

DECswitch 900EF

Installation

Part Number: EK-DEFBA-IN. C01

May 1995

This manual describes how to install and configure the DECswitch 900EF module, running Firmware Version V1.50.

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May 1995

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This equipment generates, uses, and may emit radio frequency energy. The equipment has been type tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such radio frequency interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference, in which case, measures taken to correct the interference are at the user's expense.

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Warning!

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

Achtung!

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Attention!

Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.

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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.)

The cautions that must be observed for the hardware described in this manual are listed below in English, German, French, and Spanish.

WARNING 	To prevent personal injury or equipment damage, do not insert telecommunications cabling into the Optical Bypass Relay connector.
VORSICHT	Um Personen oder Geräteschäden zu vermeiden, dürfen Sie das Telefonkabel Auf Keinen Fall am Anschluß des optischen Bypass-Relais anschließen.
DANGER	Pour éviter tout risque d'accident corporel ou de dommage matériel, Ne Branchez Pas de câble de télécommunication sur le connecteur de relais sélectif optique.
AVISO	Para evitar daños personales o al equipo, No se debe introducir cableado de telecomunicaciones en el conector óptico de relés de derivación.

WARNING 	Some fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume the cable is connected to a light source.
VORSICHT	Bestimmte Lichtleitergeräte können für die Augen gefährliches Laser- oder Infrarotlicht abstrahlen. Vermeiden Sie es daher unter allen Umständen, direkt in ein Lichtleiterkabel oder einen Lichtleiteranschluß zu schauen. Gehen Sie immer davon aus, daß Lichtleiterkabel mit einer Lichtquelle verbunden sind.
DANGER	Certains équipements à fibre optique peuvent émettre un rayonnement laser ou infra-rouge pouvant provoquer des troubles oculaires. Ne regardez jamais à l'intérieur d'une fibre optique ou d'un port de connecteur. Considérez que le câble est connecté en permanence à une source lumineuse.
AVISO	Ciertos equipos de fibras ópticas pueden emitir luz láserica o infrarroja con riesgos de lesiones en los ojos. No se debe nunca mirar en una fibra óptica o una puerta de conexión. Siempre hay que suponer que el cable está conectado a una fuente luminosa.

Safety (Cont.)

CAUTION

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

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.

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 Systemeinheit 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

The DECswitch 900EF¹ (also referred to in this manual as the module) provides the interconnection between six 10 Mb/s Ethernet² LANs and a high-speed 100 Mb/s Fiber Distributed Data Interface (FDDI) network backbone.

As a self-learning IEEE 802.1d Media Access Control (MAC) switch, the module performs standard functions such as filtering and forwarding. In addition, the module performs high-speed, transparent translation of network data packets between the FDDI and Ethernet networks.

The DECswitch 900EF module is protocol-independent. As such, it accommodates multiple protocols such as DECnet, Local Area Transport (LAT), Transmission Control Protocol/Internet Protocol (TCP/IP), or any other protocol running on FDDI and Ethernet LANs. The module operates transparently for plug-and-play network operations and also includes flexible filtering options for destination and source addresses and protocols.

Filters can be accessed through Simple Network Management Protocol (SNMP) management software, allowing network managers to determine which users or groups of users can gain access to the networks. As with other switch products from Digital, access to network management can be restricted by password protection.

The DECswitch 900EF standards-compliant technology (IEEE 802.1d, 802.1h, 802.1i, 802.2, 802.3, and ANSI FDDI) ensures interoperability in multivendor networks.

The module can be configured into the DEChub 900 MultiSwitch (also referred to in this manual as the DEChub 900) or as a standalone unit into a DEChub ONE³ docking station (see the *DEChub ONE-MX Installation* manual or the *DEChub ONE Installation* manual).

¹ The DECbridge 900MX has the same functions and features as the DECswitch 900EF.

² In this manual, the term Ethernet is Digital'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).

³ Throughout this manual, the term DEChub ONE refers to the DEChub ONE-MX or the DEChub ONE docking station unless otherwise specified.

Introduction (Cont.)

Features:

Your DECswitch 900EF module includes the following features.

- High-speed local traffic filtering and forwarding.
- Support for up to 8000 network addresses.
- Flexible filtering capabilities (source address, destination address, and protocol) for greater network control, increased security and bandwidth utilization, and reduced propagation of network problems.
- Configurable rate limiting of multicast packets to limit the spread of multicast and broadcast storms.
- Option to turn off automatic learning and manually load the address database.
- Translation between FDDI and IEEE 802.3/Ethernet frame formats for direct, transparent connections; translation of AppleTalk ® 1 and AppleTalk 2 AARP packets; handling of "raw IEEE 802.3" Novell IPX ® packets.
- Fragmentation of large FDDI IP packets to legal-size Ethernet packets as per RFC-791 (Internet Protocol) and RFC-1191 (Path MTU Discovery).
- Console support is provided for enabling and disabling translation of IPX raw 802.3 packets into SNAP encapsulated packets on the FDDI.
- Support for operation in either an FDDI tree or dual ring network configuration. FDDI port A can be switched to emulate an M port of a concentrator. If this is done, FDDI port B is automatically switched to emulate an S port.
- Spanning tree loop detection protocol:
 - IEEE 802.1d (default)
 - Digital LB100 mode
- Ability to turn off spanning tree algorithm on individual switch ports on a per-port basis.

Introduction (Cont.)

- Built-in SNMP agent support for the following:
 - SNMP management (RFC-1157)
 - Management Information Base – MIB II (RFC-1213)
 - Bridge MIB (RFC-1493)
 - FDDI MIB (RFC-1512)
 - Ethernet MIB (RFC-1398)
 - Digital ELAN MIB Extensions
- Support for the following SNMP traps:
 - coldStart
 - linkUp
 - linkDown
- Manageability using any generic SNMP management application that supports the MIBs listed above.
- Advanced Graphical User Interface (GUI) manageability with Digital's HUBwatch Network Management Station (NMS) application.
- One FDDI dual attachment station (DAS) port and six 802.3/Ethernet LAN ports.
 - Each of the ports (including FDDI PHY ports 1A/M and 1B/S) is individually switchable to a DEChub 900 backplane LAN through Hubwatch management. Port 3 can be redirected to the DEChub 900 backplane ThinWire LAN segment via HUBwatch.
 - When the module is installed into a DEChub ONE docking station, a user can configure either the DEChub ONE's AUI port or the module's (front panel) port 4 as an active Ethernet interface.
 - When connected to a DEChub ONE–MX docking station each of the FDDI PHY ports (1A/M and 1B/S) is individually switchable to the corresponding PHY ports on the DEChub ONE–MX docking station.

Introduction (Cont.)

- Out-of-band management (OBM) using SNMP over Serial Line Internet Protocol (SLIP) through the OBM connector as an alternative to normal in-band management.
- Setup port for the initial setup of the module using a setup port device (a terminal or personal computer).
- Upgradeable device firmware (in nonvolatile Flash memory) using Trivial File Transfer Protocol (TFTP) with Digital's HUBloader utility or through the setup port with any TFTP server.

Front Panel

This section describes DECswitch 900EF front panel features. For more information about the module's LEDs, refer to the section titled LED Descriptions.

- 1) **Power**  **LED** — Lights when the module has power.
- 2) **Module OK**  **LED** — Lights when the module passes self-test.
- 3) **Port State**  **LEDs** — Show the status of ports 1 to 7.
- 4) **Network Activity**  **LEDs** — Indicates network traffic level. The color indicates whether the specific port's network connection is through the front panel (green) or through the backplane or docking station (yellow).
- 5) **Address Label** — Contains the lowest of seven consecutive Media Access Control (MAC) addresses, that corresponds to port 1. For example, if this module's port 1 MAC address is 08-00-2B-AB-0C-08, then the consecutive port MAC addresses are:

Port 1 = 08-00-2B-AB-0C-08

Port 2 = 08-00-2B-AB-0C-09

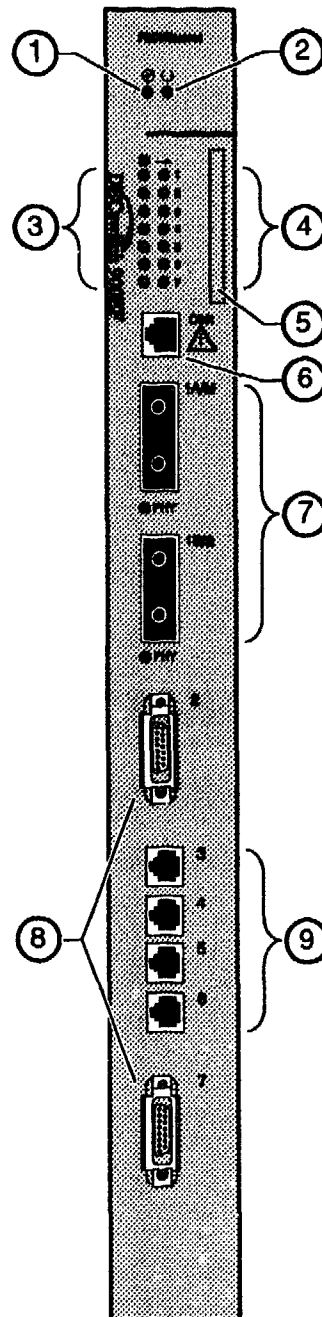
Port 3 = 08-00-2B-AB-0C-0A

Port 4 = 08-00-2B-AB-0C-0B

Port 5 = 08-00-2B-AB-0C-0C

Port 6 = 08-00-2B-AB-0C-0D

Port 7 = 08-00-2B-AB-0C-0E



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Front Panel (Cont.)

