the section titled Connecting the UTP/STP Cables, on the following page.

Installing the Module (Cont.)

Connecting the Cables

This section details connecting the AUI cable and the UTP/STP cables.

Connecting the AUI Cable

> **NOTE:** In the standalone mode, connections are normally made to **either** the ThinWire port or the AUI port, **not both**. Only one of the two ports can be active at a time. It is not necessary to place a terminator or loopback connector on the nonactive port.

1 **Connecting the AUI cable or MAU to the AUI port :**

   a. Push the module's AUI connector slide latch to the unlocked position.

   b. Insert the AUI cable plug or a MAU into the AUI connector.

   c. Push the module's AUI connector slide latch to the locked position.
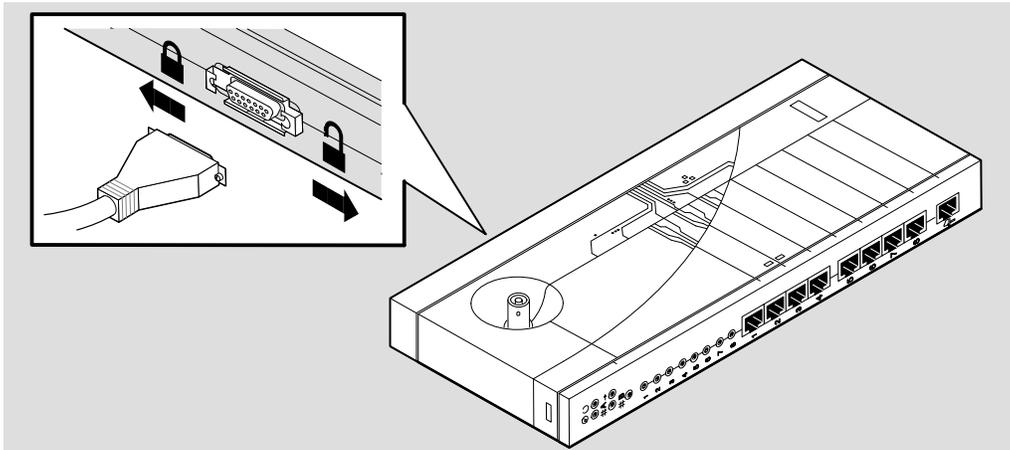
NPG-0213-95I

> **NOTE:** To disconnect the AUI cable or MAU, push the connector slide latch to the unlocked position; then pull the connector to disconnect.

Installing the Module (Cont.)

Connecting the Cables (CONT.)

Connecting the UTP/STP Cables

The DECrepeater 90TS module uses crossover 10BaseT (8-pin MJ) port connectors. The appropriate UTP/STP cable type, crossover or straight-through, is required to ensure that the module's transmit/receive signals connect correctly to the transmitter/receiver of the connected device.

Before connecting the cables to the module, note the following requirements:

- If the device you are connecting to the module uses straight-through connectors, use straight-through cables.

- If the device you are connecting to the module uses crossover connectors, use crossover cables.

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

  > **NOTE:** Digital's straight-through cables are marked (=); crossover connectors (and cables) are marked (X).

If you need help determining the appropriate cable type to use, refer to the section titled Connector Pin Assignments.

Installing the Module (Cont.)

Connecting the Cables (Cont.)

1 **Connect the UTP/STP cables:**

    a. Align the release tab on the cable plug with the keyway on the module's 10BaseT (8-pin MJ) port connector.

    b. Insert the plug into the connector, ensuring that the release tab snaps into the locked position.
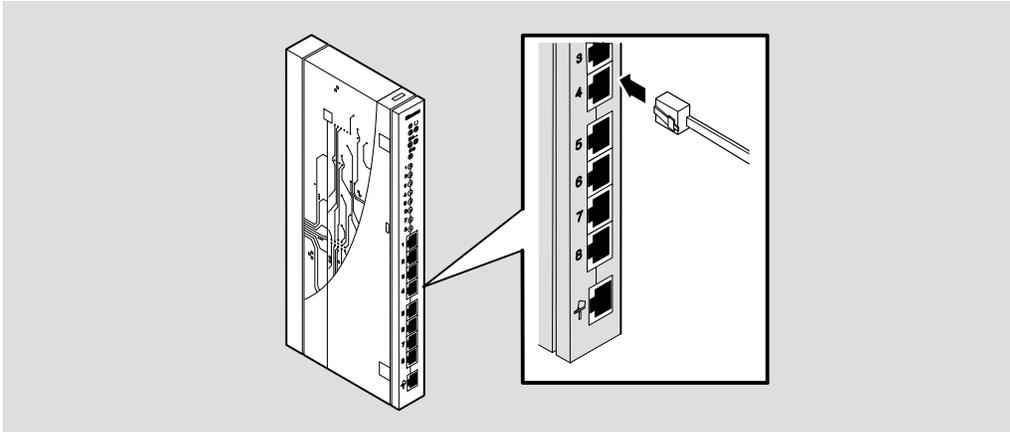
LKG-9147-94I

After all cables are installed, go to the section titled Configuring the Module.

Removing the Module

Disconnecting the UTP/STP Cables

1 **Disconnect the UTP/STP port cables from the module.**

    a. Press the release tab on the 8-pin MJ connector.

    b. Disconnect the cable.
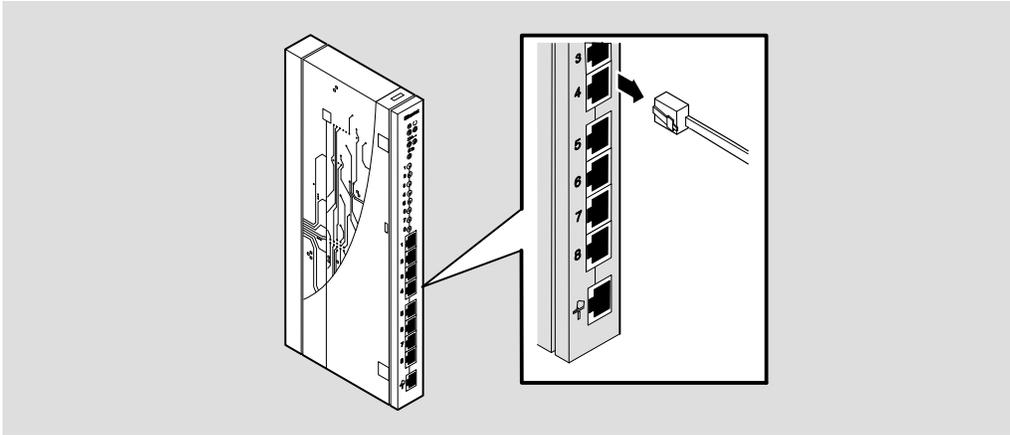
LKG-9148-94I

Removing the Module (Cont.)

Removing from a DEChub 90 or DEChub 900

2 **Unseat the module from the DEChub 900 or the DEChub 90.**

a. Lift the release lever located on the top of the DEChub 900 slot or the DEChub 90 slot (1).

b. While holding up the release lever, pivot the module back on its bottom mounting tab (2).

c. Lift the module from the backplane (3).

> **NOTE:** The figure below details removal from the DEChub900.
> Removal from the DEChub 90 is essentially the same.

DEChub 900 Module Removal
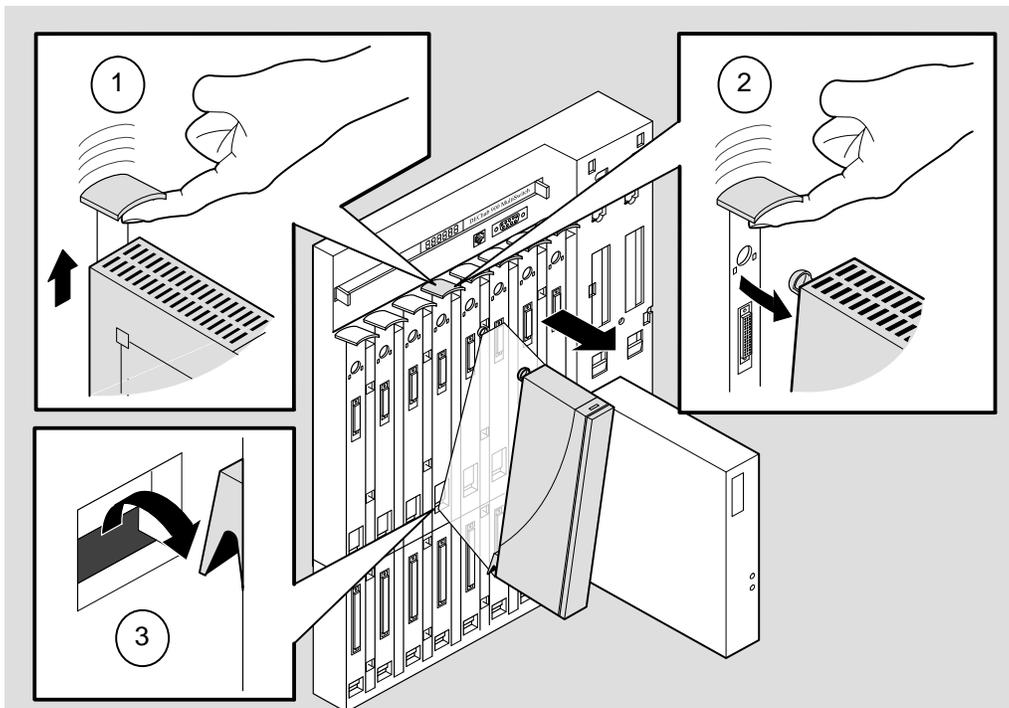
NPG-0028-95I

Configuring the Module

Setup Port Description

The setup port (on the DEChub 900 or module) allows you to access and set DECrepeater 90TS parameters. This section describes how to access the module from either port and how to set those parameters.

