DECconcentrator 900FH

Installation and Configuration

Part Number: EK-DEFHM-IN.A01

January 1996

This book explains how to install and configure the DECconcentrator 900FH module.

Revision/Update Information: This is a new document.

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

VCCI Notice — Class 1 Computing Device:
This equipment is in the 1st Class category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council for Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in commercial and/or industrial areas. Consequently, when used in a residential area or in an adjacent area thereto, radio interference may be caused to radios and TV receivers. Read the instructions for correct handling.

CE Notice — Class A Computing Device:
Warning!
This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

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

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

CONTENTS

Preface

Safety

1 DECconcentrator 900FH Description

2 Installing the Module

3 Installing the Setup Port Cable

4 Configuring the Module in a DEChub ONE

5 Configuring the Module in a DEChub 900

6 Removing the Module

7 Replacing ModPMD Interfaces

A Problem Solving

B Cables

C Connector Pin Assignments

D Product Specifications

Preface

Overview

Purpose of This Document

This manual describes how to install and configure the DECconcentrator 900FH module to operate in either a DEChub 900 MultiSwitch or as a standalone unit in a DEChub ONE docking station.

Intended Audience

This manual is intended for use by personnel who will install and configure the DECconcentrator 900FH module.

Organization

This manual is organized as follow:

Chapter	Description
1	Provides an overview of the DECconcentrator 900FH module, describes its features, and lists front and back panel features.
2	Describes how to install the DECconcentrator 900FH into a DEChub 900 MultiSwitch or Dechub ONE.
3	Provides instructions for connecting the setup port on the DEChub 900 or DEChub ONE to the setup port device.
4	Provides information on configuring the DECconcentrator 900FH in a DEChub ONE.
5	Provides information on configuring the DECconcentrator 900FH in a DEChub 900 MultiSwitch.
6	Describes how to remove the module from a DEChub 900 MultiSwitch.
7	Provides information on replacing the ModPMD interface.

Appendix	Description
A	Describes how to diagnose and solve problems with the module.
B	Describes the cables that connect the module to various network devices.
C	Shows the pin assignments of the connectors and adapters.
D	Lists the operating and acoustical specifications for the module.

Conventions

Overview

This book uses the following conventions.

Conventions

Convention	Description
Special type	This special type in examples indicates user input.
Boldface	This special type in examples indicates user input.
<Return>	Indicates that you should press the Return key.
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`

Associated Documents

The following documents provide information relating to the module. To order any of the following documents, refer to the directions on page xiv of this section.

Title and Order Number	Description
DEChub 900 MultiSwitch Owner's Manual EK-DH2MS-OM	Provides installation, use, security, and troubleshooting information for the DEChub 900 MultiSwitch.
DEChub ONE Installation EK-DEHU2-IN	Provides installation and operation guidelines for standalone module configuration, including mounting options and cabling.
DEChub ONE MX Installation EK-DEF1H-IN	Provides installation and operation guidelines for standalone module configuration, including mounting options and cabling.
HUBwatch Installation and Configuration AA-Q3S8F-TE	Provides information for installing and configuring HUBwatch for all supported platforms.
HUBwatch Use 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.
HUBwatch for Windows Use AA-Q3S3C-TE	Describes how to use the HUBwatch network management software in a Windows 3.1 operating system environment.
Fiber Distributed Data Interface Media Connection Information EK-A0597-MI	Provides FDDI connector, cable, and loopback connector information for ModPMD interfaces.
Open DECconnect Applications Guide EC-G2570-42	Provides information to help plan and install networking systems based on Digital's OPEN DECconnect System and networking products

Correspondence

Documentation Comments

If you have comments or suggestions about this document, send them to the Network Products Business Organization.

Attn.:	Documentation Project Manager
FAX:	(508) 486-6093
E-MAIL:	doc_quality@lkg.mts.dec.com

Online Services

To locate product specific information, refer to the following online services:

BBS   To read the Bulletin Board System, set your modem to 8 bits, no parity, 1 stop bit and dial 508-486-5766 (U.S.)

WWW   The Digital Equipment Corporation Network Products Business Home Page on the World Wide Web is at the following addresses:

North America:	http://www.networks.digital.com
Europe:	http://www.networks.europe.digital.com
Australia:	http://www.digital.com.au/networks

How to Order Additional Documentation

To order additional documentation, use the following information:

To Order:	Contact:
By telephone	USA (except Alaska, New Hampshire, and Hawaii): 1-800-DIGITAL (1-800-344-4825) Alaska, New Hampshire, and Hawaii: 1-603-884-6660 Canada: 1-800-267-6215
Electronically (USA. only)	Dial 1-800-DEC-DEMO (For assistance, call 1-800-DIGITAL)
By mail (USA and Puerto Rico)	DIGITAL EQUIPMENT CORPORATION P.O. Box CS2008 Nashua, New Hampshire 03061 (Place prepaid orders from Puerto Rico with the local Digital subsidiary: 809-754-7575)
By mail (Canada)	DIGITAL EQUIPMENT of CANADA LTD. 940 Belfast Road Ottawa, Ontario, Canada K1G 4C2 Attn.: A&SG Business Manager
Internationally	DIGITAL EQUIPMENT CORPORATION Attn.: A&SG Business Manager c/o local Digital subsidiary or approved distributor
Internally	U.S. Software Supply Business (SSB) DIGITAL EQUIPMENT CORPORATION 10 Cotton Road Nashua, New Hampshire 03063

Safety

Overview

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

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

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.

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

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

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	Solite während der Phase 3 des DLU-Prozesses eine Unterbrechung der Stromversorgung eintreten, kann das Firmwareprogramm zerstört verden. 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 corrumpue, 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 course 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.

WARNING	Be sure to remove the module from its power source (the DEChub 900 MultiSwitch or the DEChub ONE) before performing any ModPMD removal and replacement procedures.
VORSICHT	Achten Sie darauf, daß das Modul von seiner Energiequelle abgetrennt wurde (DEChub 900 MultiSwitch oder DEChub ONE), bevor Sie das ModPMD entfernen oder auswechseln.
DANGER	Assurez-vous que vous avez débranché le module de sa source d'alimentation (interrupteur multiple DEChub 900 ou DEChub ONE) avant de retirer ou de remplacer le ModPMD.
AVISO	Es preciso cerciorarse de retirar el módulo de la fuente de energía (Conmutador múltiple DEChub 900 o DEChub ONE) antes de realizar cualquier procedimiento de cambio y remplazo del ModPMD.

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

Chapter 1

DECconcentrator 900FH Description

Overview

Introduction

This chapter describes the DECconcentrator 900FH product and its features.

In This Chapter

What Is the DECconcentrator 900FH?

The DECconcentrator 900FH (also referred to in this manual as the module) is a 16-port (14 front panel and 2 backplane) Fiber Distributed Data Interface (FDDI) concentrator. It can be configured into the DEChub 900 MultiSwitch (also referred to in this manual as the DEChub 900).

The module can also serve as a standalone unit when configured with a DEChub ONE docking station. As standalone units, the modules can be stacked into equipment racks to allow for economical network growth. Throughout this manual, the term DEChub ONE refers to the DEChub ONE or the DEChub ONE-MX docking station unless otherwise specified.

The module's front panel provides two ModPMD ports, 12 fixed optical M-ports, and a 6-pin MJ connector that supports an optical bypass relay (OBR). The module supports four types of modular physical media dependent (ModPMD) ports: multimode fiber (MMF) using ANSI MIC connectors, single-mode fiber (SMF), twisted-pair for FDDI (TP-FDDI), and multimode fiber using SC Optics connectors. The ports can be installed in various combinations to optimize LAN usage and accessibility from a single module.

When the module is installed into a DEChub 900, you can interconnect up to eight FDDI modules via the DEChub 900 backplane, without using any of the front-panel ports. Front-panel light-emitting diodes (LEDs) provide module status and port-level status.

Features

Your DECconcentrator 900FH module includes the following features.

Hot Swap

The module's hot swap capability allows you to install or remove the module from a DEChub 900 or DEChub ONE docking station without turning off the power.

Configuration and Management

The following configuration and management options are available:

- Front-panel ports are software configured as follows:

    — 14 M-ports

    — 2 A-/B-ports and 12 M-ports

    — 1 A-port and 13 M-ports

    — 1 B-port and 13 M-ports

    — 1 S-port and 13 M-ports

- Versatile front-panel connectivity with a modular media interface design that supports the following ModPMD interfaces in front panel ports 1 and 2:

    — Multimode fiber (MMF) using ANSI MIC connectors

    — Single-mode fiber (SMF)

    — Twisted-pair for FDDI (TP-FDDI)

    — Multimode fiber using SC Optics connectors

- Setup port for initial setup of the module using a terminal or personal computer

- Upgrade device firmware (in nonvolatile flash memory) using Trivial File Transfer Protocol (TFTP) with HUBloader or through the setup port with any TFTP server

- Out-of-Band Management (OBM) over Serial Line Internet Protocol (SLIP) through the OBM connector as an alternative to in-band management

- Advanced graphical user interface (GUI) manageability with Digital's HUBwatch Network Management Station (NMS) application

- Support for SMT 7.3 Station Management (X3.229 - 1994)

Features

- Automatic self-test at power-up

- Support for an OBR

- FDDI dual ring or tree connectivity

SNMP

Built-in SNMP agent support for the following management information bases (MIBs) is provided:

- Management Information Base - MIB II (RFC-1213)

- FDDI MIB (RFC-1512)

- Digital Extended MIB V2.9, 17-May-1994

- PCOM MIB June 1995

Manageability using any generic SNMP management application that supports the MIBs listed above.

Front Panel Features

The DECconcentrator 900FH has 14 FDDI ports on the front panel. Ports 1 and 2 are software configured using HUBwatch or SNMP. The default configuration for port 1 is A-type and for port 2 is B-type.

Optional configurations are:

- Port 1 configured as either an A or M-type port

- Port 2 configured as a B, M or S-type port

Note that ports 3 through 14 are M-type ports only

The following table describes the LED indicators and connectors on the front panel of the DECconcentrator 900FH (refer to Figure 1-1).

Item	Name	Description
1	Power LED	Indicates the module has power.
2	Module OK LED	Indicates when the module passes self-test. If the module fails self-test, the Module OK LED remains off. Blinks if a non-fatal error occurs.
3	Network OK LED	Indicates the status of the network connection. Lights to indicate that the FDDI Ring is operational. During power-up, this LED lights after each successful self-test routine.
4	Optical Bypass Relay (OBR) 6-pin MJ connector	Allows you to connect to an OBR device (not supplied) to maintain connectivity of the FDDI ring in the absence of power or during fault conditions in a station.
5	Address Label	Contains the MAC address of the module.
6	Port Status LEDs (Ports 3-14)	Indicates PHY connection status (green, amber, or alternating green/amber).
7	Port Status (PHY) LED	Indicates PHY connection status (green, amber, or alternating green/amber).

Front Panel Features

Item	Name	Description
8	FRU Status LED	Indicates a ModPMD fault condition (amber). Indicates the ModPMD port type (green, flashing green, or off).
9	ModPMD port	
10	Ports 3-14 (M-Type SC Optics)	

NOTE

For more information about the module's LEDs, refer to the section titled *LED Descriptions* in Appendix A.

Figure 1-1: Front Panel Features
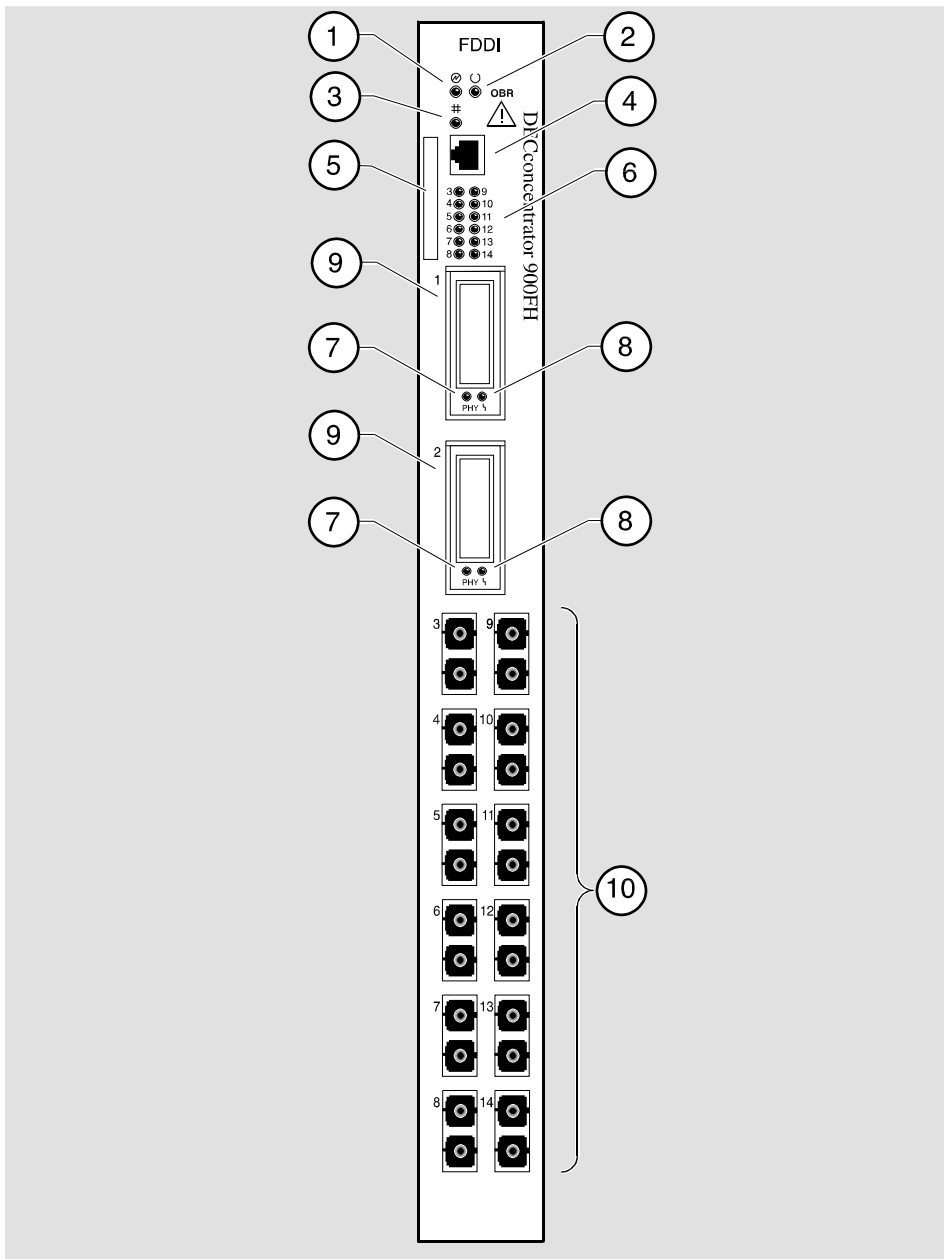
NPG-0325-95F

Back Panel Features

A description of the back panel features of the DECconcentrator 900FH are listed below (refer to Figure 1-2).

Item	Name	Description
1	Locking tab	Locks the module into a DEChub 900 backplane or into a Dechub ONE. Contains the hot-swap switch lever.
2	48-pin connector	Provides network and power connections to the module when the module is installed in a DEChub 900 or DEChub ONE.
3	Grounding bolt	Provides a chassis ground connection between the module and the DEChub 900 or the DEChub ONE.
4	Manufacturing label	Lists the part number, serial number, revision level, and power requirements.
5	Grounding Screw	Provides a chassis ground connection between the module and the DEChub 900 or the DEChub ONE.
6	160-pin connector	Provides network and power connections to the module when the module is installed into a DEChub 900 or a DEChub ONE.
7	Mounting tab	Secures the module when it is installed into a DEChub 900 or a DEChub ONE.
8	Grounding fingers	Provide additional chassis grounding between the module and a DEChub 900 or a DEChub ONE.