- 6) **Optical Bypass Relay (OBR) (6-pin MJ) connector** — Allows you to connect an OBR device (not supplied) to maintain connectivity of the FDDI ring in the absence of power or during fault conditions in a station.

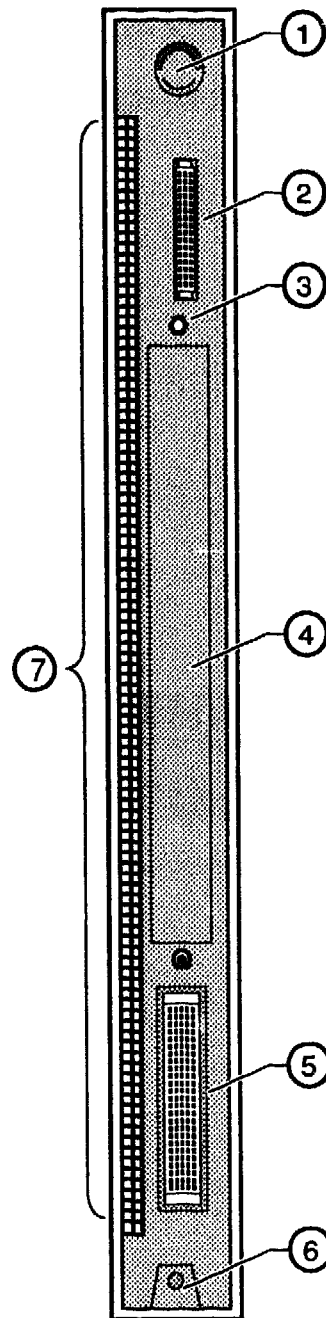
WARNING  To prevent personal injury or equipment damage, **do not** insert telecommunications cables into the Optical Bypass Relay connector.

- 7) **Dual attachment station (DAS) FDDI port connectors and associated PHY LEDs** — One port is labeled **1A/M** and the other port is labeled **1B/S**. Both ports are standard FDDI MIC connectors.
- 8) **802.3/Ethernet AUI (15-pin D-Sub) port connectors** — Refer to the *OPEN DECconnect Applications Guide* for a list of AUI media adapters you can use with your module.
- 9) **10BaseT (8-pin MJ) port connectors** — Support both UTP and STP cabling. These ports are wired as straight-through connectors.

Back Panel

This section describes DECswitch 900EF back panel features.

- 1) **Locking tab** — Locks the module into a DEChub 900 backplane or a DEChub ONE docking station. It also contains the hot-swap switch lever.
- 2) **48-pin connector** — Provides network and power connections to the module when the module is installed into a DEChub 900 or a DEChub ONE docking station.
- 3) **Grounding bolt** — Provides a chassis grounding connection between the module and a DEChub 900 or a DEChub ONE docking station.
- 4) **Manufacturing label** — Lists the module's part number, serial number, revision level, and power requirements.
- 5) **160-pin connector** — Provides network and power connections to the module when the module is installed into a DEChub 900 or a DEChub ONE docking station.
- 6) **Mounting tab** — Secures the module when it is installed into a DEChub 900 or a DEChub ONE docking station.
- 7) **Grounding fingers** — Provide additional chassis grounding between the module and a DEChub 900 or a DEChub ONE docking station.



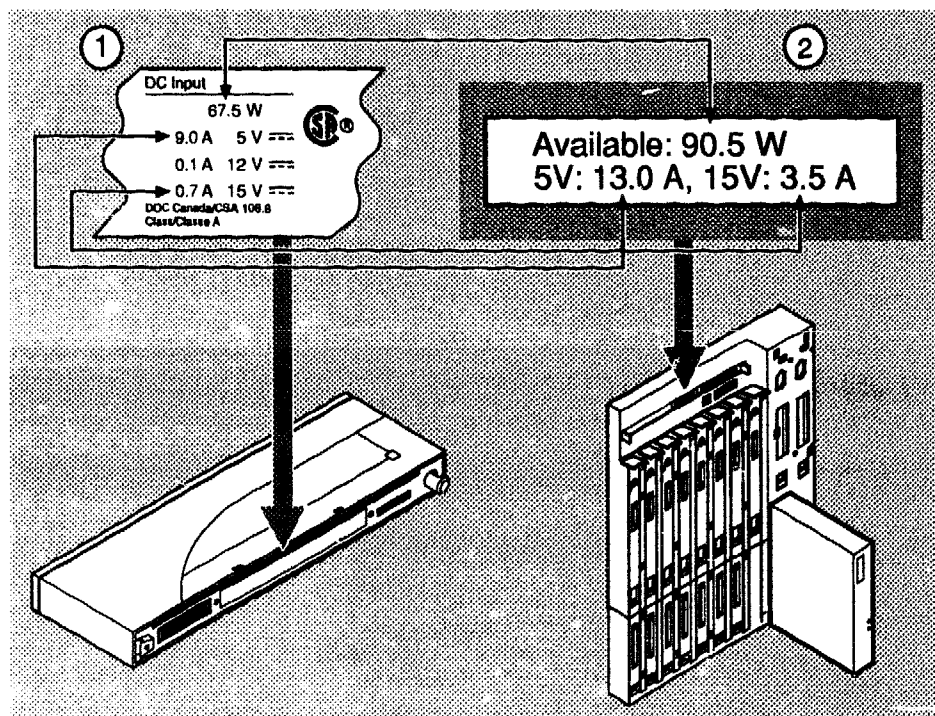
LKG-9723-941

Installing the Module

The DECswitch 900EF hot-swap feature allows you to install the module into the DEChub 900 without turning off power. Seating the module initiates the module's powerup sequence if enough power is available. To install the module in a DEChub ONE or DEChub ONE-MX, refer to the appropriate manual listed in section titled Associated Documents.

To install the module into a DEChub 900, complete the following steps:

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



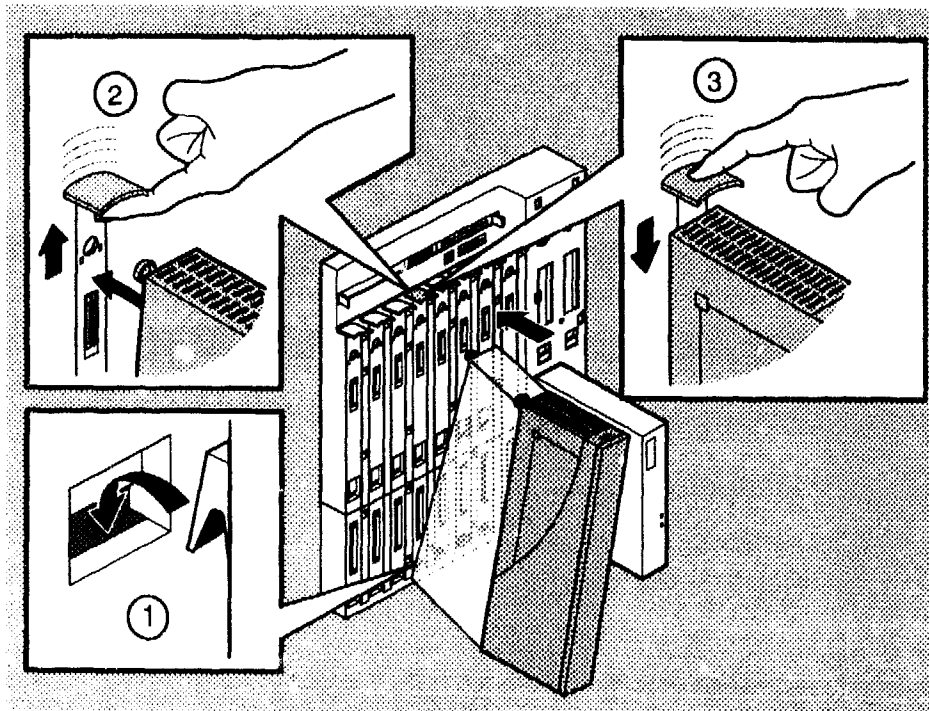
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If any of the module's power requirements exceed the values shown in the status display, add another power supply (see the *DEChub 900 MultiSwitch Owner's Manual*).

The 12V power in the DEChub 900 is derived from the 15V power source. Although it is listed separately in the product specifications, the 12V requirements are included in the 15V power total.

Installing the Module (Cont.)

- 2** **Seat the module into the DEChub 900.**
 - a. Place the module's mounting tab into a mounting slot **(1)** on the DEChub 900.
 - b. Pull the release lever **(2)** up to its unlocked position.
 - 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 **(3)** to ensure that it is locked.

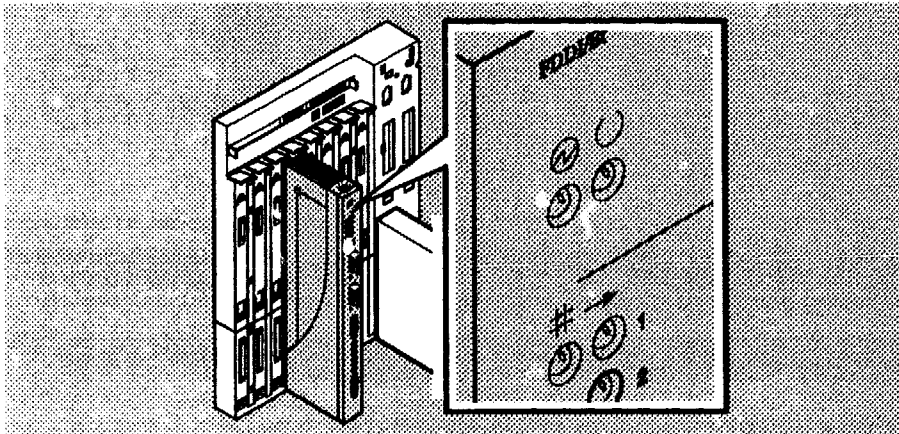


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Installing the Module (Cont.)

