

PORTswitch 900TP

Installation and Configuration

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This document describes how to install and configure the PORTswitch 900TP module.

Revision/Update Information: This is a new manual.

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Safety

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

CAUTION Contains information to prevent damage to equipment.

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

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

PRECAUCIÓN Contiene información para evitar daños al equipo.

Safety (Cont.)

CAUTION 

You must configure the links using HUBwatch before connecting the cables. Failure to do so can seriously impair performance on that segment of the LAN. [Pages 2–6 and A–1.]

ACHTUNG

Sie müssen die aufgebauten Verbindungen zuerst mit HUBwatch konfigurieren, bevor Sie die Kabel anschließen. Andernfalls ist die volle Leistungsfähigkeit dieses LAN-Segments nicht gewährleistet.

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 

This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost. [Page 3–9.]

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. [Pages 3–22, 3–24, 3–25, and 3–28.]

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.

Preface

About this Manual

Manual Contents

This manual explains how to install and configure the PORTswitch 900TP network module.

Intended Audience

This manual is intended for use by personnel who will install and set parameters for the PORTswitch 900TP.

Structure of this Manual

This manual contains the following chapters and appendixes:

Section	Description
Chapter 1	Provides an overview of the PORTswitch 900TP.
Chapter 2	Describes how to install the PORTswitch 900TP.
Chapter 3	Describes the setup port and how to use it to observe and set module parameters.
Chapter 4	Describes how to remove the PORTswitch 900TP.
Chapter 5	Describes the LED functions and provides problem-solving information.
Appendix A	Provides redundant-link configuration information.
Appendix B	Provides connector and adapter pin assignment information.
Appendix C	Discusses remote monitor alarms and events.
Appendix D	Provides product specifications.

About This Manual (Cont.)

Conventions Used in this Manual

The following conventions are used in this manual:

Convention	Meaning
Monospaced type	Indicates a literal example of system output.
Boldface type	In examples, indicates user input.
<i>Italics</i>	In examples, indicates a variable. In text, indicates emphasis or a book title.
[]	Contain default responses to the installation menu prompts.
[<i>n</i>]	Indicates a variable response to the installation menu prompts
Return	Indicates that you press the Return key.
Ethernet	The term used by Digital for its product's 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).
00.00.00.00	This format represents an Internet Protocol (IP) address in examples and figures.
08-00-2B-A3-00-00	This format represents a media access control (MAC) address in examples and figures.

Associated Documents

The following documents provide related information about the PORTswitch 900TP. The back of this book provides ordering information.

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 Installation</i> EK-DEHU2-IN	Provides installation and operation guidelines for single-slot hub configuration, including rack-mounting options and cabling.
<i>DEChub ONE-MX Installation</i> EK-DEF1H-IN	Provides installation and operation guidelines for single-slot hub configuration, including rack-mounting options and cabling.
<i>HUBwatch Installation and Configuration</i> AA-Q3S8D-TE	Provides information for installing and configuring HUBwatch for OpenVMS V4.0 and HUBwatch for Windows V4.0.
<i>HUBwatch Use</i> AA-PW4BE-TE	Provides network management and DEChub 900, DEChub 90 and DEChub ONE functionality information for HUBwatch for OpenVMS.
<i>HUBwatch for Windows Use</i> AA-Q3S3C-TE	Provides network management and DEChub 900, DEChub 90, and DEChub ONE functionality information for HUBwatch for Windows V4.0.
<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.

Associated Documents (Cont.)

Documentation Comments If you have comments or suggestions for this book or any of the DEChub documents, you can use the Reader's Comment form on the last page of this document and mail it to the address on the reverse side of the form.

Firmware Updates

Why? Because Digital continuously improves the quality and enhances the functionality of the DEChub products, periodic releases of firmware will become available. To ensure that you have the latest functionality and quality of firmware, always use the current version.

How? Firmware updates are customer installable. You can get information about the latest firmware releases from your local Digital Reseller or your local Digital Sales Office. You can also get this information by reading the `README.txt` file found in the `/pub/DEC/hub900` directory at `ftp.digital.com`.

You can register for automatic notification of new firmware releases using the Internet by sending your name, title, and mailing address to `dechub_notice@lkg.dec.com`.

PORTswitch 900TP Description

Overview

Introduction

This chapter describes the features and components of the PORTswitch 900TP.

The PORTswitch 900TP (also referred to in this manual as the module) is a port-switchable, 32-port, 10BaseT Ethernet repeater. It features advanced management and configuration control.

How Can I Configure the Module?

You can configure the module into a DEChub 900 Multiswitch (referred to in this manual as a DEChub 900) or as a standalone unit into a DEChub ONE or DEChub ONE-MX docking station. Both the DEChub ONE and the DEChub ONE-MX are referred to in this manual as the DEChub ONE.

The PORTswitch 900TP provides the flexibility to logically interconnect any combination of externally accessible ports onto any of six internal LAN segments. This level of configuration control provides flexibility across all of the 32 ports. You can also enable the six internal LANs onto the DEChub 900 flexible backplane channels to give further global expansion of the network through other DEChub network products.

In This Chapter

This chapter covers the following topics:

Topic	See Page
Module Features	1-2
Module Components	1-4

Module Features

Introduction

This section lists the hardware, firmware, and management features of the PORTswitch 900TP module.

Hardware Features

Your module includes the following hardware features:

- Module and network state LEDs.
- Momentary LED cycle switch, which enables you to observe one bank of port state LEDs at a time.
- The 32 10BaseT 8-pin MJ connectors which support both shielded twisted pair (STP) and unshielded twisted pair (UTP) cables.
- Signal-line crossover connection within each port lets you use the more common straight-through cables when connecting to most devices.
- Hot-swap capability when installed into a DEChub 900.
- Access to ThinWire 10Base2 segment in the DEChub 900 MultiSwitch or to the AUI port in the DEChub ONE.
- Ability to connect internal LANs to any of six flexible channels in the DEChub 900.

Per-port Security

The PORTswitch 900TP enforces eavesdrop prevention and intrusion protection based on the Ethernet MAC addresses of attached stations. It uses access control lists to map authorized addresses to manageable PORTswitch ports. You can enable either or both of these features per port.

Eavesdrop Prevention

When enabled, this feature prevents unauthorized monitoring of network traffic. Only packets destined for authorized stations are transmitted on the port.

Intrusion Protection

When enabled, this feature prevents unauthorized stations from successfully transmitting data into a PORTswitch port. The PORTswitch compares the source address of the packets received on a port to the list of authorized addresses assigned to that port. If the addresses do not match, the PORTswitch logs an intrusion violation and can take one of the following actions:

- Converts the remainder of this packet to a jam pattern as it is repeated.
- Disable the port that detected the violation.

Module Features (Cont.)

Basic Management Features

Your module includes the following basic management features:

- Upgradeable device firmware (in nonvolatile flash memory) with the HUBloader utility or through the setup port with any Trivial File Transfer Protocol (TFTP) server
- In-band management with SNMP
- Out-of-band management (OBM), using SNMP over Serial Line Internet Protocol (SLIP) through the OBM connector on the DEChub 900 or the DEChub ONE, in addition to the normal in-band management
- Manageability using any generic SNMP management application that supports the management information bases (MIBs) listed below
- Built-in SNMP agent that supports the following MIBs:
 - Remote MONitoring (RMON) alarms and events (RFC 1271)
 - Internet Engineering Task Force (IETF) Repeater (RFC 1516)
 - Ethernet-like Interface Type (RFC 1398)
 - Digital Extended Repeater
 - DEChub 900 Public Common
 - MIB II (RFC 1213)

Management Features with an NMS

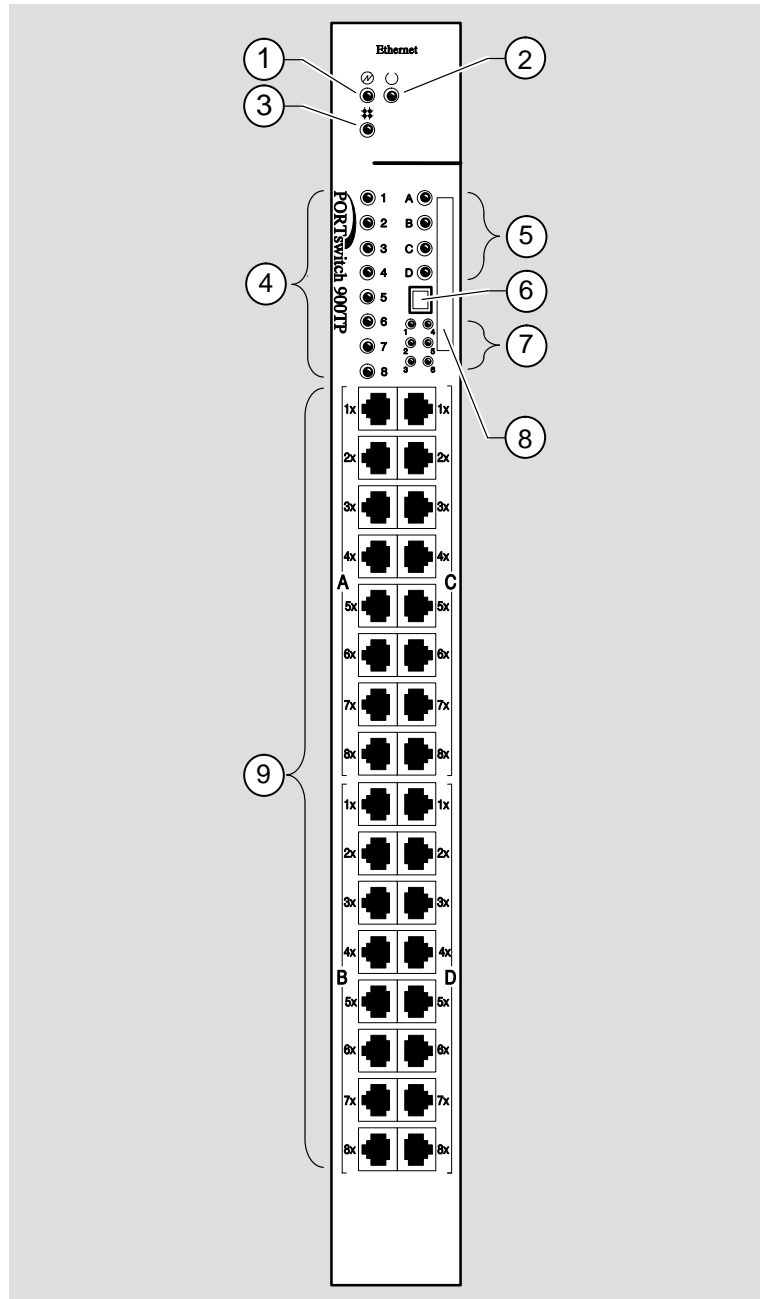
The HUBwatch Network Management Station (NMS) application is the recommended tool for managing the modules in the DEChub family. When using an SNMP-based NMS such as HUBwatch, your module includes the following management features:

- User-friendly, advanced, graphical user interface (GUI)
- Port-switching capability in both the DEChub 900 and DEChub ONE
- Redundant-link configuration for greater fault tolerance
- Port-level packet-address security

Module Components

Front Panel

Figure 1-1 Front Panel






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Module Components (Cont.)