Figure 1-2: Back Panel Layout
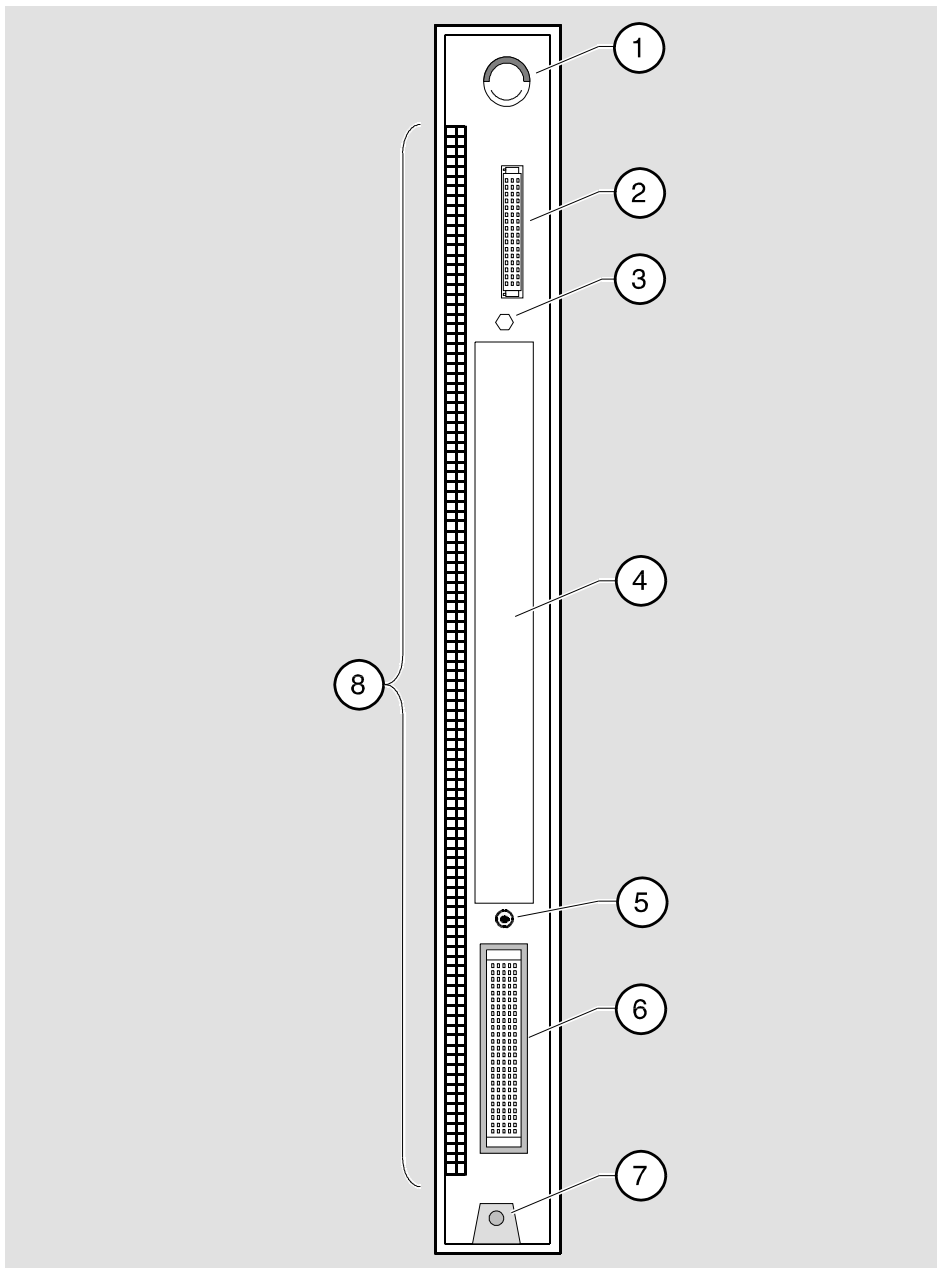
NPG-9723-95F

Network Environments

Introduction

The module can be in any one of three network environments:

- DEChub 900 (Hub)

- DEChub ONE-MX (DEF1H)

- DEChub ONE (DEHUA)

The abbreviations (shown in parentheses) are used to indicate these environments in the table in the following section.

Environment Configurations

The following table lists the possible configurations.

If the concentrator is installed into a ...	Then you can choose ...
DEChub ONE-MX	Any one of nine different FDDI port configurations through the setup port or HUBwatch.
DEChub ONE	Only two FDDI port configurations through the setup port or HUBwatch.
DEChub 900	Any one of nine different FDDI port configurations. The FDDI port configurations cannot be selected through the setup port. HUBwatch is used to put the module in the desired FDDI port configuration.

The following table contains all the configurations that can be used.

Station Type	Front Panel Ports	Backplane Ports	Environment
DAC[a]	A, B, 12M	Not used	Hub, DEF1H, DEHUA
DAC	A, 13M	B	Hub, DEF1H
DAC	B, 13M	A	Hub, DEF1H
DAC	14M	A, B	Hub, DEF1H
DAC	A, B, 12M	M	Hub, DEF1H
SAC[b]	S, 13M	Not Used	Hub, DEF1H, DEHUA
SAC	S, 13M	M	Hub, DEF1H
SAC	14M	S	Hub, DEF1H
SAC	14M	S, M	Hub, DEF1H

a. Dual attach concentrator

b. Single attach concentrator

Changing Network Environments

When the module is installed in a DEChub ONE or DEChub ONE-MX, the selected FDDI port configuration is stored in NVRAM. On a reset the selected configuration is maintained. Also, if the module is moved from a docking station to another docking station of the same type, the selected configuration is maintained. The selected configuration is maintained even if the number or type of ModPMD interfaces in the docking stations is different.

However, if the module is moved from one environment to a different environment, the selected configuration is deleted from NVRAM and the default configuration is used. All other stored information is retained (for example, in-band IP address, out-of-band address).

Network Environments

The following table contains the default configurations.

Port	Port Type
1	A
2	B
3 - 14	M
Backplane	Not used

Chapter 2

Installing the Module

Overview

Introduction

This chapter describes how to install the DECconcentrator 900FH in a DEChub 900 MultiSwitch. To install a module in a DEChub ONE docking station, refer to the *DEChub ONE Installation* manual.

The DECconcentrator 900FH hot-swap feature allows you to install the module into the DEChub 900 or DEChub ONE docking station without turning off power. Seating the module initiates its power-up sequence, if enough power is available.

In This Chapter

Installing the Module in a DEChub 900

The DECconcentrator 900FH hot-swap feature allows you to install the module into the DEChub 900 or DEChub docking station without turning off power. Seating the module initiates the module's power-up sequence if enough power is available.

Installing the module in a DEChub 900 involves the following tasks:

Task	Description
1	Compare the power ratings.
2	Seat the module into the DEChub 900.
3	Verify initial LED operation.
4	Connect the cable.

Task 1: Compare the Power Ratings

Compare the module's power ratings (1) with the values shown in the Hub Manager Status display (2) (refer to Figure 2-1).

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

Figure 2-1: Module Power Ratings

1

57.0 W
9.7 A   5 V
0.1 A   12 V
0.6 A   15 V

2

Available: 90.5 W
5V: 13.0 A, 15V: 3.5 A
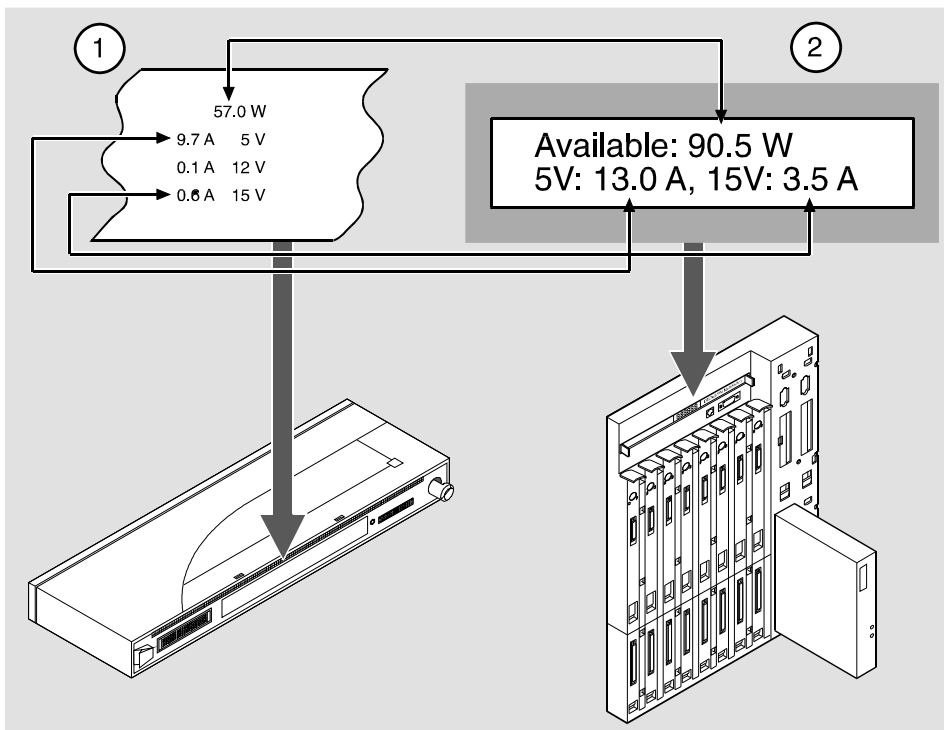
NPG-0374-95F

Task 2: Seat the Module into the DEChub 900

To seat the module, perform the following steps (refer to Figure 2-2).

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

Figure 2-2: Seating the Module
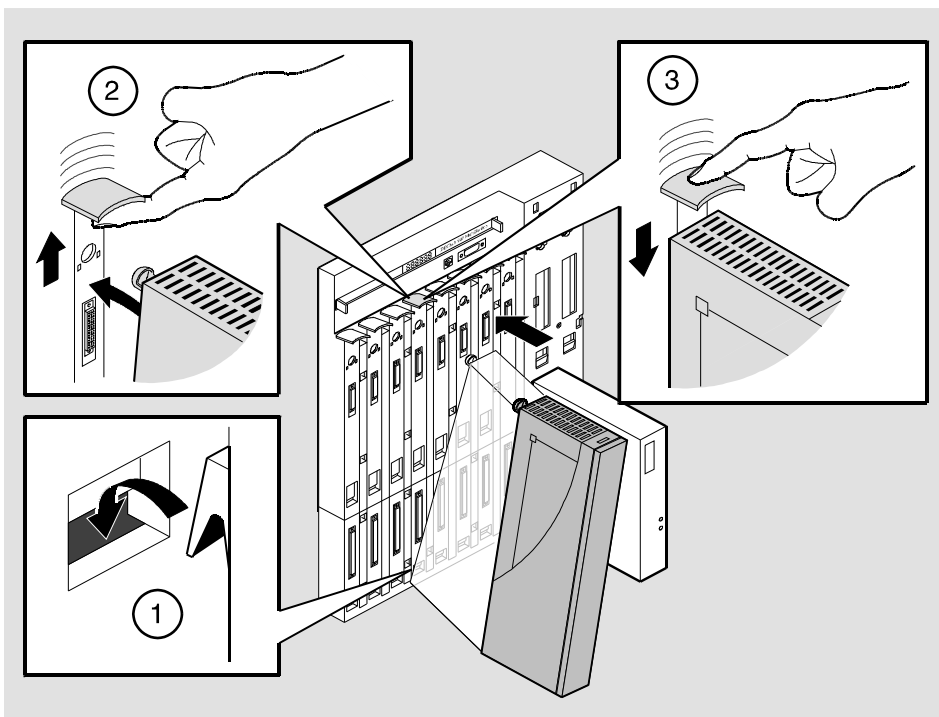
NPG-0004-95F

Task 3: Verify Initial LED Operation

Verify that the module's Power LED and the Module OK LED light within 1 minute.

Step	Action
1	The Power LED lights when power is applied; then the module performs a self-test.
2	After the module completes self-test, the Module OK LED lights and remains lit.

NOTE

If the LEDs do not operate as described, refer to Appendix A, *Problem Solving.*

Task 4: Connect the Port Cable

Depending on your network configuration requirements, connect the appropriate SMF cable, TP-FDDI cable, MMF cable, or SC Optics cable.

WARNING

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

NOTES

- Before installing the module, be sure that all cables have been installed, tested, and tagged at the site.

- ModPMD (part number DEFXS-AA) with FC/PC port connectors is not supported on this module.

To connect	Go to
Single-mode fiber-optic (SMF) cable	Task 5
Twisted-pair for FDDI (TP-FDDI) cable	Task 6
Multimode fiber-optic (MMF) cable	Task 7
Multimode SC Optics cable	Task 8

Task 5: Connect the SMF Port Cable

To connect the SMF port cable, complete the following steps (refer to Figure 2-3).

Step	Action
1	Remove the dustcaps from the ModPMD (part number DEFXS-BA) with ST-type port connectors and from the ports that you are connecting.
2	Align the tab (3) and slot (4) of the transmit cable plug with the tab (1) and slot (2) of the transmit port connector.
3	Insert the plug, then push the plug's sleeve (5) in and turn it to the right, locking it in place.
4	Connect the receive cable, in the same way, to the receive port connector. Note: To disconnect the SMF port cable, push the plug's sleeve in and turn it to the left; then disconnect the cable.

Figure 2-3: SMF Port Cable
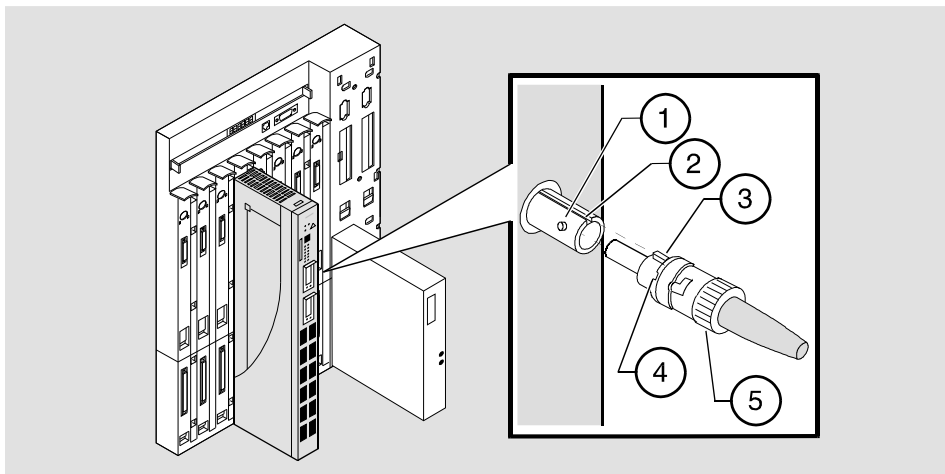
NPB-0369-95F

Task 6: Connect the TP-FDDI Port Cable

To connect the TP-FDDI port cable, complete the following steps (refer to Figure 2-4).

Step	Action
1	Align the release tab (2) on the cable plug with the keyway (1) on the module's 8-pin MJ connector.
2	Insert the plug into the connector, ensuring that the release tab snaps into the locked position.
	Note: To disconnect the TP-FDDI port cable, press the release tab on the 8-pin MJ connector; then disconnect the cable.

Figure 2-4: TP-FDDI Port Cable
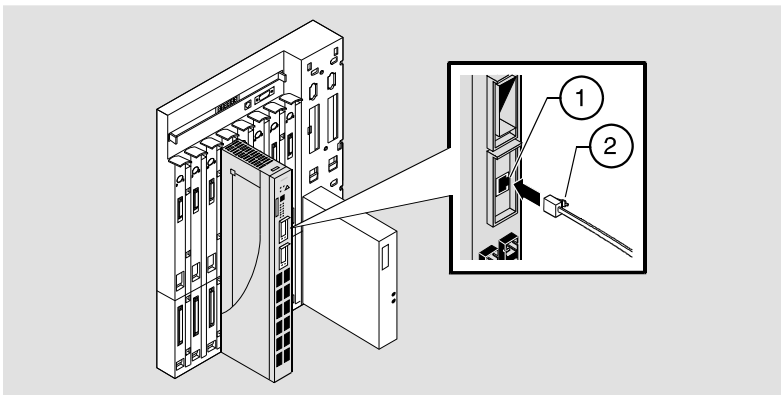
NPB-0371-95F

Task 7: Connect the MMF Port Cable

To connect the MMF port cable, complete the following steps (refer to Figure 2-5).

