



# PEswitch 900TX

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## Installation

Part Number: EK-DESBF-IN. B01

**May 1995**

This manual describes how to install and configure the PEs switch 900TX module, running Firmware Version V1.1n.

**Revision/Update Information:** This is a revised manual.

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May 1995

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Achtung!

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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:

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

## Safety (Cont.)

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

---

### 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.

---

## Safety (Cont.)

### 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 PEs switch 900TX (also referred to in this manual as the module) provides the interconnection between six 10 Mb/s Ethernet<sup>1</sup> workgroups 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) bridge, 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 PEs switch 900TX module is protocol-independent. As such, it accommodates multiple protocols such as DECnet, LAT, 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.

These features 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 bridge products from Digital, access to network management can be restricted by password protection.

The PEs switch 900TX standards-compliant technology (IEEE 802.1d, 802.1h, 802.1i, 802.2, 802.3, and ANSI FDDI) ensures operability 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 ONE<sup>2</sup> docking station.

## Features

Your PEs switch 900TX module includes the following features:

- High-speed local traffic filtering and forwarding.
- Support for up to 8000 network addresses (64 Ethernet, 7936 FDDI).

---

<sup>1</sup> 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).

<sup>2</sup> Throughout this manual, the term DEChub ONE refers to the DEChub ONE-MX or the DEChub ONE docking station unless otherwise specified.

## Introduction (Cont.)





- 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 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).
- 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.
- Built-in SNMP agent support for the following management information bases (MIBs):
  - SNMP management (RFC-1157)
  - MIB II (RFC-1213)
  - Bridge MIB (RFC-1493)
  - FDDI MIB (RFC-1512)
  - Ethernet MIB (RFC-1398)
  - Digital ELAN MIB Extensions

## Introduction (Cont.)

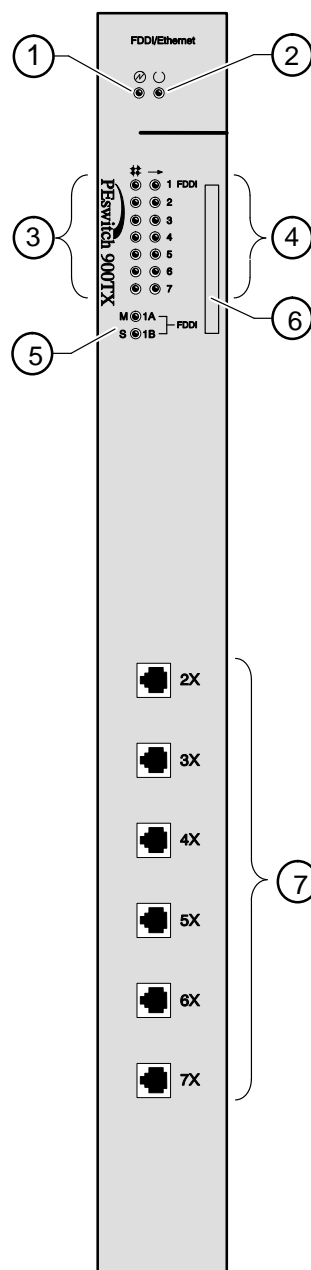
- Support for the following SNMP traps:
  - coldStart
  - linkUp
  - linkDown
- Manageability using any generic SNMP management application that supports the MIBs listed above.
- Advanced Graphical User Interface (GUI) manageability with Digital's HUBwatch Network Management Station (NMS) application.
- One FDDI dual attachment station (DAS) port and six 802.3/Ethernet (10BaseT) LAN ports:
  - The module's FDDI DAS port is available on the DEChub 900 backplane or, when operating standalone, on the DEChub ONE-MX docking station when optional ModPMDs are installed. There are no front panel FDDI connectors.
  - The 10BaseT front-panel ports are individually switchable to a DEChub 900 backplane LAN through HUBwatch management. One of the 10BaseT ports (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 port 4 to use either the DEChub ONE's AUI port or the module's (front panel) port 4 as the active Ethernet interface.
- Out-of-band management (OBM) using SNMP over Serial Line Internet Protocol (SLIP) through the OBM connector in addition 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 PEs switch 900TX 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 of the LED (green or yellow) indicates whether the specific port's network connection is through the front panel (green) or through the backplane or docking station (yellow).
- 5) **FDDI port (PHY) LEDs** — Indicates the status of the connection between the module and the FDDI network. The FDDI LEDs are labeled M 1A and S 1B. When optional MOD PMDs are installed, the FDDI port is only available on the DEChub 900 backplane, or on the DEChub ONE-MX docking station.
- 6) **Address Label** — Represents 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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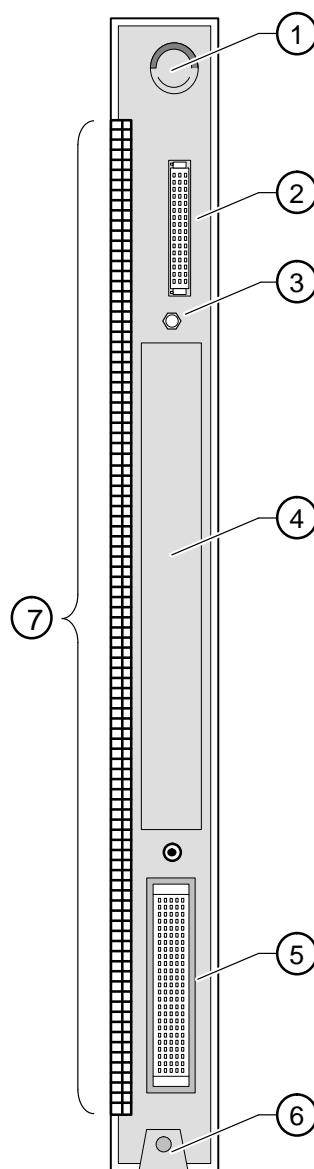
## Front Panel

- 7) **10BaseT (8-pin MJ) port connectors** — Support both UTP and STP cabling. These ports are wired as embedded crossover connections as indicated by the X after the port number. Wiring is the same as a 10BaseT repeater.