Front Panel (Cont.)

The following table describes the front-panel components that are illustrated in Figure 1–1.

Figure 1–1 Legend

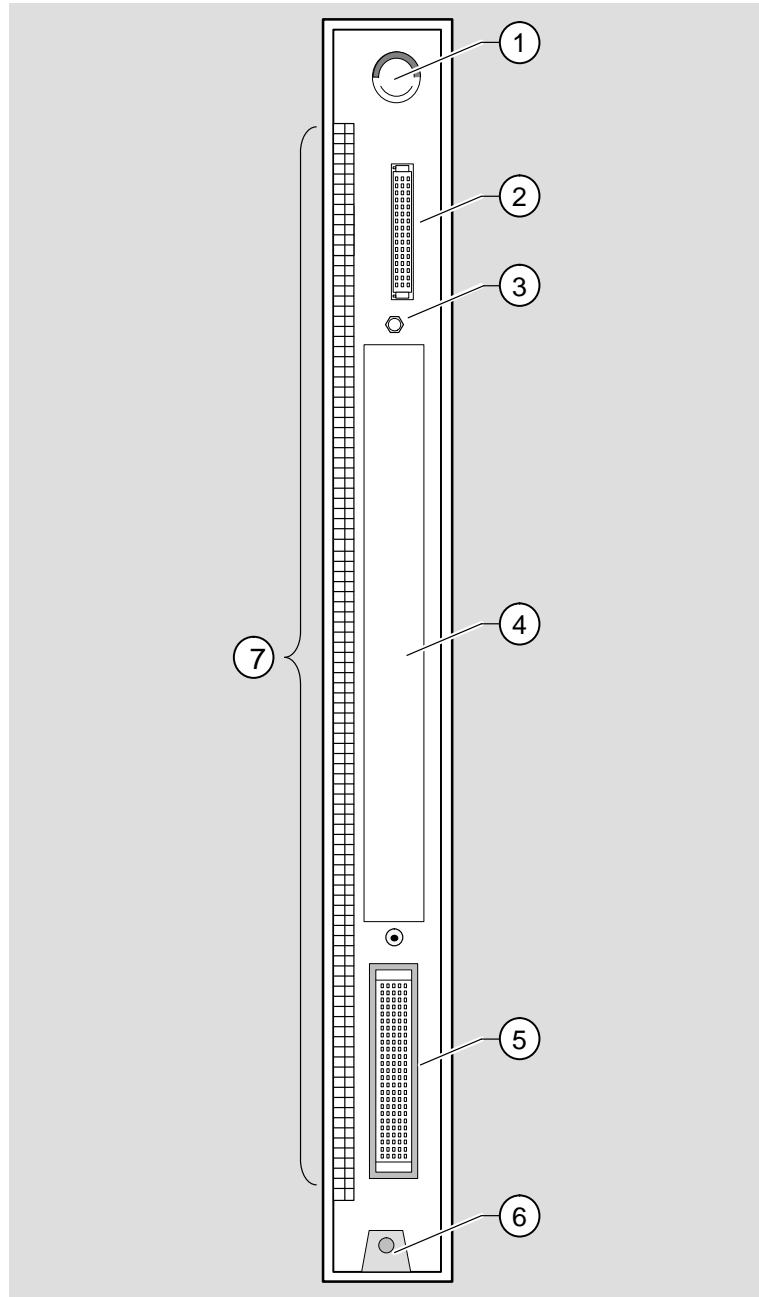
Item	Icon	Name	Description
1		Power LED	Lights when the module has power. ¹
2		Module OK LED	Lights when the module passes self-test. If the module fails self-test, the Module OK LED remains off. ¹
3		Network OK LED	Indicates the status of the backplane ThinWire port on the DEChub 900 or of the AUI port on the DEChub ONE. ¹
4	1 – 8	Port state LEDs	Show the status of one of the four banks of ports, depending on the state of the bank indicator LEDs. ¹
5	A – D	Bank indicator LEDs	Light one at a time for a few seconds, indicating which bank of ports is currently displaying its status on the eight port state LEDs. ¹
6		Momentary LED cycle switch	Enables you to stop and start the LED status scanning of the bank indicator LEDs during operation.
7	1 – 6	Internal LAN LEDs	Indicates which internal LANs have activity and the level of network traffic on each of those LANs. Green indicates the internal LAN is active on the module and front panel ports only. Yellow indicates the internal LAN is connected to a flexible channel on the DEChub 900. ¹
8		Address label	Contains the module's 48-bit Ethernet hardware address.
9	1x – 8x	10BaseT port connectors	8-pin MJ connectors for ports 1 to 32 support both UTP and STP cabling.

¹ See Chapter 5 for more information about LED operation.

Module Components (Cont.)

Back Panel

Figure 1-2 Back Panel



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Module Components (Cont.)

Back Panel (Cont.) The following table describes the back-panel components that are illustrated in Figure 1–2.

Figure 1–2 Legend

Item	Name	Description
1	Locking tab	Locks the module into a DEChub 900 backplane or DEChub ONE. 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 ground connection between the module and a DEChub 900 or DEChub ONE docking station.
4	Manufacturing label	Lists the module 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 DEChub ONE docking station.
6	Mounting tab	Secures the module to the backplane when the module is installed into a DEChub 900 or DEChub ONE docking station.
7	Grounding fingers	Provide an additional chassis ground connection between the module and a DEChub 900 or DEChub ONE.

Installing the PORTswitch 900TP

Overview

Introduction This chapter describes the tasks necessary to install the module.

What do I Need to Know? **Hot-swap Feature**

The PORTswitch 900TP hot-swap feature allows you to install the module into the DEChub 900 or DEChub ONE without turning off power. Seating the module initiates the power-up sequence if enough power is available.

The 12-Volt Power Source

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

In this Chapter This chapter describes the tasks necessary to install the module:

Topic	See Page...
Installing the Module	2-2
Before Connecting the Cables	2-5
Configuring the Ports	2-6
Connecting the Cables	2-9

Installing the Module

Task 1: Compare the Power Ratings

Compare the module's power ratings with the values shown in the Hub Manager status display.

IF the power values on the module's manufacturing label (1)...

THEN...

Do not exceed the values shown in the Hub Manager status display (2)

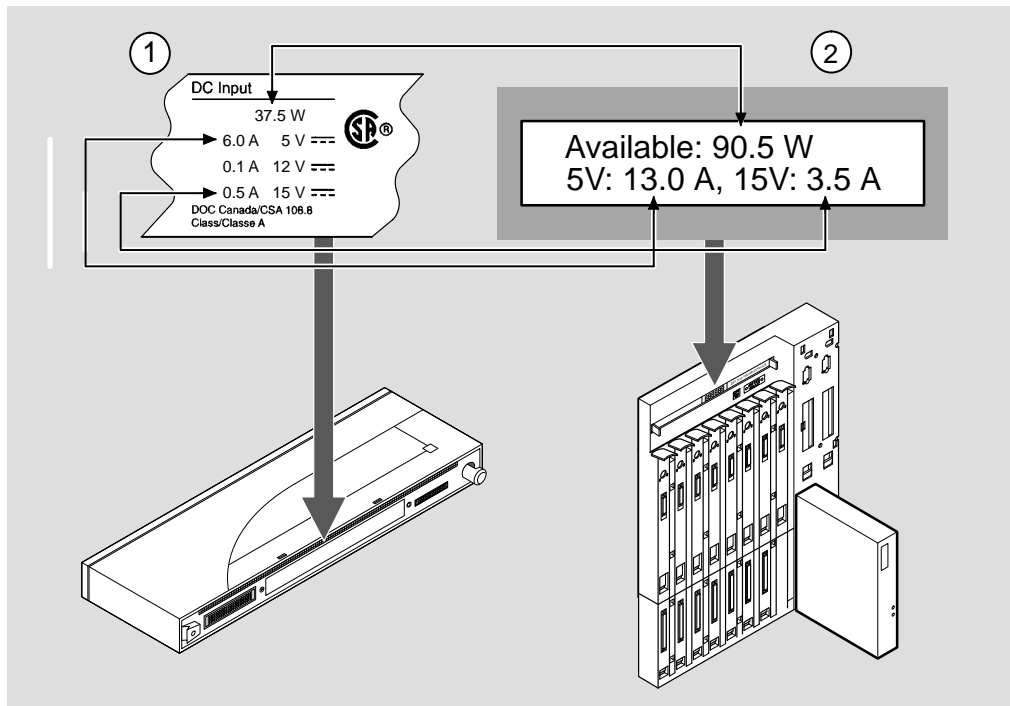
Go to Task 2: Seat the Module into the DEChub 900.

Exceed the values shown in the Hub Manager status display (2)

Add another power supply to the DEChub 900.¹

¹ See the *DEChub 900 MultiSwitch Owner's Manual*.

Figure 2-1 Comparison of Power Ratings



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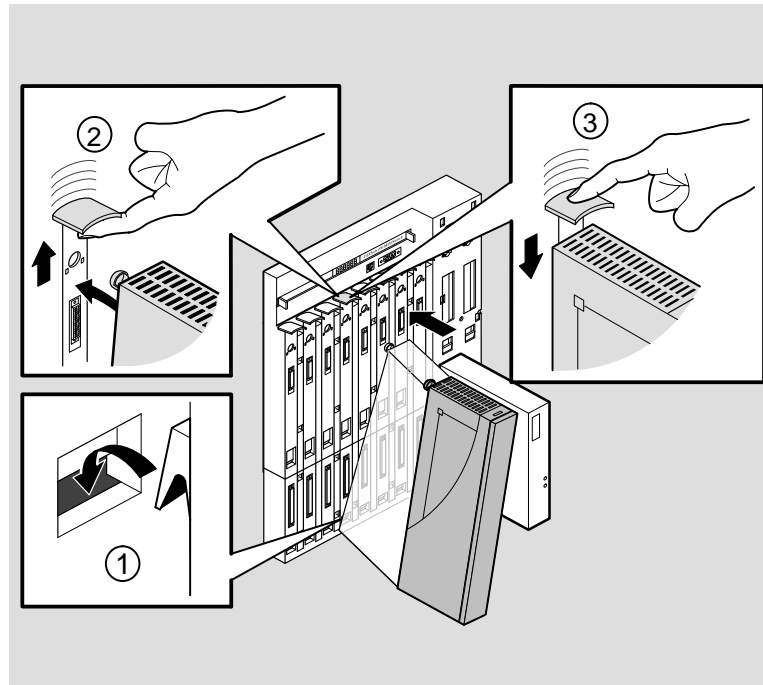
Installing the Module (Cont.)

Task 2: Seat the Module into the DEChub 900.

To seat the module, complete the following steps:

Step	Action
1	Place the module's mounting tab into the mounting slot on the DEChub 900 (1).
2	Pull up the release lever to its unlocked position (2).
3	Pivot the module on the mounting tab and align the connectors.
4	Firmly push the module onto the backplane connectors.
5	Press down on the release lever to ensure that the module is locked (3).