Step	Action
1	Remove the protective caps from the module's MMF port connector and from the MMF cable plug.
2	Align the keyway (2) on the MMF cable plug with the key on the module's MMF port connector.
3	Insert the plug into the connector, ensuring that the locking clips (1) on the sides of the plug snap into the locked position.
	Note: To disconnect the MMF port cable, press the locking clips on the cable plug; then disconnect the cable.

Figure 2-5: MMF Port Cable
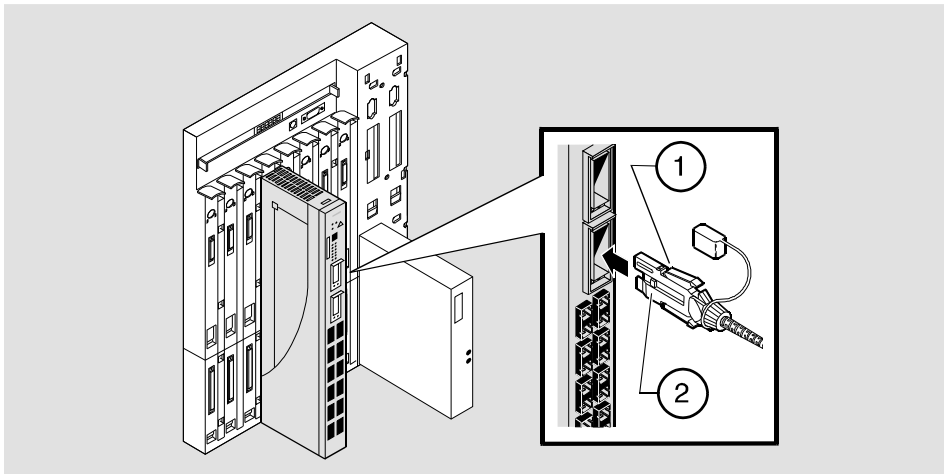
NPB-0372-95F

Task 8: Connect the SC Optics Port Cable

To connect the SC Optics port cable, complete the following steps (refer to Figure 2-6).

Step	Action
1	Remove the dustcaps from the ModPMD (part number DEFXM-SC) on the front panel SC Optics.
2	Remove the dustcaps from the cable.
3	Align the notch of the cable plug with the slot on the connector.
4	Insert the connector until it is seated. Note: To disconnect the SC Optics port cable, grasp the connector near the bezel and pull.

Figure 2-6: SC Optics Port Cable
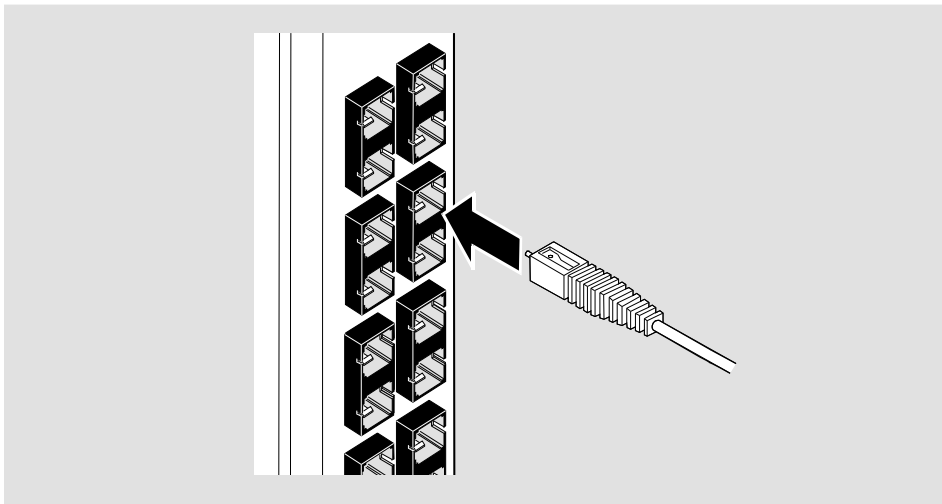
NPB-0375-95F

Chapter 3

Installing the Setup Port Cable

Overview

Introduction

This chapter describes how to connect the DECconcentrator 900FH module to the setup port on a DEChub 900 MultiSwitch or a DEChub ONE docking station.

In This Chapter

Topic	Page
Signaling Standards	3-2
Setup Port Device Cabling	3-3
Connecting the Setup Port	3-4

Signaling Standards

Signals from the DEChub 900 MultiSwitch Hub Manager 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 MultiSwitch Hub Manager setup port is compatible with devices that use the EIA-423 signaling standard.

Setup Port Device Cabling

The setup port (see Figure 3-1) on the DEChub 900 MultiSwitch or the DEChub ONE docking station can be connected to a setup port device (a terminal or personal computer), using the following cables and adapters:

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

[1] xx indicates cable length in meters.

Connecting the Setup Port

To connect the setup port on the DEChub 900 or the DEChub ONE, 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 MultiSwitch or the DEChub ONE docking station (see Figure 3-1).

The following legend identifies the setup port cabling in Figure 3-1:

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

Figure 3-1: Setup Port Cabling Components
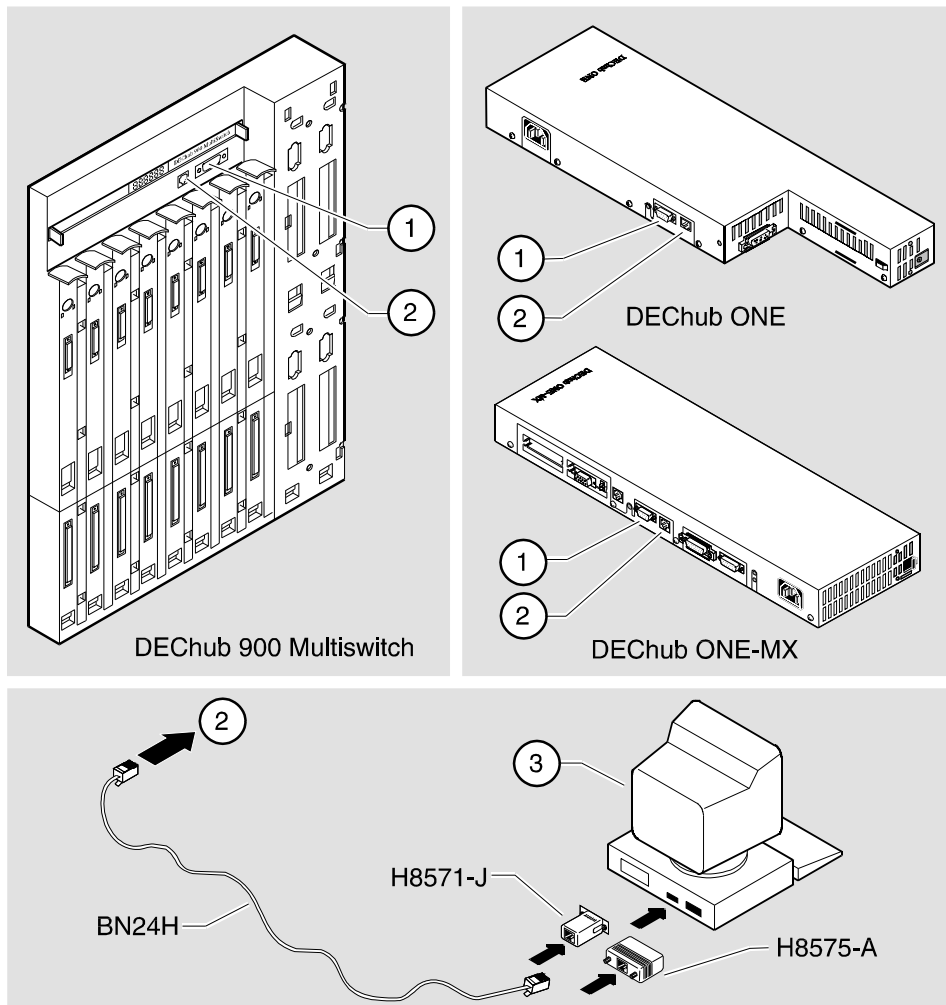
NPG-0020-95F

After all cables are connected, go to one of the following sections:

To	Go to
Configure the module in a DEChub ONE	Chapter 4
Configure the module in a DEChub 900	Chapter 5

Chapter 4

Configuring the Module in a DEChub ONE

Overview

Introduction

This chapter describes how to configure your DECconcentrator 900FH when it is installed in a DEChub ONE docking station. For DEChub ONE installation procedures refer to the *DEChub ONE Installation* manual.

In This Chapter

Accessing the Setup Port

To configure your module and make it remotely accessible you must assign:

- An IP address

- A subnet mask

- A default gateway

The setup port provides menus that allows you to access the DECconcentrator 900FH. These menus allow you to setup the module for basic connectivity. After setup, you then configure the module's software using commands. These commands can be accessed remotely via TCP/IP Telnet, or locally through the setup port on a DEChub ONE docking station.

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

To access the setup menus, press the <Return> key on the setup port device until the `DECconcen 900FH INSTALLATION MENU` appears.

To configure the module using	Go to the section titled
Menus	*Using Menus to Setup the Module*

Using Menus to Setup the Module

This section describes the options that are available from the DECconcen 900FH
INSTALLATION MENU when the module is installed in the DEChub ONE docking
station.

The following example shows the dialog associated with this option when the module
is setup with factory defaults.

```
        DECconcen 900FH
=====================================================
         DECconcen 900FH INSTALLATION MENU

[1] Restart with Factory Defaults
[2] Restart with Current Settings
[3] Show Current Settings
[4] Configure IP ...
[5] Dump Error Log
[6] Downline Upgrade
[7] Configure Out-of-Band Port ...
[8] Module-Specific Options ...

[Ctrl/C] Return to Hub Manager Installation Menu


=====================================================
    Enter number: [n] <Return>
```

[1] Restart with Factory Defaults

This option initializes the module's configuration to factory default values by resetting the module's NVRAM parameters and restarting the module. (To keep the configured setup, use Option 2.) Allow approximately one minute for the module to restart and complete self-test.

CAUTION

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

The following example shows the dialog associated with this option.

```
      Enter number : 1
DECconcen 900FH
==================================================================
                  RESTART WITH FACTORY DEFAULTS
   * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
   *         IMPORTANT!    IMPORTANT!    IMPORTANT!        *
   * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
   * This selection will delete the current configuration   *
   * settings and restart the system with the factory default*
   * settings. All configuration settings will be lost.     *
   * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
==================================================================
                Press Y to confirm [N]:  <Return>

                Press Return for Main Menu ...
```

[2] Restart with Current Settings

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

NOTE

Allow approximately one (1) minute for the module to restart.

The following examples show the dialog associated with this option.

```
          Enter number: 2
DECconcen 900FH
==================================================
             RESTART WITH CURRENT SETTINGS
     This selection will restart your system with
     the current configuration settings.
==================================================
        Press Y to confirm [N]: <Return>
        Press Return for Main Menu ...
```

[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 are blank.

The following example shows the dialog associated with this option.

```
        Enter number : 3
DECconcen 900FH
===================================================================
DECconcen 900FH, 14-port FDDI Concentrator, HW=v0,RO=v.1.2,SW=T3.6.0.2
SysUpTime                        : 6 days  01:39:11 34 resets
SNMP Read/Write Community        : public
SNMP Trap Addresses              : Not Configured
Status of Last Downline Upgrade  : TFTP Read
                                     00:02:55 27 resets
                                     Transfer Complete
Out-of-Band (OBM) Management RTS : Speed 38400 bps
BootP                            : Disabled
-------------------------------------------------------------
Interface  IP Address  Subnet Mask  Def. Gateway Other Info
FDDI Port                                        08-00-2B-A6-0E-05
OBM Port   16.20.548.26                          Speed 38400 bps
===================================================================
SNMP Port Traps                : Enabled
Quick diagnostic on PC-trace   : Disabled
FDDI Port Configuration        : Front Panel: MS Docking Station: S
===================================================================

          Press Return for Main Menu ...
```

[4] IP Configuration

The IP Configuration option provides you with seven selections.

The following example shows the dialog associated with this option.

```
DECconcen 900FH
===================================================================

                     IP CONFIGURATION

      [1] Set SNMP Read/Write Community
      [2] Add SNNP 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 number: [n]  <Return>
```

The following pages describe the IP Configuration options.

Topic	Page
Set SNMP Read/Write Community	4-9
Add SNMP Trap Addresses	4-9
Delete SNMP Trap Addresses	4-10
Set In-Band Interface IP Address	4-11
Set Out-of-Band Interface IP Address	4-12
Enable/Disable BootP	4-13

[1] **Set SNMP Read/Write Community**

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

NOTE

The SNMP read/write community name is case sensitive.

The following example shows the dialog associated with this option.

```
           Enter number:  1
DECconcen 900FH
===============================================================

              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 []: smith95 <Return>

    SNMP Read/Write community string set.

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

[2] Add SNMP Trap Addresses

This option prompts you to enter IP addresses to which SNMP traps will be sent from the DECconcentrator 900FH.

The following example shows the dialog associated with this option.

```
             Enter number:  2
DECconcen 900FH
===================================================================

               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 <Return>

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

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

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

[3] Delete SNMP Trap Addresses

This option prompts you to select an SNMP trap address to be deleted from the
community trap address table.

The following example shows the dialog associated with this option.

```
            Enter number:  3
DECconcen 900FH
====================================================================

               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: 16.20.54.156


====================================================================
Configured SNMP Trap Addresses: 16.20.216.81

    Enter a Trap address [] : 16.20.216.81 <Return>

Trap address deleted! Enter a Trap Address [none] : <Return>

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

[4] Set In-Band Interface IP Address

This option prompts you to enter the module's IP address, subnet mask and default gateway address. If an address was previously configured, an in-band address will be displayed. To remove an address or mask, enter **0** at the prompt.

The factory default of this menu option is no in-band addresses.

The following example shows the dialog associated with this option.

```
        Enter number:  4
DECconcen 900FH
==================================================================

           IN-BAND INTERFACE IP ADDRESS CONFIGURATION

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

                     example: 16.20.40.156

       To delete the address, enter 0 in the appropriate
       address field.
==================================================================
Interface  IP Address    Subnet Mask   Def. Gateway  Other Info
FDDI Port  16.20.126.24 255.255.192.0 16.20.157.25  08-00-2B-A6-39-25
OBM Port   16.20.158.26 255.0.0.0     16.20.159.27  Speed 9600 bps
==================================================================
    Enter the IP address [16.20.126.24]: 16.20.54.155 <Return>

    Enter the Subnet Mask [255.255.192.0] : 255.255.255.0 <Return>

    Enter the Default Gateway [16.20.157.25] : 16.20.54.156 <Return>

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

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

This option prompts you to enter the IP address, subnet mask and default gateway address. To remove an address or mask, enter **0** at the prompt.

This feature allows you to manage your module through the OBM port on the DEChub ONE docking station as an alternative to normal in-band management. To enable out-of-band management, you need to assign an OBM IP address and select an OBM port speed from the `DECconcen 900FH INSTALLATION MENU`.