## Back Panel

This section describes PEs switch 900TX back panel features.

- 1) **Locking tab** — Locks the module into a DEChub 900 backplane or into 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 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 the module is installed into a DEChub 900 or a DEChub ONE docking station.
- 7) **Grounding fingers** — Provides additional chassis grounding between the module and a DEChub 900 or a DEChub ONE docking station.



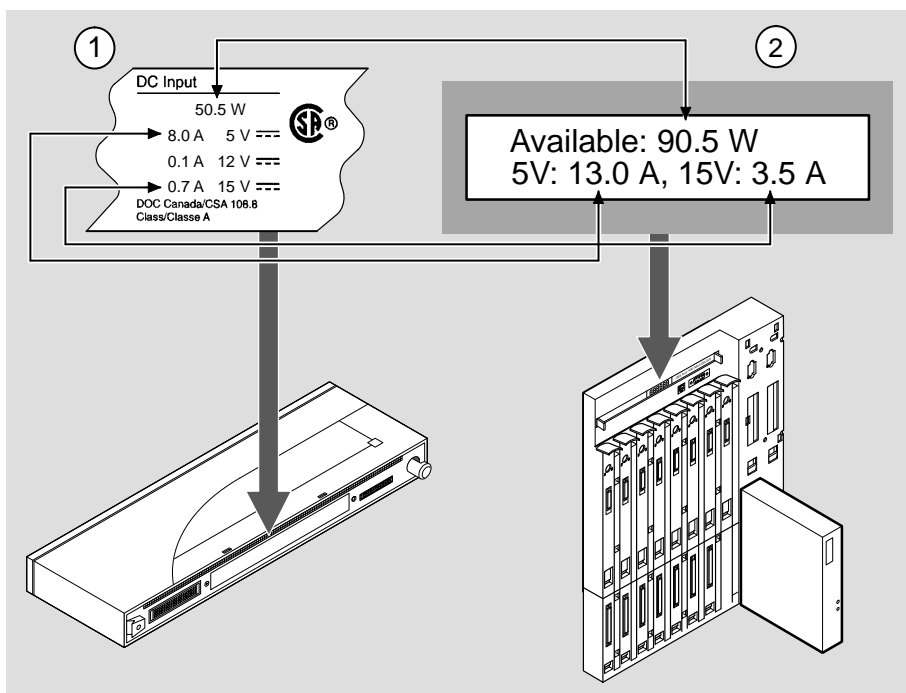
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## Installing the Module

The PEs witch 900TX 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).**



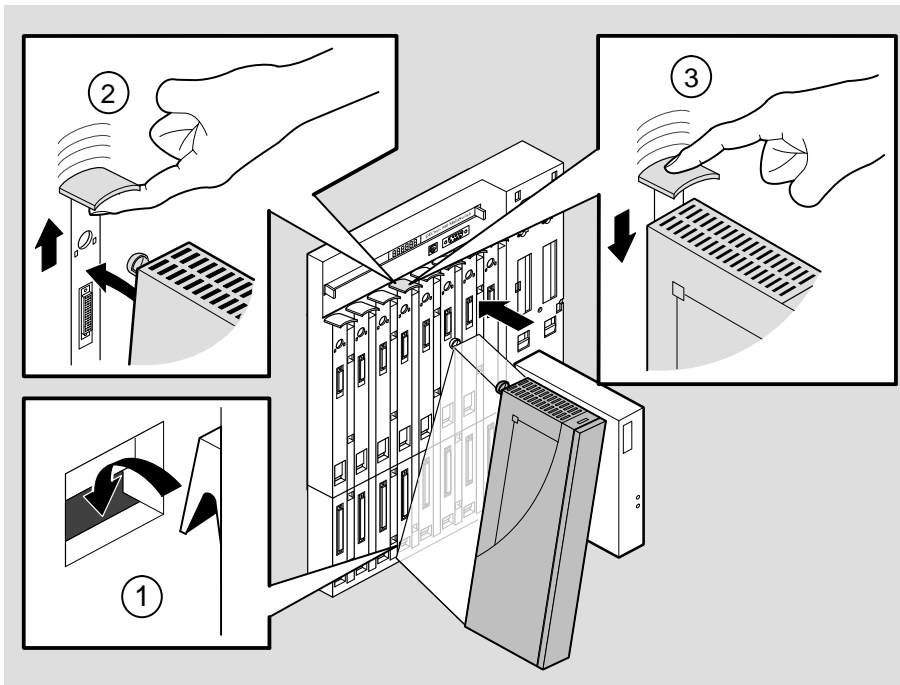
NPG-0107-95I

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.