Figure 2-2 Seating the Module



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Installing the Module (Cont.)

Task 3: Verify Initial LED Operation

Seating the module initiates the power-up sequence as follows:



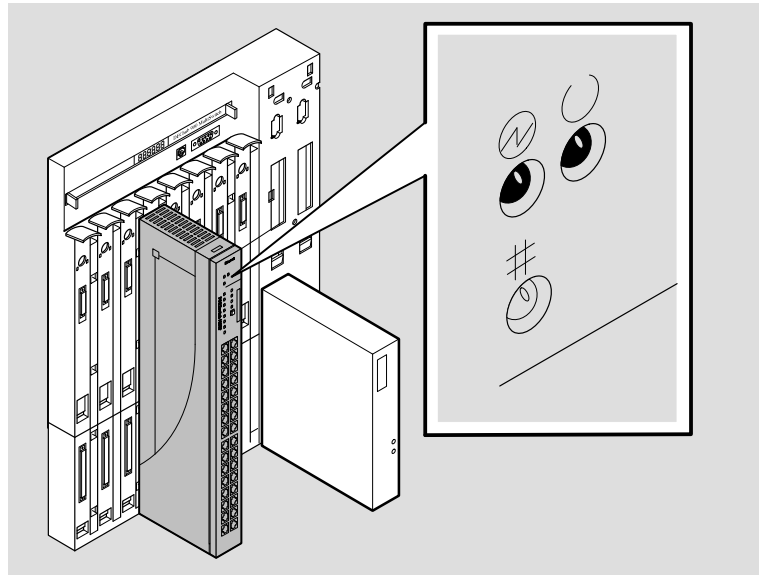
Stage	Description
1	The DEChub 900 Hub Manager determines whether enough power is available.
2	If enough power is available, the Hub Manager allocates power to the module. The module's power  LED lights, and the module runs a self-test.
3	After the module completes self-test (within one minute), the module OK  LED lights and remains lit. The Hub Manager status display shows: PORTswitch 900TP up.

Figure 2-3 LED Verification



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Note

If the LEDs do not operate as described, refer to Chapter 5, Problem Solving.

Before Connecting the Cables

What Type of Cables Should I Use?

The PORTswitch 900TP module uses crossover 10BaseT (8-pin RJ45) port connectors. The appropriate UTP/STP cable type, crossover or straight-through, is required to ensure that the module's transmit and receive ports connect correctly to the receive and transmit ports of the connected device.

When connecting the cables to the module, follow these rules:

IF the device to which you are connecting the module uses...	THEN use...
Straight-through connectors	Straight-through cables
Crossover connectors	Crossover cables

If you are connecting the module to another DEC repeater or PORTswitch, use crossover cables.

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

Note

Digital's straight-through cables are marked with two horizontal lines (=). Digital's crossover cables are marked with an x.

If you need help determining the appropriate cable to use, refer to Appendix B.

Configuring the Ports

Determine the Configuration

Determine whether you are configuring the ports as redundant-link pairs (RLP)¹, separate independent ports (default configuration), or as a mixture of the two configurations. See the example in Figure 2–4.

IF you are configuring the ports as...	THEN go to ...
Redundant-link pairs ¹	Task 4: Configure the Ports as Redundant-Link Pairs.
Separate independent ports	Task 5: Connect the Cables.

Task 4: Configure the Ports as Redundant-Link Pairs

Caution

You must configure the links using HUBwatch, before connecting the cables. Failure to do so can seriously impair performance on that segment of the LAN.

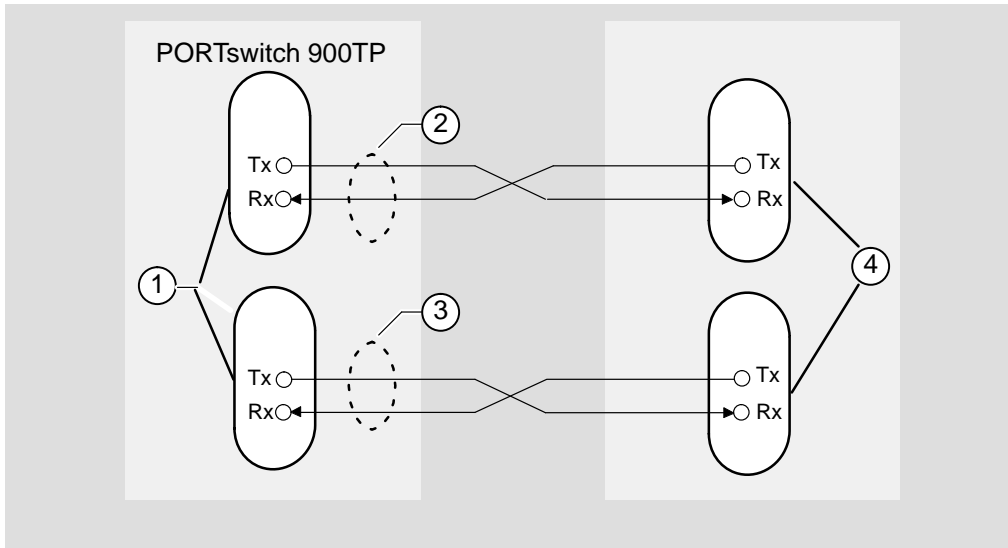
Figure 2–4 illustrates an example of a simple redundant-link configuration.

¹ Refer to Appendix A for more information about redundant-link pairs. Refer also to *HUBwatch Online Help*.

Configuring the Ports (Cont.)

Task 4: Configure the Ports as Redundant-Link Pairs (Cont.)

Figure 2–4 Redundant-Link Configuration



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Item	Description
1	Master port pair
2	Primary link
3	Secondary link
4	Single responder ports, nonresponder ports, or a combination. These ports can reside on one module (as shown in Figure 2–4) or on separate modules.

Configuring the Ports (Cont.)

Task 4: Configure the Ports as Redundant-Link Pairs (Cont.)

After you have configured the ports using HUBwatch, complete the following steps:

Step	Action
1	Identify the ports that you have assigned as the primary and secondary master port pair and the ports that you have assigned as responder or nonresponder ports.
2	Follow the procedure in Task 5: Connecting the Cables to connect a 10BaseT cable to the primary master port.
3	Connect the other end of the port cables to the primary responder or nonresponder port.
4	Connect another 10BaseT cable port cable to the secondary master port.
5	Connect the other end of that cable to the secondary responder or nonresponder port.
6	Repeat Steps 1 through 5 for all the remaining RLP ports.

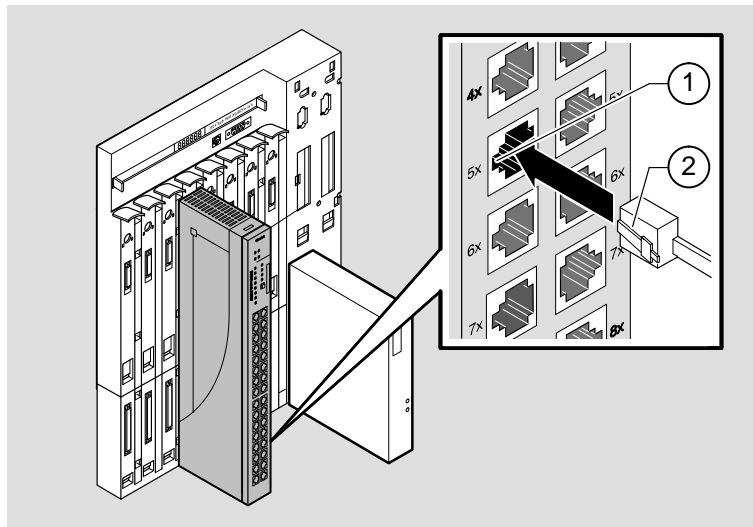
Connecting the Cables

Task 5: Connect the Cables

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

Step	Action
1	Align the release tab (2) on the cable plug with the keyway (1) on the module's 10BaseT port connector.
2	Insert the plug into the connector, ensuring that the release tab snaps into the locked position.
3	If you are connecting the ports as redundant-link pairs, return to Task 4 for the remaining RLP ports.

Figure 2–5 Connecting the Cables



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Configuring the Module

Overview

Introduction This chapter describes how to access the setup port to configure the module and the configuration options that you may choose.

Conventions In this chapter, **boldface type** in examples indicates user input. The format of an IP address is the standard 4-octet dotted decimal notation, where each octet of the address is represented as a decimal value, separated by a decimal point (.). The following is an example of an IP address: 16 . 20 . 54 . 156

In This Chapter This chapter covers the following topics:

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Downline Upgrade	3-22

Setup Port Description

Introduction

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

Examples of the setup screen displays in this section aid in the description of the setup port and display the available options. Because they are examples only, the displays can vary slightly from the actual screen displays on your setup port device.

Signaling Standards

The signals from the DEChub 900 Hub Manager setup port and the DEChub ONE 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 Cabling

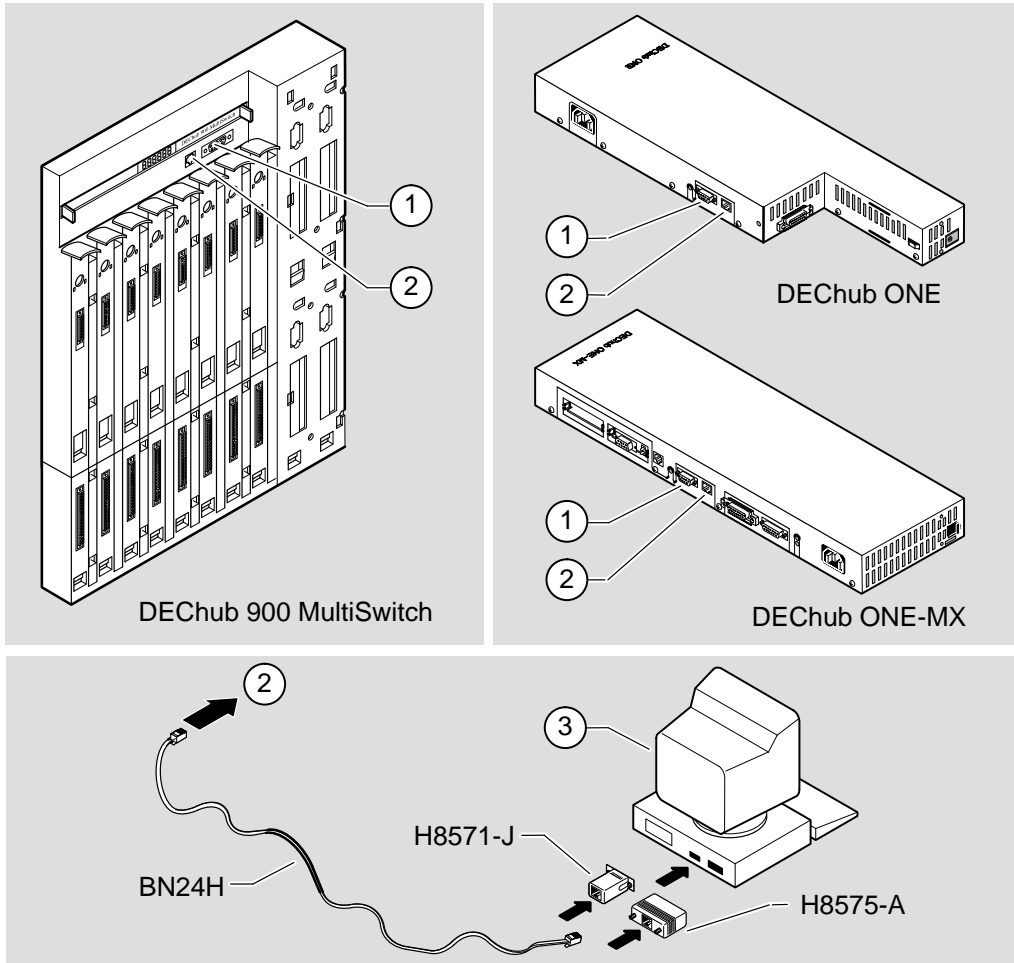
The setup port (see Figure 3–1) on the DEChub 900 or the DEChub ONE can be connected to a setup port device (a terminal or personal computer) by using the following cables and adapters.