The following example shows the dialog associated with this option.

```
     Enter number :  5

DECconcen 900FH
====================================================================

          OUT-OF-BAND INTERFACE IP ADDRESS CONFIGURATION

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

                  example: 16.20.40.156

       To delete the address, enter 0 in the appropriate
       address field.
====================================================================
Interface   IP Address    Subnet Mask    Def. Gateway   Other Info
FDDI Port   16.20.126.24 255.255.192.0 16.20.157.25   08-00-2B-A6-39-25
OBM Port    16.20.158.26 255.0.0.0      16.20.159.27  Speed 9600 bps
====================================================================

    Enter the IP address [16.20.158.26]: 16.20.54.155 <Return>

    Enter the Subnet Mask [255.0.0.0] : 255.255.255.0 <Return>

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

[6] Enable/Disable BootP

This option prompts you to enable or disable the Bootstrap (BootP) process.

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 module obtains its IP address using BootP and an SNMP trap sink has been entered, traps will be lost until the BootP response message is received by the module.

The following example shows the dialog associated with this option.

```
     Enter number :  6

DECconcen 900FH
======================================================================

             ENABLE/DISABLE BOOTP

   BOOTP is the IP bootstrap protocol. BOOTP may be used to obtain
   the modules 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] N <Return>

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

NOTE

If an IP address is entered via the setup port, BootP messages are not sent even if this option is enabled.

---

[5] Dump Error Log

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

The following shows an the display associated with this option:

```
       Enter number : 5
DECconcen 900FH
=======================================================================

                   DUMP ERROR LOG
               Current Reset Count: 34
=======================================================================

   Entry #        =   10
   Timestamp      =   0 0
   Reset Count    =   29
   FW Upgrade to:V3.0.0
Dump another entry Y [N]?  N <Return>
=======================================================================

   No more Error Log entries.

       Press Return for Main Menu ...
```

[6] Downline Upgrade

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

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

Examples of an image file and an IP address are as follows:

    dcon900FH.bin and 16.20.40.156

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

CAUTION

If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.

The DLU process consists of four stages:

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

Stage	Description
1	**The new firmware image from the TFTP load host is transported across the network, and placed into a temporary storage buffer in the module.**

After you initiate the process, by pressing <Return> at the screen prompt, the screen displays the following message:

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

The series of dots that appear on the screen indicate that the load is in progress.

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

```
Transfer complete.
```

This stage normally takes 1 minute to complete. However, because of variations in network configurations (load path, bit rate, and traffic levels), this stage can take 10 minutes or more.

Stage	Description
2	**The module verifies that the firmware image is correct after Stage 1 is complete.**

The following states indicate that this stage is in progress:

- Module status – functional (but not manageable).

- Module can respond to management requests.

- LED display – the Power LED and the Module OK LED remain on. All other LEDs turn off.

This stage normally takes 5 seconds to complete.

Stage	Description
3	**The new firmware image is transferred from the module's temporary storage buffer to flash memory, overwriting the old firmware image**.
	CAUTION: If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.
	Indications that this stage is in progress include:
	• Module status – not functional.
	• Module cannot respond to management requests.
	• LED display – all LEDs (except the Power LED) are off.
	This stage normally takes 3 minutes to complete.
4	**The module resets, runs self-test, and then begins executing the new firmware image**.
	The module LEDs display the following sequence during this stage:
	1 The Network OK LED flashes immediately to indicate that various diagnostic routines are running.
	2 After approximately 40 or 50 seconds, all Port-Type LEDs flash alternately amber to green. This sequence indicates that all port LEDs are operational.
	3 After self-test completes successfully, the Module OK LED turns on and the module becomes fully operational.
	This stage takes approximately 1 minute to complete, then the module returns to normal operational status.

[6] Downline Upgrade

Using the DLU Process

The following section explains how to use the DLU process and details the events that occur within each of the four stages of the process.

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

The following example shows the dialog associated with this option.

```
          Enter number : 6
DECconcen 900FH
====================================================================

                        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 the 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
*   lost power during a downline upgrade.
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
====================================================================

             Press Return Key to Continue ...
```

Using the DLU Process (cont.)

When you press <Return>, the screen displays the following prompt:

```
Enter the Load Filename [] dcon900FH.bin <Return>
```

After you enter the load image filename and press <Return>, the screen prompts you to enter the address of the TFTP server.

```
Enter the Load host IP Address [] :16.20.54.156 <Return>


Load will be activated over the FDDI port network interface.


Would you like to use a different network
```

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.

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

Using the DLU Process (cont.)

When you press <Return>, the DLU process is initiated over the in-band network interface.

If you selected [Y], the setup screen displays the following information:

```
Interface              Description
1                      FDDI port
2                      OBM port

Enter the network interface to be used [1] :
```

Choose the desired port and press <Return>, 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.

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

Pressing <Return> for this selection initiates the DLU process.

[7] Out-of-Band Port Configuration

This option provides you with two configuration selections:

- Set Port Speed

- Enable/Disable RTS

The following example shows the dialog associated with this option:

```
DECconcen 900FH
=========================================================

        OUT-OF-BAND PORT CONFIGURATION

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

=========================================================
        Enter number : n <Return>
```

[1] Set Port Speed

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

NOTE

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

The following example shows the menu associated with this option:

```
        Enter number : 1
DECconcen 900FH
=============================================================

       SET OUT-OF-BAND MANAGEMENT INTERFACE PORT SPEED

          [1] 1200 baud
          [2] 2400 baud
          [3] 4800 baud
          [4] 9600 baud
          [5] 9200 baud
          [6] 38400 baud
=============================================================

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

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

[2] Enable/Disable RTS

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

NOTE

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

The factory default for this menu option is disabled.

The following example shows the menu associated with this option:

```
          Enter number : 2
DECconcen 900FH
============================================================

             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]

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

[8] Module-Specific Options

This option provides module-specific selections. When selected, the option offers three selections:

- Enable/Disable SNMP Port Traps

- Enable/Disable Quick PC-trace Recovery

- FDDI Port Configuration

The following example shows the dialog associated with this option.

```
          Enter number : 8
DECconcen 900FH
========================================================
          DECconcen 900FH Configuration

     [1] Enable/Disable SNMP Port Traps
     [2] Enable/Disable Quick PC-trace Recovery
     [3] FDDI Port Configuration


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

          Enter number : n <Return>


    Press Return for Main Menu...
```

[1] Enable/Disable SNMP Port Traps

This section allows you to enable or disable the SNMP Port Traps.

The module can generate any one of the following SNMP traps:

- Cold Start ê Cold Start traps are sent following a power up or module reset.

- Port ê Port traps are sent on any fddimibPORTConnectState change. Therefore, an SNMP Port Trap is transmitted for every port following power up or a module reset because the fddimibPORTConnectState transitions into the connecting state. A second Port Trap is transmitted if the port has a valid connection and transitions into the active state.

- Link Up ê A Link Up trap is transmitted when the first port trap transitions into the active state.

NOTE

If BootP is used by the module to obtain its IP address, the Cold Start trap, Link Up trap, and a percentage of the Port traps may be lost. The transmission of traps is delayed for three seconds following a power up or reset. If the BootP server responds within three seconds, the traps will be successfully transmitted. However, if the BootP server does not respond within three seconds, some or all of the queued up traps will be lost.

- Link Down ê A Link Down trap is transmitted when the last port transitions out of the active state.

- Authentication Failure ê An Authentication Failure trap is sent if an SNMP set is attempted with the incorrect read-write community.

In order to have traps successfully transmitted out of the OBM, the necessary information needs to be entered in the ipNetToMediaTable in such a way that it is retained across power failures and resets. This is accomplished by marking the entry in the table as static. ipNetToMediaTable entries that are "learned" by examining the source address of the incoming frames are dynamic entries. Dynamic entries are aged out and are not retained across power failures and resets.

[1] Enable/Disable SNMP Port Traps

When an IP packet is to be sent (this includes SNMP traps), the ipNetToMediaTable is accessed to see if it contains the destination's IP address. If it does, the corresponding MAC address and interface are used for transmission. If the destination address is not in the ipNetToMediaTable, an Address Resolution Protocol (ARP) request is transmitted to obtain the MAC address to be used. If the module is in a docking station and only the OBM has been assigned an IP address, the ARP request cannot be sent. Therefore, the packet cannot be transmitted and is deleted.

There are two ways to generate the necessary ipNetToMediaTable entry to allow the packet to be transmitted out the OBM:

• Access (for example, use ping) the module through the OBM interface from the trap sink(s). This will cause the entry to be added to the ipNetToMediaTable mapping the trap sink address with the OBM interface. However, since this entry was "learned", it is marked as dynamic. To change this, use an NMS and set the corresponding entry's ipNetToMediaTable entry to static.

• Set (using NMS) the ipNetToMediaTablePhysAddress to a null length octet string. This causes the table row to be constructed with a ipNetToMediaType of static. The interface number for the module's OBM is 2. Therefore, to add a static entry for IP address 16.21.12.27 to the ipNetToMediaTable, set the object ipNetToMediaTablePhysAddress [2.16.21.12.27] to a null length octet string.

The following example shows the dialog associated with this option:

```
DECconcen 900FH
==============================================================

            Enable and Disable SNMP Port Traps.
        SNMP Port Traps are currently disabled.
==============================================================

    Press Y to ENABLE the Port Traps. [N]: Y <Return>

SNMP Port Trap Switch Enabled.

        Press Return for Main Menu ...
```

[2] Enable/Disable Quick PC-trace Recovery

This selection allows you to enable or disable Quick PC-trace Recovery.

As defined by the FDDI standard, a PC-trace is a method for isolating faulty hardware. All stations that are in the fault domain perform some level of hardware diagnostic tests before attempting to re-enter the FDDI ring. Normally, the module runs its full set of hardware diagnostic tests. This will take approximately one minute, but gives the highest level of assurance that a hardware failure would be found.

If a subset of the hardware diagnostic tests is to be run following a PC-trace, enable this setup option. The reduced set of diagnostic tests complete in approximately 10 seconds. If any hardware failure is found by this reduced set of diagnostic tests, the module is reset, causing the full set of diagnostic tests to be executed. If a hardware problem is not found, the module is enabled and attempts to rejoin the ring.

The following example shows the dialog associated with this option:

```
DECconcen 900FH
============================================================

          Enable and Disable Quick PC-trace Recovery
        Quick PC-trace Recovery is currently disabled.
============================================================

Press Y to ENABLE Quick PC-trace Recovery. [N]: Y <Return>

Quick PC-trace Recovery Enabled.

             Press Return for Main Menu ...
```

[3] FDDI Port Configuration

This option allows you to set the Station Configuration.

The following example shows the menu associated with this option. This screen also indicates the current station configuration.

```
        Enter number : 3

DECconcen 900FH
================================================================
    [1] Front Panel: A, B, Ms     Docking Station: none
    [2] Front Panel: Ms           Docking Station: A, B
    [3] Front Panel: B. Ms        Docking Station: A
    [4] Front Panel: A, Ms        Docking Station: B
    [5] Front Panel: S, Ms        Docking Station: none
    [6] Front Panel: Ms           Docking Station: S, M
    [7] Front Panel: S, Ms        Docking Station: M
    [8] Front Panel: Ms           Docking Station: S
    [9] Front Panel: A, B, Ms     Docking Station: M
    [10]Return to Main Menu

Current FDDI Port configuration: Front Panel A, B, Ms Docking
Station: none
================================================================

        Enter selection: [n] <Return>
```

Chapter 5

Configuring the Module in a DEChub 900

Overview

Introduction

This chapter describes how to configure your DECconcentrator 900FH when it resides in a DEChub 900 MultiSwitch.

In This Chapter

DEChub 900 MultiSwitch Installation Menu

The following screen is an example of the DEChub 900 MultiSwitch INSTALLATION MENU.

To access the module's set up screen, you must choose option [9] Start Redirect Mode.

The following example shows the dialog associated with this option.

```
        DEChub 900 MultiSwitch
        =======================================================

                DEChub 900 MultiSwitch INSTALLATION MENU

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

[9] Start Redirect Mode

 The `Start Redirect Mode` option redirects the DEChub 900 set-up port to the set-up port of any network module (such as the DECconcentrator 900FH) that is installed into the DEChub 900 MultiSwitch. Choosing this option allows you to set-up 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 900 MultiSwitch INSTALLATION MENU`, the screen display prompts you for a slot number (3) as shown in the following example. After you enter the number of the slot in which the DECconcentrator 900FH is installed, the console is redirected to this slot.

NOTE

The slot number may change to reflect the slot number in which your module is installed.

The following example shows the dialog associated with this option.

```
Enter number: 9
=============================================================
Enter the slot number for redirection (1-8): 3 <Return>
Console redirected to 3:  DECconcen 900FH
Attempting connection [Ctrl/C to abort]...
    Connection successful!
```

If the redirection is successful after you press the <Return> key, the `DECconcen INSTALLATION MENU` appears on your screen. Go to the next section, Using Menus to Setup the Module.

Using Menus to Setup the Module

This section describes the options that are available from the DECconcen 900FH INSTALLATION MENU when the module is installed in the DEChub 900 MultiSwitch.

The following example shows the dialog associated with this option when the module is setup with factory defaults.

```
DECconcen 900FH - slot 3
===================================================

        DECconcen 900FH 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: [n] <Return>
```

[1] Reset with Factory Defaults

This option initializes the module's configuration to factory default values by resetting the module's NVRAM and restarting the module. (To keep the configured setup, use Option 2.) Allow approximately one minute for the module to restart and complete self-test.

CAUTION

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

The following example shows the dialog associated with this option.

```
       Enter number : 1
DECconcen 900FH - slot 3
================================================================
                 RESTART WITH FACTORY DEFAULTS
    * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
    *          IMPORTANT!    IMPORTANT!    IMPORTANT!          *
    * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
    * This selection will delete the current configuration    *
    * settings and restart the system with the factory default*
    * settings. All configuration settings will be lost.      *
    * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
================================================================
                 Press Y to confirm [N]:  <Return>

                 Press Return for Main Menu ...
```

[2] Reset with Current Settings

This option restarts the module, but leaves the module's NVRAM parameters at their current values.

NOTE

Allow approximately one (1) minute for the module to restart.

The following example shows the dialog associated with this option.

```
          Enter number: 2

DECconcen 900FH - slot 3
================================================
            RESTART WITH CURRENT SETTINGS
    This selection will restart your system with
    the current configuration settings.
================================================
        Press Y to confirm [N]: <Return>
        Press Return for Main Menu ...
```

[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 are blank.

The following example shows the dialog associated with this option.

```
        Enter number : 3

DECconcen 900FH - slot 3
=======================================================================
DECconcen 900FH, 14-port FDDI Concentrator, HW=v0,RO=v.1.2,SW=T3.6.0.2
SysUpTime                          : 6 days  01:39:11 34 resets
SNMP Read/Write Community          : public
SNMP Trap Addresses                : Not Configured
Status of Last Downline Upgrade    : TFTP Read
                                       00:02:55 27 resets
                                       Transfer Complete
BootP                              : Disabled
-----------------------------------------------------------
Interface   IP Address  Subnet Mask  Def. Gateway Other Info
FDDI Port                                        08-00-2B-A6-0E-05
OBM Port    16.20.548.26                         Active
=======================================================================
SNMP Port Traps            : Enabled
Quick diagnostic on PC-trace  : Disabled
=======================================================================

              Press Return for Main Menu ...
```

[4] IP Configuration

The IP Configuration option provides you with six selections.

The following example shows the dialog associated with this option.

```
DECconcen 900FH - slot 3
=====================================================================

                      IP CONFIGURATION

      [1] Set SNMP Read/Write Community
      [2] Add SNNP 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: [n]  <Return>
```

The following pages describe the IP Configuration options.

Topic	Page
Set SNMP Read/Write Community	5-9
Add SNMP Trap Addresses	5-10
Delete SNMP Trap Addresses	5-11
Set In-Band Interface IP Address	5-12
Enable/Disable BootP	5-13

[1] Set SNMP Read/Write Community

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

NOTE

The SNMP read/write community name is case sensitive.

The following example shows the dialog associated with this option.

```
          Enter number:  1

DECconcen 900FH - 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 []: smith95 <Return>

    SNMP Read/Write community string set.

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

[2] Add SNMP Trap Addresses

This option prompts you to enter IP addresses to which SNMP traps will be sent from the DECconcentrator 900FH.