Examples of the setup screen displays are provided in this section to aid in the description of the setup port and to display the options that are available. Because they are examples only, the displays can vary slightly from the actual screen displays on your setup port device. **Boldface type** in the screen display examples indicate user input.

The format of an IP address is the standard 4-octet dotted decimal notation, where each octet of the address is represented as a decimal value, separated by a decimal point (.). The following is an example of an IP address: `16.20.54.156`

Signaling Standards

Signals from the DEChub 900 Hub Manager setup port and from the module setup port conform to the EIA-232D signaling standard at 9600 baud. To the user, the port appears as a data terminal equipment (DTE) device.

The DEChub 900 Hub Manager setup port is also compatible with devices that use the EIA-423 signaling standard.

Setup Port Device Cabling

The setup port (see illustration on the next page) on the DEChub 900 MultiSwitch or the module can be connected to a setup port device (a terminal or personal computer) by using the following cables and adapters:

If the setup port device is a...	Then use this cable...	With this adapter...
PC with a 9-pin D-Sub communications port	BN24H-xx[1]	H8571-J
Terminal with a 25-pin D-Sub connector	BN24H-xx[1]	H8575-A
Terminal with a 6-pin MMJ connector	BN24H-xx[1]	Not required

[1] xx indicates cable length in meters.

Configuring the Module (Cont.)
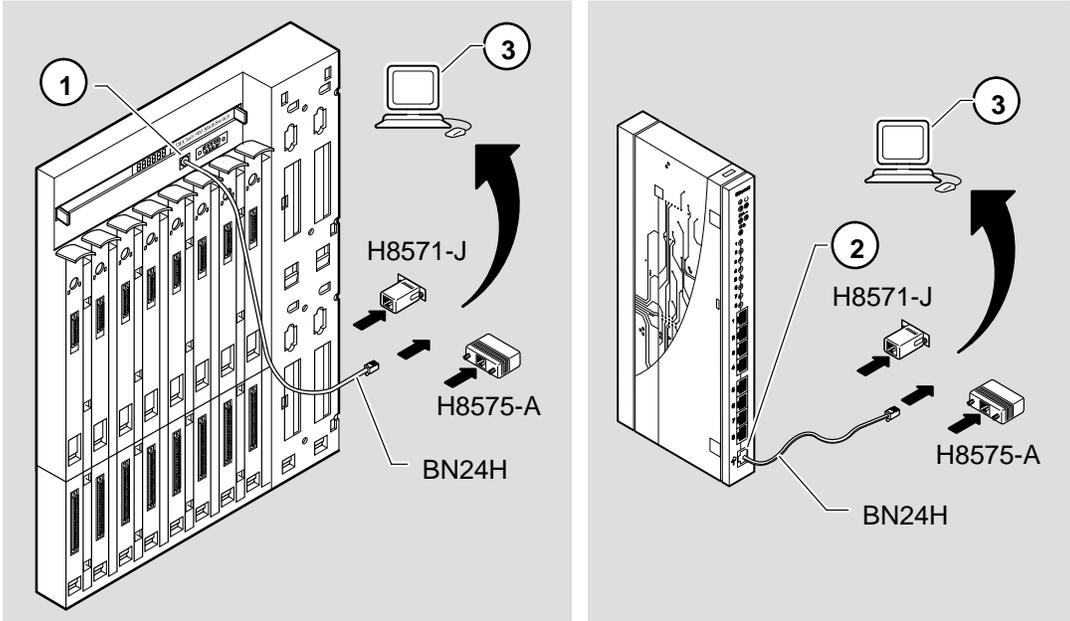
NPG-0220-95I

Item	Description
1	DEChub 900 setup port
2	DECrepeater 90TS front panel serial (setup) port
3	Setup port device (terminal or PC)

Configuring the Module (Cont.)

Connecting to the Setup Port

To connect to the setup port on the DECrepeater 90TS module, do the following:

1. Ensure that the transmit and receive baud rates on the setup port device are set to 9600 baud.

2. Connect the setup port device to the setup port connector on either the DEChub 900 or to the module's front-panel serial port.

Accessing the Setup Port

To access the setup port on the DECrepeater 90TS module, do the following:

1. Press Return on the setup port device a few times until a menu appears.

   a. If the module is installed in a DEChub 90, a Digital MultiStack System, or is a standalone unit, the DECrepeater 90TS Installation Menu appears. Go to the section titled DECrepeater 90TS Installation Menu (DEChub 90/Standalone Options).

   b. If the module is installed in a DEChub 900 MultiSwitch, the Hub Manager Installation Menu appears (see the following example).

2. Choose option 9; then go to the section titled Start Redirect Mode.

The following example shows the DEChub 900 MultiSwitch INSTALLATION MENU:

```
DEChub 900 MultiSwitch

===============================

DEChub 900 MultiSwitch INSTALLATION MENU

[1]  Reset with Factory Defaults
[2]  Reset with Current Settings
[3]  Show Current Settings
[4]  Configure IP...
[5]  Dump Error Log
[6]  Downline Upgrade
[7]  Configure Out-of-Band Port...
[8]  Start Event Display Mode
[9]  Start Redirect Mode...
===============================
    Enter selection number: 9  Return
```

Configuring the Module (Cont.)

Start Redirect Mode

The Start Redirect Mode option redirects the DEChub 900 Hub Manager setup port to the setup port of any network module (such as the DECrepeater 90TS) that is installed into the DEChub 900. Choosing this option allows you to configure or obtain status of an installed network module by accessing the module's installation menu.

After you choose the Start Redirect Mode option from the DEChub 900 MultiSwitch Installation Menu, the screen prompts you for a slot number as shown in the following example.

The following example shows you how to select a slot number:

```
                    Enter selection: 9
    ==============================
    Enter the slot number for redirection (1-8):  [3] Return
    Console redirected to 3: DECrepeater 90TS
    Attempting connection [Ctrl/C to abort]...
```

After you press Return, the DECrepeater 90TS Installation Menu appears on your screen.

Configuring the Module (Cont.)

DECrepeater 90TS Installation Menu (DEChub 900 Options)

This section shows the options available from the DECrepeater 90TS Installation Menu when the module is installed in the DEChub 900 MultiSwitch.

Also, when your module is installed in the DEChub 900, the slot number in which the module is installed is shown at the top of the menu.

The following example shows the DECrepeater 90TS Installation Menu operating in a DEChub 900 configuration:

```
DECrepeater 90TS – slot 3
================================

        DECrepeater 90TS INSTALLATION MENU

[1]  Reset with Factory Defaults
[2]  Reset with Current Settings
[3]  Show Current Settings
[4]  Configure IP . . .
[5]  Dump Error Log
[6]  Downline Upgrade

[Ctrl/C] Return to Hub Manager Menu

================================

     Enter selection number : [n] Return
```

Go to the section titled Description of Menu Options.

Configuring the Module (Cont.)

DECrepeater 90TS Installation Menu
(Digital MultiStack System/DEChub 90/Standalone Options)

This section shows the options available from the DECrepeater 90TS Installation Menu when the module is installed in a Digital MultiStack System, DEChub 90, or as a standalone unit.

The following example shows the DECrepeater 90TS Installation Menu operating in a DEChub 90 configuration:

```
DECrepeater 90TS

===================================

    DECrepeater 90TS INSTALLATION MENU

[1]  Reset with Factory Defaults
[2]  Reset with Current Settings
[3]  Show Current Settings
[4]  Configure IP...
[5]  Dump Error Log
[6]  Downline Upgrade
[7]  Configure Out-of-Band Port...
[8]  Module Specific Options
     [Ctrl/C] Return to Hub Manager Installation Menu

===================================

    Enter selection number :
```

Go to the section titled Description of Menu Options.