IF the setup port device is...	THEN use this cable...	WITH this adapter...
A PC with a 9-pin D-Sub communications port	BN24H-xx ¹	H8571-J
A terminal with a 25-pin D-Sub connector	BN24H-xx ¹	H8575-A
A terminal with a 6-pin MMJ connector	BN24H-xx ¹	Not required

¹ xx indicates cable length in meters.

Setup Port Description (Cont.)

Figure 3-1 Setup Port Cabling



NPG-0020-951

Item	Description
1	OBM port
2	Setup port
3	Setup port device

Accessing the Setup Port

Accessing the Setup Port

To access the setup port, complete the following steps:

Step	Action
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.
3	Press <input type="text" value="Return"/> on the setup port device a few times until the menu appears.
4	Do the following:
IF the module is installed into a...	THEN this menu appears... Go to the section titled...
DEChub ONE	PORTswitch 900TP INSTALLATION MENU PORTswitch 900TP INSTALLATION MENU (DEChub ONE Options)
DEChub 900	DEChub 900 MultiSwitch INSTALLATION MENU DEChub 900 INSTALLATION MENU

Accessing the Setup Port (Cont.)

DEChub 900 Installation Menu

The following example shows the DEChub 900
MultiSwitch INSTALLATION MENU:

```
DEChub 900 MultiSwitch
=====
DEChub 900 MultiSwitch INSTALLATION MENU

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

=====

Enter selection number: 9 
```

Accessing the Setup Port (Cont.)

The Start Redirect Mode Option

This option redirects the DEChub 900 Hub Manager setup port to any network module (such as the PORTswitch 900TP) 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 module's installation menu.

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

The following example shows how to select a slot number.

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

After you press , the console redirects to the PORTswitch 900TP INSTALLATION MENU.

PORTswitch 900TP Installation Menu (DEChub 900 Options)

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

The indication at the top of the screen, slot 3, refers to the DEChub 900 slot number where the module is installed.

The following example shows the PORTswitch 900TP INSTALLATION MENU operating in a DEChub 900 configuration:

```
PORTswitch 900TP - slot 3
=====
          PORTswitch 900TP INSTALLATION MENU

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

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

Enter selection number : [n] 
```

Go the section titled Description of Menu Options.

PORTswitch 900TP Installation Menu (DEChub ONE Options)

This section shows the options available from the PORTswitch 900TP INSTALLATION MENU when the module is installed standalone into the DEChub ONE.

The following example shows the PORTswitch 900TP INSTALLATION MENU operating in a DEChub ONE configuration:

```
PORTswitch 900TP
=====
      PORTswitch 900TP 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...
=====

Enter selection number: [n] 
```


Descriptions of Menu Options

Introduction

This section describes the options that are available from the `PORTswitch 900TP INSTALLATION MENU`.

Note that the out-of-band menu options apply to the module only when it is in standalone mode (configured in a DEChub ONE).

[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.

Caution

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

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

Table 3–1 lists examples of the module's NVRAM parameters and tells how the selection of this option affects each parameter.

Table 3–1 Effect of Reset with Factory Defaults

Parameter	Effect
SNMP read/write community	Name reset to <code>PUBLIC</code> .
SNMP trap addresses	Deleted
In-band interface IP address	Deleted
In-band interface default gateway address	Deleted
Out-of-band interface IP address	Deleted
Out-of-band interface port speed	Reset to 9600
Serial number	No effect ¹
Reset count	No effect ¹
Error log data	No effect ¹
RTS	Set to Disabled

¹ These are the *only* parameters that are *not* reset with factory defaults.

Descriptions of Menu Options (Cont.)

[1] Reset with Factory Defaults (Cont.)

Note

Allow approximately 1 minute for the module to reset and complete self-test.

The following example shows the dialog associated with this option:

```
Enter selection : 1
PORTswitch 900TP - 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] : 
Press Return for Main Menu ...
```

Descriptions of Menu Options (Cont.)

[2] Reset with Current Settings

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

Note

Allow approximately 1 minute for the module to reset and complete self-test.

The following example shows the dialog associated with this option:

```
Enter selection : 2
PORTswitch 900TP - 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 ...
```

Descriptions of Menu Options (Cont.)

[3] Show Current Settings

This option shows the module's current settings.

Note

If the module is being configured for the first time, some fields are blank.

The following example shows the display associated with this option:

```

Enter selection : 3

PORTswitch 900TP - slot 3
=====
PORTswitch 900TP 32 Port Ethernet Rptr SNMP HW=v2,RO=v00.03,SW=v2.0
SysUpTime                : 01:39:11      14 resets
SNMP Read/Write Community : public
SNMP Trap Addresses       : Not Configured
Status of Last Downline Upgrade : TFTP Read
                                00:00:44  28 resets
                                Transfer Complete
In-Band Interface Hardware Address : 08-00-2B-A3-4C-70
In-Band Interface IP Address      : 16.20.216.181
In-Band Interface Default Gateway Address : Not Configured
Out-of-Band (OBM) Management RTS  : Disabled
BootP                          : Disabled
Interface  IP Address  Subnet Mask  Def.Gatewa  Other Info
Ethernet 16.20.156.24  0.255.255.255 16.20.157.25 08-00-2B-B1-4D-C7
OBM Port 16.20.158.26                               Speed 9600 bps
=====
Press Return for Main Menu ...
  
```

Item	Description
1	Out-of-Band (OBM) Management RTS appears only when the module is installed into a DEChub ONE.
2	OBM Port information including port Speed appears only when the module is installed into a DEChub ONE.

Descriptions of Menu Options (Cont.)

- [4] Configure IP** This option provides you with IP configuration selections.
The following examples show this option's dialog:

DEChub 900 Configure IP Options

```
=====
                                Enter selection : 4
PORTswitch 900TP - 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] Enable/Disable BootP
                                [6] Return to Main Menu
=====
                                Enter selection number : [1] 
```

DEChub ONE Configure IP Options

```
=====
                                Enter selection : 4
PORTswitch 900TP
=====
                                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 : [1] 
```

The following seven pages describe the IP configuration options.

Descriptions of Menu Options (Cont.)

[4] Configure IP (Cont.)

[1] Set SNMP Read/Write Community

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

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

The following example shows the dialog associated with this option:

```
=====
                                Enter selection : 1
PORTswitch 900TP - slot 3
=====

                                SET SNMP READ/WRITE COMMUNITY

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

=====

Enter the Community String [public] : peterh45 
SNMP Read/Write community string set.

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

Descriptions of Menu Options (Cont.)

[4] Configure IP (Cont.)

[2] Add SNMP Trap Addresses

This option prompts you to enter IP addresses to which the PORTswitch 900TP module will send SNMP traps.

An SNMP trap address must be set to enable the alarms and events group of the Remote MONitoring (RMON) MIB. (Refer to Appendix C for more information.)

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

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

The following example shows the dialog associated with this option:

```
=====
                                Enter selection : 2
PORTswitch 900TP
=====
                                ADD SNMP TRAP ADDRESSES

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

                                example: 16.20.40.156
=====

Trap address [ ] : 16.20.40.157 

Trap address added! Add another? [none] : 

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

Descriptions of Menu Options (Cont.)

[4] Configure IP (Cont.)

[3] Delete SNMP Trap Addresses This option prompts you to select SNMP trap addresses for deletion from the community trap address table.

The following example shows the dialog associated with this option:

```
=====
                                Enter selection : 3
PORTswitch 900TP - slot 3
=====

                                DELETE SNMP TRAP ADDRESSES

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

                                example: 16.20.40.156
=====

Configured SNMP Trap Addresses: 16.20.40.156
                                Trap address [ ] : 16.20.40.156 
Trap address deleted. Delete another? [none] : 

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


Descriptions of Menu Options (Cont.)

[4] Configure IP (Cont.)

[4] Set In-Band Interface IP Address

This option prompts you to enter the module's in-band IP address.

If an IP address was previously configured, the screen displays an in-band IP address, subnet mask, and default gateway.

The factory default setting is no IP address.

The following example shows the dialog associated with this option:

```
=====
                                Enter selection : 4
PORTswitch 900TP - 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 '.' character.

         example: 16.20.40.156

To delete the address, enter 0 in the appropriate address
field.

Interface  IP Address    Subnet Mask    Def.Gatewa    Other Info
Ethernet                                08-00-2B-B1-4D-C7
=====

Enter the IP address [ ] : 16.20.54.155  
Enter the Subnet Mask [ ] : 
Enter the Default Gateway [ ] : 

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

Descriptions of Menu Options (Cont.)

[4] Configure IP (Cont.)

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

This option prompts you to enter an out-of-band IP address and a subnet mask.

Note

This selection is operational only when the module is in standalone mode (when it is installed into a DEChub ONE).

If an IP address was previously configured, the screen displays an out-of-band IP address and subnet mask.

The factory default setting is no IP address.

The following example shows the dialog associated with this option:

```
=====
                                Enter selection : 5
PORTswitch 900TP
=====

                                IP ADDRESS CONFIGURATION

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

         example: 16.20.40.156

To delete the address, enter 0 in the appropriate address field.
Interface  IP Address  Subnet Mask  Def.Gatewa  Other Info
Ethernet 16.20.156.24
OBM Port 16.20.158.26                               Speed 9600 bps
=====

Enter IP address  : 16.20.54.155  

Enter Subnet Mask :  

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

Descriptions of Menu Options (Cont.)

[4] Configure IP (Cont.)

[5] Set Out-of-Band Interface IP Address (Cont.)

Note

To enable out-of-band management, you must also select an out-of-band management (OBM) port speed from the PORTswitch 900TP INSTALLATION MENU
Option [7] Configure Out-of-Band Port
Submenu option [1] Set Port Speed

See the *DEChub ONE Installation* manual or the *DEChub ONE-MX Installation* manual for OBM port cabling information.

Descriptions of Menu Options (Cont.)

[4] Configure IP (Cont.)

[6] Enable/ Disable BootP

This option prompts you to enable or disable Bootstrap Protocol (BootP) requests from the module.

Note

This selection appears as submenu option [5] when the module is installed into a DEChub 900.

The factory default setting is DISABLED.

The following example shows the dialog associated with this option:

```
=====
                                Enter selection : 6
PORTswitch 900TP
=====
                                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 in Enabled and the module is not configured
with an IP address the module will send out BOOTP requests
until it receives a response or is manually configured with
an IP address.  When BOOTP is disabled, no BOOTP requests will
be sent.