The following example shows the dialog associated with this option.

```
          Enter number:  2

DECconcen 900FH - slot 3
==================================================================

              Add SNMP TRAP ADDRESSES

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

          example: 16.20.54.156


==============================================================
Configured SNMP Trap Addresses: 16.20.216.81

    Trap address [] : 16.20.54.156 <Return>

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

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

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

[3] Delete SNMP Trap Addresses

This option prompts you to select an SNMP trap address to be deleted from the community trap address table.

The following example shows the dialog associated with this option.

```
          Enter number:  3

DECconcen 900FH - slot 3
=====================================================================

              DELETE SNMP TRAP ADDRESSES

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

          example: 16.20.54.156

=====================================================================
Configured SNMP Trap Addresses: 16.20.216.81

    Enter a Trap address [] : 16.20.216.81 <Return>

Trap address deleted! Enter a Trap Address [none] : <Return>

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

[4] Set In-Band Interface IP Address

This option prompts you to enter the module's IP address, and subnet mask. If an address was previously configured, an in-band address will be displayed. To remove an address or mask, enter **0** at the prompt.

The factory default of this menu option is no in-band addresses.

The following example shows the dialog associated with this option.

```
         Enter number:  4

DECconcen 900FH - slot 3
===================================================================

           IN-BAND INTERFACE IP ADDRESS CONFIGURATION

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

                    example: 16.20.40.156

       To delete the address, enter 0 in the appropriate
       address field.
===================================================================
Interface  IP Address    Subnet Mask    Def. Gateway    Other Info
FDDI Port  16.20.126.24 255.255.192.0 16.20.157.25    08-00-2B-A6-39-25
OBM Port   16.20.158.26 255.0.0.0     16.20.159.27    Speed 9600 bps
===================================================================
   Enter the IP address [16.20.126.24]: 16.20.54.155 <Return>

   Enter the Subnet Mask [255.255.192.0] : 255.255.255.0 <Return>

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

[5] Enable/Disable BootP

This option prompts you to enable or disable the Bootstrap Protocol (BootP) process.

The factory default of this menu option is `Disabled`. If BootP is enabled, the word `Disabled` shown in the following dialog is replaced with the word Enabled.

If the module obtains its IP address using BootP and an SNMP trap sink has been entered, traps are lost until the BootP response message is received by the module.

The following example shows the dialog associated with this option.

```
    Enter number :  6

DECconcen 900FH - slot 3
=======================================================================

             ENABLE/DISABLE BOOTP

    BOOTP is the IP bootstrap protocol. BOOTP may be used to obtain
    the modules 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] N <Return>

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

NOTE

If an IP address is entered via the setup port, BootP messages are not sent even if this option is enabled.

[5] Dump Error Log

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

The following shows an the display associated with this option:

```
               Enter number : 5

DECconcen 900FH - slot 3
=======================================================================

                  DUMP ERROR LOG
              Current Reset Count: 34
=======================================================================


    Entry #        =   10
    Timestamp      =   0 0
    Reset Count    =   29
    FW Upgrade to:V3.0.0
Dump another entry Y [N]?  N <Return>
=======================================================================

    No more Error Log entries.

        Press Return for Main Menu ...
```

[6] Downline Upgrade

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

Before initiating this option, be sure that the module that you are upgrading has been configured with an IP address (refer to option [4]). If the module is not configured with an IP address, you can still upgrade the module by selecting the Downline Upgrade option from the DEChub 900 MultiSwitch INSTALLATION MENU. Refer to the *DEChub 900 MultiSwitch Owner's Manual* for more information.

Examples of an image file and an IP address are as follows:

    dcon900FH.bin and 16.20.40.156

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

CAUTION

If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.

The DLU process consists of four stages:

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

The following table describes the four stages of the DLU process.

Stage	Description
1	**The new firmware image from the TFTP load host is transported across the network, and placed into a temporary storage buffer in the module.**
	After you initiate the process, by pressing <Return> at the screen prompt, the screen displays the following message:

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

The series of dots that appear on the screen indicate that the load is in progress.

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

```
Module not responding! Connection closed!
```

This stage normally takes 1 minute to complete. However, because of variations in network configurations (load path, bit rate, and traffic levels), this stage can take 10 minutes or more.

Stage	Description
2	**The module verifies that the firmware image is correct after Stage 1 is complete.**

The following states indicate that this stage is in progress:

- Module status – functional (but not manageable).

- Module can respond to management requests.

- LED display – the Power LED and the Module OK LED remain on. All other LEDs turn off.

- Hub Manager displays:

```
DECconcen 9000FH
up
```

This stage normally takes 5 seconds to complete.

Stage	Description
3	**The new firmware image is transferred from the module's temporary storage buffer to flash memory, overwriting the old firmware image**.

CAUTION

If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.

Indications that this stage is in progress include:

• Module status – not functional.

• Module cannot respond to management requests.

• LED display – all LEDs (except the Power LED) are off.

• Hub Manager displays:

```
DECconcen 900FH
unknown
```

This stage normally takes 3 minutes to complete.

Stage	Description
4	**The module resets, runs self-test, and then begins executing the new firmware image**.

The module LEDs display the following sequence during this stage:

1 The Network OK LED flashes immediately to indicate that various diagnostic routines are running.

2 After approximately 40 or 50 seconds, all Port-Type LEDs flash alternately amber to green. This sequence indicates that all port LEDs are operational.

3 After self-test completes successfully, the Module OK LED turns on and the module becomes fully operational.

This stage takes approximately 1 minute to complete, then the module returns to normal operational status.

[6] Downline Upgrade

Using the DLU Process

The following section explains how to use the DLU process and details the events that occur within each of the four stages of the process. An (expanded) example of the setup screen display follows the description.

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

The following example shows the dialog associated with this option.

```
          Enter number : 6
DECconcen 900FH
====================================================================
                    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 the 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
*   lost power during a downline upgrade.
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
====================================================================

              Press Return Key to Continue ...
```

Using the DLU Process (cont.)

When you press <Return>, the screen displays the following prompt:

```
Enter the Load Filename [] dcon900FH.bin <Return>
```

After you enter the load image filename and press <Return>, the screen prompts you to enter the address of the TFTP server.

```
Enter the Load host IP Address [] :16.20.54.156 <Return>
```

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.

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

When the load is complete, the screen displays the following message:

```
Module not responding!
```

This is normal.

Using the DLU Process (cont.)

When you press <Return>, the DLU process is initiated over the in-band network interface.

If you selected [Y], the setup screen displays the following information:

```
Interface                Description
1                        FDDI port
2                        OBM port

Enter the network interface to be used [1] :
```

Choose the desired port and press <Return>, 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 following message:

```
Module not responding!
```

This is normal.

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

Pressing <Return> for this selection initiates the DLU process.

[7] Module-Specific Options

This option provides module-specific selections. When selected, the option offers two selections:

- Enable/Disable SNMP Port Traps

- Enable/Disable Quick PC-trace Recovery

The following example shows the dialog associated with this option.

```
              Enter number : 7

DECconcen 900FH - slot 3
========================================================
              DECconcen 900FH Configuration

        [1] Enable/Disable SNMP Port Traps
        [2] Enable/Disable Quick PC-trace Recovery


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

              Enter selection : n <Return>


    Press Return for Main Menu...
```

[1] Enable/Disable SNMP Port Traps

When an IP packet is to be sent (this includes SNMP traps), the ipNetToMediaTable is accessed to see if it contains the destination's IP address. If it does, the corresponding MAC address and interface are used for transmission. If the destination address is not in the ipNetToMediaTable, an Address Resolution Protocol (ARP) request is transmitted to obtain the MAC address to be used. If the module is in a docking station and only the OBM has been assigned an IP address, the ARP request cannot be sent. Therefore, the packet cannot be transmitted and is deleted.

There are two ways to generate the necessary ipNetToMediaTable entry to allow the packet to be transmitted out the OBM:

* Access (for example, use ping) the module through the OBM interface from the trap sink(s). This will cause the entry to be added to the ipNetToMediaTable mapping the trap sink address with the OBM interface. However, since this entry was "learned", it is marked as dynamic. To change this, use an NMS and set the corresponding entry's ipNetToMediaTable entry to static.

* Set (using NMS) the ipNetToMediaTablePhysAddress to a null length octet string. This causes the table row to be constructed with a ipNetToMediaType of static. The interface number for the module's OBM is 2. Therefore, to add a static entry for IP address 16.21.12.27 to the ipNetToMediaTable, set the object ipNetToMediaTablePhysAddress [2.16.21.12.27] to a null length octet string.

The following example shows the dialog associated with this option:

```
DECconcen 900FH - slot 3
===========================================================

          Enable and Disable SNMP Port Traps.
       SNMP Port Traps are currently disabled.
===========================================================

   Press Y to ENABLE the Port Traps. [N]: Y <Return>

SNMP Port Trap Switch Enabled.

       Press Return for Main Menu ...
```

[2] Enable/Disable Quick PC-trace Recovery

This selection allows you to enable or disable Quick PC-trace Recovery.

As defined by the FDDI standard, a PC-trace is a method for isolating faulty hardware. All stations that are in the fault domain perform some level of hardware diagnostic tests before attempting to re-enter the FDDI ring. Normally, the module runs its full set of hardware diagnostic tests. This will take approximately one minute, but gives the highest level of assurance that a hardware failure would be found.

If a subset of the hardware diagnostic tests is to be run following a PC-trace, enable this setup option. The reduced set of diagnostic tests complete in approximately 10 seconds. If any hardware failure is found by this reduced set of diagnostic tests, the module is reset, causing the full set of diagnostic tests to be executed. If a hardware problem is not found, the module is enabled and attempts to rejoin the ring.

The following example shows the dialog associated with this option:

```
DECconcen 900FH - slot 3
============================================================
         Enable and Disable Quick PC-trace Recovery
      Quick PC-trace Recovery is currently disabled.
============================================================


Press Y to ENABLE Quick PC-trace Recovery. [N]: Y <Return>


Quick PC-trace Recovery Enabled.


              Press Return for Main Menu ...
```

Chapter 6

Removing the Module

Overview

Introduction

This chapter describes how to remove the DECconcentrator 900FH from a DEChub 900 MultiSwitch. To remove the DECconcentrator 900FH from a standalone module, refer to the *DEChub ONE Installation* manual.

In This Chapter

Topic	Page
Removing the Cables	6-2
Unseating the Module	6-4

Removing the Cables

To remove cables from the module, complete the steps in the following table that are appropriate for your type of cable (refer to Figure 4-1).

WARNING

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

Step	Description
1	To disconnect SMF port cables, push the plug's sleeve (1) in and turn it to the left, then disconnect the cable.
2	To disconnect OBR or TP-FDDI port cables, press the release tab (2) on the connector, then disconnect the cable.
3	To disconnect MMF port cables, press the locking clips (3) on the cable.
4	To disconnect the SC Optics, pull on the connectors(4).

Figure 6-1: Cable Removal
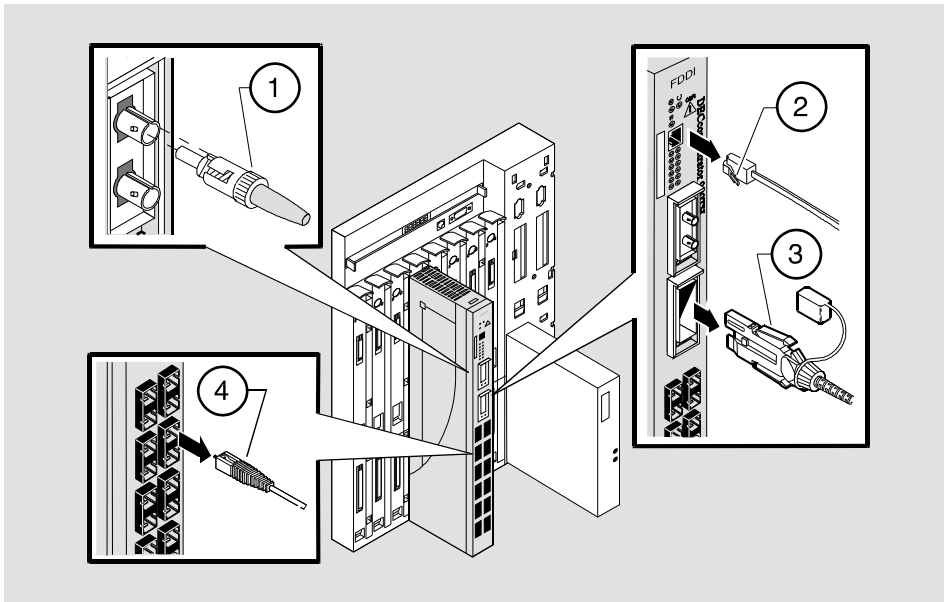
NPG-0327-95F

Unseating the Module

To unseat the module from the DEChub 900, complete the following steps (refer to Figure 6-2).

Step	Action
1	Hold the module to be removed and lift the release lever (1) located at the top of the DEChub 900 slot.
2	While holding up the release lever, pivot the module back on its bottom mounting tab (2).
3	Remove the module (3).

Figure 6-2: Unseat the module
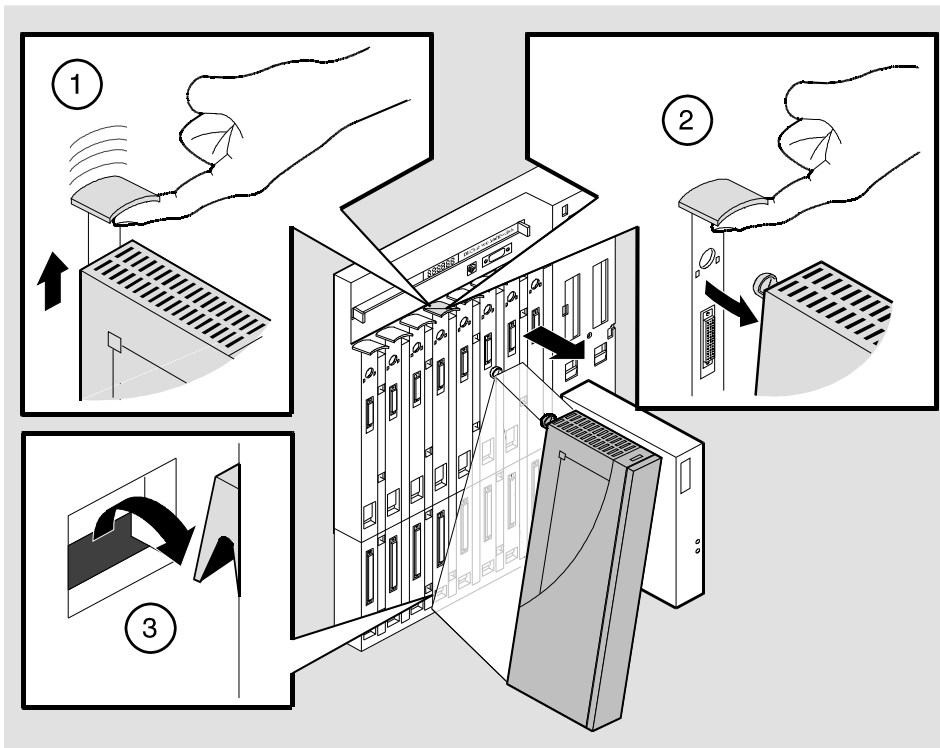
NPG-0008-95F

Chapter 7

Replacing ModPMD Interfaces

Overview

Introduction

This chapter provides removal and replacement procedures for the module's ModPMD interfaces.

In This Chapter

This chapter consists of the following topics:

Topic	Page
Replacement Items	7-2
Removing and Installing ModPMDs	7-4
Other Installation Procedures	7-19

Replacement Items

The following illustration shows replacement items for the DECconcentrator 900FH.

Figure 7-1: Replacement Items

NPG-0334-95F

The following table contains a description and order number for each item.