- 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:

DECswitch 900EF
Up.



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

Installing the Module (Cont.)

4 Connect the port cables.

Depending on your network configuration requirements, connect the appropriate AUI cables and UTP/STP cables. After all cables are connected, go to the section titled Configuring the Module.

See your network manager if you are not sure which cables to connect.

NOTE: All cables should be installed, tested, and tagged at the site, prior to this installation.

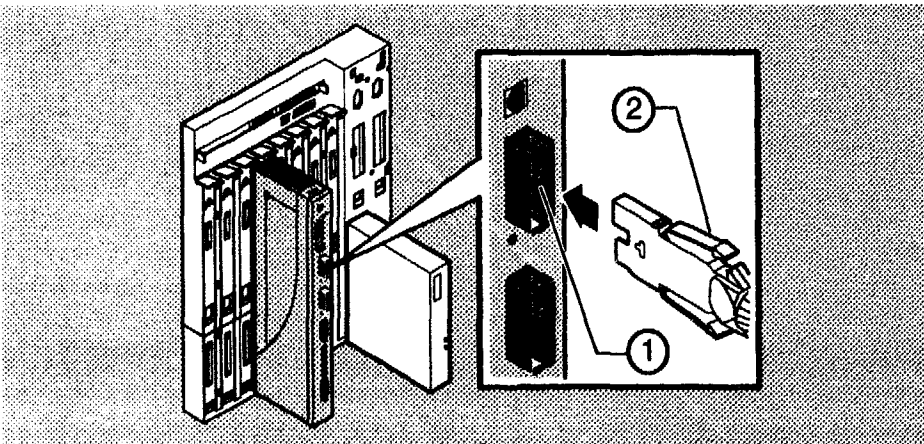
- To connect FDDI cables, go to step 5.
- To connect AUI cables, go to step 6.
- To connect UTP/STP cables, go to step 7.
- To connect Optical Bypass Relay (OBR), refer to the installation instructions included with the OBR.

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

Installing the Module (Cont.)

5 Connect the FDDI cables.

- a. Remove the protective caps from the module's FDDI connector and from the FDDI cable plug.
- b. Align the keyway (1) on the FDDI cable plug with the key on the module's FDDI connector.
- c. Insert the plug into the connector (2), ensuring that the locking clips on the sides of the plug snap into the locked position.

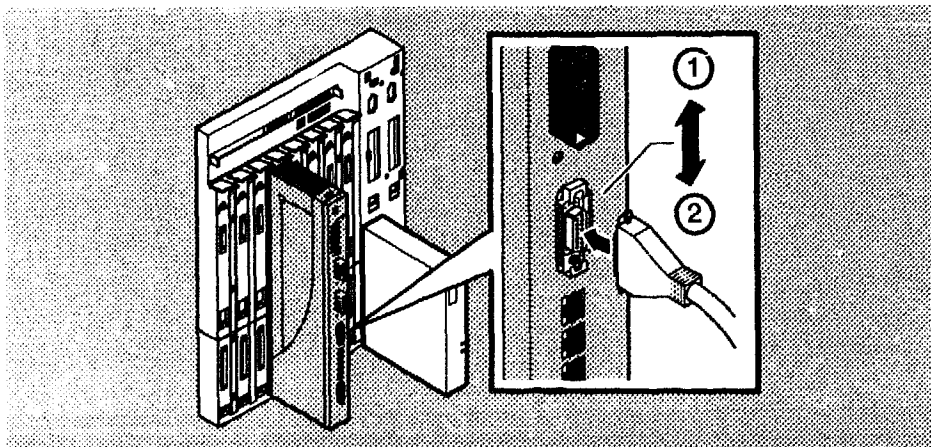


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NOTE: To disconnect the cables, press the locking clips on the cable plug, then disconnect the cable.

Installing the Module (Cont.)

- 6 **Connect the AUI cables.**
 - a. Push the module's AUI connector slide latch up to the unlocked position (1).
 - b. Insert the AUI cable plug into the AUI connector.
 - c. Push the module's AUI connector slide latch down to the locked position (2).



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NOTE: To disconnect the cables, push the connector slide latch to the unlocked position, then disconnect the cable.

Installing the Module (Cont.)

7 Connect the UTP/STP cables.

The DECswitch 900EF module uses straight-through 10BaseT (8-pin MJ) port connectors. Select the appropriate UTP/STP cable type, crossover or straight-through, 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 rules:

- If the device you are connecting to the module uses straight-through connectors, use crossover cables.
- If the device you are connecting to the module uses crossover connectors, use straight-through cables.
- The sum of crossovers must always equal an odd number.

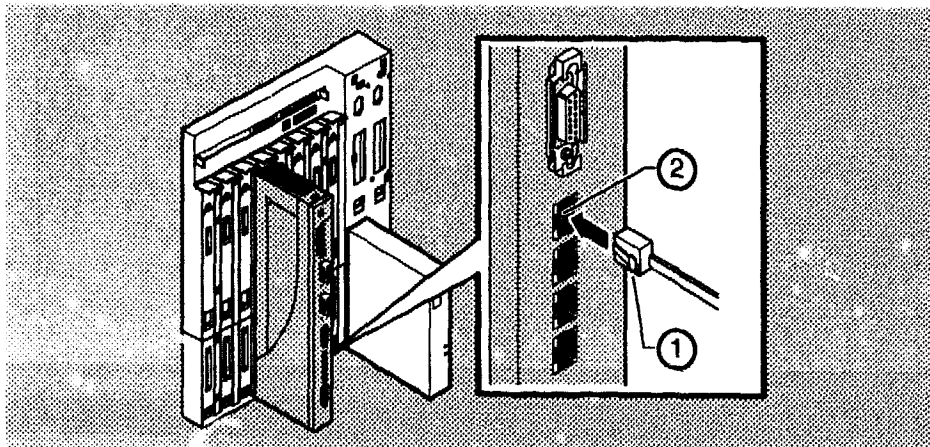
NOTE: Digital's straight-through cables are marked (=); crossover connectors (and cables) are marked (X).

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

Installing the Module (Cont.)

To connect the UTP/STP cables, complete the following steps:

- a. Align the release tab on the cable plug (1) with the keyway on the module's 10BaseT port connector.
- b. Insert the plug into the connector (2), ensuring that the release tab snaps into the locked position.



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

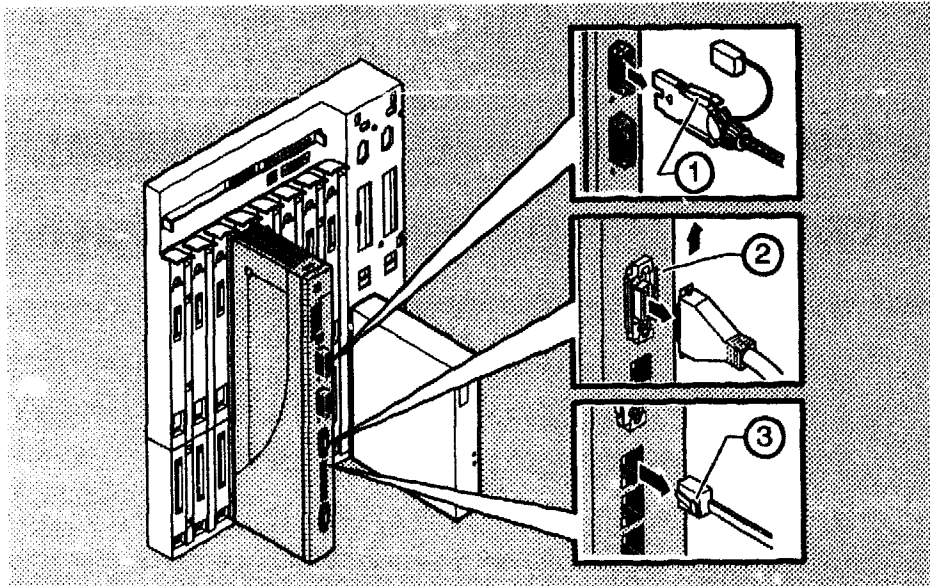
Removing the Module

- 1 **Disconnect all the cables from the module.**

WARNING  Some fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume the cable is connected to a light source.

To disconnect:

- a. FDDI cables, press the locking clips (1) on the cable plug, then pull out the cable.
- b. AUI cables, push the connector slide latch up (2) to the unlocked position, then pull out the cable.
- c. UTP/STP cables, press the release tab (3) on the cable plug, then pull out the cable.
- d. Optical Bypass Relay (OBR) cables, refer to the removal instructions included with the OBR.