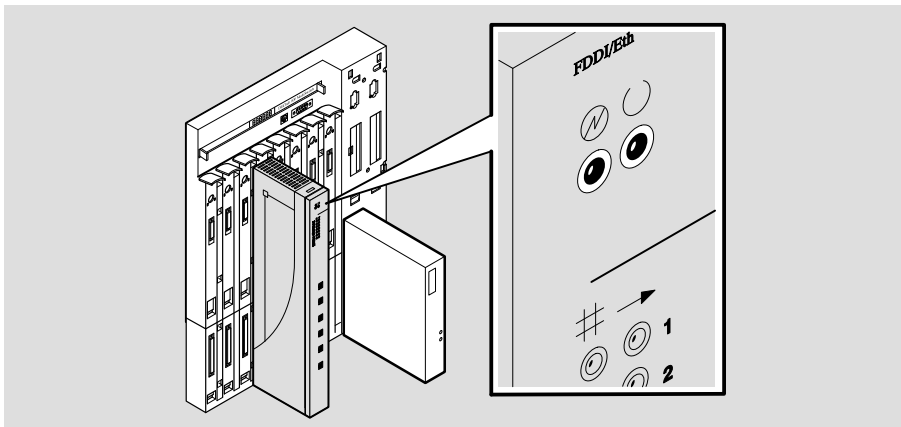
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## Installing the Module (Cont.)

- 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:

```
PEswitch 900TX  
Up.
```



NPG-0113-951

**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 UTP/STP cables. To connect UTP/STP cables, go to step 5. 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 LAN cables should be installed, tested, and tagged before you install this module.

## Installing the Module (Cont.)

---

### 5 Connect the UTP/STP cables.

The PEs switch 900TX module uses crossover 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 straight-through cables.
- If the device you are connecting to the module uses crossover connectors, use crossover cables.
- The sum of crossovers must always equal an odd number.

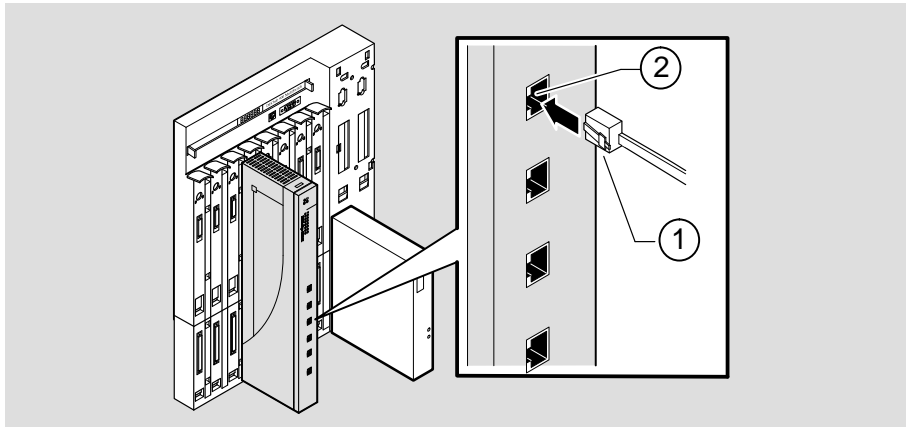
**NOTE:** Digital's straight-through cables are marked (=); crossover connectors (and cables) are marked (X).

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 **(1)** on the cable plug 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.



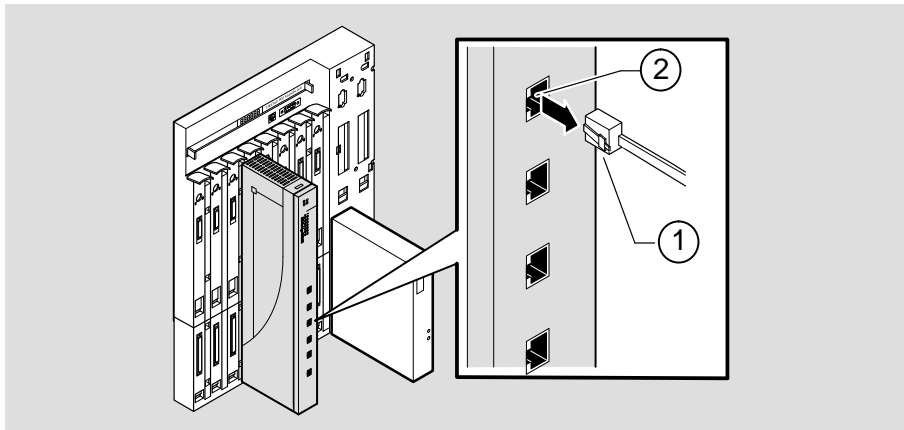
NPG-0114-951

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

## Removing the Module

### 1 Disconnect all the cables from the module.

To disconnect UTP/STP cables, press the release tab on the cable plug **(1)**, then pull out the cable **(2)**.