Description of Menu Options

This section describes the options that are available from the DECrepeater 90TS Installation Menu.

> **NOTE:** Note that the Out-of-Band and module specific menus do not apply when the module is installed in a DEChub 900.

[1] Reset with Factory Defaults

This option reboots the module, causing the module's configured NVRAM parameters to be initialized to factory default values.

If you want to reboot the module and retain the current settings, choose option 2, Reset With Current Settings.

> **CAUTION** ⚠ This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost.

> **NOTE:** Allow approximately 1 minute for the module to reset and complete self-test.

The following example shows the dialog associated with this option.

```
                     Enter selection : 1

 DECrepeater 90TS – slot 3
====================================
               RESET WITH FACTORY DEFAULTS
     * * * * * * * * * * * * * * * * * * * * * * * * * * * *
     *    IMPORTANT!         IMPORTANT!         IMPORTANT!    *
     * * * * * * * * * * * * * * * * * * * * * * * * * * * *
     *  This selection will delete the current configuration   *
     *  settings and reset the system with the factory default *
     *  settings. All configuration settings will be lost.     *
     * * * * * * * * * * * * * * * * * * * * * * * * * * * *
====================================

        Press Y to confirm [N]
```

Configuring the Module (Cont.)

[2] Reset with Current Settings

This option reboots the module but leaves the module's configured NVRAM parameters at their current values.

> **NOTE:** Allow approximately 1 minute for the module to reset and complete self-test.

The following example shows the dialog associated with this option.

```
                     Enter selection : 2

  DECrepeater 90TS – slot 3
  ================================

                 RESET WITH CURRENT SETTINGS
       This selection will reset your system with the current
       configuration settings.

  ================================

       Press Y to confirm [N]
```

Configuring the Module (Cont.)

[3] Show Current Settings

This option shows the module's current settings.

> **NOTE:** If the module is being configured for the first time, some fields will be blank.

The following example shows the display associated with this option.

```
                    Enter selection : 3

   DECrepeater 90TS – slot 3
========================================
DECrepeater 90TS, 8 port TP Ethernet Rptr SNMP, HW=v3,RO=v.01,SW=v2.0
SysUpTime                              : 01:39:11    14 resets
SNMP Read/Write Community              : public
SNMP Trap Addresses                    : Not Configured
Status of Last Downline Upgrade        : TFTP Read
                                         00:00:44  28 resets
                                         Transfer Complete.
Out-of-Band Management RTS             : Disabled                  1
BootP                                  : Disabled
Interface     IP Address    Subnet Mask   Def.Gateway   Other Info
Ethernet Port 16.20.156.24 0.255.255.255 16.20.157.25  08-00-2B-A4-97-D3
OBM Port      16.20.158.26 255.0.0.0                    Speed 9600 bps
Hub Mastership Enable     : Off
Hub Master Configuration  : Not Configured

========================================                            2

            Press Return for Main Menu ...
```

Item	Description
1 and 2	Neither appears if the module is installed in a DEChub 900. They both appear in all other configurations.

DECrepeater 90TS Installation and Configuration

Configuring the Module (Cont.)

[4] Configure IP

This option provides you with six IP configuration selections. The following six pages describe the IP Configuration menu.

The following example shows the dialog associated with this option.

```
=========================================
                  Enter selection : 4

DECrepeater 90TS – slot 3
=========================================
                IP CONFIGURATION

        [1]  Set SNMP Read/Write Community
        [2]  Add SNMP Trap Addresses
        [3]  Delete SNMP Trap Addresses
        [4]  Set In-Band Interface IP Address
        [5]  Set Out-of-Band Interface IP Address
        [6]  Enable/Disable BootP
        [7]  Return to Main Menu

=========================================


        Enter selection number : [n] Return
```

NOTE: Option 5 – Set Out-of-Band Interface IP Address does not appear in the DEChub 900 IP Configuration menu.

Configuring the Module (Cont.)

[4] Configure IP (Cont.)

Option [1] Set SNMP Read/Write Community

This option prompts you to enter the community name. The community name can be used for read/write access control.

The factory default of this menu option sets the read/write community name to `public`.

The following example shows the dialog associated with this option.

```
===========================================
                  Enter selection : 1

DECrepeater 90TS – slot 3
===========================================
                 SET SNMP READ/WRITE COMMUNITY

    Format:    The format for a community name is a string,
               consisting of 4 to 31 printable ASCII characters,
               that describes the relationship between an SNMP
               agent and one or more SNMP managers. The string
               defines the authentication mechanism that is employed
               to validate the use of the community by the sending
               SNMP entity.

===========================================


Enter the community string [public] : Engineering   Return

               SNMP Read/Write community string set.

               Press Return for IP Configuration Menu ...
```

DECrepeater 90TS Installation and Configuration

Configuring the Module (Cont.)

[4] Configure IP (Cont.)

Option [2] Add SNMP Trap Addresses

This option prompts you to enter IP addresses to which SNMP traps will be sent from the DECrepeater 90TS.

If an SNMP trap address was previously configured, the screen displays the SNMP trap address.

The factory default of this menu option deletes all SNMP trap addresses.

> **NOTE:**   You can configure up to 8 SNMP trap addresses.

The following example shows the dialog associated with this option.

```
=========================================
                  Enter selection : 2

DECrepeater 90TS
=========================================
                ADD SNMP TRAP ADDRESSES

    Format:    The standard 4 octet dotted decimal notation in which
               each octet of the address is represented as a decimal
               value, separated by '.' character.

                      example: 16.20.40.156


=========================================


      Trap address [ ] : 16.20.40.157   Return

Trap address added!   Enter a Trap Address [none] :    Return

      Press Return for IP Configuration Menu ...
```

Configuring the Module (Cont.)

[4] Configure IP (Cont.)

Option [3] Delete SNMP Trap Addresses

This option prompts you to select SNMP trap addresses and delete them from the community trap address table.

The following example shows the dialog associated with this option.

```
=========================================
                 Enter selection : 3

DECrepeater 90TS - slot 3
=========================================
                DELETE SNMP TRAP ADDRESSES

    Format:    The standard 4 octet dotted decimal notation in which
               each octet of the address is represented as a decimal
               value, separated by '.' character.

                        example: 16.20.40.156


=========================================


     Configured SNMP Trap Addresses: 16.20.40.156

             Enter a Trap address [ ] : 16.20.40.156   Return

Trap address deleted.  Enter a Trap Address [none] : Return

             Press Return for IP Configuration Menu ...
```

DECrepeater 90TS Installation and Configuration

Configuring the Module (Cont.)

[4] Configure IP (Cont.)

Option [4] Set In-Band Interface IP Address

This option prompts you for an IP address, subnet mask address, and a default gateway address. If an address was previously configured, the screen displays an in-band address. To delete an address, enter 0 in the appropriate address field.

The factory default of this menu option is no in-band addresses. The following example shows the dialog associated with this option.

```
========================================
                  Enter selection : 4

DECrepeater 90TS - slot 3
========================================
                IN-BAND IP ADDRESS CONFIGURATION

    Format:   The standard 4 octet dotted decimal notation in which
              each octet of the address is represented as a decimal
              value, separated by '.' character.

                      example: 16.20.40.156

    To delete the address, enter 0 in the appropriate address
    field.
 Interface     IP Address    Subnet Mask   Def.Gateway   Other Info
 Ethernet Port 16.20.156.24  0.255.255.255 16.20.157.25  08-00-2B-A4-97-D3
  OBM Port     16.20.158.26  255.0.0.0     16.20.159.27  Speed 9600 bps

========================================
        Enter the IP address  : 16.20.54.155   Return
        Enter the Subnet Mask  : 255.255.0.0   Return
        Enter the Default Gateway  : 16.20.54.156   Return        ①
               Press Return for IP Configuration Menu ...
```

Item	Description
1	Does not appear when the module is installed in a DEChub 900.

Configuring the Module (Cont.)

[4] Configure IP (Cont.)

Option [5] Set Out-of-Band Interface IP Address (Not available in the DEChub900)

This option prompts you for an IP address and a subnet mask address. If an address was previously configured, an out-of-band address is displayed.

The OBM feature allows you to manage your DECrepeater 90TS through the OBM port in addition to normal in-band management. To enable out-of-band management, you need to assign an OBM IP address and select an OBM port speed from the DECrepeater 90TS Installation Menu.

The factory default of this menu option is no out-of-band address.