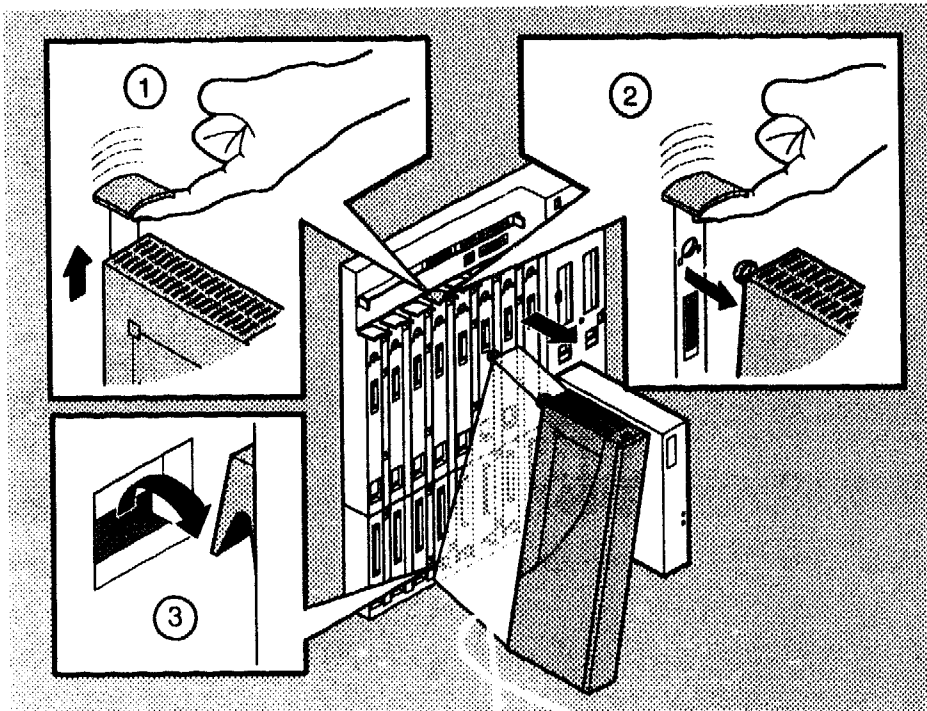


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Removing the Module (Cont.)

2 Unseat the module from the DEChub 900.

- a. Lift the release lever (1) located at the top of the DEChub 900 slot.
- b. While holding up the release lever (2), pivot the module back on its bottom mounting tab (3).
- c. Remove the module.



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Configuring the Module

Setup Port Description

The setup port (on the DEChub 900 or the DEChub ONE docking station) allows you to access and set DECswitch 900EF parameters. This section describes how to use the setup port.

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.

Signaling Standards

Signals from the DEChub 900 Hub setup port and from the DEChub ONE docking station 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 compatible with devices that use the EIA-423 signaling standard.

Setup Port Device Cabling

The setup port (see the following illustration) on the DEChub 900 MultiSwitch or the DEChub ONE docking station can be connected to a setup port device (a terminal or personal computer), using the following cables and adapters:

IF the setup port device is...	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.

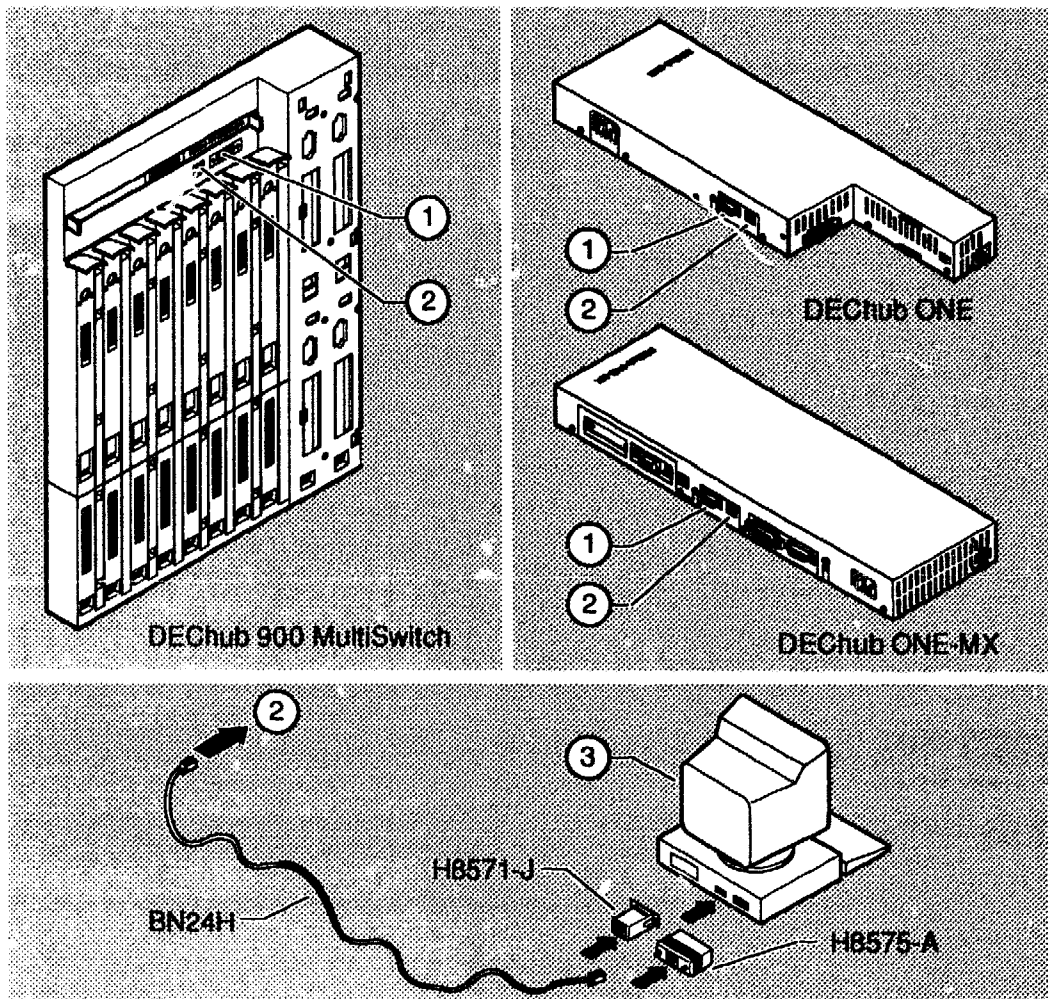
¹ xx indicates cable length in meters.

Connecting the Setup Port

To connect the setup port on the DECswitch 900EF module, complete the following steps:

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 the DEChub ONE docking station (see illustration).

Configuring the Module (Cont.)



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The following legend identifies the setup port cabling components (see illustration).

Item	Description
1	OBM Port
2	Setup Port
3	Setup Port Device

Configuring the Module (Cont.)

Accessing the Setup Port

To access the setup port on the DECswitch 900EF module, press **Return** on the setup port device a few times until one of the following menus appear.

- If the module is connected to the setup port on the DEChub 900, the DEChub 900 MultiSwitch INSTALLATION MENU appears. Go to the section titled DEChub 900 MultiSwitch INSTALLATION MENU
- If the module is connected to the setup port on the DEChub ONE docking station, the DECswitch 900EF INSTALLATION MENU appears. Go to the section titled DECswitch 900EF INSTALLATION MENU (DEChub ONE Options)

DEChub 900 MultiSwitch Installation Menu

The following screen is an example of 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.)

DEChub 900 MultiSwitch Installation Menu (Cont.)

[9] 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 DECswitch 900EF) that is installed into the DEChub 900. Choosing this option allows you to configure or obtain the status of an installed network module by accessing the specified network module's installation menu.

After you choose the **Start Redirect Mode** option from the DEChub MultiSwitch **INSTALLATION MENU**, the screen display prompts you for a slot number, as shown in the following example. After you enter the number of the slot in which the DECswitch 900EF is installed, the console is redirected to this slot.

The following example shows the dialog associated with this option.

```
Enter selection: 9
=====
Enter the slot number for redirection (1-8): 3 
Console redirected to 3: DECswitch 900EF
Attempting connection [Ctrl/C to abort]...
```

If the redirection is successful after you press , the DECswitch 900EF **INSTALLATION MENU** appears on your screen. Go to the section titled **DECswitch 900EF INSTALLATION MENU (DEChub 900 Options)**.

Configuring the Module (Cont.)

DECswitch 900EF Installation Menu (DEChub 900 Options)

This section shows the options available from the DECswitch 900EF INSTALLATION MENU when the module is installed into the DEChub 900.

When the module is installed in a DEChub 900, the slot where the module is installed is shown at the top of the menu.

The DECswitch 900EF INSTALLATION MENU selections are described in the section titled Description of Menu Options.

```
DECswitch 900EF - slot 3
```

```
=====:
```

DECswitch 900EF 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] Module-Specific Options...

```
[Ctrl/C] Return to Hub Manager Installation Menu
```

```
=====:
```

```
Enter selection number : [n] 
```

Configuring the Module (Cont.)

DECswitch 900EF Installation Menu (DEChub ONE Options)

This section shows the options available from the DECswitch 900EF INSTALLATION MENU when the module is installed into the DEChub ONE or DEChub ONE-MX docking station.

The DECswitch 900EF INSTALLATION MENU selections are described in the section titled Description of Menu Options.

```
DECswitch 900EF
```

```
=====
```

DECswitch 900EF 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...

```
=====
```

```
Enter selection number : [n] 
```

Configuring the Module (Cont.)

Description of Menu Options

This section describes the options that are available from the DECswitch 900EF INSTALLATION MENU in both the DEChub 900 and the DEChub ONE. Note that the Configure Out-of-Band Port option is available only when the module is installed in a DEChub ONE docking station.

[1] Reset with Factory Defaults

This option reboots the module, causing the module's configured Nonvolatile Random Access Memory (NVRAM) parameters to be initialized to factory default values.

If you need to reboot the module and retain the current settings, choose Option [2] from the DECswitch 900EF INSTALLATION MENU.

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 reboot and complete self-test.

The following example shows the dialog associated with this option.

```
Enter selection : 1
DECswitch 900EF - 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] : Return
Press Return for Main Menu ...
```

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[2] Reset with Current Settings

This option reboots the module but leaves the module's configured Nonvolatile Random Access Memory (NVRAM) parameters at their current values.

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

The following example shows the dialog associated with this option.

```
Enter selection : 2
DECswitch 900EF - slot 3
=====

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

=====

Press Y to confirm [N] : 
Press Return for Main Menu ...
```

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[3] Show Current Settings

This option shows the module's current settings. If the module is being configured for the first time, some of the fields will be blank.