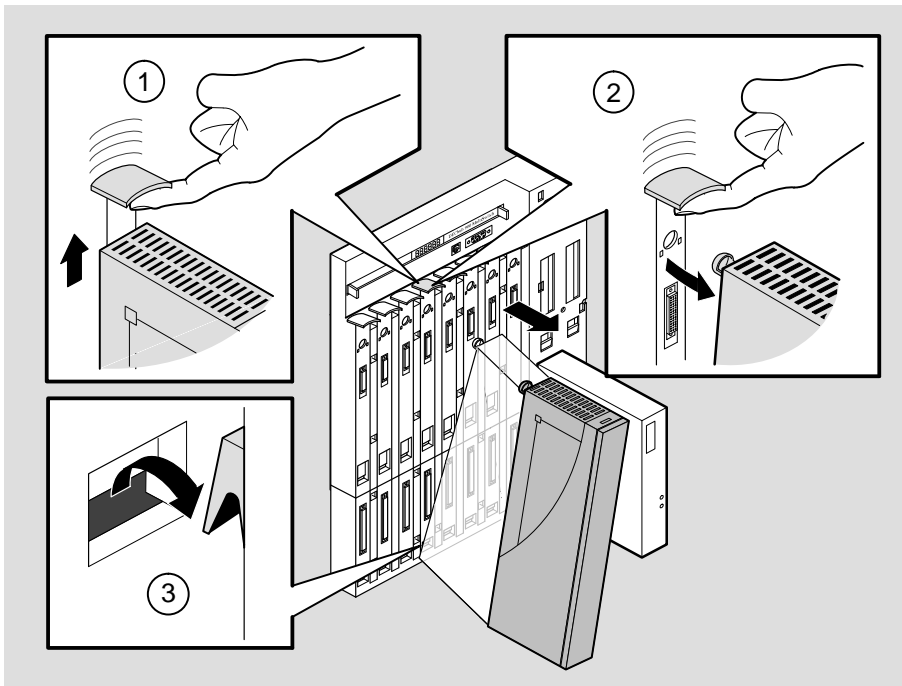


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## Removing the Module

### 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.



NPG-0008-95I

## 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 PEs switch 900TX parameters. This section describes how to use the setup port.

Examples of the setup screen displays are provided in this section. 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 indicates user input.

### Signaling Standards

Signals from the DEChub 900 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 on the DEChub 900 or the DEChub ONE docking station (see the following illustration) 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 <sup>1</sup>	H8571-J
Terminal with a 25-pin D-Sub connector	BN24H-xx <sup>1</sup>	H8575-A
Terminal with a 6-pin MMJ connector	BN24H-xx <sup>1</sup>	Not required.

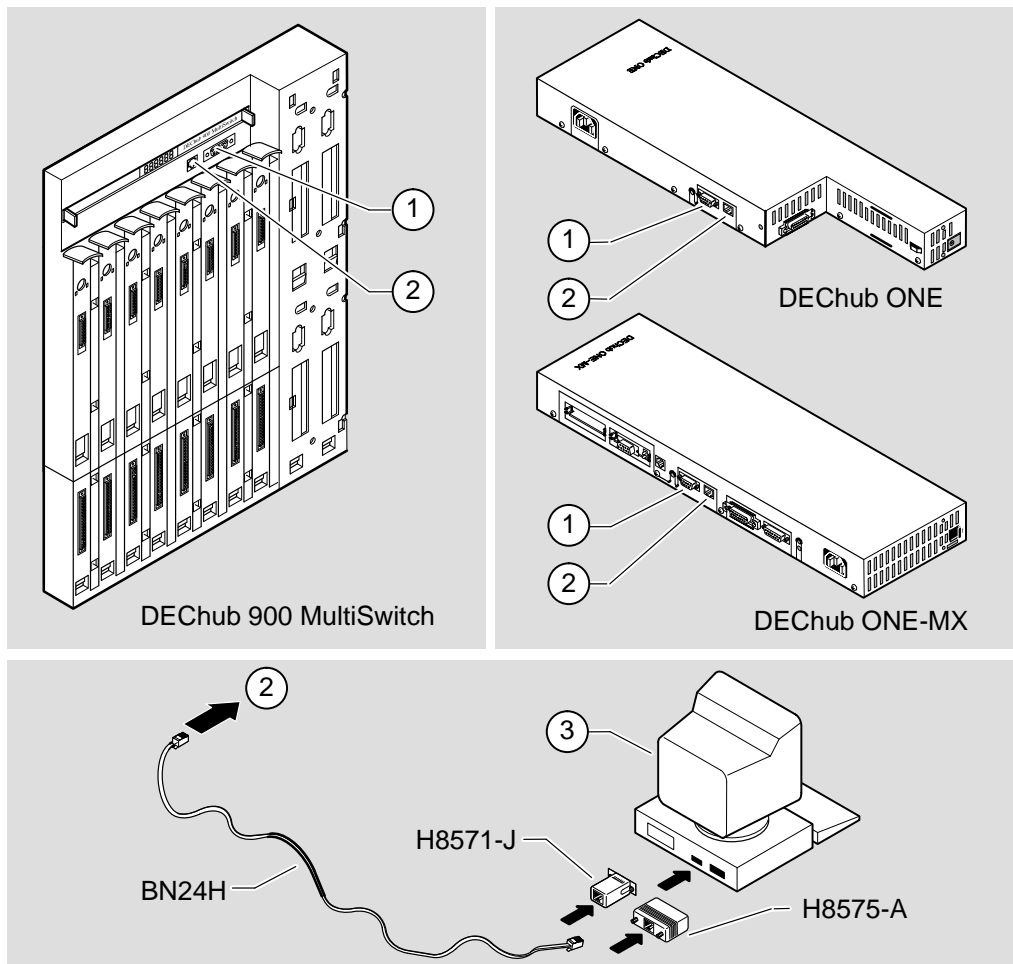
<sup>1</sup> xx indicates cable length in meters.

### Connecting the Setup Port

To connect the setup port on the PEs switch 900TX 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



NPG-0020-951

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

### Accessing the Setup Port

To access the setup port on the PEs switch 900TX module, press  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 PEs switch 900TX INSTALLATION MENU appears. Go to the section titled PEs switch 900TX 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 
```

## 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 PEswitch 900TX) 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 PEswitch 900TX 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): 5 
Console redirected to 5: PEswitch 900TX
Attempting connection [Ctrl/C to abort]...
```

If the redirection is successful, the `PEswitch 900TX INSTALLATION MENU` appears on your screen. Go to the section titled `PEswitch 900TX INSTALLATION MENU (DEChub 900 Options)`.