The following example shows the dialog associated with this option.

```
========================================
                   Enter selection : 5

DECrepeater 90TS – slot 3
========================================
              OUT–OF–BAND IP ADDRESS CONFIGURATION

     Format:   The standard 4 octet dotted decimal notation in which
               each octet of the address is represented as a decimal
               value, separated by '.' character.

                        example: 16.20.40.156

     To delete the address, enter 0 in the appropriate address
     field.
 Interface      IP Address    Subnet Mask   Def.Gateway   Other Info
 Ethernet Port 16.20.156.24 0.255.255.255 16.20.157.25 08–00–2B–A4–97–D3
 OBM Port      16.20.158.26 255.0.0.0     16.20.159.27 Speed 9600 bps
========================================
         Enter the IP address  : 16.20.54.155  [Return]
         Enter the Subnet Mask  : 255.255.0.0  [Return]
             Press Return for IP Configuration Menu ...
```

Configuring the Module (Cont.)

[4] Configure IP (Cont.)

Option [6] Enable/Disable BootP

This option allows you to enable/disable sending bootp requests.

The factory default of this menu option is `Disabled`.

The following example shows the dialog associated with this option.

```
=======================================
                 Enter selection : 6

DECrepeater 90TS – slot 3
=======================================

                    ENABLE/DISABLE BOOTP

     BOOTP is the IP bootstrap protocol.  BOOTP may be used
     to obtain the module's IP address, subnet mask, and default
     gateway.  When BOOTP is Enabled and the module is not configured
     with an IP address the module will send out BOOTP requests
     until it receives a response or is manually configured with
     an IP address.  When BOOTP is disabled, no BOOTP requests will
     be sent.

     The BOOTP server must be properly configured to return the
     address information.

=======================================

The BOOTP process is DISABLED
Would you like to ENABLE BOOTP Y/[N]
                  Press Return for Main Menu ...
```

Configuring the Module (Cont.)

[5] Dump Error Log

This option displays error log dumps for use by Digital support personnel when analyzing system faults. Up to four error log dumps can be stored, and the most recent dump is displayed first.

The following example shows the display associated with this option.

```
                    Enter selection : 5

  DECrepeater 90TS – slot 3
 =====================================
                    DUMP ERROR LOG
              Current Reset Count: 14

 =====================================
        Entry        = 3
        Timestamp    =    0  32069352
        Reset Count  = 13
        Watch Dog Interrupt!

Dump another entry Y/[N]? N  Return
 =====================================
No more Error Log entries.

                  Press Return for Main Menu ...
```

Configuring the Module (Cont.)

[6] Downline Upgrade

This option allows you to upgrade the module firmware (in nonvolatile flash memory). It prompts you to enter the load image file name and the IP address of your Trivial File Transfer Protocol (TFTP) load host.

Before initiating this option, be sure that the module that you are upgrading has been configured with an IP address (refer to option 4).

>   **NOTE:**   The module's IP address is retained at the completion of
>   the downline upgrade process.

The following example shows an image file name and an IP address:

```
detmi110.bin and 16.20.54.156
```

The format of the image file name is specified according to the conventions used by your TFTP load host.

>   **CAUTION** ⚠   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.

The Downline Upgrade (DLU) Process

The DLU process consists of four stages:

- Stage 1 — Transferring firmware image

- Stage 2 — Verifying firmware image

- Stage 3 — Writing new firmware image into nonvolatile flash memory

- Stage 4 — Module reset and self-test

Table 1 describes what happens during each stage of the DLU Process.

Configuring the Module (Cont.)

[6] Downline Upgrade (Cont.)

Table 1:   DLU Process Description

Stage	What Happens
1	**The new firmware image from the TFTP load host is transported across the network and placed into a temporary storage buffer in the module.**
	Indications that this stage is in progress include:
	• Module status — functional and manageable.
	• Module can respond to management requests.
	• LED display — Port 2 LED is lit.
	• HUB Manager display — `DECrepeater 90TS` `up`
	Typical time to complete this stage — approximately 1 minute. However, because of variations in network configurations (load path, bit rate, and traffic levels), this stage of the DLU process can take up to 10 minutes to complete.
2	**The module verifies that the firmware image is correct after Stage 1 is complete.**
	Indications that this stage is in progress include:
	• Module status — functional.
	• Module can respond to management requests.
	• LED display — Port 3 LED is lit.
	• HUB Manager display — `DECrepeater 90TS` `up`
	Typical time to complete this stage — 1 second.
3	**The new firmware image is transferred from the module's temporary storage buffer to the flash RAM, overwriting the old firmware image.**

CAUTION ⚠ 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.

DECrepeater 90TS Installation and Configuration

Configuring the Module (Cont.)

[6] Downline Upgrade (Cont.)

Table 1 (Cont.)   DLU Process Description

Stage	What Happens
	Indications that this stage is in progress include:
	• Module status — functional but not manageable.
	• Module cannot respond to management requests.
	• LED display — Port 4 LED is lit.

	• HUB Manager display —
	`DECrepeater 90TS`
	`unknown`

	Typical time to complete this stage — approximately 3 minutes.
4	**The module resets, runs self-test and then begins executing the new firmware image.**
	Indications that this stage is in progress include:
	• Module status — not functional during reset and self-test.
	• Module cannot respond to management requests.
	• LED display — (standard self-test pattern) LEDs flash, indicating various subroutines are running.

	• HUB Manager display —
	`DECrepeater 90TS`
	`unknown`

	Typical time to complete this stage — 1 minute.
	After the successful completion of self-test, the Module OK⟳ LED lights and the module becomes fully manageable. Note also that the HUB Manager display indicates:
	`DECrepeater 90TS` ` up`

Configuring the Module (Cont.)

[6] Downline Upgrade (Cont.)

Update the Firmware from the DECrepeater 90TS Installation Menu

When you select this option, the initial setup screen display appears (see the following example display). This screen identifies the option and alerts you not to interrupt power during the downline load.

The following example shows the dialog associated with this option.

```
        Enter selection : 6

   DECrepeater 90TS

===========================================

                  DOWNLINE UPGRADE

     This process upgrades the device's firmware (in
     nonvolatile Flash memory). Enter the IP address of
     your TFTP (Trivial File Transfer Protocol) load host
     and the image file name when prompted.

   * * * * * * * * * * * * * * * * * * * * * * * * * * * *
   *      IMPORTANT!        IMPORTANT!        IMPORTANT!      *
   * * * * * * * * * * * * * * * * * * * * * * * * * * * *
   *   If power is interrupted during the downline load, the   *
   *   firmware image can be corrupted. Do not turn off power  *
   *   to the unit or perform any action that can cause the    *
   *   unit to lose power during a downline upgrade.           *
   * * * * * * * * * * * * * * * * * * * * * * * * * * * *

===========================================

            ... Press Return Key to Continue ...
```

Configuring the Module (Cont.)

[6] Downline Upgrade (Cont.)

After you press Return, the screen display prompts you to Enter the Load Filename:

- If the firmware image load file is located in the default TFTP directory, enter only the firmware image load filename.

- If the firmware image load file is not located in the default TFTP directory, enter the complete pathname along with the firmware image load filename.

The following screen display example shows the entry of a firmware image load file that is located in the default TFTP directory (pathname not required):

```
     Enter the Load Filename [] detmi110.bin Return
```

After you enter the firmware image load filename and press Return, the screen prompts you to enter the IP address of the TFTP server (load host):

```
     Enter the Load Host IP Address [] :16.20.54.156 Return
```

The following screen and dialog appear when the module is installed into a DEChub 900:

```
 Load will be initiated over the Ethernet Port network interface.

 The device becomes nonfunctional for up to 10 minutes during the
 time that the flash load is in progress.
```

```
 When the load is complete the screen displays the message:
 (Module not Responding!) This is normal.

    ... Press Return Key to Start Load [Ctrl/C to abort]...
```

If you press Return, the DLU process is initiated over the Ethernet Port network interface. If you pressed Return for this selection go to the section titled Starting the DLU Process.

Configuring the Module (Cont.)

[6] Downline Upgrade (Cont.)

Start the DLU Process

CAUTION ⚠   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.

NOTE: Because of variations in network configurations (load path and traffic levels), this initial stage of the DLU process can take up to 10 minutes to complete.

Initiate the process by pressing ⌷Return⌷ at the screen prompt. The screen displays the following message:

```
DLU process started!
```

The firmware image is loaded into the module's temporary storage buffer, and the new firmware image is validated. The DLU process overwrites the old firmware image in the module's nonvolatile flash memory with the new firmware image.

Because the module is nonfunctional during the flash load process, communications between the module and the Hub Manager cannot take place. Therefore, the Hub Manager status display and the setup screen display show the following messages:

NOTE: The following screen displays do not appear if you are initiating the load process from a DEChub 90 or a standalone unit.

Configuring the Module (Cont.)

[6] Downline Upgrade (Cont.)

Hub Manager Status Display

```
4: DECrepeater 90TS
unknown
```
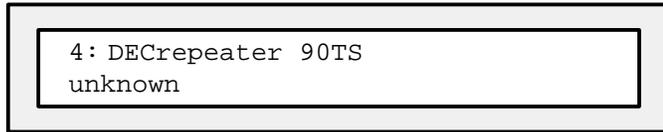
This is normal.