The following example shows the dialog associated with this option.

```
Enter selection : 3
DECswitch 900EF - slot 3
=====
DECswitch 900EF, 6-Ethernet/FDDI Switch, HW=v1/2,RO=v0.4,SW=v1.50
SysUpTime           : 00:03:18      28 resets
SNMP Read/Write Community : whitney95
SNMP Trap Addresses   : 16.7.88.156
Status of Last Downline Upgrade : TFTP Read
                                00:02:55  27 resets
                                Transfer Complete.
Out-of-Band (OBM) Management RTS : Disabled ①
BootP                 : Disabled
Interface  IP Address  Subnet Mask  Def.Gateway  Other Info
In-Band    16.20.216.91 255.255.255.0 16.21.0.1    08-00-2B-A3-CD-08
OBM Port    16.20.66.156 255.255.255.0 ③           Active ②
IPX switch is disabled.
FDDI port configuration is Front Panel: A, B Docking Station:None ④
Port 4 using front panel UTP port
=====
Press Return for Main Menu ...
```

Item	Description
------	-------------

- | | |
|---|--|
| 1 | Appears only when the module is installed in a DEChub ONE. |
| 2 | If the module is installed in a DEChub ONE, the word Active is replaced with the current OBM port speed (for example, Speed 38400 bps). |
| 3 | This line will change to reflect the current configuration of the IPX switch. |
| 4 | These lines do not appear when the module is in a DEChub 900. These lines will change to reflect the current configuration of ports 1 and 4. |

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[4] Configure IP

This option provides you with IP configuration selections.

The following example shows the dialog associated with this option.

```
Enter selection : 4
DECswitch 900EF - 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] 
```

The IP Configuration options are described on the following pages.

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[4] Configure IP (Cont.)

[1] Set SNMP Read/Write Community

This option prompts you to enter the module's SNMP read/write community name.

The following example shows the dialog associated with this option.

```
Enter selection : 1
DECswitch 900EF - slot 3
=====
      SET SNMP READ/WRITE COMMUNITY

Format: The format for a community name is a string,
        consisting of 4 to 31 printable ASCII character-
        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] : whitney95 
      SNMP Read/Write community string set.

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

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[4] Configure IP (Cont.)

[2] Add SNMP Trap Addresses

This option prompts you to enter one or more SNMP trap addresses. You can enter up to 8 trap addresses. If one or more SNMP trap addresses were previously configured, the screen displays those trap addresses.

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

The following example shows the dialog associated with this option.

```
Enter selection : 2
DECswitch 900EF ~ slot 3
=====
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 a '.' character.

example: 16.20.54.156

=====
Configured SNMP Trap Addresses: 16.20.216.81

Trap address [ ] : 16.20.54.156 
Trap address added! Enter a Trap Address [none] : 
Press Return for IP Configuration Menu ...
```

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[4] Configure IP (Cont.)

[3] Delete SNMP Trap Addresses

This option prompts you to select SNMP trap addresses for deletion. If one or more SNMP trap addresses were previously configured, the screen displays those trap addresses.

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

The following example shows the dialog associated with this option.

```
Enter selection : 3
DECswitch 900EF - 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 a '.' character.

example: 16.20.40.156

=====
Configured SNMP Trap Addresses: 16.20.216.81
Trap address [ ] : 16.20.216.81 
Trap address deleted. Enter a Trap address [none] : 
Press Return for IP Configuration Menu ...
```

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[4] Configure IP (Cont.)

[4] Set In-Band Interface IP Address

This option prompts you to change or enter the IP address, subnet mask, and default gateway for the in-band interface.

The format for these values 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 (.), for example: 16.20.54.156.

The module does not need to be configured with a subnet mask for SNMP communications with management stations located on the same subnet as the module.

The following example shows the dialog associated with this option.

```
Enter selection : 4
DECswitch 900EF - slot 3
=====
IN-BAND INTERFACE 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 a '.' 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
In-Band    16.20.216.91  255.255.255.0  16.21.0.1    08-00-2B-A3-CD-08
OBM Port   16.20.66.156  255.255.255.0                Active

=====
Enter the IP address [16.20.216.91] : 16.20.54.156 Return
Enter the Subnet Mask [255.255.255.0] : 255.255.192.0
Enter the Default Gateway [16.21.0.1] : 16.21.0.2
Press Return for IP Configuration Menu ...
```

If the module is installed in a DEChub ONE, the Other Info column in the OBM Port row on the screen shows the current OBM port speed (for example, Speed 38400 bps).

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[4] Configure IP (Cont.)

[5] Set Out-of-Band Interface IP Address

This option prompts you to change or enter the IP address and subnet mask for the out-of-band interface.

The OBM feature allows you to manage your module through the OBM port located on the DEChub ONE docking station as an alternative 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 DECswitch 900EF INSTALLATION MENU.

If the module is in a DEChub 900, the OBM feature allows you to manage your module through the OBM port located on the DEChub 900. To enable out-of-band management, you need to assign an OBM IP address.

The following example shows the dialog associated with this option.

```
Enter selection : 5
DECswitch 900EF - slot 3
=====
OUT-OF-BAND INTERFACE 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 a '.' 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
In-Band    16.20.216.91  255.255.255.0  16.21.0.1    08-00-2B-A3-CD-08
OBM Port   16.20.66.156  255.255.255.0                Active
=====
Enter the IP address [16.20.66.156] : 16.20.54.156 Return
Enter the Subnet Mask [255.255.255.0] : 255.255.192.0
Press Return for IP Configuration Menu ...
```

If the module is installed in a DEChub ONE, the Other Info column in the OBM Port row on the screen shows the current OBM port speed (for example, Speed 38400 bps). See *DEChub ONE Installation* or *DEChub ONE-MX Installation* manual for OBM port cabling information.

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[4] Configure IP (Cont.)

[6] Enable/Disable BootP

This option prompts you to enable or disable the bootstrap protocol (BootP) process. BootP is a protocol that the module uses to determine its IP address automatically by communicating with the BootP server.

If the ENABLE/DISABLE BootP is disabled (factory default), the following dialog appears on the screen.

```
Enter selection : 6
```

```
DECswitch 900EF - 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] : Y 
```

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

If ENABLE/DISABLE BootP is enabled, the screen shows The BootP process is ENABLED.

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[5] Dump Error Log

This option dumps error log entries for use by Digital support personnel when analyzing system faults. Up to four error log entries can be stored. The most recent entry is displayed first.

The following example shows the dialog associated with this option.

```
Enter selection : 5
DECswitch 900EF - slot 3
=====
                        DUMP ERROR LOG
                  Current Reset Count: 28
=====
Entry #           = 3
Entry Status      = 0 [0=valid, 1=write_error, 2=invalid, 3=empty, 4=crc_error]
Entry Id          = 10
Firmware Rev      = 1.0
Reset Count       = 7
Timestamp         = 0      0      1C7
Write Count       = 24
FRU Mask          = 0
Test ID           = A60
Error Data        = SR=2000 PC=03034C4A Error Code=000023C0
Registers         = D0=ECE462A1 D1=9FFF9FFD D2=00000284 D3=EC63F2C5
                   D4=9FFD9FC7 D5=00000001 D6=00000000 D7=0000FFFF
                   A0=04800000 A1=0307CE50 A2=04480000 A3=00066914
Dump another entry [Y]/N? N 
=====
No more Error Log entries.

                        Press Return for Main Menu ...
```

NOTE: The format for some entries in the error log may be different from those shown here.

Configuring the Module (Cont.)

Description of Menu Options (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 TFTP (Trivial File Transfer Protocol) 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]). If the module is not configured with an IP address, you can still upgrade the module by selecting the Downline Upgrade option from the DEChub 900 MultiSwitch INSTALLATION MENU. Refer to the *DEChub 900 MultiSwitch Owner's Manual* for more information.

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

Examples of an image file name and an IP address are as follow ::

defba150.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.

NOTE: If the module loses power, contact your service representative.

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 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 — normal operational. • HUB Manager display — DECswitch 900EF up This stage normally completes in 1 minute, however, because of variances 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 — normal operational. • HUB Manager display — DECswitch 900EF up This stage normally completes in 1 second.
3	The new firmware image is transferred from the module's temporary storage buffer to the nonvolatile Flash memory, overwriting the old firmware image. If the module loses power during Stage 3 of the process, contact your Digital representative.



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.

(continued on next page)

Configuring the Module (Cont.)

[6] Downline Upgrade (Cont.)

Table 1 (Cont.) DLU Process Description

Stage	What Happens
3 (Cont.)	Indications that this stage is in progress include: • Module status — not functional. • Module cannot respond to management requests. • LED display — the following sequence is displayed: 1. Port State # LED 4 lights (green) for 3 or 4 seconds¹. 2. Port State # LED 5 lights (green) for up to 2 minutes¹. 3. All Port State # LEDs flash alternately (green/yellow) for 10 seconds². • HUB Manager display — <code>DECswitch 900EF</code> <code>unknown</code> This stage normally completes in 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. • Module cannot respond to management requests. • LED display — (standard self-test pattern) Port State # LEDs flash, indicating various subroutines are running. • HUB Manager display — <code>DECswitch 900EF</code> <code>unknown</code> This stage normally completes in 1 minute. After the successful completion of self-test, the Module OK LED lights and the module becomes fully manageable. The Hub Manager display indicates: <code>DECswitch 900EF</code> <code>up</code>

¹ If Port State # LEDs (4 and 5) do not light, the load did not succeed. Check that the load host is operational.

² If all Port State # LEDs turn on yellow (after Port State # LED 4 or 5 lights), a loading error has occurred. If this occurs, retry the loading process. If the problem persists, contact your Digital service representative.

Configuring the Module (Cont.)

[6] Downline Upgrade (Cont.)

Updating Firmware from the DECswitch 900EF Installation Menu

When you select the Downline Upgrade option from the DECswitch 900EF INSTALLATION MENU, the initial setup screen display appears (see the following example). This screen identifies the option and alerts users not to interrupt power during the downline load.

The following example shows the dialog associated with this option.