## Configuring the Module (Cont.)

### PEswitch 900TX Installation Menu (DEChub 900 Options)

This section shows the options available from the `PEswitch 900TX` `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 `PEswitch 900TX` `INSTALLATION MENU` selections are described in the section titled `Description of Menu Options`.

```
PEswitch 900TX - slot 5
=====:

    PEs switch 900TX 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.)

### PEswitch 900TX Installation Menu (DEChub ONE Options)

This section shows the options available from the PEs witch 900TX INSTALLATION MENU when the module is installed into the DEChub ONE or DEChub ONE–MX docking station.

The PEs witch 900TX INSTALLATION MENU selections are described in the section titled Description of Menu Options.

```
PEswitch 900TX
=====:

    PEs witch 900TX 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 `PEswitch 900TX 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 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 `PEswitch 900TX 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
PEswitch 900TX - slot 5
=====
                        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
PEswitch 900TX - slot 5
=====:

                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
PEswitch 900TX - slot 5
=====
PEswitch 900TX, 6-Ethernet/FDDI Switch, HW=v1/2,RO=v0.4,SW=v1.10
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
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
IPX switch is disabled.
FDDI port configuration is Docking Station: A, B
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. FDDI port configuration information is displayed only when the module is installed in a DEChub ONE-MX. 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
PEswitch 900TX - slot 5
=====
                        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
PEswitch 900TX - slot 5
=====
                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] : whitney95 Return

                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
PEswitch 900TX - slot 5
=====
      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

If one or more SNMP trap addresses were previously configured, this option prompts you to select SNMP trap addresses for deletion.

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
PEswitch 900TX - slot 5
=====
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
PEswitch 900TX - slot 5
=====
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.
```

<u>Interface</u>	<u>IP Address</u>	<u>Subnet Mask</u>	<u>Def.Gateway</u>	<u>Other Info</u>
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 900 or 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 `PEswitch 900TX 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 on OBM IP address.

The following example shows the dialog associated with this option.

```
Enter selection : 5
PEswitch 900TX - slot 5
=====
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.
```

<u>Interface</u>	<u>IP Address</u>	<u>Subnet Mask</u>	<u>Def.Gateway</u>	<u>Other Info</u>
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.

The factory default of this menu option is DISABLED. If BootP is enabled, the word DISABLED shown in the following dialog will be replaced with the word ENABLED.

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

```
Enter selection : 6

PEswitch 900TX - slot 5
=====

                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 used 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
PEswitch 900TX - slot 5
=====
                        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 Return
=====
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's 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, find out if 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 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.

An example of an image file name and an IP address are as follows:

`desbf110.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	<p><b>The new firmware image from the TFTP load host is transported across the network and placed into a temporary storage buffer in the module.</b></p> <p>Indications that this stage is in progress include:</p> <ul style="list-style-type: none"> <li>• Module status — functional, and manageable.</li> <li>• Module can respond to management requests.</li> <li>• LED display — normal operational.</li> <li>• HUB Manager display — <code>PEswitch 900TX up</code></li> </ul> <p>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.</p>
2	<p><b>The module verifies that the firmware image is correct after Stage 1 is complete.</b></p> <p>Indications that this stage is in progress include:</p> <ul style="list-style-type: none"> <li>• Module status — functional.</li> <li>• Module can respond to management requests.</li> <li>• LED display — normal operational.</li> <li>• HUB Manager display — <code>PEswitch 900TX up</code></li> </ul> <p>This stage normally completes in 1 second.</p>
3	<p><b>The new firmware image is transferred from the module's temporary storage buffer to the NVRAM, overwriting the old firmware image.</b></p> <p>If the module loses power during Stage 3 of the process, contact your service representative.</p>

#### 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.)	<p>Indications that this stage is in progress include:</p> <ul style="list-style-type: none"> <li>• Module status — not functional.</li> <li>• Module cannot respond to management requests.</li> <li>• LED display — the following sequence is displayed:               <ol style="list-style-type: none"> <li>1. Port State # LED 4 lights (green) for 3- or 4 seconds<sup>1</sup>.</li> <li>2. Port State # LED 5 lights (green) for up to 2 minutes<sup>1</sup>.</li> <li>3. All Port State # LEDs flash alternately (green/yellow) for 10 seconds<sup>2</sup>.</li> </ol> </li> <li>• HUB Manager display — <code>PEswitch 900TX unknown</code></li> </ul> <p>This stage normally completes in 3 minutes.</p>
4	<p><b>The module resets, runs self-test, and then begins executing the new firmware image.</b></p> <p>Indications that this stage is in progress include:</p> <ul style="list-style-type: none"> <li>• Module status — not functional.</li> <li>• Module cannot respond to management requests.</li> <li>• LED display — (standard self-test pattern) Port State # LEDs flash, indicating various subroutines are running.</li> <li>• HUB Manager display — <code>PEswitch 900TX unknown</code></li> </ul> <p>This stage normally completes in 1 minute.</p> <p>After the successful completion of self-test, the Module OK<sup>®</sup> LED lights and the module becomes fully manageable. The HUB Manager display indicates:</p> <div style="background-color: #f0f0f0; padding: 5px; border: 1px solid #ccc;"> <code>PEswitch 900TX up</code> </div>

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

<sup>2</sup> 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 PEs switch 900TX Installation Menu

When you select the Downline Upgrade option from the PEs switch 900TX 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 screen display prompts can vary, depending on whether the module is installed into a DEChub 900 or into a DEChub ONE docking station.

The following is an example of the dialog associated with this option.

```
Enter selection : 6
PEswitch 900TX
=====
                        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 []: desbf110.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 screen and dialog appear. To select a network interface to use for load request, do the following procedures:

```
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, in which the module is installed.

Go to the subsection 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 module 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  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.