Item	Description	Order Number
1	Phillips head screw	PIN 90-06022-02
2	Fan assembly	PIN 70-31327-03
3	ModPMD faceplate	PIN 70-30245-01(blank) 70-30245-03 (ANSI MMF)
4	Bezel	PIN 74-50108-01
5	Circuit board	PIN 54-24207-01 (mother card) 54-19459-01 (daughter card)
6	Hot-swap switch lever	PIN 74-46920-01
7	Enclosure	PIN 74-46348-01
8	Hex grounding bolt	PIN 74-42117-01

Tools Required

The following tools are required to replace items in the DECconcentrator 900FH:

- A flat-blade screwdriver

- A Phillips-head screwdriver

- A 5/16-inch nut driver

- An antistatic wrist-strap kit (required to handle circuit boards and components)

Removing and Installing ModPMD Interfaces

This section describes how to remove and install ModPMD interfaces. After completing these procedures, verify that the module is operational by installing the module into the DEChub 900 (refer to Chapter 2, *Installing the Module*) or the DEChub ONE docking station (refer to the *DEChub ONE Installation* manual).

Step	Action
1	Before removing the module from the DEChub 900 or DEChub ONE docking station, save or record the module's characteristics.
2	Remove the module from the DEChub 900 or from the DEChub ONE docking station.

WARNING

Be sure to remove the module from its power source (the DEChub 900 MultiSwitch or the DEChub ONE) before performing any ModPMD removal and replacement procedures.

Removing and installing the ModPMD interfaces involves eight tasks, which are listed in the following table:

Task		Page
1	Removing the bezel.	7-5
2	Removing the circuit board from the enclosure.	7-7
3	Determining the ModPMD to be installed.	7-8
4	Removing the ModPMD.	7-10
5	Installing the replacement ModPMD.	7-12
6	Installing the circuit board into the enclosure.	7-14
7	Installing the bezel.	7-15
8	Installing the faceplate.	7-17

Task 1: Removing the Bezel

To remove ModPMD interfaces from the module, complete the following steps (refer to Figure 7-2).

CAUTION

Static electricity can damage modules and electronic components. Digital recommends using a grounded antistatic wrist strap and a grounded work surface when handling any modules.

Step	Action
1	Place the blade of a screwdriver in each of the snaplock slots (1) and pry the snaplock in the direction of the bezel.
2	When all six snaplocks (3) are unlocked, use your fingers to grasp one end of the bezel (2) and work the bezel loose by pulling it away from the enclosure. Pull the bezel carefully along its entire length until it is free of the enclosure.
3	Place the bezel aside.

Task 1: Removing the Bezel

Figure 7-2: Removing the Bezel
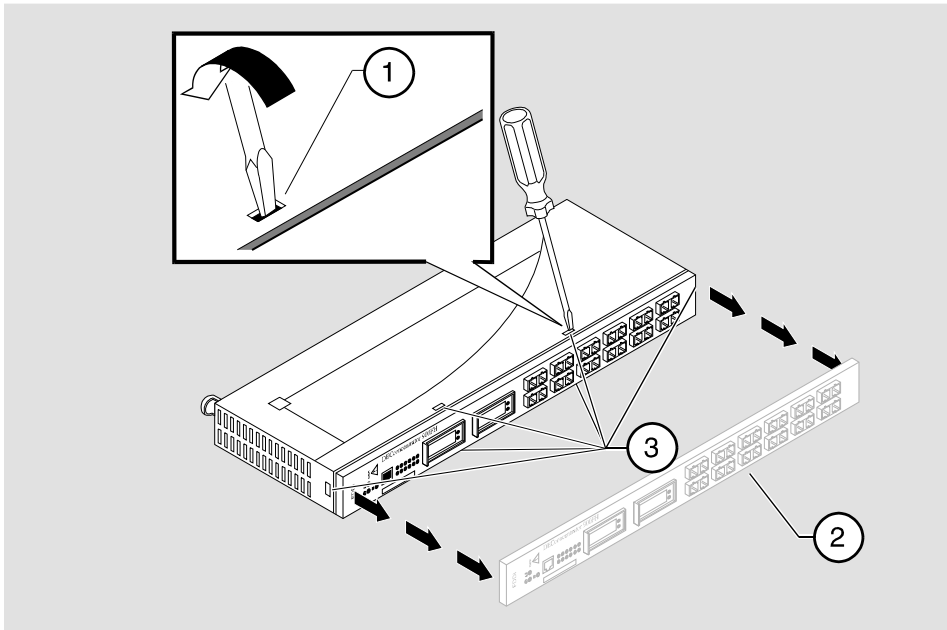
NPG-0328-95F

Task 2: Removing the Circuit Board from the Enclosure

To remove the circuit board from the enclosure, complete the following steps (refer to Figure 7-1).

Step	Action
1	Attach a grounded antistatic wrist strap to your wrist.
2	Remove the Phillips-head screw (1) next to the 160-pin connector.
3	Remove the hex grounding bolt (8).
4	Remove the circuit board (5) from the enclosure (7). The fan harness (2) extends to allow the circuit board to clear the enclosure. The ModPMDs are now accessible.

Task 3: Determining the ModPMD to be Installed

The DECconcentrator 900FH accommodates four different ModPMDs (refer to Figure 7-3, Figure 7-4, Figure 7-5, and Figure 7-6).

NOTE

The ModPMDs are shown component-side up for identification purposes only.

Figure 7-3: Multimode Fiber (MMF) Mod PMD (Part Number DEFXM-AA)
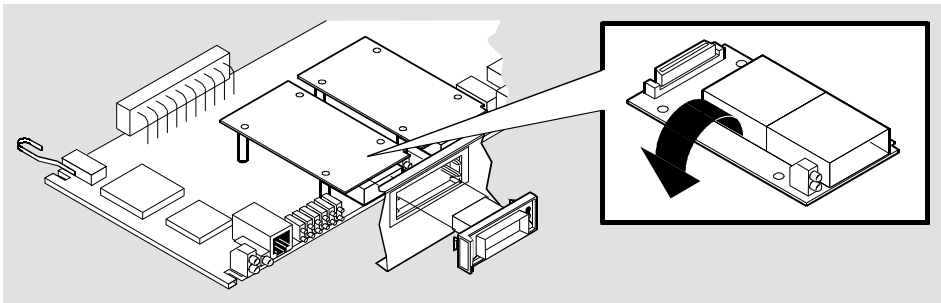
LKG-0131-95F

Figure 7-4: Single-Mode Fiber (SMF) Mod PMD (Part Number DEFXS-BA)
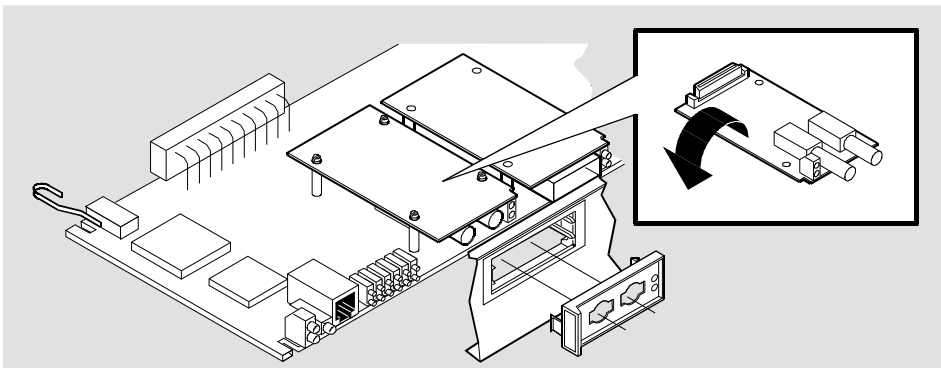
LKG-09786-95F

NOTE

The DEFXS-AA Single Mode ModPMD, which uses FC/PC-type receptacles, is NOT supported in the DECconcentrator 900FH. The DEFXS-BA Single Mode ModPMD, which uses ST type receptacles, is supported.

Figure 7-5: Twisted-Pair for FDDI (TP-FDDI) Mod PMD (Part Number DEFXU-AA or DEFXU-BA)
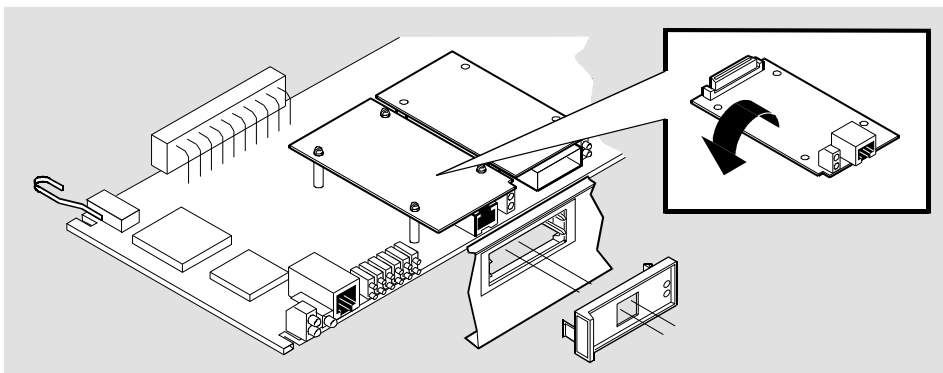
LKG-09787-95F

Figure 7-6: SC Optics ModPMD (Part Number DEFXM-SC)
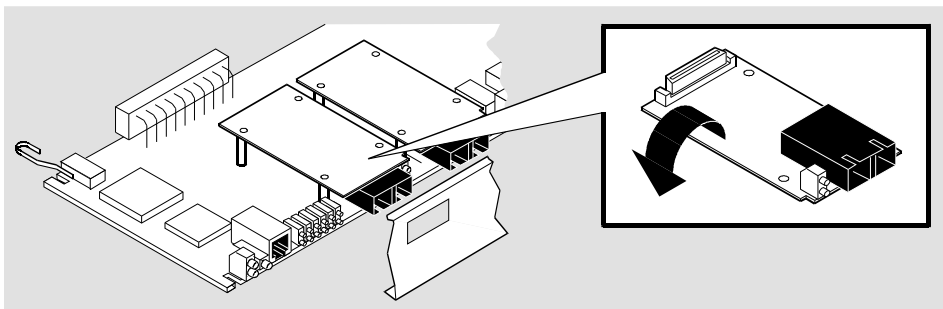
NPB-0370-95F

Task 4: Removing the ModPMD

To remove the ModPMD, complete the following steps (refer to
Figure 7-7 and Figure 7-8).

Step	Action
1	Using your fingers, push up on the corners of the ModPMD (1) until it is released from the four standoffs (2) (refer to Figure 7-7).
2	Disconnect the ModPMD from the PMD connector (1) and remove it from the four standoffs (refer to Figure 7-8).

Figure 7-7: Releasing the ModPMD
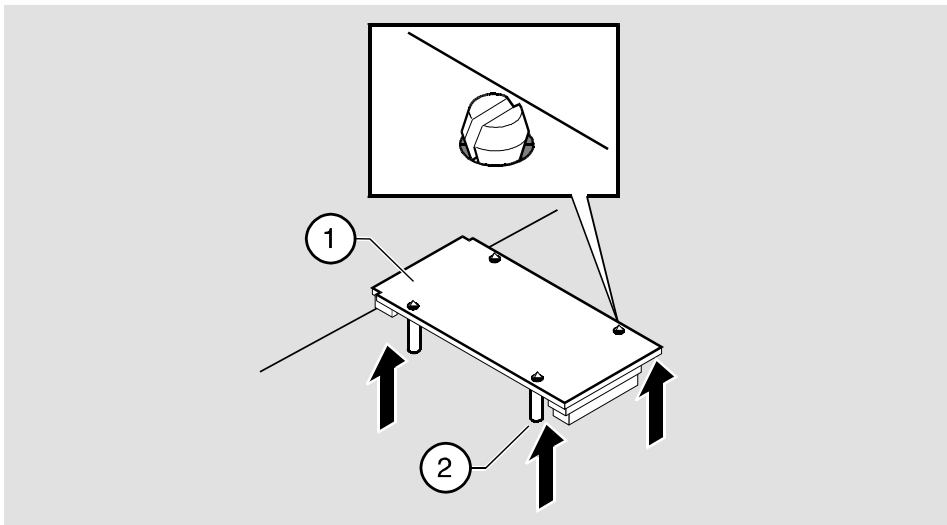
NPG-0132-95F

Figure 7-8: Disconnecting the Mod PMD
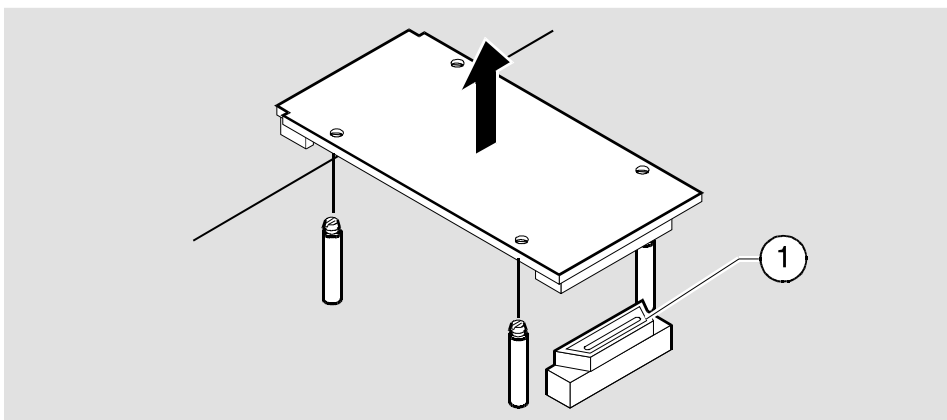
NPG-0133-95F

Task 5: Installing the Replacement ModPMD

To install the replacement ModPMD, complete the following steps (refer to Figure 7-9 and Figure 7-10).

NOTE

To prevent stressing the module, support the circuit board.

Step	Action
1	Align the four holes on the replacement ModPMD (1) with the four standoffs (3) (refer to Figure 7-9). Ensure that the ModPMD's connector aligns properly with the PMD connector (2) on the circuit board.
2	Press down firmly on each corner of the ModPMD, seating one corner at a time (refer to Figure 7-10). This action seats the connector and secures the ModPMD to the circuit board.

Figure 7-9: Aligning the Four Holes

NPG-0134-95F

Figure 7-10: Seating the Connector
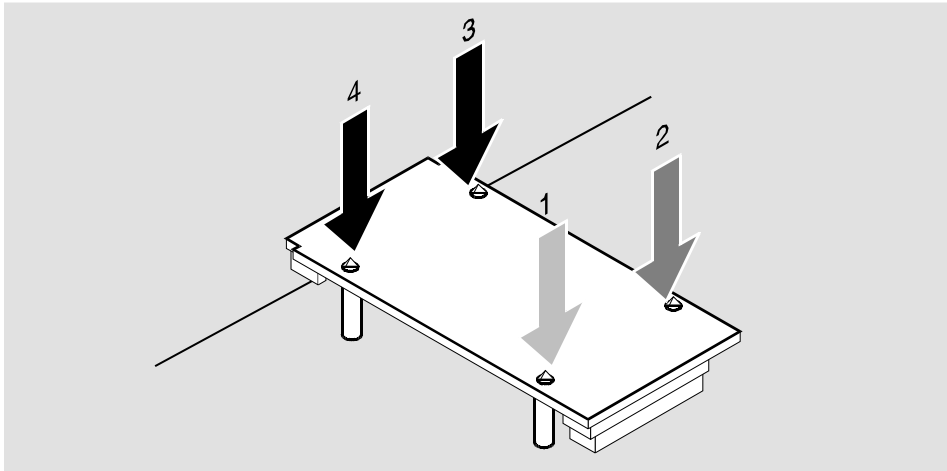
LKG-8993-95F

Task 6: Installing the Circuit Board into the Enclosure

To install the circuit board into the enclosure, complete the following steps (refer to Figure 7-11).

Step	Action
1	Carefully slide the circuit board (6) partially into the enclosure (8).
2	Using your finger, guide the hot-swap switch lever (7) into the locking tab enclosure (9) while seating the circuit board into the enclosure. The hot-swap switch lever should not protrude from the locking tab when the circuit board is seated correctly.
3	Insert and secure the Phillips-head screw (1).
4	Insert and secure the hex grounding bolt(10).