```
Enter selection : 6
DECswitch 900EF
=====
                        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 , 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 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 []: defba150.bin 
```

After you enter the firmware image load filename and press , 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 
```

Each network interface has its own IP address. When the firmware reads more than one IP address (therefore, more than one network interface with an IP address), it prompts you to select one of the network interfaces to use for the load request.

NOTE: If the module's firmware reads only one IP address, the display screen does not prompt you to select a network interface. Pressing initiates the load over the interface that has an IP address. Go to the section titled Starting the DLU Process.

The following dialog appears when the firmware reads more than one IP address:

```
Load will be initiated over the In-Band network interface.
```

```
Would you like to use a different interface? Y/[N]: 
```

Configuring the Module (Cont.)

[6] Downline Upgrade (Cont.)

If you select the default [N], the setup screen displays the following message:

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 , the DLU process is initiated over the in-band network interface.

Go to the section titled Starting the DLU Process if you pressed for this selection.

If you selected Y at the screen prompt, the setup screen displays the following information:

Interface	Description
-----	-----
1	In-Band
8	OBM port

Enter the network interface to be used [1]:

If you select 8, then press , the setup screen displays the following message:

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 , the DLU process is initiated over the OBM port on the DEChub 900 or the DEChub ONE, depending in which the module it is installed.

Go to the section titled Starting the DLU Process if you pressed for this selection.

Configuring the Module (Cont.)

[6] Downline Upgrade (Cont.)

Starting 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: If the unit loses power during stage 3 of the DLU process, contact your service representative.

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

After you initiate the process (by pressing **Return** at the screen prompt), the screen displays the following message:

```
DLU process started!
```

```
.....  
.....
```

The series of dots (.) indicate that the load is in progress.

When the series of dots end, the screen displays the following message:

```
Transfer complete.
```

After 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.

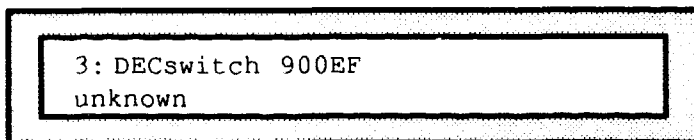
Because the module is nonfunctional during the Flash load process, communications between the module and the Hub Manager cannot take place. Therefore, the Hub Manager status display and the setup screen display show the following messages:

NOTE: The following displays do not appear if you are initiating the load process from a DEChub ONE docking station.

Configuring the Module (Cont.)

[6] Downline Upgrade (Cont.)

Hub Manager Status Display



This is normal.

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

```
Module not Responding! Connection closed!
```

This is normal.

DLU Process Completion

When the DLU process is complete, the module reboots 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 turns on and the module becomes fully operational.

The screen displays one of the following:

- If the module is installed into a DEChub ONE docking station, the screen displays the DECswitch 900EF INSTALLATION MENU.
- If the module is installed into a DEChub 900, the screen displays the following message:

```
Press Return for Main Menu ...
```

When you press **Return**, the screen displays the DECswitch 900EF INSTALLATION MENU.

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[7] Configure Out-of-Band Port (DEChub One-MX or DEChub One)

Out-of-band port configuration is operational only when the module is installed into a DEChub ONE-MX or a DEChub ONE docking station.

This option lets you set the out-of-band port speed and enable or disable Request To Send (RTS).

NOTE: The port speeds at both ends of the communications link must be identical.

The following example shows the dialog associated with this option.

```
Enter selection : 7
DECswitch 900EF
=====
OUT-OF-BAND PORT CONFIGURATION
[1] Set Port Speed
[2] Enable/Disable RTS
[3] Return to Main Menu
=====
Enter selection number : [n] 
```

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[7] Configure Out-of-Band Port (Cont.) (DEChub One-MX or DEChub One)

[1] Set Port Speed

This option lets you select and enter the out-of-band port speed. The factory default for this option is 9600 baud. The OBM port speed that you select must match the speed of your OBM device.

NOTE: The port speeds at both ends of the communications link must be identical.

The following example shows the dialog associated with this option.

```
Enter selection : 1
DECswitch 900EF
=====
      SET OUT-OF-BAND (OBM) PORT SPEED
      [1] 2400 baud
      [2] 9600 baud
      [3] 38400 baud
=====
Enter selection [2] (9600) : [n] Return
      OBM port speed set.
      Press Return for OBM Configuration Menu ...
```

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[7] Configure Out-of-Band Port (Cont.) (DEChub ONE-MX or DEChub One)

[2] Enable/Disable RTS

This option allows you to enable or disable Request To Send (RTS). The factory default for this option is Disabled.

If the RTS is disabled (factory default), the following dialog appears on the screen.

```
Enter selection : 2

DECswitch 900EF
=====
                ENABLE/DISABLE OUT-OF-BAND PORT 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] Return

                Press Return for OBM Configuration Menu ...
```

If RTS is enabled, the screen shows RTS is Enabled. Would you like to DISABLED RTS?.

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

Module-Specific Options

Go to one of the subsequent subsections listed in the following table:

IF the module is installed into a...	THEN go to...
DEChub 900	[7] Module-Specific Options (DEChub 900)
DEChub ONE-MX or DEChub ONE docking station	[8] Module-Specific Options (DEChub ONE-MX or DEChub ONE)

[7] Module-Specific Options (DEChub 900)

This option provides module-specific selections. When selected, the option allows you to configure the IPX switch, and run extended diagnostics.

The following example shows the dialog associated with this option.

```
Enter selection : 8
DECswitch 900EF - slot 3
=====
      MODULE-SPECIFIC OPTIONS
[1] Configure IPX Switch
[2] Run Extended Diagnostics
[3] Return to Main Menu
=====
Enter selection : [n] Return
Press Return to Continue ...
```

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[7] Module-Specific Options (Cont.) (DEChub 900)

[1] Configure IPX Switch

This option allows you to configure the IPX switch. The Novell Internetworking Protocol eXchange (IPX) interconnects LANs to allow communication between client and server.

When the IPX switch is enabled the DECswitch 900EF translates raw 802.3 frames to SNAP encapsulated FDDI frames with a protocol type 81-37. When disabled, IPX frames are translated without SNAP encapsulation. The current state of the IPX switch can be viewed by selecting option [3] Show Current Settings in the DECswitch 900EF INSTALLATION MENU.

If the IPX switch is disabled (factory default), the following dialog appears on the screen.

```
Enter selection : 1
```

```
Enable IPX Switch?
```

```
Press Y to confirm [N] : Y 
```

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

If IPX switch is enabled, the screen shows Disable IPX Switch?.

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[7] Module-Specific Options (Cont.) (DEChub 900)

[2] Run Extended Diagnostics

This option allows you to run certain extended diagnostics tests if you suspect that the module is faulty. The extended diagnostics test is the Ethernet backplane loopback test. All other tests run as part of the normal powerup self-test.

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

NOTE: This option is meant to facilitate fault diagnosis under certain conditions. There is normally no need to select this option.

The extended diagnostics tests will disrupt operation on the DEChub backplane and on network segments connected to the switch ports. In addition, the switch will be reset to factory defaults at the end of the tests. As a result, all configuration parameters stored in nonvolatile Flash memory are erased. Please be sure to observe the following precautions before proceeding further with the extended diagnostics test:

1. Record any configuration parameters, such as the module's IP address and address filters that you would like to restore after the test.
2. Disconnect all modules other than this switch from backplane channels. Do this by physically removing the modules from the hub or using the HUBwatch LAN Interconnect view.

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[7] Module-Specific Options (Cont.) (DECsub 900)

[2] Run Extended Diagnostics (Cont.)

The following example shows the dialog associated with this option.

```
Enter selection : 2
DECswitch 900EF - slot 3
=====
*****
*   IMPORTANT!           IMPORTANT!           IMPORTANT!   *
*****
The extended diagnostics tests utilize hub backplane LANs.
These LANs may not be utilized by any other module during
the tests. Also, the switch will be reset to factory
defaults after the test. All nonvolatile configuration
parameters including the switch's IP address will be lost.
You must do the following before running the tests:

(1) Disconnect all modules from backplane LANs (ThinWire LAN
connections need not be removed). This may be done from
the HUBwatch LAN interconnect view (RECOMMENDED)
Alternately, the modules (other than this switch) may be
physically removed from the Hub.
(2) Note down any configuration parameter such as the switch's
IP address that you want to restore after the test?

=====
Are you ready to run the extended diagnostics tests?
Press Y to confirm [N] : Y 
```

If you do not want to run the extended diagnostics tests, press N or .
If you press Y, the extended diagnostics tests are run. After a few seconds,
the following message appears on the screen:

```
Module Removed! Connection closed!
Press Return for Main Menu . . .
```

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[7] Module-Specific Options (Cont.)

(DEChub 900)

[2] Run Extended Diagnostics (Cont.)

The module is now reset to factory defaults. Allow approximately 1 minute for the module to reset. After successfully resetting and completing self-test, the Module OK  LED lights and the HUB Manager display indicates the following information.

```
DECswitch 900EF
up
```

Press **Return** to display the DEChub 900 MultiSwitch INSTALLATION MENU. Display the DECswitch 900EF INSTALLATION MENU as described in the section titled DEChub MultiSwitch INSTALLATION MENU ([9] Start Redirect Mode). Select option [5] Dump Error Log in the DECswitch 900EF INSTALLATION MENU. This dumps the most recent entry in the error log, if there are any entries.