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

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

Descriptions of Menu Options (Cont.)

[5] Dump Error Log

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

When the firmware has been upgraded to a new version, the version number is entered into the error log.

The following example shows the display associated with this option:

```
Enter selection : 5

PORTswitch 900TP - slot 3
=====
                DUMP ERROR LOG
            CURRENT RESET COUNT: 14
=====

Entry          = 3
Timestamp      = 0 0
Reset Count    = 13
FW upgraded:   to v2.0

Dump another entry Y/[N]? N 
=====

No more Error Log entries

                Press Return for Main Menu ...
```

Descriptions 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 Trivial File Transfer Protocol (TFTP) load host.

The Downline Upgrade (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.

The DLU process consists of four stages:





Stage	Description
1	Transferring firmware image
2	Verifying firmware image
3	Writing new firmware image into nonvolatile flash memory
4	Module reset and self-test

Table 3–2 explains what happens during each stage of the DLU process:

Descriptions of Menu Options (Cont.)

[6] Downline Upgrade (Cont.)

Table 3–2 DLU Process Description

Stage	What Happens
1	<p>The new firmware image from the TFTP load host is transported across the network and placed into a temporary storage buffer in the module.</p> <p>This stage normally takes 1 minute to complete. However, due to variations in network configurations (load path and traffic levels), this stage can take 10 minutes or more.</p> <p>The following states indicate that this stage is in progress:</p> <ul style="list-style-type: none">• Module status — functional and manageable.• Module can respond to management requests.• LED display — the power  LED and the module OK  LED remain on. All other LEDs remain in the state they were in before the DLU process began.• Hub Manager display — <code>PORTswitch 900TP</code> <code>up</code>
2	<p>The module verifies that the firmware image is correct after Stage 1 is complete.</p> <p>This stage normally takes 10 seconds to complete.</p> <p>The following states indicate that this stage is in progress:</p> <ul style="list-style-type: none">• Module status — functional and manageable.• Module can respond to management requests.• LED display — The power  LED and the module OK  LED remain on. All other LEDs remain in the state they were in before the DLU process began.• Hub Manager display — <code>PORTswitch 900TP</code> <code>up</code>

(continued on next page)

Descriptions of Menu Options (Cont.)

Table 3–2 DLU Process Description (Cont.)

Stage	What Happens
3	<p>The new firmware image is transferred from the module’s temporary storage buffer to the flash RAM, overwriting the old firmware image.</p> <hr/> <p style="text-align: center;">Caution ⚠</p> <hr/> <p>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.</p> <hr/> <p>This stage normally takes less than 1 minute to complete. The following states indicate that this stage is in progress:</p> <ul style="list-style-type: none"> • Module status — functional, but not manageable. • Module cannot respond to management requests. • LED display — the power Ⓜ LED remains on. The module OK Ⓜ LED turns off. The port state LED #4 lights. All other LEDs turn off. • Hub Manager display — <code>PORTswitch 900TP</code> <code>unknown</code> <p>After the transfer is complete, the #5 port state LED lights for up to 22 seconds while the module awaits a reset.</p>
4	<p>The module resets, runs self-test, and then begins executing the new firmware image.</p> <p>This stage normally takes 1 minute to complete.</p> <p>The following states indicate that this stage is in progress:</p> <ul style="list-style-type: none"> • Module status — not functional during reset and self-test. • Module cannot respond to management requests. • The power Ⓜ LED remains on. The module OK Ⓜ LED and the #5 port state LED turn off. The LEDs display the self-test sequence. • Hub Manager display — <code>PORTswitch 900TP</code> <code>unknown</code> <p>After the successful completion of self-test, the module OK Ⓜ LED turns on and the module becomes fully operational and manageable. Note also that the HUB Manager display indicates:</p> <p><code>PORTswitch 900TP</code> <code>up</code></p>

Descriptions of Menu Options (Cont.)

[6] Downline Upgrade (Cont.)

Using the DLU Process

The following section explains how to use 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.

You can perform the downline upgrade in one of the following ways:

IF the module has...	AND is installed into a...	THEN you can...
Been assigned an IP address	DEChub 900 or DEChub ONE	Use the module's IP address.
Not been assigned an IP address	DEChub 900	Use the IP address of the DEChub 900 Hub Manager ¹ .
	DEChub 900 ¹ or DEChub ONE	Use out-of-band management through the OBM port over Serial Line Interconnect Protocol (SLIP). Assign an IP address. Refer to Option [4].

¹ Refer to the *DEChub 900 MultiSwitch Owner's Manual* for more information.

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

Descriptions of Menu Options (Cont.)

[6] Downline Upgrade (Cont.)

Using the DLU Process (Cont.)

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

detpjbv20.bin and 16.20.54.156

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

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

```
Enter selection : 6
PORTswitch 900TP

=====
                        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 ...
```

Descriptions of Menu Options (Cont.)

[6] Downline Upgrade (Cont.)

Using the DLU Process (Cont.)

After you press , the screen prompts you to Enter the Load File Name in the following format:

IF the file is...	THEN enter...
Located in the default TFTP directory	Only the file name.
Not located in the default TFTP directory	The complete path name along with the file name.

The following example shows the dialog associated with this option for a file that is located in the default directory:

```
Enter the Load Filename [ ] detpjbv20.bin 
```

After you enter the firmware image file name 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 
```

After you enter the load host IP address and press , the following screen and dialog appear:

```
Load will be initiated over the Ethernet Port network interface.
The device becomes nonfunctional for up to 10 minutes during the time that the flash load is in progress.
When the load is complete the screen displays the message:
(Device Not Responding!) This is normal.
... Press Return Key to Start Load [Ctrl/C to abort]...
```

Descriptions of Menu Options (Cont.)

[6] Downline Upgrade (Cont.)

Using the DLU Process (Cont.)

When you press `Return`, the DLU process is initiated over the LAN that is connected to the load host.

Note

The PORTswitch 900TP is nonfunctional only during reset and self-test (about 1 minute of Stage 4) of the DLU process. During the first three stages of the process, the module continues to function as a repeater.

After you initiate the DLU process, the screen displays the following message:

```
DLU process started!  
.....
```

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

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

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.

Descriptions of Menu Options (Cont.)

[6] Downline Upgrade (Cont.)

Using the DLU Process (Cont.)

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 flash RAM with the new firmware image.

IF your module is installed into a...	THEN go to...
DEChub ONE	The section titled DLU Process Completion
DEChub 900	The following section, DEChub 900 Hub Manager Indications

DEChub 900 Hub Manager Indications

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

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

This is normal.

The Hub Manager status display shows the following:

Hub Manager Status Display


```
3: PORTswitch 900TP
unknown
```

This is normal. The Hub Manager status display continues to display this message until the DLU process is complete.

Descriptions of Menu Options (Cont.)


[6] Downline Upgrade (Cont.)

DLU Process Completion

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

The screen displays one of the following:

IF the module is installed into a...	THEN the screen displays...
DEChub ONE	The PORTswitch 900TP INSTALLATION MENU
DEChub 900	The following message: <pre>Press Return for Main Menu...</pre>

When you press , the screen displays the DEChub 900 INSTALLATION MENU.

Verifying the DLU

When the DLU process has completed, select Option [3] Show Current Settings from the PORTswitch 900TP INSTALLATION MENU. When the process has completed successfully, the screen displays the following:

```
Status of Last Downline Upgrade           :      TFTP Read
                                           Transfer Complete
```

Descriptions of Menu Options (Cont.)

[7] Configure Out-of-Band Port

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

Note

This option is operational only when the module is in standalone mode (when it is installed into a DEChub ONE).

The following example shows the dialog associated with this option:

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

Descriptions of Menu Options (Cont.)

[7] Configure Out-of-Band Port

[1] Set Port Speed

This option prompts you to select the speed of your OBM port.

Note

This option is operational only when the module is in standalone mode (when it is installed into a DEChub ONE).

The OBM port speed that you select must match the speed of your OBM device. The port speed must be the same at each end of the communications link.

The factory default for this option is 9600.

The following example shows the dialog associated with this option:

```
=====
                                Enter selection : 1
PORTswitch 900TP
=====

      SET OUT-OF-BAND MANAGEMENT INTERFACE PORT SPEED
          [1] 2400 baud
          [2] 9600 baud
          [3] 19200 baud
          [4] 38400 baud
=====

Enter selection number [2] (9600) :4 
      OBM port speed set.

      Press Return for Main Menu ...
```


Descriptions of Menu Options (Cont.)

[7] Configure Out-of-Band Port

[2] Enable/ Disable RTS

This option prompts you to enable or disable the request-to-send (RTS) signal line on the OBM port.

Note

This option is operational only when the module is in standalone mode (when it is installed into a DEChub ONE).

When you enable this option, the RTS signal on the OBM port is active only when data is being transmitted to the OBM port. When you disable this option, RTS is always active.

The factory default of this menu option is disabled.

The following example shows the dialog associated with this option:

```
=====
                                Enter selection : 2
PORTswitch 900TP
=====