Figure 7-11: Installing the circuit board
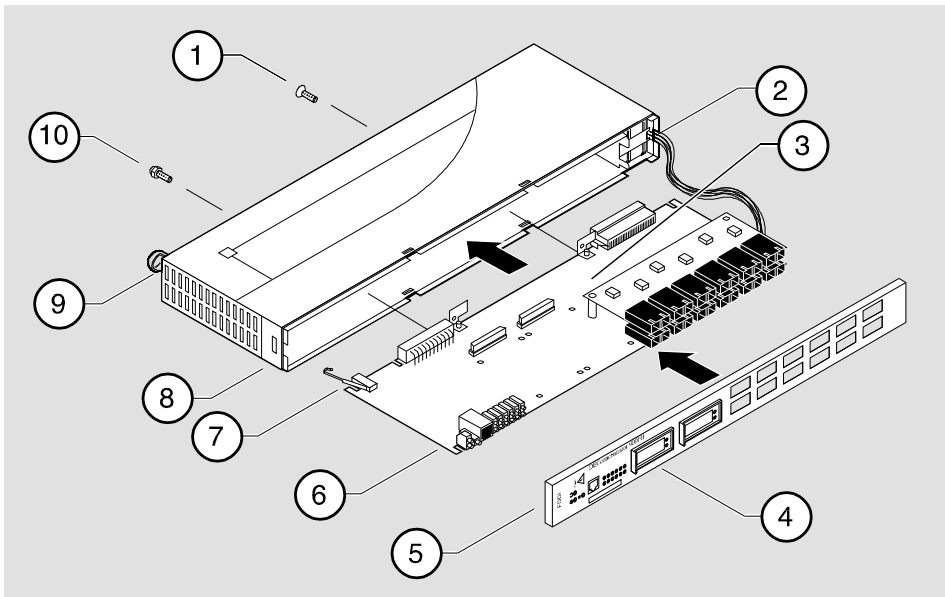
NPG-0359-95F

Task 7: Installing the Bezel

To install the bezel, complete the following steps (refer to Figure 7-12 and Figure 7-13).

NOTE

Remove all ModPMD faceplates before you install the bezel.

Step	Action
1	Press the faceplate's locking tab (1) and remove the faceplate (3) from the bezel (2) (refer to Figure 7-12).
2	Align the bezel with the enclosure so that the module LEDs are aligned with the LED cutouts (3) on the bezel (see Figure 7-13).
3	Starting at one end, press the bezel into place, until all six snaplocks (2) are seated into the six enclosure slots (1) (see Figure 7-13).

Task 7: Installing the Bezel

Figure 7-12: Pressing the Faceplate's Locking Tab
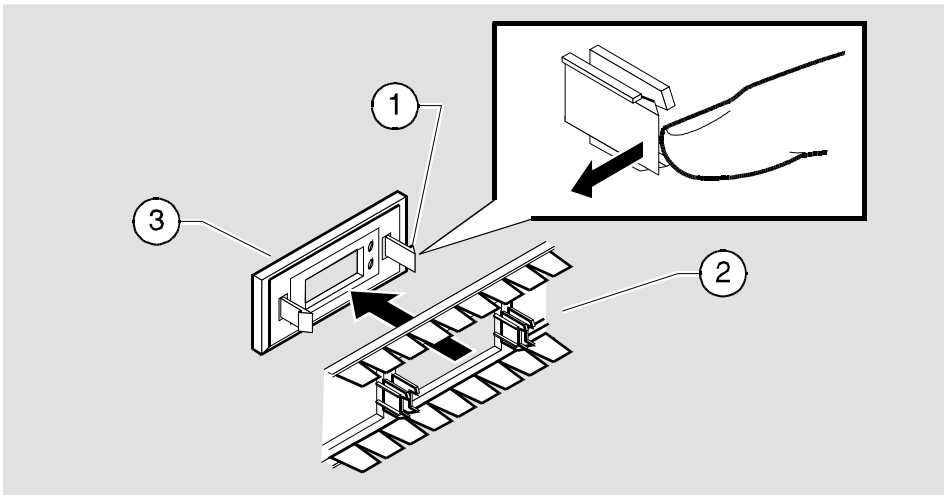
NPG-0136-95F

Figure 7-13: Seating the Snaplocks
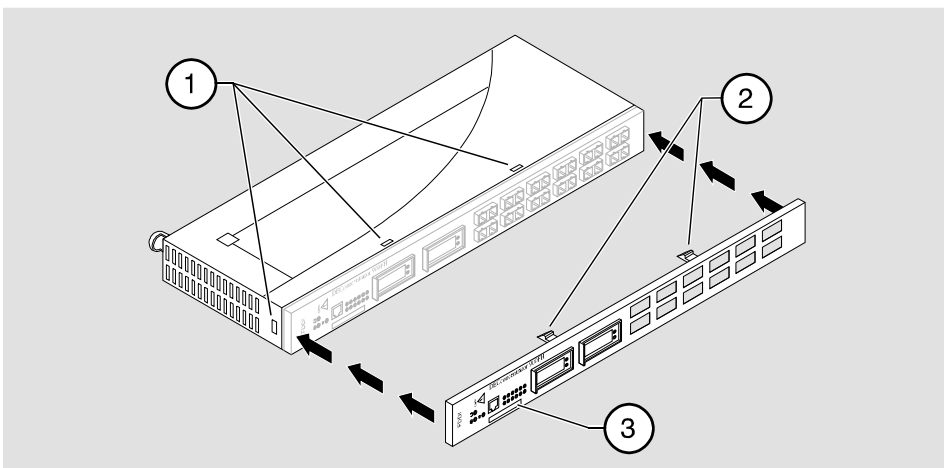
NPG-0331-95F

Task 8: Installing the Faceplates

To install the faceplates, complete the following steps (refer to Figure 7-14).

CAUTION

To avoid personal injury or damage to equipment, do not install the module into a DEChub 900 or into a DEChub ONE unless the module is completely assembled with the enclosure and bezel in place.

NOTES

- If you are installing a multimode fiber (MMF) ModPMD into a metal receptacle, you must install a metal ESD shield (supplied). MMF ModPMDs with plastic (non-metallic) receptacles do not require the metal ESD shield.

- The single-mode fiber (SMF) (DEFXS-BA) ModPMD faceplate includes an ESD shield that provides a brushlike contact to the ST receptacles. This contact normally causes a slight drag while installing or removing the faceplate.

Step	Action
1	Install the metal shield (if required) as follows:
	a Align the metal ESD shield (2) with the metal MMF receptacle (6) (refer to Figure 7-14).
	b Slide the metal ESD shield over the receptacle (6) and gently press it until the metal fingers (5) and (8) are flush against the channel on the bezel (9).
2	Position the faceplate (3) so that the LED cutout aligns with the LEDs (1).
3	Press the faceplate's locking tabs (4) into the slots on the bezel (7). Push gently to lock the faceplate into place on the bezel.

Figure 7-14: Locking the Faceplate
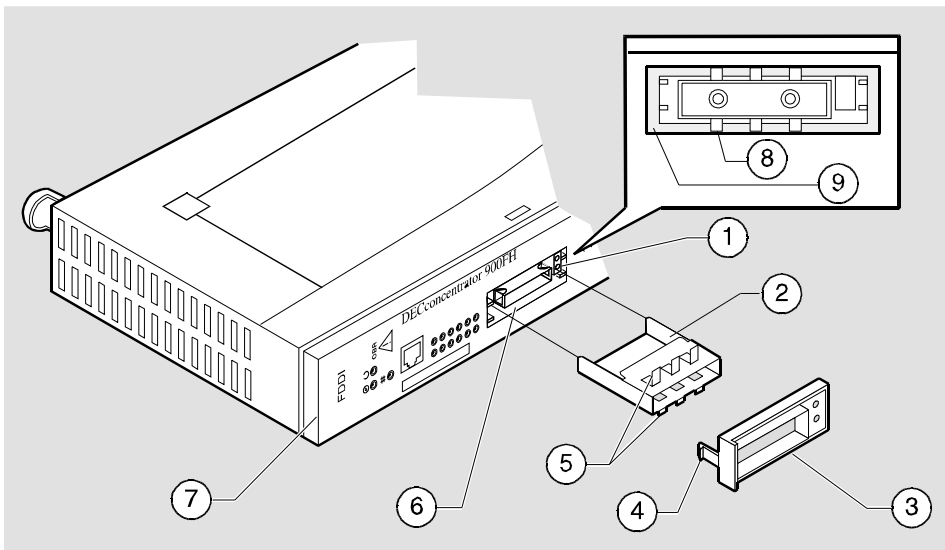
NPG-0332-95F

Other Installation Procedures

Refer to the following sources for other installation procedures:

- To install the module into a DEChub 900, refer to Chapter 2, *Installing the Module*.

- To install the module into a DEChub ONE docking station, refer to the *DEChub ONE Installation* manual.

Final Tasks

After you verify that the module is operational, restore any previously saved module characteristics.

Appendix A

Problem Solving

Overview

Introduction

This appendix describes the LED functions and provides problem solving information. The LED's on the front of the module, with this appendix, provide information to help you correct possible problems.

In This Appendix

LED Descriptions

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

Normal Power-Up

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

Event	Description
1	The module's Power LED lights as soon as power is applied to the unit.
2	The module initiates its built-in self-test. Flashing Port State LEDs and activity LEDs indicate that the module is running various subroutines as part of the self-test.
3	After the successful completion of self-test, 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 the following table.

Module LEDs

The following table shows the states that are possible for each of the module's LED's.

LED Name	Icon	Off	On (Green)	Flashing
Power		No power to module.	Module receiving power.	N/A
Module OK		Self-test failed.	Module passed self-test	Non-fatal failure.
Network OK		FDDI Ring is not operational.	FDDI Ring is operational.	N/A

ModPMD LEDs

The ModPMD LEDs indicate the status of the connection between the module and the FDDI network. Note that each of the FDDI ModPMD ports are provided with the following two LEDs:

- PHY LED (Port Status)

- FRU Status LED

The SC Optics ports (ports 3-14) have port LEDs only.

	Off	On		Flashing		
LED Name	No color	Green	Amber	Green	Amber	Green/ Amber
FRU Status Mod-PMD	M-type	S-type	Mod PMD fault	A or B	N/A	N/A
PHY Mod-PMD	Ready to connect	Good connec-tions	Link error rate exceeded	Manage-ment disabled or broken	Illegal/ unwanted connec-tion	Standby/ dual homing
SC Optics Port Status LED (Ports 3-14)	Ready to connect	Good connec-tions	Link error rate exceeded	Manage-ment disabled or broken	Illegal/ unwanted connec-tion	Standby/ dual homing

Problem Solving Using the LEDs

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

Symptom	Probable Cause	Corrective Action
Power LED is off.	Bad Power LED.	Replace the module.
	The module is not receiving +5.0 V.	Check the power LED on the DEChub 900 power supply.
	If the power LED on the DEChub power supply is off, then there is a problem with the DEChub power supply.	See the troubleshooting procedures in the *DEChub 900 MultiSwitch Owner's* manual.
	If the power LED on the DEChub power supply is on and the other power LED components are off, then the DEChub has a power problem.	See the troubleshooting procedures in the *DEChub 900 MultiSwitch Owner's* manual.
	If the power LED turns on when reseated in the same slot, then the module was not properly seated.	Seat the module properly in the slot.
	If the power LED turns on when reseated in another slot, then the problem is with the DEChub.	See the troubleshooting procedures in the *DEChub 900 MultiSwitch Owner's* manual.

Symptom	Probable Cause	Corrective Action
Power LED is off (cont.)	If the DEChub does not have enough power to turn on the module, then the module will not power up.	Increase the power capability of the DEChub 900 by adding on an optional power supply.
	If the module does not turn on in a known good slot, then the module is defective.	Replace the module.
Module OK LED is off.	Self-test in progress.	Wait for self-test to complete.
	Self-test failed.	If the LED does not light after 90 seconds, reseat the module to repeat the self-test. If the self-test fails again, replace the module.
Module OK LED is flashing.	Self-test has detected a non-fatal fault. Module is not fully functional.	The nonfatal failure indicates a bad ModPMD, fan, or EEPROM; contact your service representative.
FRU Status LED is on amber.	Faulty ModPMD.	Replace the ModPMD; contact your service representative.
PHY Status LED is flashing green.	Port disabled by management.	Enable port by management and retest.
PHY Status LED is flashing amber.	Invalid connection.	Use a valid connection (for example, M-to-M connections are invalid).
		Change one of the M-M type connections to another type, such as S-M, to achieve a valid connection.

Symptom	Probable Cause	Corrective Action
PHY Status LED is on steady amber, or it repeats the following cycle: on (amber) for 50 seconds, then turns to green for a brief period, then returns to steady amber.	Network problem, or the PHY port is faulty.	Disconnect the port cable. If the LED turns off, the PHY port is functional. To confirm, move the cable to a different module port and observe results. If the problem shifts to the other concentrator port, replace the cable. If the cable is not the problem, troubleshoot the remote device that is connected to the original port.
		If the problem does not shift to the other concentrator port, the cable is good. Perform loopback testing on the original concentrator port.
After correctly installing the module on a DEChub 900, the information display does not read: `DECconcen 900FH up`	Defective module.	Replace the module.
After correctly installing the module on a DEChub 900, the Hub Manager does not display configuration information.	Defective module.	Replace the module.

Loopback Testing

You can use a loopback connector to isolate and identify problems related to the module from those that are caused by the network. The loopback connector routes the module's transmitter port output directly back to its own receiver. If a problem occurs, it is isolated to that specific PHY port, simplifying the corrective action.

NOTE

Loopback testing does not verify the port's minimum receive levels or transmit signal specifications.

This section identifies the various loopback connectors available from Digital, provides details of the loopback installation procedure, and describes how to interpret the ModPMD status LEDs when using the loopback connector.

Identifying Loopback Connectors

The appropriate loopback connectors to select when evaluating the various types of ports are listed below.

Port Type	Vendor	Connector Part Number
Multimode fiber (MMF)	Digital	12-32005-01
Single-mode fiber (SMF)	N/A	N/A
Twisted-pair for FDDI (TP-FDDI)	Amphanol	12-35619-03
SC Optic	Digital	H4085

Attaching Loopback Connectors

The following table lists the tasks involved with attaching loopback connectors.

Task	Page
Attaching the multimode fiber (MMF) loopback connector	A-9
Making and attaching the single-mode fiber (SMF) loopback connector	A-11
Attaching the twisted-pair for FDDI (TP-FDDI) loopback connector	A-14
Attaching the SC Optic loopback connector	A-15

Attaching the Multimode Fiber (MMF) Loopback Connector

To attach an MMF loopback connector, complete the following steps (refer to Figure A-1).

NOTE

To avoid optical power loss, do not touch the fiber ends.

Step	Action
1	Press the locking clips (2) on the media interface connector (MIC) cable plug (5) (or dust cap), and remove the cable (or dust cap) from the PHY port.
2	Align the keyway (4) on the loopback connector (3) with the key on the MMF connector (1).
3	Insert the plug into the connector, ensuring that the locking clips snap into the locked position.
4	Go to the section titled Evaluating ModPMD LEDs During Loopback Test.