The following setup screen displays the message (only if the module is installed into a DEChub 900):

```
Module removed!   Connection closed!
```

This is normal.

When the the screen displays the following:

```
Module removed!   Connection closed!
```

Pressing Return displays the DEChub 900 Multiswitch Installation Menu

If the module is installed in a Digital MultiStack System, a DEChub 90, or as a standalone unit, the screen displays nothing automatically. After the load is completed, pressing Return displays the DECrepeater 90TS Installation Menu.

DLU Process Completion

When the DLU process is complete, the module resets and initiates self-test. After self-test completes successfully, the module exits from the DLU process and begins the execution of the new firmware image. The Module OK ☉ LED lights and the module becomes fully operational.

Configuring the Module (Cont.)

[7] Configure Out-Of-Band Port (Standalone only)

This option provides you with two configuration selections – set port speed and enable/disable RTS.

The following example shows the dialog associated with this option.

```
=========================================
                  Enter selection : 7

DECrepeater 90TS – slot 3
=========================================

               OUT-OF-BAND PORT CONFIGURATION

        [1]   Set Port Speed
        [2]   Enable/Disable RTS
        [3]   Return to Main Menu

=========================================


        Enter selection number : [n] Return
```

Configuring the Module (Cont.)

[7] Configure Out-Of-Band Port (Cont.) (Standalone only)

Option [1] Set Port Speed

This option prompts you to select and enter the speed of your out-of-band management (OBM) port.

NOTE

The port speeds at each end of the communications link must be identical.

The factory default of this menu option sets the out-of-band port speed to `9600`.

The following example shows the dialog associated with this option.

```
=========================================
                Enter selection : 1

DECrepeater 90TS
=========================================
        SET OUT-OF-BAND MANAGEMENT INTERFACE PORT SPEED

                        [1]  2400 baud
                        [2]  9600 baud
                        [3] 19200 baud
                        [4] 38400 baud

=========================================


            Enter selection [3] (9600) :4   Return
                    OBM port speed set.

                Press Return for Main Menu ...
```

Configuring the Module (Cont.)

[7] Configure Out-Of-Band Port (Cont.) (Standalone only)

Option [2] Enable/Disable Out-Of-Band Port RTS

This option allows you to enable/disable request to send (RTS) for additional control to modem communications. When you enable this option, the RTS signal on the OBM port is active only when data, such as an SNMP trap, is being transmitted to the OBM port. When you disable this option, RTS is always active. RTS is automatically disabled upon the completion of module self-tests.

NOTE

The port speed at each end of the communications link must be identical.

The factory default of this menu option is disabled.

The following example shows the dialog associated with this option.

```
========================================
                  Enter selection : 2

DECrepeater 90TS
========================================

                     ENABLE/DISABLE RTS

     Enable/Disable Request To Send (RTS) allows additional
     control to modem communications. When the RTS option is
     Disabled the RTS signal on the OBM port is asserted after
     self-test is completed and left asserted.  When the RTS
     option is Enabled the RTS signal is asserted only when there
     is data to be transmitted and deasserted after the data has
     been transmitted.

========================================


  RTS is Disabled. Would you like to Enable RTS? [N]

                  Press Return for Main Menu ...
```

Configuring the Module (Cont.)

[8] Module-Specific Options

This option provides module-specific selections. The sub-menu includes options to switch to OBM, to enable Hub Mastership mode (or disable, if Hub Mastership mode is already enabled), and to set Hub Mastership configuration. If the DECrepeater 90TS is operating in Hub Mastership mode, the sub-menu on page 56 is displayed.

The following example shows the dialog associated with this option.

```
DECrepeater 90TS
===================================
              DECrepeater 90TS Installation

              [1]  Switch to OBM mode
              [2]  Enable Hub Mastership Mode
              [3]  Set Hub Mastership Configuration
              [4]  Return to Main Menu
===================================
              Enter selection number : [n] Return
```

Configuring the Module (Cont.)

[8] Module-Specific Options

Option [1] Switch to OBM

This selection allows you to switch from setup mode to OBM mode.

NOTE

> The port speeds at each end of the communications link must be identical.

The following example shows the dialog associated with this option.

```
DECrepeater 90TS
=====================================
              DECrepeater 90TS Installation

              [1]  Switch to OBM
              [2]  Enable Hub Mastership Mode
              [3]  Set Hub Mastership Configuration
              [4]  Return to Main Menu
=====================================
               Enter selection number : 1  Return
              Press Y to confirm [N] : y  Return
              Press Return for Main Menu ...

Switching Console port to Out of Band Management mode

              Press Return for Main Menu ...
```

Configuring the Module (Cont.)

[8] Module-Specific Options (Cont.)

Option [1] Switch to OBM (Cont.)

After selecting the option to switch to OBM mode, do the following:

1. Change the cable at either the front-panel serial port on the module or at the OBM device by using one of the cable/adapter pairs listed in the table below.

    a. If the OBM device uses the **same** cable as the setup port device, disconnect the cable from the setup port device, and install it into the OBM device (see illustration on the next page).

    b. If the OBM device uses a **different** cable than that used for the the setup port device, disconnect the cable from the front-panel serial port of the module, and connect the cable from the OBM device into the front-panel serial port of the module (see illustration on the next page).

Cable/Adapter Type	Connecting OBM Device
BN25G-xx[1]/H8585-AC[2]	A modem with a 25-pin D-Sub connector
BN25G-xx[1]/8585-AA	A PC with a 9-pin D-Sub communications port
BN24H-xx[1]/8584-AA	An 8-pin MJ terminal server

[1] xx indicates cable length in meters.
[2] Not for connection to public networks in Sweden, Germany, or Japan.

2. To end OBM mode and return to setup mode, do the following:

    a. Connect the cable from the front-panel serial port to a setup port device. (For more information, see the section titled Setup Port Device Cabling.)

    b. Recycle the power to the module.

    The setup port device displays the following message.

```
Type ctrl-C to end Out of Band Management mode.
```

    c. Press Ctrl/C on the setup port device within 30 seconds after the message is displayed on the setup port device to end the OBM session.

Configuring the Module (Cont.)

[8] Module-Specific Options (Cont.)

Option [1] Switch to OBM (Cont.)
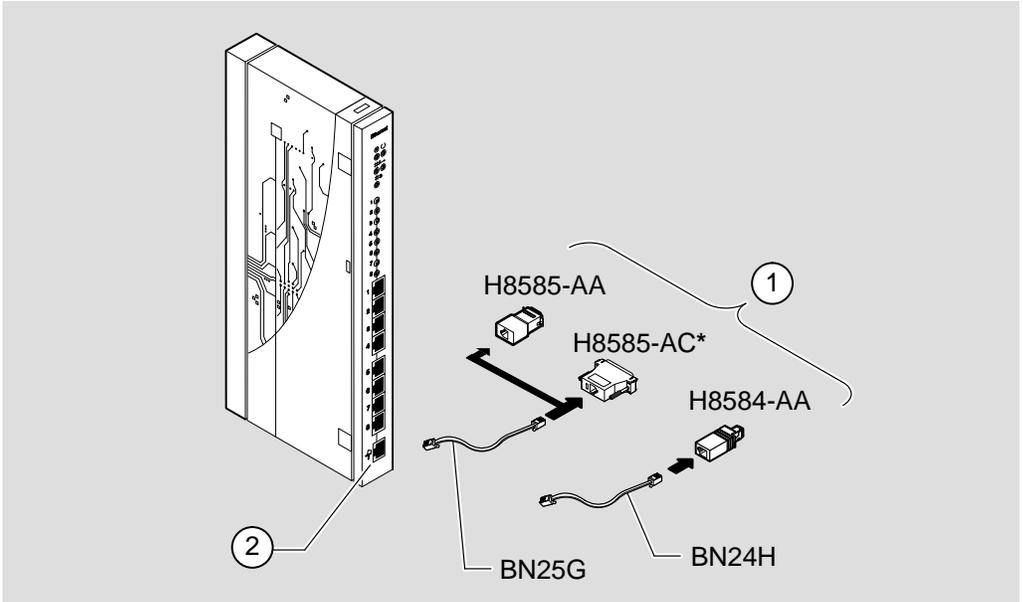
* Not for connection to public networks in Sweden, Germany, or Japan.

Item	Description
1	To OBM device
2	Front panel serial port

Configuring the Module (Cont.)

[8] Module-Specific Options (Cont.)