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

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

                                Press Return for Main Menu ...
```

Removing the PORTswitch 900TP

Overview

Introduction This chapter describes the tasks necessary to remove the module.

In This Chapter This chapter covers the following topics:

Topic	See Page
Disconnecting the Cables	4-2
Unseating the Module	4-3

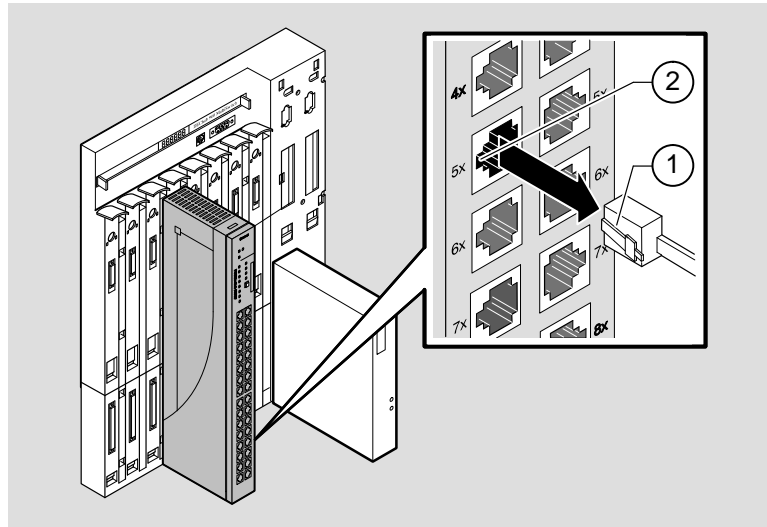
Disconnecting the Cables

Task 1: Disconnect the Cables

To disconnect the cables, complete the following steps:

Step	Action
1	Press the release tab (1) on the 8-pin MJ connector.
2	Disconnect the cable from the port connector (2).

Figure 4-1 Disconnecting the Cables



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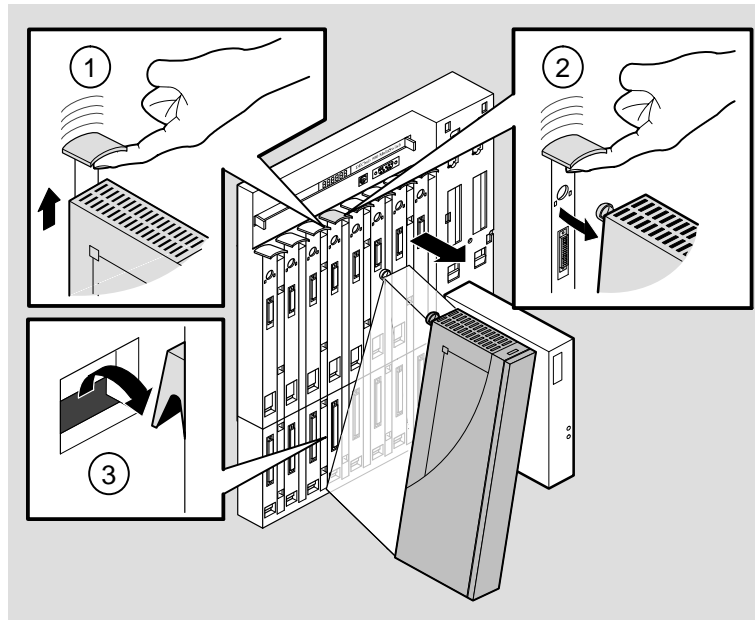
Unseating the Module

Task 2: Unseat the Module

To unseat the module, complete the following steps:

Step	Action
1	Lift the release lever located on the top of the DEChub 900 slot (1).
2	While holding up the release lever, pivot the module back on its bottom mounting tab (2).
3	Lift the module from the backplane (3).

Figure 4-2 Unseating the Module



NPG-0147-951

Problem Solving

Overview

Introduction

This chapter describes the module LED states and provides troubleshooting information.

The module LEDs provide dynamic indications of module status.

In This Chapter

This chapter covers the following topics:




Topic	See Page
LED Descriptions	5-2
Problem Solving Using the LEDs	5-4

LED Descriptions

LED Indications

Table 5–1 lists the static states that are possible for each of the module LEDs.

Table 5–1 Module LED States

LED Name	Icon	Off	On	Flashing
Power		No power to the module.	Module receiving power.	N/A
Module OK		After 1 minute, self-test failed.	Module passed self-test.	Fan failure.
Network OK		Module is not connected to a properly terminated and operational LAN through the ThinWire 10Base2 port on the DEChub 900 or through the AUI port on the DEChub ONE, or there is a repeater loop.	Module is connected to a properly terminated and operational LAN through the ThinWire 10Base2 port on the DEChub 900 or through the AUI port on the DEChub ONE.	ThinWire 10Base2 port on the DEChub 900 or the AUI port on the DEChub ONE is disabled by network management.
Port state	1 through 8	Associated port is not properly connected to another operational network device.	Associated port is properly connected to another operational network device.	Flashing once per second indicates that the associated port is disabled by network management.

(continued on next page)

LED Descriptions (Cont.)





LED Indications (Cont.)

Table 5–1 Module LED States (Cont.)

LED Name	Icon	Off	On	Flashing
Bank indicator	A through D	Associated bank is not currently displaying its port connection status on the 8 port state LEDs.	Associated bank is currently displaying its port connection status on the 8 port state LEDs.	N/A.
Internal LAN	1 through 6	The associated internal LAN has no activity.	Green indicates the internal LAN exists only on the module. Yellow indicates the internal LAN is connected to the flexible channel on the DEChub 900 backplane.	Flashes more rapidly and appears brighter as network traffic increases on the associated LAN.

Normal Powerup

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

Stage	What Happens
1	The power  LED lights and remains lit. All other LEDs except the module OK  LED light and then turn off. This verifies that the individual LEDs are operational.
2	The module initiates self-test. The module OK  LED turns off and remains off. The remaining LEDs display the self-test sequence.
3	After the successful completion of self-test (within 1 minute), the module OK  LED lights and remains lit.
4	The remaining LEDs indicate their operational status.

Problem Solving Using the LEDs

Combined LED States

When diagnosing a problem with the module, note that the problem is often indicated by the combined states of the module LEDs.

Individual LED States

Table 5–2 lists the states of the LEDs for various error conditions and suggests corrective actions.

Table 5–2 Problem Solving Using the LEDs

Symptom	Icon	Probable Cause	Corrective Action
All LEDs are off.		The module does not have power.	<p>If installing the module into a DEChub 900, check the power status on the Hub Manager status display.</p> <p>If enough power is available, lift the release lever and reseat the module.</p> <p>If installing the module into a DEChub ONE, ensure that the locking L-bracket screw is locked securely.</p> <p>Remove the module and inspect the module's 48-pin and 160-pin connectors for bent or broken pins.</p> <p>If any pins are broken or bent, replace the module.</p> <p>If no pins are broken or bent, reinstall the module.</p> <p>If the problem persists, replace the module.</p>
Power LED is off.	⊗	Faulty power LED.	Replace the module.

(continued on next page)

Problem Solving Using the LEDs (Cont.)

Individual LED States (Cont.)

Table 5–2 Problem Solving Using the LEDs (Cont.)

Symptom	Icon	Probable Cause	Corrective Action
Module OK LED is off.	☺	Self-test is in progress. Self-test failed.	Wait up to 1 minute for self-test to complete. If the LED does not light after 1 minute, reseal the module to repeat the self-test. If self-test fails again, replace the module.
Module OK LED is flashing.	☺	Fan is faulty.	Contact your Digital service representative to replace the fan.
Network OK LED is off.	#	There is a repeater loop.	Check the redundant links for proper configuration. Check HUBwatch for a configuration error.
Port state LED is off.		Associated port is not properly connected to another operational network device.	Properly connect the associated port to network or station. Reseat the cable. If problem persists, replace the cable.
Port state LED is flashing about once per second.		Associated port is disabled by network management.	Enable the associated port, if necessary. Use HUBwatch to check the security log.
Internal LAN LEDs are off.		No front-panel ports are mapped to an internal LAN, or there is no network traffic.	N/A

Redundant-Link Configuration

Overview

Introduction

This appendix describes the configuration and implementation of the redundant-link pair (RLP) of Ethernet 10BaseT links

Redundant-link configuration refers to two Ethernet links that are configured on a single LAN to provide greater fault tolerance than a single port-to-port configuration provides.

Caution

You must configure the links using HUBwatch before connecting the cables. Failure to do so can seriously impair performance on that segment of the LAN.

Major Components

Redundant links consist of the following major components:

- Master port pair
- Responder ports
- Nonresponder ports
- Master control algorithm (MCA)
- Primary link
- Secondary link

Overview (Cont.)

Basic Configuration

The basic redundant-link configuration consists of a pair of master ports on the same module and two remote ports on one module or on separate modules. These ports must reside on the same LAN or extended LAN.

Note

This configuration does not result in a repeater loop because only one of the links is active at one time.

The remote ports can be one of two types: a responder port or a nonresponder port. A responder port provides full fault detection. A nonresponder port provides only partial fault detection.

Redundant-Link Components