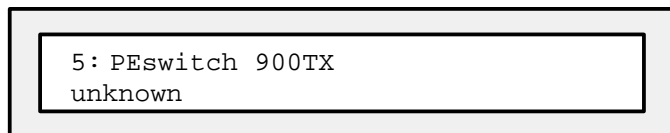
Because the module is nonfunctional during the Flash load process, communications between the module and the HUB Manager cannot take place. Therefore, the HUB Manager status display and the setup screen display show the following messages:

**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 `PEs switch 900TX 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 `PEs switch 900TX 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).

The following example shows the dialog associated with this option.

```
Enter selection : 7
PEswitch 900TX
=====
                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.

The following example shows the dialog associated with this option.

```
Enter selection : 1
PEswitch 900TX
=====
      SET OUT-OF-BAND (OBM) PORT SPEED
      [1] 2400 baud
      [2] 9600 baud
      [3] 38400 baud
=====
Enter selection [2] (9600) : [n] 
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

PEswitch 900TX
=====

      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 subsections listed in the following table:

IF the module is installed into a...	THEN go to...
DEChub 900	<b>[7] Module-Specific Options</b> (DEChub 900)
DEChub ONE-MX	<b>[8] Module-Specific Options</b> (DEChub ONE-MX)
DEChub ONE	<b>[8] Module-Specific Options</b> (DEChub ONE)

#### **[7] Module-Specific Options** (DEChub 900)

This option provides module-specific selections for the user. 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
PEswitch 900TX - slot 5
=====
MODULE-SPECIFIC OPTIONS
[1] Configure IPX Switch
[2] Run Extended Diagnostics
[3] Return to Main Menu
=====
Enter selection : [n] 
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 PEswitch 900TX 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. View the current state of the IPX switch by selecting option [3] Show Current Settings in the PEswitch 900TX 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.) (DEChub 900)

#### [2] Run Extended Diagnostics (Cont.)

The following example shows the dialog associated with this option.

```
Enter selection : 2
PEswitch 900TX - slot 5
=====
*****
*   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.

```
PEswitch 900TX  
up
```

Press **Return** to display the DEChub 900 MultiSwitch INSTALLATION MENU. Display the PEs switch 900TX INSTALLATION MENU as described in the section titled DEChub MultiSwitch INSTALLATION MENU ([9] Start Redirect Mode). Select option [5] Dump Error Log in the PEs switch 900TX 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 Digital representative for further assistance.

## Configuring the Module (Cont.)

### Description of Menu Options (Cont.)

#### [8] Module-Specific Options (DEChub ONE-MX)

This option allows you to set the FDDI port configuration, set Ethernet configuration, and configure the IPX switch when the module is in a DEChub ONE-MX.

The following example shows the dialog associated with this option.

```
Enter selection : 8
PEswitch 900TX
=====
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)

##### [1] Set FDDI Configuration

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

The following example shows the dialog associated with this option.

```
Enter selection : 1
PEswitch 900TX
=====
PEswitch 900TX FDDI PORT CONFIGURATION MENU
[1] Docking Station : A, B
[2] Docking Station : M, S
[3] Return to Previous Menu

Current Configuration is Docking Station : A, B
=====
Enter Selection : [n] 
FDDI port configured to Docking Station : M, S

Press Return to Continue ...
```

## Configuring the Module (Cont.)

### Description of Menu Options (Cont.)

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

##### [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 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's 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)

##### [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 PEs switch 900TX 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. View the current state of the IPX switch by selecting Option [3] Show Current Settings in the PEs switch 900TX 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 for Main Menu ...
```

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

## Configuring the Module (Cont.)

### Description of Menu Options (Cont.)

#### [8] Module-Specific Options (DEChub ONE)

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

The following example shows the dialog associated with this option.

```
Enter selection : 8
PEswitch 900TX
=====
MODULE-SPECIFIC OPTIONS
[1] Set Ethernet Configuration
[2] Configure IPX Switch
[3] 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)

##### [1] 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 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's 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)