Option [2] Enable Hub Mastership Mode

The following example shows the dialog associated with this option when the IP address has not been previously set.

```
DECrepeater 90TS
=====================================
               DECrepeater 90TS Installation

               [1]  Switch to OBM
               [2]  Enable Hub Mastership Mode
               [3]  Set Hub Mastership Configuration
               [4]  Return to Main Menu
=====================================
                Enter selection number : 2 Return

               Hub Mastership enabled!
               Please Return to Main Menu and set your IP address!

               Press Return for Main Menu ...
```

The following example shows the dialog associated with this option when the IP address has already been set.

```
DECrepeater 90TS
=====================================
               DECrepeater 90TS Installation

               [1]  Switch to OBM
               [2]  Enable Hub Mastership Mode
               [3]  Set Hub Mastership Configuration
               [4]  Return to Main Menu
=====================================
                Enter selection number : 2 Return

               Hub Mastership enabled!
               Press Return for Main Menu ...
```

Configuring the Module (Cont.)

[8] Module-Specific Options (Cont.)

Option [2] Disable Hub Mastership Mode

If Hub Mastership Mode is already enabled, the following sub-menu is displayed. The following example shows the dialog associated with this option.

```
DECrepeater 90TS
================================
              DECrepeater 90TS Installation

              [1]  Switch to OBM
              [2]  Disable Hub Mastership Mode
              [3]  Set Hub Mastership Configuration
              [4]  Return to Main Menu
================================
               Enter selection number : 2 Return

              Hub Mastership disabled!
              Press Return for Main Menu ...
```

Configuring the Module (Cont.)

[8] Module-Specific Options (Cont.)

Option [3] Set Hub Mastership Configuration

This option provides you with four configuration selections. The following four pages describe the Hub Mastership configuration menu.

The following example shows the dialog associated with this option.

```
========================================
              Enter selection number : 3

 DECrepeater 90TS
 ========================================

              DECrepeater Hub Configuration


              Current Configuration:  Not Configured

         [1]  Set Configuration to Standalone
         [2]  Set Configuration to Single DEChub 90
         [3]  Set Configuration to DEChub 90 Pair
         [4]  Set Configuration to DECstack 90
         [5]  Exit Hub Mastership Configuration


 ========================================


              Enter selection number : [n] Return
```

Configuring the Module (Cont.)

[8] Module-Specific Options (Cont.)

Option [3] Set Hub Mastership Configuration (Cont.)

Option [1] Set Configuration to Standalone

This option configures your module to standalone.

The following example shows the dialog associated with this option.

```
========================================
              Enter selection number : 3

 DECrepeater 90TS
 ========================================

              DECrepeater Hub Configuration


              Current Configuration:  Not Configured

              [1]  Set Configuration to Standalone
              [2]  Set Configuration to Single DEChub 90
              [3]  Set Configuration to DEChub 90 Pair
              [4]  Set Configuration to DECstack 90
              [5]  Return to Main Menu

 ========================================


               Enter selection number : [1] Return

              Hub Configuration set to Standalone!

              Press Return for Main Menu ...
```

Configuring the Module (Cont.)

[8] Module-Specific Options (Cont.)

Option [3] Set Hub Mastership Configuration (Cont.)

Option [2] Set Configuration to Single DEChub 90

This option configures your module to a single DEChub 90.

The following example shows the dialog associated with this option.

```
========================================
               Enter selection number : 2

 DECrepeater 90TS
 ========================================

                 DECrepeater Hub Configuration


                 Current Configuration:  Not Configured

                 [1]  Set Configuration to Standalone
                 [2]  Set Configuration to Single DEChub 90
                 [3]  Set Configuration to DEChub 90 Pair
                 [4]  Set Configuration to DECstack 90
                 [5]  Return to Main Menu

 ========================================


                  Enter selection number : [2] Return

             Hub Configuration set to Single DEChub 90!
             You will have to reset to current settings before this
             selection will take effect.

             Press Return for Main Menu ...
```

Configuring the Module (Cont.)

[8] Module-Specific Options (Cont.)

Option [3] Set Hub Mastership Configuration (Cont.)

Option [3] Set Configuration to DEChub 90 Pair

This option configures your module to manage the modules in a pair of DEChub 90s.

The following example shows the dialog associated with this option.

```
========================================
                Enter selection number : 2

 DECrepeater 90TS
 ========================================

                  DECrepeater Hub Configuration


                  Current Configuration:   Not Configured

                  [1]  Set Configuration to Standalone
                  [2]  Set Configuration to Single DEChub 90
                  [3]  Set Configuration to DEChub 90 Pair
                  [4]  Set Configuration to DECstack 90
                  [5]  Return to Main Menu


 ========================================



                  Enter selection number : [3] Return

             Hub Configuration set to DEChub 90 Pair!
             You will have to reset to current settings before this
             selection will take effect.

             Press Return for Main Menu ...
```

Configuring the Module (Cont.)

[8] Module-Specific Options (Cont.)

Option [3] Set Hub Mastership Configuration (Cont.)

Option [4] Set Configuration to DECstack 90

This option configures your module as stack manager for a Digital MultiStack System.

The following example shows the dialog associated with this option.

```
========================================
              Enter selection number : 2

 DECrepeater 90TS
 ======================================

              DECrepeater Hub Configuration


              Current Configuration:  Not Configured

              [1]  Set Configuration to Standalone
              [2]  Set Configuration to Single DEChub 90
              [3]  Set Configuration to DEChub 90 Pair
              [4]  Set Configuration to DECstack 90
              [5]  Return to Main Menu


 =====================================



              Enter selection number : [4] Return

         Hub Configuration set to DECstack 90!
         You will have to reset to current settings before this
         selection will take effect.

         Press Return for Main Menu ...
```

LED Descriptions

The module LEDs provide dynamic indications of module status. Flashing LEDs indicate special situations.

Table 2 shows the static states that are possible for each of the module LEDs.

Table 2   Module LED States

LED Name	Icon	Off	On	Flashing
Power	⟳	No power to module.	Module receiving power.	N/A.
Module OK	↻	After 1 minute, self-test failed.	Module passed self-test.	N/A.
Network OK	⌗ A	ThinWire 10Base 2 port not connected to a properly terminated and operational LAN, or the port not selected.	ThinWire 10Base 2 port connected to a properly terminated and operational LAN.	ThinWire 10Base2 port disabled by network management.
Network OK	⌗ B	AUI port not connected to a properly terminated and operational LAN, or the port not selected.	AUI port connected to a properly terminated and operational LAN.	AUI port disabled by network management.
Network Activity	−−>	No network activity.	Heavy traffic on the network.	Flashes more rapidly and appears brighter as network traffic increases.
Port State	1–8	Associated port not connected to another operational network device, or a faulty cable.	Associated port connected to another operational network device.	Associated port disabled by network management.

Problem Solving Using the LEDs

When diagnosing a problem with the module, note that the problem is often indicated by the combined states of the module LEDs. Table 3 lists the states of the LEDs for various error conditions that can occur during initial installation of the device, along with probable causes and corrective actions to take.

Normal Power-up

When power to the module is initially turned on, the following events occur:

1. The Power ⊘ LED lights and stays lit.

2. The module initiates its built-in self-test. During self-test , the Port State LEDs cycle through various patterns.

3. After the successful completion of self-test (within one minute), the Module OK ⟳ LED lights, and remains lit.

4. The remaining LEDs indicate their operational status.

Table 3   Problem Solving Using the LEDs

Symptom	Probable Cause	Corrective Action
All LEDs are off.	The module does not have power.	**If the module is installed as a standalone unit:**
		Secure the power cables at the back cover and between the power supply and the wall outlet.
		Check the wall outlet using another appliance or light, or plug the power cord into another outlet. If no power is available, check the wall outlet's circuit breaker.
		If the problem persists, replace the power supply or the module.

<div align="right">(continued on next page)</div>

Table 3 (Cont.)   Problem Solving Using the LEDs

| Symptom	Probable Cause	Corrective Action
All LEDs are off (cont.)	The module does not have power.	**If the module is installed in either the DEChub 900 or the DEChub 90:** Reseat the module. Remove the module and inspect the module's 48-pin connector for bent or broken pins. If no pins are broken or bent, reinstall the module. If the problem persists, replace module.
Power ⊘ LED is off.	Bad power LED.	Replace the module.
Module OK ↺ LED is off.	Self-test is in progress.	Wait for self-test to complete.
	Self-test failed.	If the LED does not light after 1 minute, reseat the module to repeat the self-test. If self-test fails again, replace the module.
Port State LED is off.	Improper cable connection.	Check that the cables and connections are installed properly. Check that the correct cable type is used (straight-through or crossover). Refer to the section titled Connector Pin Assignments. If problem persists, replace the cable.
Port State LED is flashing.	Associated port is disabled by network management.	Enable the associated port.

Connector Pin Assignments

This section illustrates connectors and their pin assignments.

> **NOTE:** The H8575-A and H8585-AC adapters cannot be used to connect public networks in Sweden, Germany, or Japan.