Introduction	This section describes the components that make up a redundant-link configuration.
Redundant-Link Pair	The redundant-link pair (RLP) is a pair of links that provide fault-tolerant communication in the event of transmitter, receiver, or cable failures.
Master Port Pair	The master port pair is the pair of manageable ports that reside on the module that contains the master control algorithm. One link of the master port pair is the primary link; the other is the secondary link.
Responder Ports	<p>A responder port, (referred to as a responder) is a manageable port that can detect a failure on its receive link and signal the master port that there is a failure.</p> <p>Responder ports enable full fault detection.</p>
Nonresponder Ports	<p>A Nonresponder port is a port that cannot signal the master that there is a failure. Use of nonresponder ports in a redundant-link pair provides only partial fault detection.</p> <p>Responder and nonresponder ports reside on a separate module from that of the master port, but must reside on the same LAN or extended LAN.</p> <p>The responder and nonresponder ports can reside on the same module as each other or on separate modules.</p>

Redundant-Link Components (Cont.)

Master Control Algorithm The master control algorithm (MCA) resides within the module that is assigned as the master and contains the master port pair. The MCA does the following tasks:

- Controls the active and standby status of each of the two ports of the master port pair.
- Monitors and reports the states of both links, and stores the status information in a MIB.
- Counts the number of link state transitions and stores the information in a MIB.

Primary Link The primary link, assigned by the MCA, is the active link at the module initialization time and after a reset.

Secondary Link The secondary link, assigned by the MCA, is the inactive link at the module initialization time and after a reset. The secondary link becomes active if the MCA detects a failure in the primary link.

The primary and secondary links retain their primary and secondary assignments. They change only their active and passive roles.

Redundant-Link Operation

How does it work?

The MCA controls the redundant-link operation by:

- Enabling the primary link at initialization time (assuming that there are no failures on that link).
- Monitoring the primary link status for failures.
- When it detects a failure of the primary link, it does the following:
 1. Disables the primary link.
 2. Enables the secondary link.

This typically occurs within 3 to 6 milliseconds (10 milliseconds maximum).

Once the primary link is repaired, it remains inactive until one of the following events occur:

- The MCA detects a failure in the secondary link.
- The secondary port is internally partitioned or disabled.
- The module is rebooted.

Configurations

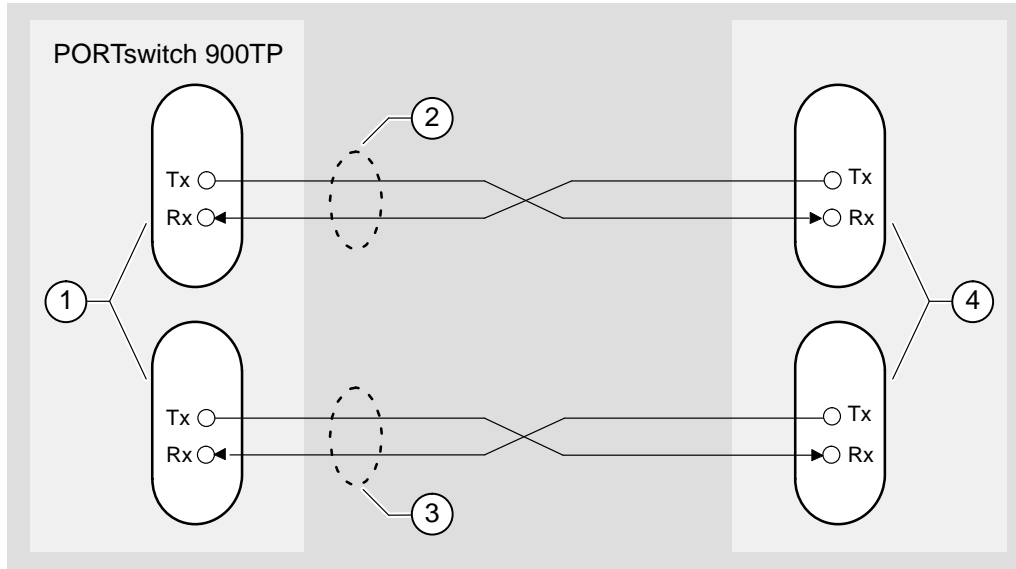
Simple Redundant-link Configuration

In its simplest form, a redundant link consists of a pair of master ports that reside on one module, and a pair of responder or nonresponder ports on a remote module. See Figure A-1.

Note

Use crossover (x) cables when connecting two PORTswitches or DECrepeaters.

Figure A-1 Simple Redundant-Link Configuration Example



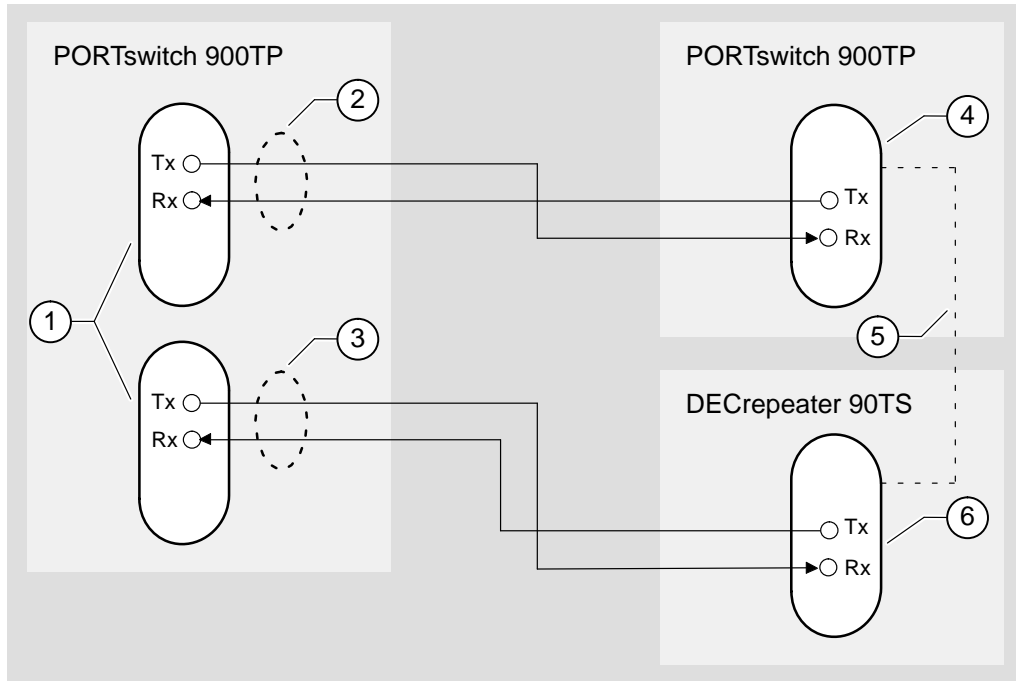
Item	Description
1	Master port pair
2	Primary link
3	Secondary link
4	Single responder ports, nonresponder ports, or a combination. These ports may be on one module (as shown in Figure A-1) or separate modules

Configurations (Cont.)

Complex Redundant-link Configuration

A complex redundant-link configuration consists of a master port pair and responder ports, nonresponder ports, or a combination of the two. The responder or nonresponder ports reside on separate modules, as shown in Figure A-2.

Figure A-2 Complex Redundant-Link Configuration Example



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Item	Description
1	Master port pair
2	Primary link
3	Secondary link
4	Single responder port
5	A backbone link between these ports
6	Single nonresponder port

Fault Detection

Partial Fault Detection

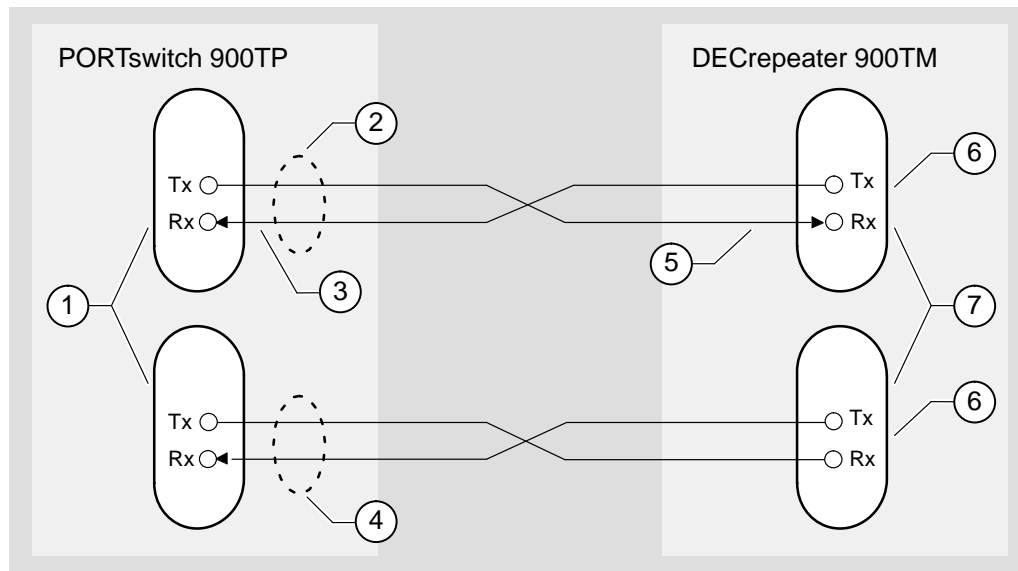
Partial fault detection allows the PORTswitch 900TP to achieve limited fault tolerance with connections to nonresponder repeaters such as the DECrepeater 900TM, DECrepeater 90TS, DECrepeater 90T, or to any IEEE compliant 10BaseT repeaters. See Figure A-3. When the link is configured for partial fault tolerance, the MCA disables the primary port and enables the secondary port under the following circumstances:

- A link failure of the master's primary receive port
- Partitioning of the primary port
- One of the following internally detected failures:
 - An excessive number of collisions
 - An excessively long collision
 - Received jabbering
 - Internally detected MAU failure

Partial fault detection adequately detects most failure conditions. However, it cannot detect a link failure to the nonresponder receive port.

Fault Detection (Cont.)

Figure A-3 Partial Fault Detection Configuration Example



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Item	Description
1	Master port pair.
2	Primary link (initially active).
3	The master can detect a link failure here.
4	Secondary link (initially standby and disabled).
5	The master cannot detect a link failure here.
6	Single nonresponder port (always enabled).
7	These ports may be on the same module or separate modules.

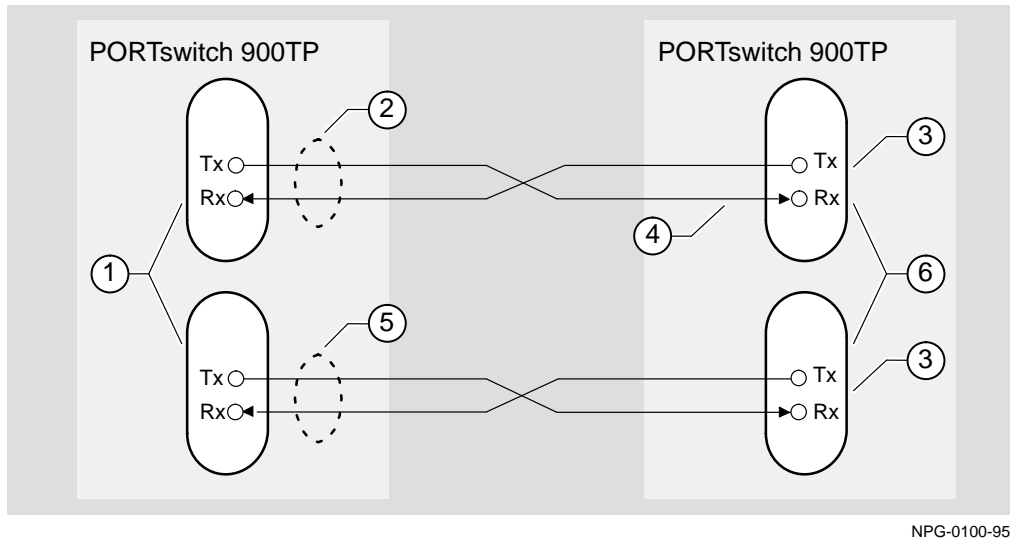
Fault Detection (Cont.)

Full Fault Detection

The PORTswitch 900TP supports full fault detection. When the PORTswitch 900TP ports are connected to the ports of another repeater that supports this feature, such as another PORTswitch 900TP, failures are detected at either end of the receive or transmit link. See Figure A-4.

If the responder's receive port detects a link failure, the responder signals the MCA. This allows the MCA to disable the active port and enable the inactive port.

Figure A-4 Full Fault Detection Configuration Example



Item	Description
1	Master port pair.
2	Primary link (initially active).
3	Single responder port (always enabled).
4	The master can detect a link failure here.
5	Secondary link (initially standby and disabled).
6	These ports may be on the same module or separate modules.

Fault Detection (Cont.)

Fault Detection Comparison

Figure A-1 shows the difference in failure detection between partial fault detection and full fault detection.

Table A-1 Comparison of Partial Fault Detection to Full Fault Detection

IF a link failure occurs in the master port's...	THEN partial fault detection...	THEN full fault detection...
TX Link	Does not detect the failure	Detects the failure
RX Link	Detects the failure	Detects the failure

Recommendations for Redundant-Link Configuration

Consider the following recommendations when configuring the PORTswitch 900TP as redundant links:

- Use responder ports (rather than nonresponder ports) whenever possible.
- If you use a combination of responder ports and nonresponder ports, assign the responder ports to the primary link and the nonresponder ports to the secondary link.
- Assign the remote ports (responder or nonresponder) to separate modules to ensure that one of the two remote ports is functional if a remote module fails.
- Whenever possible, configure primary and secondary link cables into separate pathways to avoid a single point of failure.

B

Connector Pin Assignments