##### [2] 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 PEswitch 900TX 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. View the current state of the IPX switch by selecting Option [3] Show Current Settings in the PEswitch 900TX 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 for Main Menu ...
```

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

## LED Descriptions

The module 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 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) now indicate their operational status, as described in Table 2.



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

**Table 2    Module LED States**

LED Name	Off	On (Green)	On (Yellow)	Flashing
<b>Power</b> 	No power to module.	Module receiving power.	N/A.	N/A.
<b>Module OK</b> 	Self-test failed (if more than 60 seconds elapsed).	Module passed self-test.	N/A.	Nonfatal error.

## LED Descriptions (Cont.)

**Table 2 Module LED States (Cont.)**

LED Name	Off	On (Green)	On (Yellow)	Flashing
<b>Port State</b> 	Bad or no connection.	Port is in the Forwarding state.	Port Failure.	Port is in the Backup, Preforwarding or Disabled state.
<b>Network Activity</b> 	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
<b>PHY</b>	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.	<p>Check the power status on the Hub Manager status display.</p> <p>If the Hub Manager status display indicates that power is available for this module, press the release lever down and re-seat or remove the module.</p> <p>Inspect the module's 48- or 160-pin connector for bent, broken, or dirty pins.</p> <p>If the problem persists, either replace the module or contact your service representative to correct the problem.</p>
Module OK  LED is off.	Self-test in progress.	Wait for self-test to complete.
	Self-test failed.	If the LED does not light within 60 seconds, lift the release lever momentarily to repeat the self-test.

## Problem Solving Using the LEDs (Cont.)

**Table 4 Problem Solving Using the LEDs (Cont.)**

Symptom	Probable Cause	Corrective Action
		If self-test fails again, either replace the module or contact your service representative to correct the problem.
Module OK  LED is off and Port State # LED for Port 1 is blinking green (once every 8 seconds).	Module 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.

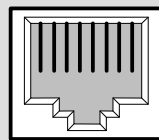
## Connector Pin Assignments

### 10BaseT (8-pin MJ) Port Connector

The following illustration shows the 8-pin MJ (crossover) connector and its pin assignments:

<u>Pin</u>	<u>Assignment</u>
1	RX+
2	RX-
3	TX+
4	Unused
5	Unused
6	TX-
7	Unused
8	Unused

Pin 1 → 8



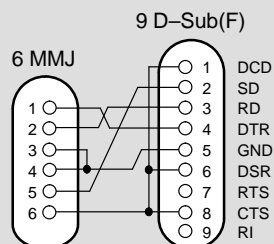
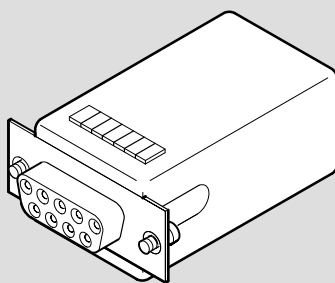
8-pin MJ connector

LKG-9552-94I

**NOTE:** All 10BaseT port connectors on the module are (crossover) connections.

### H8571-J Adapter

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

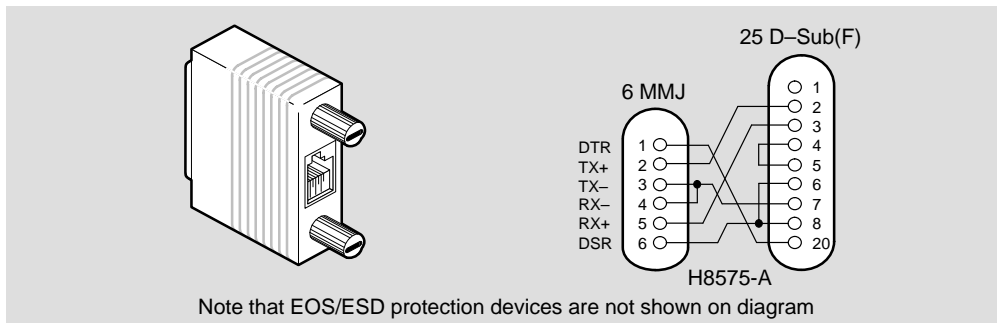


LKG-5342-91I

## Connector Pin Assignments (Cont.)

### 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:



LKG-8793-93I

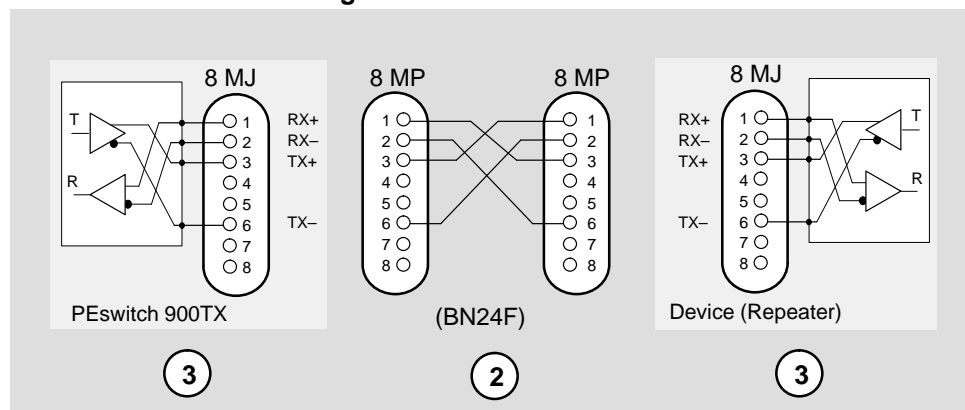
## Connector Pin Assignments (Cont.)

### Internal and External Crossover Configurations

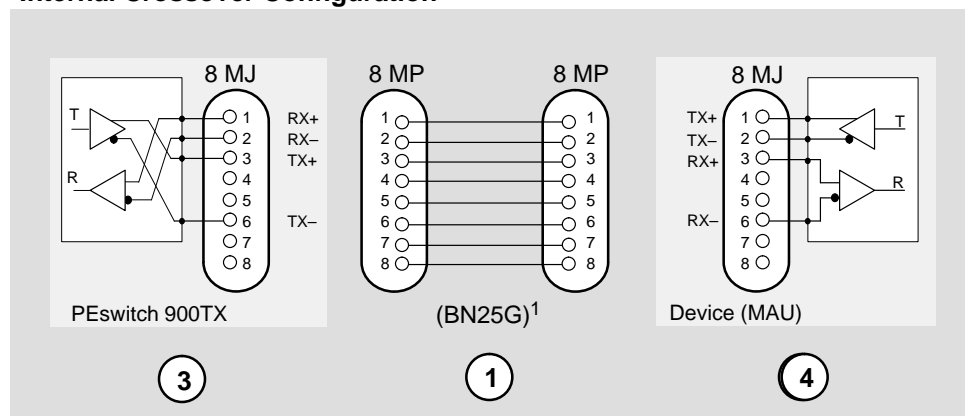
A crossover function must be implemented in every twisted-pair link. The crossover function (internal or external) allows the transmitter of one device to connect to the receiver of the device at the other end of the twisted-pair link.

The following illustration shows the use of straight-through (1) and crossover cables (2) for connecting crossover (3) and straight-through (4) type of devices. The PEs switch 900TX uses embedded crossover connectors.

#### External Crossover Configuration



#### Internal Crossover Configuration



LKG-9669-941

<sup>1</sup> If screened cabling is required, use BN26M.

## Connector Pin Assignments (Cont.)

Digital uses embedded crossover connectors on each PEs switch 900TX port because each port is optimized to connect to a single end station (or very small workgroups) much like a repeater. Note that there is an X sign on each 10BaseT port of the PEs switch 900TX, indicating crossover. This is required by the IEEE 802 standard for 10BaseT repeaters.

This differs from the DEC switch 900EF and DEC switch 900EE family of switches which use straight-through connectors, since they are designed to be connected to a LAN device (repeater) that would provide the crossover function.