AUI (15-pin D-Sub) Connector

The following illustration shows a 15-pin AUI connector and its pin assignments:
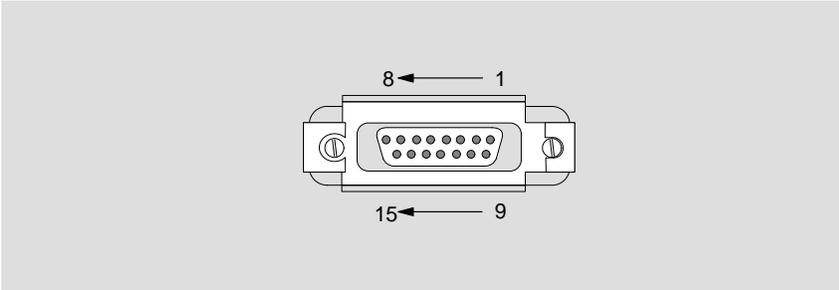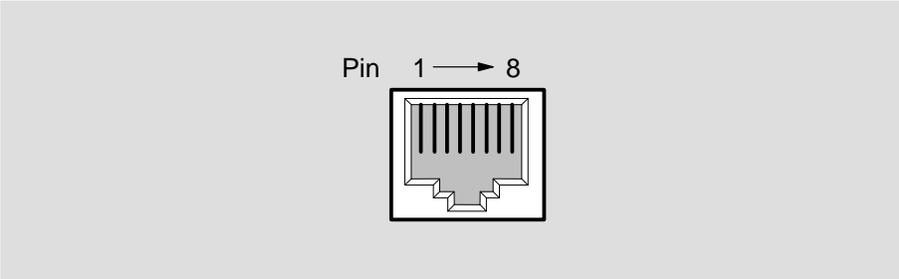

LKG-0222-93I

Item	Description	Item	Description
1	Ground	9	CI–
2	CI+	10	DO–
3	DO+	11	Ground
4	Ground	12	DI–
5	DI+	13	Power (12V)
6	Power rtn	14	Ground
7	NC	15	NC
8	Ground		

Connector Pin Assignments (Cont.)

Serial Port (8-pin MJ) Connector

The following illustration shows the front panel serial port 8-pin MJ connector and its pin assignments:
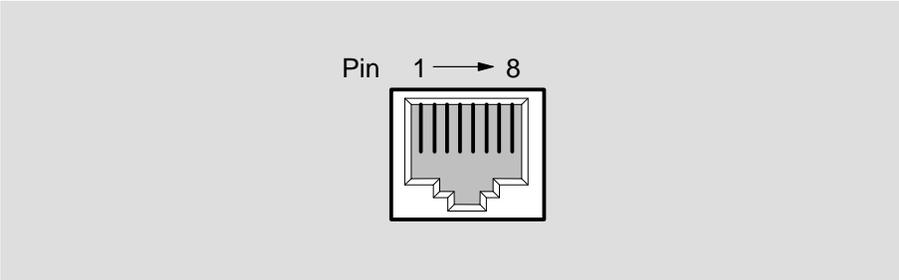
Pin 1 ⟶ 8

LKG-8719-93I

Item	Description	Item	Description
1	Ground	5	RTS
2	RX	6	TX
3	Ground	7	DTR
4	CTS	8	DSR

Connector Pin Assignments (Cont.)

10BaseT Port (8-pin MJ) Connector

The following illustration shows the 10BaseT port (8-pin MJ) crossover connector and its pin assignments:
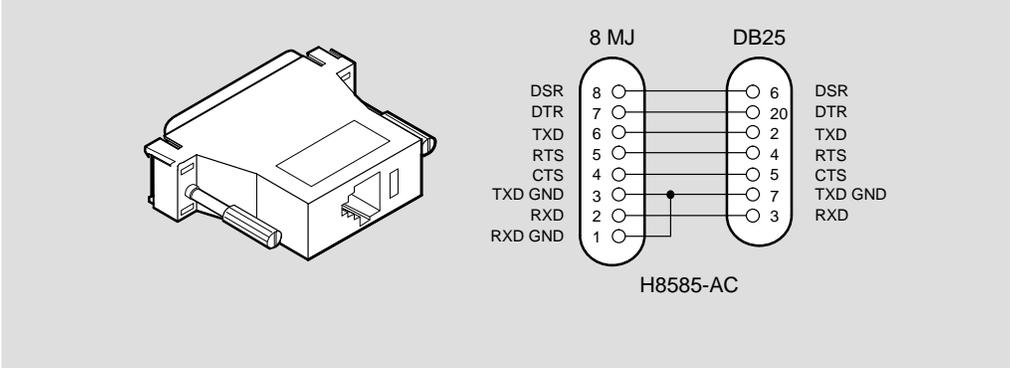
Pin 1 ⟶ 8

LKG-8719-93I

Item	Description	Item	Description
1	RX+	5	Unused
2	RX–	6	TX–
3	TX+	7	Unused
4	Unused	8	Unused

Connector Pin Assignments (Cont.)

H8585-AC Adapter

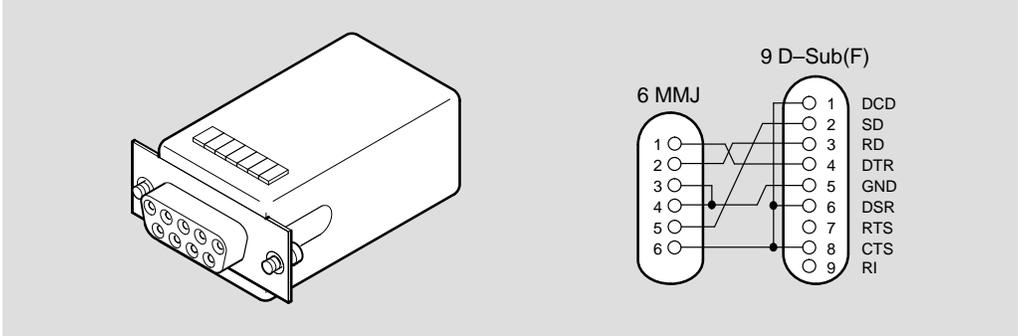The following illustration shows the H8585-AC adapter (8-pin MJ to 25-pin connector) and its pin assignments:

8 MJ   DB25

	8 MJ			DB25	
DSR	8	○————○	6		DSR
DTR	7	○————○	20		DTR
TXD	6	○————○	2		TXD
RTS	5	○————○	4		RTS
CTS	4	○————○	5		CTS
TXD GND	3	○————○	7		TXD GND
RXD	2	○————○	3		RXD
RXD GND	1	○			

H8585-AC

NOTE: Not for connection to public networks in Sweden, Germany, or Japan.

Connector Pin Assignments (Cont.)
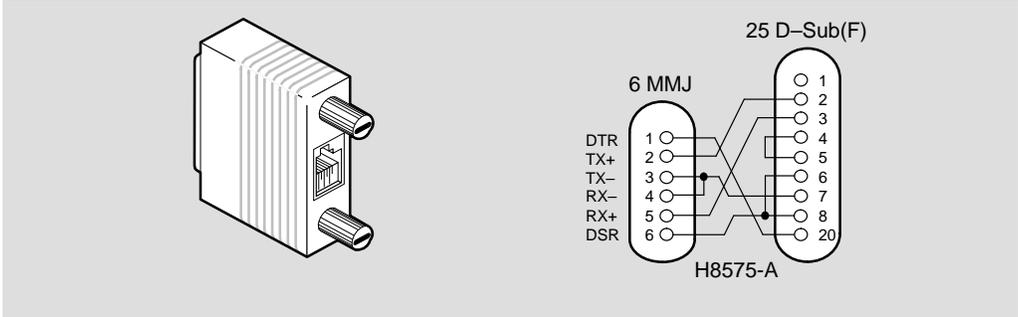
H8571-J Adapter

The following illustration shows the H8571-J adapter (6-pin MMJ to 9-pin D-Sub connector) and its pin assignments:

LKG-5342-91I

H8575-A Adapter

The following illustration shows the H8575-A adapter (6-pin MMJ to 25-pin D-Sub connector) and its pin assignments:
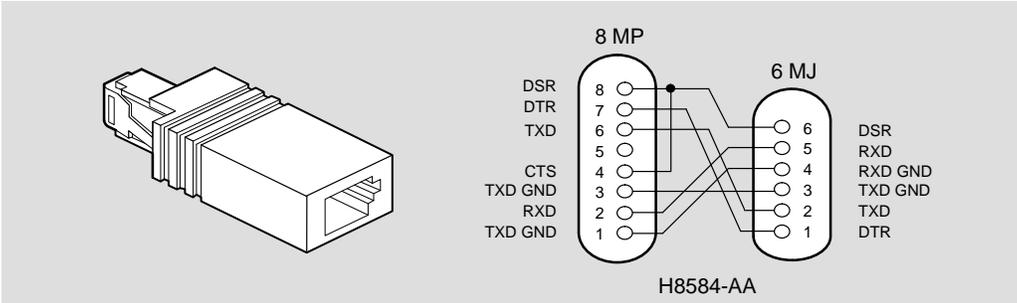

LKG–8793–93I

NOTE: EOS/ESD protection devices are not shown on diagram.