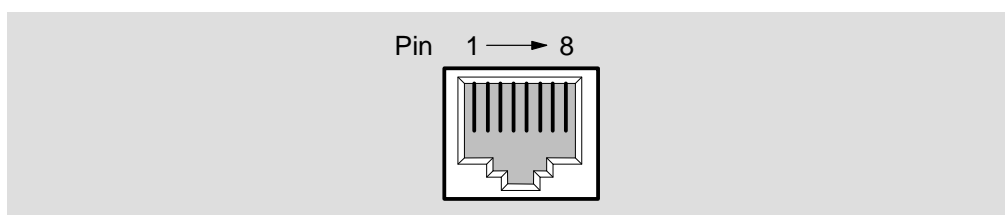
Overview

Introduction This appendix shows detailed illustrations of the connectors, cables, and adapters used on the PORTswitch 900TP.

10BaseT Connectors

10BaseT Port (8-pin MJ) Connector Figure B-1 shows the 8-pin MJ crossover connector and its pin assignments:

Figure B-1 10BaseT Port (8-pin MJ) Connector



NPG-0101-95I

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

The Crossover Function 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.

10BaseT Connectors (Cont.)

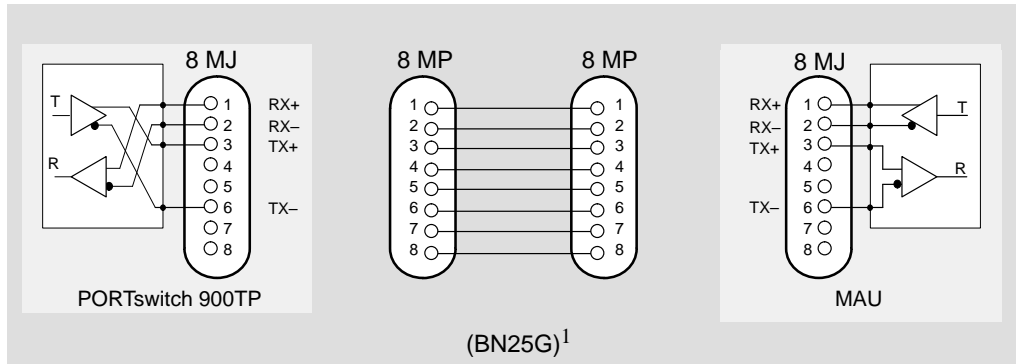
Straight-through Cable

The PORTswitch 900TP provides a signal-line crossover connector for each port. This enables the ports to use the more common straight-through cables. When connecting the PORTswitch 900TP to a MAU, you must use a straight-through cable.

Cable Wiring

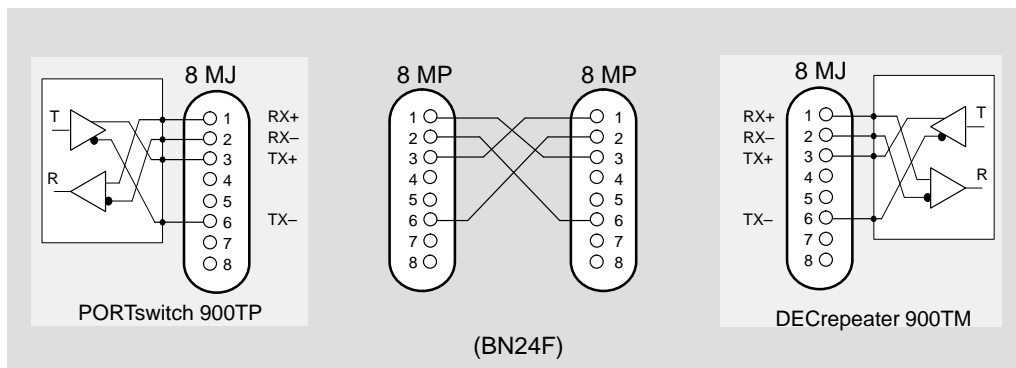
Figure B-2 and Figure B-3 show the use of straight-through and crossover cables for connecting internal and external crossover-type devices.

Figure B-2 Internal Crossover Configuration



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Figure B-3 External Crossover Configuration



NPG-0104-951

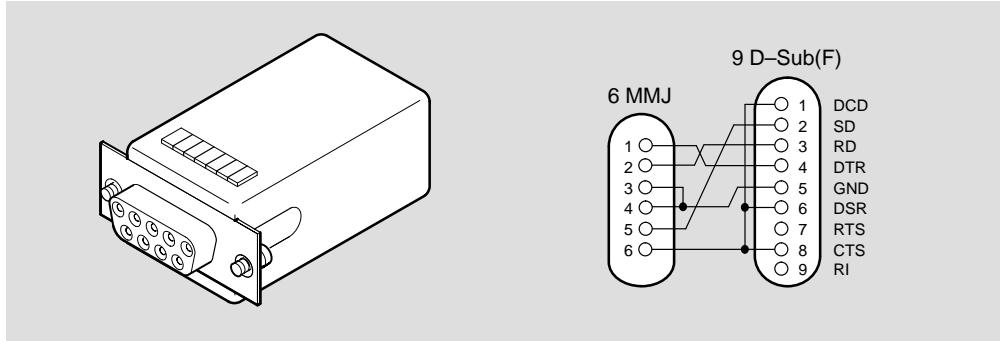
¹ If screened cabling is required, use BN26M.

Adapters

H8571-J Adapter

Figure B-4 shows the H8571-J adapter (6-pin MMJ connector to 9-pin D-Sub connector) and its pin assignments:

Figure B-4 H8571-J Adapter

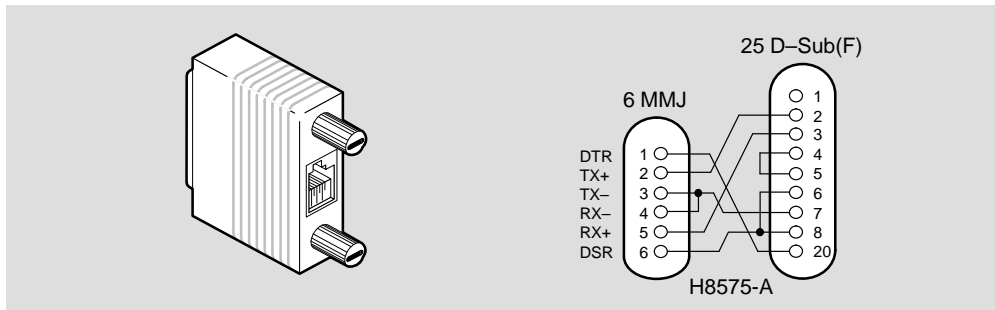


LKG-5342-911

H8575-A Adapter

Figure B-5 shows the H8575-A adapter (6-pin MMJ connector to 25-pin D-Sub connector) and its pin assignments:

Figure B-5 H8575-A Adapter



NPG-0102-951

Note that EOS/ESD protection devices are not shown on the diagram.

Remote Monitor Alarms and Events

Overview

Introduction

This appendix provides an overview of the PORTswitch 900TP remote monitor (RMON) alarms and events feature.

RMON alarms and events implement a subset of the RMON management information base (MIB) groups based on the IETF draft standard MIB specified by RFC1757, where the primary purpose is to function within the PORTswitch 900TP, and not operate as an RMON probe. The RMON MIB groups include RMON Alarms and RMON Events.

Alarms and Events Description

The Portswitch 900TP implements the RMON alarms and events groups. You can use the alarms and events to monitor MIB objects within the module. The alarms group specifies objects and thresholds you can sample. When the value of a MIB object reaches its threshold, an event is generated.

You can use an SNMP application to create alarm and event table entries. The module is configured with nine default alarms and events that you can modify or delete.

The following two sections describe the alarms and events groups.

Alarms and Events Groups

RMON Alarms Group

The RMON alarms group samples variables from the PORTswitch 900TP and compares them to preconfigured and configurable thresholds. An alarm table stores configuration values of MIB objects for the polling frequency, thresholds, alarm types, and the events to be generated when an alarm exceeds its threshold.

Using the RMON alarms group, you can selectively monitor any integer-like object associated with the PORTswitch 900TP.

RMON Events Group

The RMON events group controls the generation and notification of events of the PORTswitch 900TP. Each entry in the eventTable describes parameters of the event that can be activated. Events are activated by alarms configured in the alarms group. You can specify, at your option, that a log entry is created for each eventEntry whenever the event occurs. You can also specify event notification trap messages for each entry. The RMON events group supports the risingAlarm and fallingAlarm event traps.

Configured Alarms and Events

Default Alarms and Events The PORTswitch 900TP RMON alarms and events MIB is configured with nine alarms and events. Table C–1 describes the PORTswitch 900TP configured alarms and events.

Table C–1 Configured RMON Alarms and Events

This Alarm Message...	Means...
An environmental change occurred	The module has a fan failure or overheating condition.
Port autopartitioned or operational	One or more ports has been autopartitioned, or a port that was previously autopartitioned is now operational.
NVRAM full	There is no more memory for nonvolatile parameters.
Health text changes	The module's operational state has changed.
Total ports events	The total number of times a port has become nonoperational, autopartitioned, or unavailable.
Total repeater errors	The total number of errors for this module.
Redundant-link state changes	The module's link state change has occurred while using redundant-link configuration.
Security violation	A security violation has occurred on one or more ports.
Media available or unavailable	One or more media have become available or unavailable.

User-defined Alarms and Events In addition to the nine default alarms and events, you can also configure RMON alarms and events on any integer-like object supported by the module.

D

Product Specifications

Introduction This appendix lists operating and acoustical specifications.

Operating Specifications Table D–1 lists the PORTswitch 900TP environmental specifications.

Table D–1 PORTswitch 900TP Operating Specifications

Parameter	Specification
<i>Operating Environment</i>	
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	37.5 W, total power 6.0 A, 5Vdc, 0.1 A, 12Vdc ² 0.5 A, 15Vdc

Connectors

Module has 32 10BaseT ports.

DEChub ONE has one 8-pin MJ, one DB-9, and one 15-pin D-Sub AUI connector.

DEChub ONE-MX has: one 8-pin MJ, one 6-pin MJ (OBR), one DB-9, one 15-pin D-Sub, and one redundant power connector (D-sub).

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 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 total.

Physical Specifications

Table D–2 lists the PORTswitch 900TP physical and certification specifications.

Table D–2 PORTswitch 900TP Physical Specifications

Parameter	Specification
<i>Physical</i>	
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 or DEChub ONE-MX
Weight	2.65 kg (5.85 lb) ¹
<i>Certification</i>	
CE, CSA, FCC, TÜV, UL, VCCI	

¹ Include an additional 1.59 kg (3.5 lb) when installed into a DEChub ONE; when installed into a DEChub ONE-MX, add 2.10 kg (4.63 lb).

Acoustical Specifications

Table D–3 lists the PORTswitch 900TP acoustical specifications.

Table D–3 Acoustical Specifications

Acoustics — Declared values per ISO 9296 and ISO 7779¹

Product	Sound Power Level $L_{WA,d}$, B	Sound Pressure Level L_{pAm}, dBA (bystander positions)
	<i>Idle/Operate</i>	<i>Idle/Operate</i>
DETPJ	4.9	35
DETPJ + DEHUA	5.3	39
DETPJ + DEF1H	5.3	39

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

Produkt	Schalleistungspegel $L_{WA,d}$, B	Schalldruckpegel L_{pAm}, dBA (Zuschauerpositionen)
	<i>Leerlauf/Betrieb</i>	<i>Leerlauf/Betrieb</i>
DETPJ	4,9	35
DETPJ + DEHUA	5,3	39
DETPJ + DEF1H	5,3	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.

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ELECTRONIC ORDERS (U.S. ONLY)

Dial 1-800-dec-demo with any VT100 or VT200
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*Any prepaid order from Puerto Rico must be placed
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EK-DETPJ-IN. A01**

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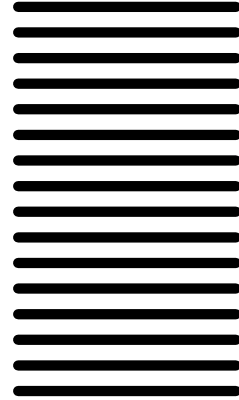
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