If no error log entry is displayed, or if the Test ID field of the first entry displayed does not have a value of B06, the module has successfully passed the extended diagnostics test.

If an error log entry is displayed, check the Test ID field in the entry. If this field has a value of B06, then the backplane loopback test has failed. This may be due to any of the following reasons:

- A fault in this module
- A fault in the hub backplane
- Faults in other modules installed in the hub

Call your service representative for further assistance.

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[8] Module-Specific Options

(DECsub ONE-MX or DECsub ONE)

This option allows you to set the FDDI port configuration, set Ethernet configuration, and configure the IPX switch.

The following example shows the dialog associated with this option.

```
Enter selection : 8
DECswitch 900EF
=====
      MODULE-SPECIFIC OPTIONS
[1] Set FDDI Configuration
[2] Set Ethernet Configuration
[3] Configure IPX Switch
[4] Return to Main Menu
=====
Enter selection : [n] 
Press Return for Main Menu ...
```

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[8] Module-Specific Options (Cont.) (DEChub ONE-MX or DEChub ONE)

[1] Set FDDI Configuration (Cont.)

The following example shows the dialog associated with this option when the module is installed in a DEChub ONE-MX.

```
Enter selection : 1
DECswitch 900EF
=====
DECswitch 900EF FDDI PORT CONFIGURATION MENU

[1] Front Panel: A, B      Docking Station: None
[2] Front Panel: None     Docking Station: A,B
[3] Front Panel: B        Docking Station: A
[4] Front Panel: A        Docking Station: B
[5] Front Panel: M,S      Docking Station: None
[6] Front Panel: None     Docking Station: M, S
[7] Front Panel: S        Docking Station: M
[8] Front Panel: M        Docking Station: S
[9] Return to Previous Menu

Current configuration is: Front Panel : A, B  Docking Station: None
=====
Enter Selection : [5] 
FDDI port configuration set to Front Panel:M, S Docking Station: None

Press Return to Continue ...
```

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[8] Module-Specific Options (Cont.) (DEChub ONE-MX or DEChub ONE)

[1] Set FDDI Configuration

This option allows you to set the FDDI port configuration.

The following example shows the dialog associated with this option when the module is installed in a DEChub ONE.

```
Enter selection : 1
DECswitch 900EF
=====
DECswitch 900EF FDDI PORT CONFIGURATION MENU
[1] Front Panel: A, B
[2] Front Panel: M, S
[3] Return to Previous Menu

Current configuration is : Front Panel : A, B
=====
Enter Selection : [2] 
FDDI port configuration set to Front Panel: M, S

Press Return to Continue ...
```

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[8] Module-Specific Options (Cont.) (DEChub ONE–MX or DEChub ONE)

[2] Set Ethernet Configuration

This option allows you to set Ethernet configuration in standalone mode.

This selection allows you to toggle the connection of port 4 between the module's front panel and the docking station's AUI port. When port 4 is connected to the AUI of a DEChub ONE note that the Network Activity → LED corresponding to that port changes to yellow. The yellow color of the LED indicates that the port is now connected to the AUI port on the DEChub ONE docking station.

Port 4 can physically connect to either an AUI port or a front panel UTP port. If port 4 is connected to the docking station's AUI port then the front panel UTP port 4 is not operational.

The following example shows the dialog associated with this option.

```
Enter selection : 2
```

```
Change Port 4 to use docking station AUI port?
```

```
Press Y to confirm [N] : Y 
```

```
Press Return for Main Menu ...
```

NOTE: If port 4 is already connected to the docking station AUI port, the prompt changes to Change Port 4 to use front panel UTP port?.

Configuring the Module (Cont.)

Description of Menu Options (Cont.)

[8] Module-Specific Options (Cont.) (DEChub ONE-MX or DEChub ONE)

[3] Configure IPX Switch

This option allows you to configure the IPX switch. The Novell Internetworking Protocol eXchange (IPX) interconnects LANs to allow communication between client and server.

When the IPX switch is enabled the DECswitch 900EF will translates raw 802.3 frames to SNAP encapsulated FDDI frames with a protocol type 81-37. When disabled, IPX frames are translated without SNAP encapsulation. The current state of the IPX switch can be viewed by selecting option [3] Show Current Settings in the DECswitch 900EF INSTALLATION MENU.

If the IPX switch is disabled (factory default), the following dialog appears on the screen.

```
Enter selection : 3
```

```
Enable IPX Switch?
```

```
Press Y to confirm [N] : Y 
```

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

If IPX switch is enabled, the screen shows Disable IPX Switch?.

LED Descriptions

The module's LEDs provide dynamic indications of the status of the module. The LEDs can be in various states (on, off, or flashing), and can change color (green or yellow) depending on the operational status of the module or the level of activity on the network.

Normal Powerup

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

1. The module's Power  LED lights as soon as power is applied to the unit.
2. The module initiates its built-in self-test. Flashing Port State  LEDs and activity LEDs indicate that the module is running various subroutines as part of the self-test.
3. After the successful completion of self-test (within 60 seconds after power is applied), the Module OK  LED lights, and remains lit.
4. The remaining LEDs (Port State  and Network Activity  LEDs, and PHY LEDs) now indicate their operational status, as described in Table 2.

LED Descriptions (Cont.)

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

Table 2 Module LED States

LED Name	Off	On (Green)	On (Yellow)	Flashing
Power 	No power to module.	Module receiving power.	N/A.	N/A.
Module OK 	Self-test failed (if more than 60 seconds elapsed).	Module passed self-test.	N/A.	Nonfatal error.
Port State 	Bad or no connection.	Port is in the Forwarding state.	Port Failure.	Port is in the Backup, Preforwarding or Disabled state.
Network Activity 	No network activity.	Port connected to network through the module's front panel connector.	Port connected to network via DEChub 900 backplane or DEChub ONE AUI port.	Intermittent network activity.

The FDDI Phy LEDs (see Table 3) indicate the status of the connection between the module and the FDDI network.

Table 3 FDDI PHY LED States

LED Name	Off	On		Flashing		
	No Color	Green	Yellow	Green	Yellow	Green / Yellow
PHY	Ready to connect	Good connection	Link Error Rate exceeded	Disabled/ Broken	Illegal/ unwanted connection	Standby/ Dual homing

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 4 lists the typical combined 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.

Table 4 Problem Solving Using the LEDs

Symptom	Probable Cause	Corrective Action
Power  LED is off.	The module is not receiving +5Vdc.	Check the power status on the Hub Manager status display. If the Hub Manager status display indicates that power is available for this module, press the release lever down and reseal or remove the module Inspect the module's 48- or 160-pin connector for bent, broken, or dirty pins. If the problem persists, either replace the module or contact your service representative to correct the problem.
Module OK  LED is off.	Self-test in progress. Self-test failed.	Wait for self-test to complete. If the LED does not light within 60 seconds, lift the release lever momentarily to repeat the self-test. If self-test fails again, replace the module. If the problem persists, contact your service representative to correct the problem.

Problem Solving Using the LEDs (Cont.)

Table 4 (Cont.) Problem Solving Using the LEDs

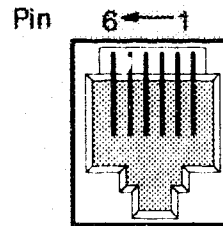
Symptom	Probable Cause	Corrective Action
Module OK  LED is off and Port State # LED for Port 1 is blinking green (once every 8 seconds).	Module's firmware image is corrupted.	Either replace the module or contact your service representative to correct the problem.
Module OK  LED is flashing, but module continues to operate normally.	A nonfatal error occurred.	Power off and on. If the problem persists, either replace the module or contact your service representative to correct the problem.
Port State # LED is off.	1. Connection is bad.	Loose, or incorrect cable. Correct the cable connection.
	2. Port not connected	None — normal operation.
Port State # LED is on yellow.	Port failure.	Either replace the module or contact your service representative to correct the problem.
Port State # LED is flashing green.	The corresponding port is in one of the following port states: Backup, Preforwarding or Disabled.	None — normal operation.

Connector Pin Assignments

Optical Bypass Relay (6-Pin MJ) Connector

The Optical Bypass Relay (OBR) feature on the module maintains FDDI dual-ring integrity if the module fails or if the power to the module is turned off. The following illustration shows the OBR 6-pin MJ connector and its pin assignments. Refer to this information when selecting OBR devices.

Pin	Assignment
1,2	Relay drive; +5V @ 200 mA (max.)
3,4,6	Return; grounded internally
5	Bypass present; must be externally grounded to pin 3,4, or 6



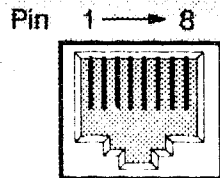
6-pin MJ connector

KG 8720-931

10BaseT (8-pin MJ) Port Connector

The following illustration shows the 8-pin MJ (straight-through) connector and its pin assignments.

Pin	Assignment
1	TX+
2	TX-
3	RX+
4	Unused
5	Unused
6	RX-
7	Unused
8	Unused



8-pin MJ connector

KG 8719-931

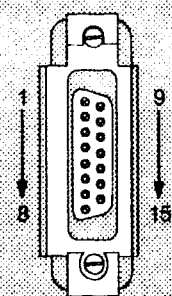
NOTE: All 10BaseT port connectors on the module are (straight through) connections.

Connector Pin Assignments (Cont.)