## Product Specifications

Operating specifications for the PEs switch 900TX module are provided in Table 5.

The PEs switch 900TX acoustical specifications are listed in Table 6.

**Table 5 PEs switch 900TX Operating Specifications**

Parameter	Specification
<b>Operating Environment</b>	
Operating Temperature <sup>1</sup>	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	50.5 W, total power 8.0 A, 5Vdc, 0.1 A, 12Vdc <sup>2</sup> 0.7 A, 15Vdc
<b>Connectors</b>	
PEs switch 900TX has: six shielded 8-pin MJ (10BaseT ports) with embedded crossover 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.	
<b>Physical</b>	
Height	44.45 cm (17.5 in)
Width	4.45 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) <sup>3</sup>
<b>Certification</b>	
CE, CSA, FCC, TÜV, UL, VCCI.	

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> Include an additional 1.59 kg (3.5 lb) when attached to a DEChub ONE; when attached to a DEChub ONE-MX, add 2.10 kg (4.63 lb).

## Product Specifications (Cont.)

**Table 6 Acoustical Specifications**

**Acoustics — Declared values per ISO 9296 and ISO 7779<sup>1</sup>**

<b>Product</b>	<b>Sound Power Level <math>L_{WA,d}</math>, B</b>	<b>Sound Pressure Level <math>L_{pAm}</math>, dBA (bystander positions)</b>
	<i>Idle/Operate</i>	<i>Idle/Operate</i>
PEswitch 900TX DESBF-MA	5.0	36
PEswitch 900TX & DEChub ONE DESBF-MA + DEHUA	5.3	40
PEswitch 900TX & DEChub ONE-MX DESBF-MA + DEF1H	5.4	39

**Schallemissionswerte — Werteangaben nach ISO 9296 und ISO 7779/DIN EN27779<sup>2</sup>**

<b>Produkt</b>	<b>Schalleistungspegel <math>L_{WA,d}</math>, B</b>	<b>Schalldruckpegel <math>L_{pAm}</math>, dBA (Zuschauerpositionen)</b>
	<i>Leerlauf/Betrieb</i>	<i>Leerlauf/Betrieb</i>
PEswitch 900TX DESBF-MA	5,0	36
PEswitch 900TX & DEChub ONE DESBF-MA + DEHUA	5,3	40
PEswitch 900TX & DEChub ONE-MX DESBF-MA + DEF1H	5,4	39

<sup>1</sup> Current values for specific configurations are available from Digital Equipment Corporation representatives. 1 B = 10 dBA.

<sup>2</sup> 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.

<b>Title and Order Number</b>	<b>Description</b>
<i>DEChub 900 MultiSwitch Owner's Manual</i> EK-DH2MS-OM	Provides installation, use, security, and troubleshooting information.
<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>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>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	Provides planning and installation information for systems based on Digital'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).



## 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)

### DIRECT MAIL ORDERS (U.S. and Puerto Rico\*)

DIGITAL EQUIPMENT CORPORATION  
P.O. Box CS2008  
Nashua, New Hampshire 03061

### DIRECT MAIL ORDERS (Canada)

DIGITAL EQUIPMENT OF CANADA LTD.  
940 Belfast Road  
Ottawa, Ontario, Canada K1G 4C2  
Attn: A&SG Business Manager

### INTERNATIONAL

DIGITAL EQUIPMENT CORPORATION  
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c/o Digital's local subsidiary  
or approved distributor

Internal orders should be placed through U.S. Software Supply Business (SSB),  
Digital Equipment Corporation, 10 Cotton Rd. Nashua, NH. 03063-1260

\*Any prepaid order from Puerto Rico must be placed  
with the Local Digital Subsidiary:  
809-754-7575



**PEswitch 900TX Installation  
EK-DESBF-IN. B01**

**Please return this card.**

Your comments and suggestions will help us improve the quality and usefulness of our documentation.

Did you use the manual as a reference or as a step-by-step procedure to install the device?

\_\_\_\_\_

Were the instructions easy to follow? \_\_\_\_\_

Were the instructions complete? \_\_\_\_\_

Were they in the proper sequence? \_\_\_\_\_

Which chapters or sections were most helpful? \_\_\_\_\_

\_\_\_\_\_

Did you use the appendixes? Which ones? \_\_\_\_\_

\_\_\_\_\_

Were the illustrations helpful? \_\_\_\_\_ All? \_\_\_\_\_ Some? \_\_\_\_\_ Which ones? \_\_\_\_\_

\_\_\_\_\_

Were some illustrations unnecessary? \_\_\_\_\_ Which ones? \_\_\_\_\_

Do you think the manual needs more illustrations? \_\_\_\_\_ Please give an example. \_\_\_\_\_

\_\_\_\_\_

Thank you.

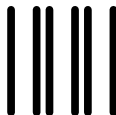
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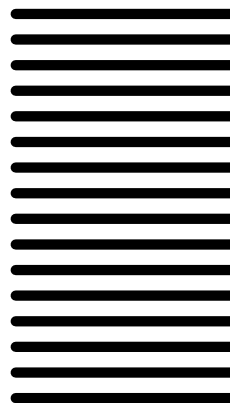
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