Connector Pin Assignments (Cont.)
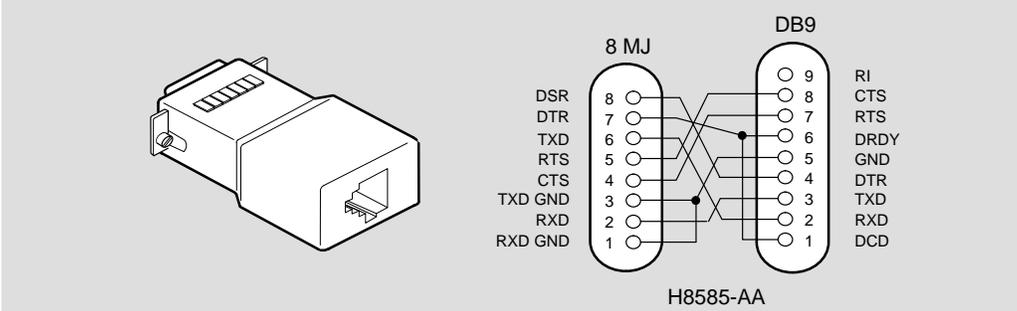
H8584-AA Adapter

The following illustration shows the H8584-AA adapter (8-pin MP to 6-pin MJ connector) and its pin assignments:

LKG–6972-92I

H8585-AA Adapter

The following illustration shows the H8585-AA adapter (8-pin MJ to 9-pin DB connector) and its pin assignments:

LKG–6973-92I

DECrepeater 90TS Installation and Configuration
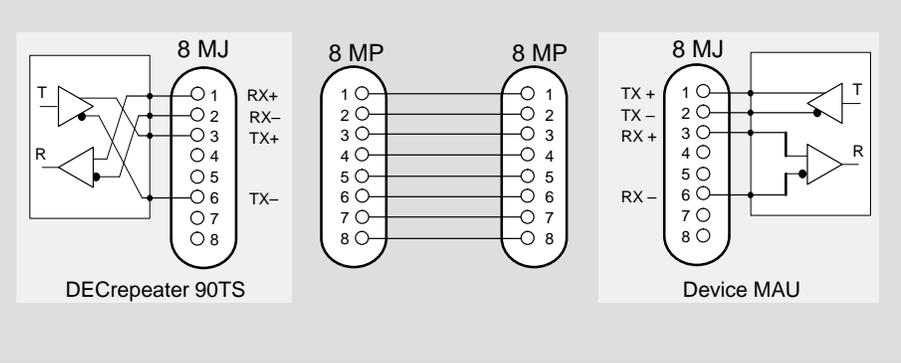
Connector Pin Assignments (Cont.)

Internal and External Crossover Configurations

A crossover function must be implemented in every twisted-pair link. The crossover function (internal or external) allows the transmitter of one device to connect to the receiver of the device at the other end of the twisted-pair link.

The following illustrations show the use of straight-through and crossover cables for connecting internal and external crossover-type devices. The DECrepeater 90TS uses crossover connectors.

Internal Crossover Configuration
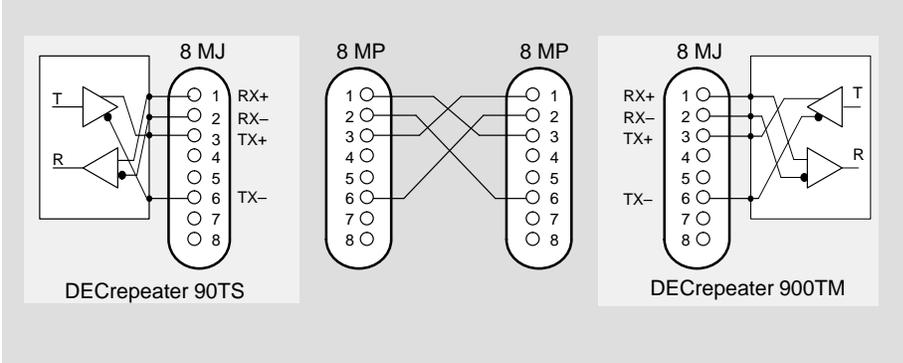
Internal Crossover Configuration:

NPG-0249-95I

Connector Pin Assignments (Cont.)

Internal and External Crossover Configurations (Cont.)

External Crossover Configuration

External Crossover Configuration:

NPG-0249-95I

Product Specifications

Table 4 lists the DECrepeater 90TS physical, environmental, and certification specifications. Note the additional parameters (listed in the table) to consider when the module is installed as a standalone unit.

Table 4   DECrepeater 90TS Operating Specifications

Parameter	Specification
Operating Environment	
Operating Temperature[1]	5° C to 50° C (41° F to 122° F)
Relative Humidity	10% to 95% noncondensing
Altitude	Sea level to 4900 m (16,000 ft)
Power – in a DEChub 900	6.0 W, total power 1.2 A, 5Vdc, 0.0 A, 12Vdc 0.0 A, 15Vdc
Power – in a standalone configuration with the back cover installed	12.0 W, total power 1.2 A, 5Vdc
	0.5 A, 12Vdc (when connected to the network through the AUI connector)
Connectors	
1 AUI (15–pin D–Sub) 9 MJ-8 (eight 8–pin MJ 10BaseT connectors, one 8–pin MJ serial port connector)	
Physical	
Height	27.3 cm (10.75 in)
Width	3.2 cm (1.25 in)
Depth	11.2 cm (4.4 in); 13.5 cm (5.3 in) when installed as a standalone unit.
Weight	0.82 kg (1.5lb); 1.09 kg (2.0 lb) when installed as a standalone unit.
Certification	
CE, CSA, FCC,TÜV, UL, VCCI	

[1] For sites above 4900 m (16,000 ft), decrease the operating temperature specification by 1.8° C for each 1000 m or 3.2°F for each 3200 ft.

Product Specifications (Cont.)

Table 5 lists the acoustical specifications for the DECrepeater 90TS

Table 5   Acoustical Specifications

Acoustics — Declared values per ISO 9296 and ISO 7779[1]

Product	Sound Power Level L_{WAd}, B	Sound Pressure Level L_{pAm}, dBA (bystander positions)
	Idle/Operate	*Idle/Operate*
DETMI	No acoustic noise	No acoustic noise
DETMI + H7827–BA	No acoustic noise	No acoustic noise

Schallemissionswerte — Werteangaben nach ISO 9296 und ISO 7779/DIN EN27779[2]

Produkt	Schalleistungspegel L_{WAd}, B	Schalldruckpegel L_{pAm}, dBA (Zuschauerpositionen)
	Leerlauf/Betrieb	*Leerlauf/Betrieb*
DETMI	keine meßbaren Schallemissionen	keine meßbaren Schallemissionen
DETMI + H7827–BA	keine meßbaren Schallemissionen	keine meßbaren Schallemissionen

[1] Current values for specific configurations are available from Digital Equipment Corporation representatives. 1 B = 10 dBA.

[2] Aktuelle Werte für spezielle Ausrüstungsstufen sind über die Digital Equipment Vertretungen erhältlich. 1 B = 10 dBA.

Associated Documents

The following documents provide related information about the module. Ordering information is provided at the back of this manual.

Document	Description
Digital MultiStack System Stacking Unit Installation and Configuration EK–DETXX–IN	Describes how to install, configure, and monitor an Ethernet MultiStack System.
DEChub 900 MultiSwitch Owner's Manual EK–DH2MS–OM	Provides installation, use, security, and troubleshooting information for the DEChub 900 MultiSwitch.
HUBwatch Installation and Configuration AA–Q3S8C–TE	Provides information for installing and configuring HUBwatch for Open VMS and HUBwatch for Windows.
HUBwatch for Windows Use AA–Q3S3E–TE	Provides network management and DEChub 900 functionality information for HUBwatch for Windows.
HUBwatch Use AA–PW4BE–TE	Provides network management and DEChub 900 functionality information for HUBwatch for OpenVMS and OSF.
DEChub 90 Owner's Manual EK-DEHUB-OM	Provides installation, use, security, and troubleshooting information.
Open DECconnect Applications Guide EC–G2570–42	Provides information to help plan and install networking systems based on Digital's OPEN DECconnect System and networking products.

Documentation Comments

If you have any comments or suggestions to improve the quality and usability of this book or any of the DECrepeater documents, please send them to the Network Integration Products Group.

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