AUI (15-pin D-Sub) Port Connector

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

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



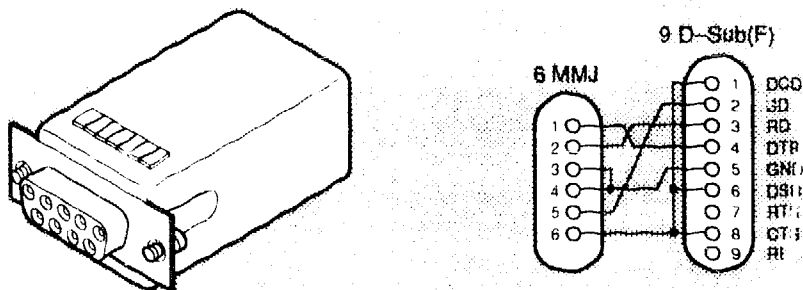
15-pin AUI
connector

LKG-8866-93I

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:

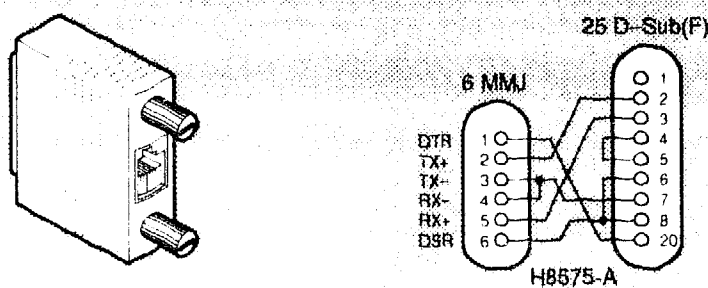


KG 5342-911

H8575-A Adapter

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

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



KG-8793-931

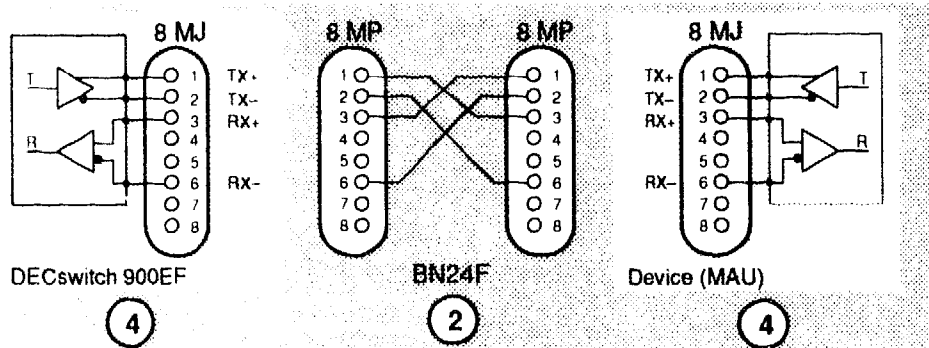
Connector Pin Assignments (Cont.)

Internal and External Crossover Configurations

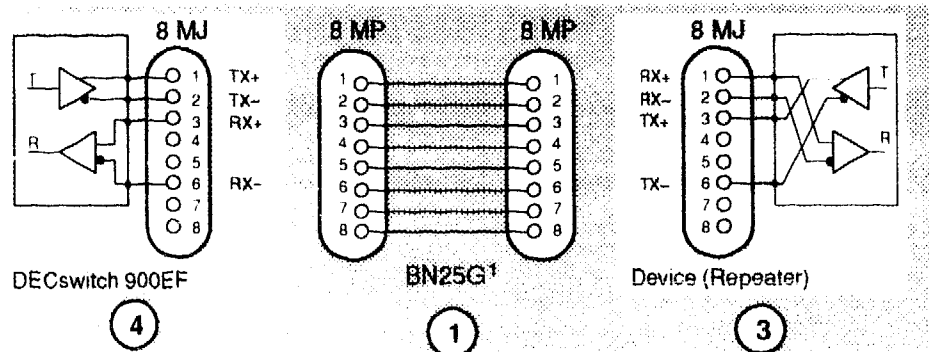
A crossover function must be implemented in every twisted-pair link. The crossover function (internal or external) allows the transmitter of one device to connect to the receiver of the device at the other end of the twisted-pair link.

The following illustration shows the use of straight-through (1) and crossover cables (2) for connecting crossover (3) and straight-through (4) types of devices. The DECswitch 900EF uses straight-through connectors.

External Crossover Configuration:



Internal Crossover Configuration:



LKG 09706-941

¹ If screened cabling is required, use BN26M.

Digital uses embedded straight-through connectors on each DECswitch 900EF port because each port acts as a bridge for connection to shared LAN devices (repeaters). Repeaters are specified by IEEE 802 to provide this crossover function.

Connector Pin Assignments (Cont.)

This differs from the PEs switch 900TX which uses embedded crossover connectors, since it is designed to be connected to a single user device (such as a PC) that is straight through.

NOTE: The DECswitch 900EF also supports single user devices. To configure single user devices follow the cabling instructions described in the section titled Internal and External Crossover Configurations.

Product Specifications

Operating specifications for the DECswitch 900EF module are provided in Table 5.

The module's acoustical specifications are listed in Table 6.

Table 5 DECswitch 900EF 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	67.5 W, total power 9.0 A, 5Vdc, 0.1 A, 12Vdc ² 1.5 A, 15Vdc
Connectors	
DECswitch 900EF has: one Dual Attachment Station (DAS) FDDI port multimode optics (ANSI MIC), one shielded 6-pin MJ (OBR), two 15-pin D-Sub (AUI ports), and four shielded 8-pin MJ (10BaseT ports) with straight through connectors.	
DEChub ONE has: one 8-pin MJ (setup port), one DB-9 (OBM), and one 15-pin D-Sub (AUI connector).	
DEChub ONE-MX has: one 8-pin MJ (setup port), one 6-pin MJ (OBR), one DB-9 (OBM), one 15-pin D-Sub (AUI), one redundant power connector (D-Sub), and 2 MOD PMD slots.	
Physical	
Height	41.45 cm (17.5 in)
Width	44.5 cm (1.75 in)
Depth	15.25 cm (6 in); 25.40 cm (10.0 in) with a DEChub ONE docking station. 15.25 cm (6 in); 25.40 cm (12.0 in) with a DEChub ONE-MX docking station.
Weight	1.8 kg (4 lb) ³
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.

² The 12Vdc power in the DEChub 900 is derived from the 15Vdc power source. Although it is listed separately in the product specifications, the 12Vdc requirements are included in the 15Vdc power total.

³ Include an additional 1.59 kg (3.5 lb) when attached to a DEChub ONE docking station.

Product Specifications (Cont.)

Table 6 Acoustical Specifications

Acoustics — Declared values per ISO 9296 and ISO 7779¹

Product	Sound Power Level L_{WAd}, B	Sound Pressure Level L_{pAm}, dBA (bystander positions)
	<i>Idle/Operate</i>	<i>Idle/Operate</i>
DECswitch 900EF DEFBA-MA	5.0	36
DECswitch 900EF & DEChub ONE DEFBA-MA + DEHUA	5.4	40
DECswitch 900EF & DEChub ONE-MX DEFBA-MA + DEF1H	5.4	39

Schallemissionswerte — Werteangaben nach ISO 9296 und ISO 7779/DIN EN27779²

Produkt	Schalleistungspegel L_{WAd}, B	Schalldruckpegel L_{pAm}, dBA (Zuschauerpositionen)
	<i>Leerlauf/Betrieb</i>	<i>Leerlauf/Betrieb</i>
DECswitch 900EF DEFBA-MA	5,0	36
DECswitch 900EF & DEChub ONE DEFBA-MA + DEHUA	5,4	40
DECswitch 900EF & DEChub ONE-MX DEFBA-MA + DEF1H	5.4	39

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.

Title and Order Number	Description
<i>DEChub 900 MultiSwitch Owner's Manual</i> EK-DH2MS-OM	Provides installation, use, security, and troubleshooting information.
<i>DEChub ONE-MX Installation</i> EK-DEF1H-IN	Describes the DEChub ONE-MX single-slot hub and how to install DEChub full-height network modules for standalone use.
<i>DEChub ONE Installation</i> EK-DEHU2-IN	Provides installation and operation guidelines for single-slot hub configuration, including rack-mount options and cabling.
<i>HUBwatch Installation and Configuration</i> AA-Q358D-TE	Provides information for installing and configuring HUBwatch for Open VMS and HUBwatch for Windows.
<i>HUBwatch Use</i> AA-PW4BE-TE	Describes how to use the HUBwatch network management software in an open VMS or DEC OSF/1 (Digital UNIX) operating system environment.
<i>HUBwatch for Windows Use</i> AA-Q3S3C-TE	Describes how to use the HUBwatch network management software in an MS-Windows operating environment.
<i>OPEN DECconnect Applications Guide</i> EC-G2570-42	Contains general descriptions to help plan and install networking systems based on Digital Equipment Corporation's OPEN DECconnect System and networking products.
<i>Bridge and Extended LAN Reference</i> EK-DEBAM-HR	Describes how bridges are used to create extended local area networks (LANs). The descriptions include the use of bridges in extended LAN configurations, information on LAN interconnections, overall bridge operation, spanning tree, bridge management, and solving bridge-related problems in a network.

HOW TO ORDER ADDITIONAL DOCUMENTATION

DIRECT TELEPHONE ORDERS

In Continental USA
call 1-800-DIGITAL
(1-800-344-4825)

In Canada
call 1-800-267-6215

In New Hampshire,
Alaska or Hawaii
call 1-603-884-6660

ELECTRONIC ORDERS (U.S. ONLY)

Dial 1-800-dec-demo with any VT100 or VT200
compatible terminal and a 1200 baud modem.
If you need assistance, call 1-800-DIGITAL (1-800-344-4825)

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Internal orders should be placed through U.S. Software Supply Business (SSB),
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* Any prepaid order from Puerto Rico must be placed
with the Local Digital Subsidiary
809-754-7575