Attaching the Multimode Fiber (MMF) Loopback Connector

Figure A-1: Attaching a MMF Loopback Connector
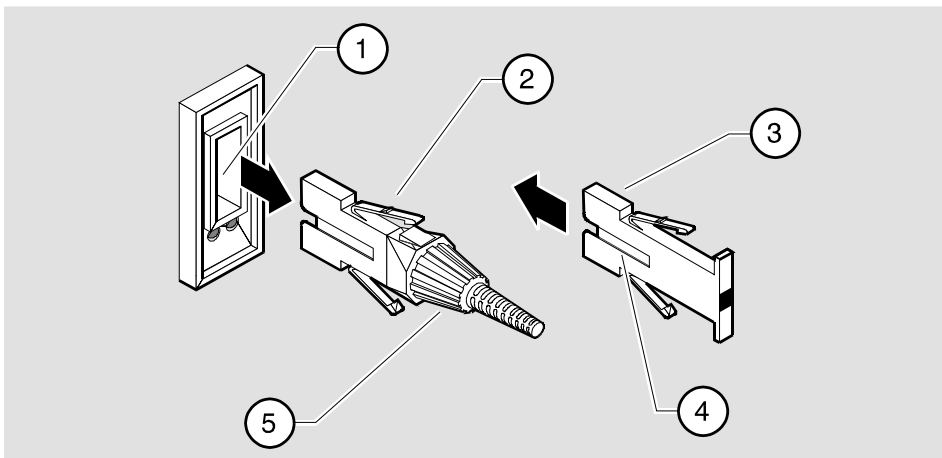
NPG-0139-95F

Removing a MMF Loopback Connector

To remove a MMF loopback connector, press the locking clips on the MMF loopback connector, then disconnect the connector. Replace the cable or dust caps.

Making and Attaching the Single-Mode Fiber (SMF) Loopback Connector

SMF loopback connectors for the DEFXS-BA ModPMD are not available from Digital as single units. To perform loopback on SMF ModPMDs, you must make a loopback connector from three discrete components: two ST-to-FC cables and a line-loss element.

Part	Vendor	Quantity
ST-to-FC Cable	Various	2
Line-Loss Element (attenuator)	3M Storm Products	1

Making a SMF Loopback Connector

To make a SMF loopback connection, complete the following steps (refer to Figure A-2).

Step	Action
1	Connect the FC end of one of the cables to the line-loss element.
2	Connect the FC end of the other cable to the line-loss element.

The following items are illustrated in Figure A-2.

Item	Description
1	Cable identifier tag
2	Line-loss element
3	FC end of cable
4	ST end of cable

Figure A-2: SMF Loopback Connector
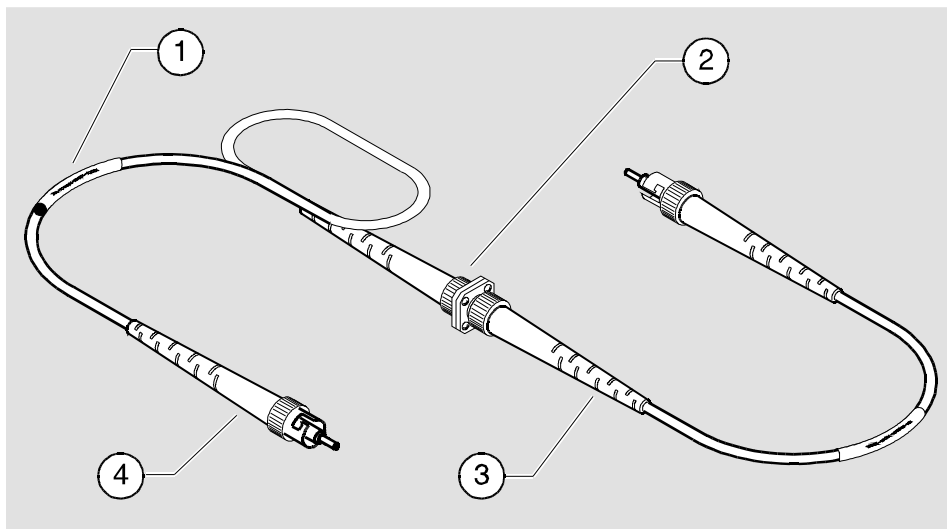
NPG-0042-95F

See the section titled Cables for Vendor Information.

Attaching the Single-Mode Fiber (SMF) Loopback Connector

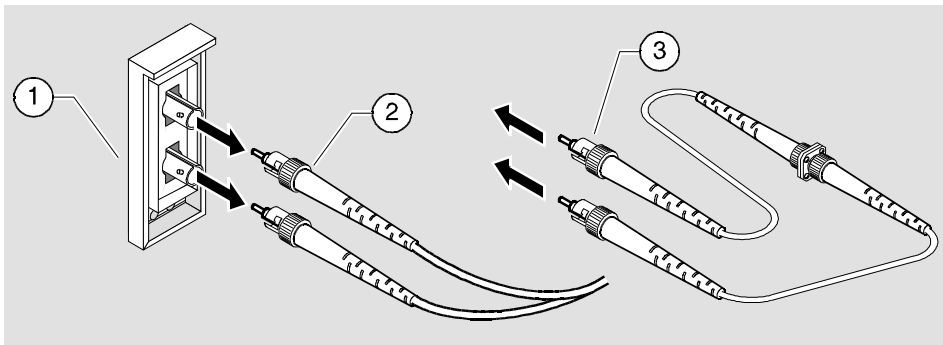To attach a SMF loopback connector, complete the following steps (refer to Figure A-3).

NOTE

Ensure that the bend radius of the fiber-optic cable remains greater than 2.5 cm (1 in).

Step	Action
1	Remove the cables (2) or (dust caps) from the PHY port's ST-type connectors.
2	Insert one end of the SMF loopback connector (3) into the ModPMD's (1) transmit port connector, ensuring that it is seated into the connector. Twist the connector clockwise to engage the locking mechanism.
3	Connect the other end of the SMF loopback connector into the SMF receive port connector. Twist the connector clockwise to engage the locking mechanism.
4	Go to the section titled *Evaluating ModPMD LEDs During Loopback Test*

Figure A-3: Attaching the SMF Loopback Connector


NPG-0175-95F

Removing the SMF Loopback Connector

To remove the SMF loopback connector, twist the connector counter clockwise and pull the cable out. Replace the cable or dust caps.

Attaching the Twisted-Pair for FDDI (TP-FDDI) Loopback Connector

To attach a TP-FDDI loopback connector, complete the following steps (refer to Figure A-4).

Step	Action
1	Press the locking tab (4) on the TP-FDDI cable (6) plug; then disconnect the cable.
2	Align the release tab (2) on the loopback connector (5) with the keyway (3) on the PHY port's (1) 8-pin MJ connector (7).
3	Insert the loopback connector plug into the PHY port's 8-pin MJ connector, ensuring that the release tab snaps into the locked position.
4	Go to the section titled *Evaluating ModPMD LEDs During Loopback Test*.

Figure A-4: Attaching the TP-FDDI Loopback Connector
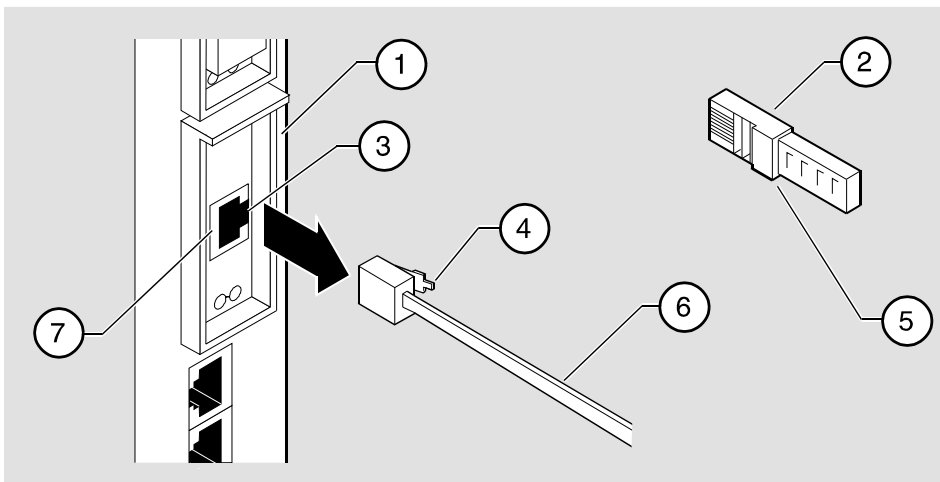
NPG-0333-95F

Removing the TP-FDDI Loopback Connector

To remove the TP-FDDI loopback connector, press the locking tab on the loopback connector; then remove the loopback connector. Align the locking tab with the keyway and replace the TP-FDDI cable into the PHY port's 8-pin MJ connector.

Attaching the SC Optic Loopback Connector

To attach the SC Optic loopback connector, complete the following steps (refer to Figure A-5).

Step	Action
1	Align the notch on the plug with the slots on the receptacle.
2	Insert the connector until it is seated.
3	Go to the section titled *Evaluating ModPMD LEDs During Loopback Test*.

Figure A-5: Attaching the SC Optics Loopback Connector
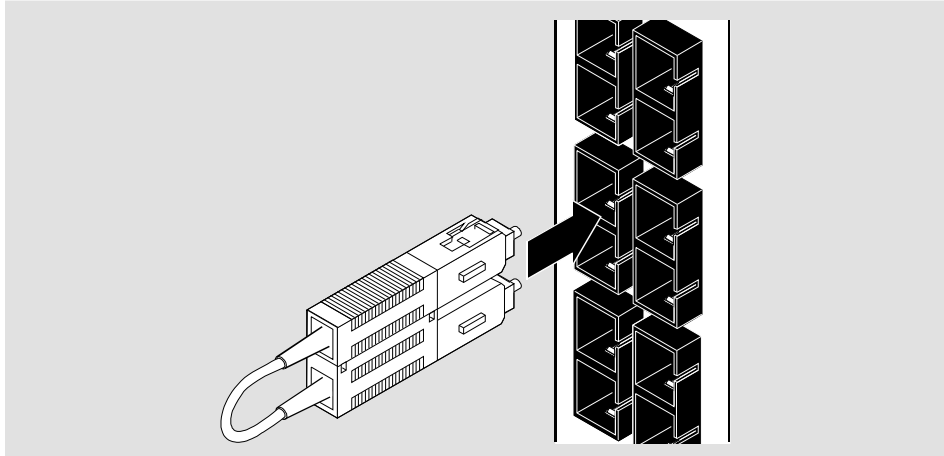
NPB-0360-95F

Removing the SC Optic Loopback Connector

NOTE

When removing the SC Optic loopback connector, do not pull on the small loop of fiber.

To remove the SC Optic loopback connector, grasp the connector near the bezel and pull.

Evaluating ModPMD LEDs During Loopback Test

After attaching the loopback connector, complete the following steps:

Step	Action
1	Observe and record the LED status indications on the port under test.
2	Compare the recorded findings with the symptoms described in the following table.

Symptom	Probable Cause	Corrective Action
PHY Status LED is flashing amber	Normal condition during loopback testing	Port functioning. No action required. (LED color depends on port type definition.) The media or another device may require further testing.
PHY Status LED is on amber, or off	Port failure	Replace the ModPMD on that port (refer to Chapter 7, *Replacing ModPMD Interfaces*), or contact your service representative.
PHY Status Led flashing green	Port disabled by network management	Port cannot be tested while disabled; use network management to enable the port.

Appendix B

Cables

Overview

Introduction

This section describes some of the cables that are available for connecting your module to various network devices. Digital has cables that can satisfy most of your needs. Contact your Digital sales representative for additional information.

In This Appendix

Topic	Page
Multimode Cables with MIC Connectors	B-2
Multimode Cables with SC Connectors	B-3
Single-Mode Cables	B-4
Twisted-pair for FDDI Cables	B-6

Multimode Cables

The following ANSI multimode cables are available from Digital Equipment
Corporation:

Cable Description	Order Number
FDDI MIC-to-FDDI MIC connector cables	BN24B-xx *
FDDI-to-2.5 mm ST-type connector cables	BN24D-xx*

*xx represents the cable length in meters.

The following cable lengths are available:

Cable Length	xx Value
1 m (3.3 ft)	01
3 m (9.8 ft)	03
4.5 m (14.8 ft)	4E
10 m (32.8 ft)	10
20 m (65.6 ft)	20
30 m (98.4 ft)	30

Port Keying

Digital BN24B and BN24D cables are color-key coded on the top of the duplex
connector as follows:

- red for PHY A ports

- blue for PHY B port

- green for PHY M ports

The receptacles and plugs are keyed as shown in Figure B-1.

Figure B-1: Receptacles and Plugs Keying MIC Connectors
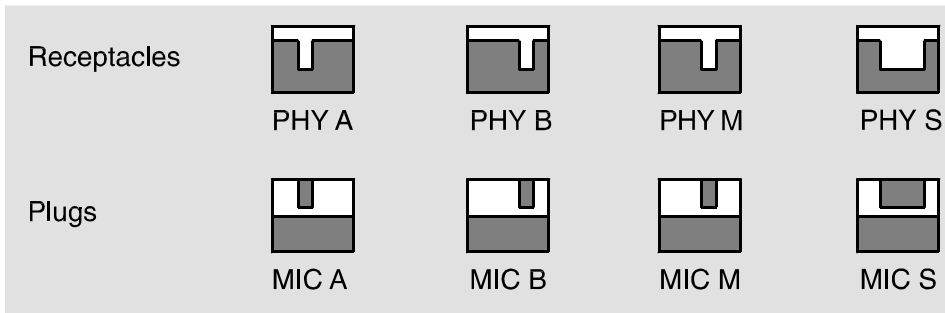
NPG-0188-95F

Multimode Cables with MIC Connectors

Multimode cables with MIC connectors are available from Digital Equipment
Corporation. Refer to the following table for the connector type and description.

Connector	Description
MIC A	Primary in/secondary out - DAS PHY A port
MIC B	Primary in/secondary out - DAS PHY B port
MIC M	Concentrator PHY M port
MIC S	SAS PHY S port

Multimode Cables with SC Connectors

Multimode cables with SC connectors are available from Digital Equipment
Corporation. Refer to the following table for a description of the various connector
types and order numbers.

SC Cable Description	Order Number
SC to ST	BN 34A -XX
SC to SC	BN 34B -XX
SC to MIC	BN 34D -XX

Single-Mode Cables

Single-mode patch cables are available from the following vendors. You can also use equivalent parts from other vendors.

Simplex Patch Cables	Duplex Patch Cables	ST to FC Patch Cables
AMP Incorporated	Anixter Brothers	3M
AT&T (A six-unit coupler is also available.)	—	Anixter Brothers
Dorran/3M	—	Computer Crafts

NOTE

Earlier versions of the single-mode fiber ModPMDs may have FC-type connectors. Replacement ModPMDs have ST-type connectors. An FC-to-ST adapter is available from Digital, part number 12-44990-01.

When you use single-mode cable, verify the following information:

- The cable plant has a loss of between 12 decibels (dB) and 22 dB (measured at a wavelength of 1300 nm).

- The cable plant attaches to the FDDI device through ST-type connectors.

- Use fiber-optic cables that conform to EIA/TIA 492CAAA with a cutoff wavelength of 1240 nm or less.

- Use in-line loss elements with cables of less than 12 dB of loss. Use one of the following types of in-line loss elements.

Cable Loss	Loss Element Rating
0 dB to 6 dB	12 dB to 16 dB
6 dB to 12 dB	6 dB to 10 dB

In-line loss elements are available from Amphenol Corporation, 3M and Storm Products. You can use equivalent parts from other vendors.

Contact your Digital sales representative for additional information.

Twisted-Pair for FDDI Cables

The following table shows the twisted-pair for FDDI (TP-FDDI) cables that are available from Digital Equipment Corporation (you can also use equivalent parts from other vendors).

Cable Description	Order Number
8-pin MP to 8-pin MP office cable (crossover) (3m (9.8 ft) only)	BN25H-03
8-pin MP to 8-pin MP Category 5 cable (straight through)	BN25G-03

The BN25H is a category 5 crossover cable used to connect the TP-FDDI ModPMD in the module directly to another FDDI device in an office environment.

When a DECconcentrator 900TH is installed in an equipment room, a BN25G straight-through cable is often used to connect the TP-FDDI ModPMD to a patch panel.

NOTE

Digital crossover cables are marked with the letter X. Digital straight-through cables are marked with the symbol =.

Appendix C

Connector Pin Assignments

Overview

Introduction

This appendix shows the pin assignments of the connectors and adapters used on the module.

In this Appendix

This appendix consists of the following topics:

Connector Assignments

**Optical Bypass Relay (6-pin MJ) Connector**

WARNING

To prevent personal injury or equipment damage, do not insert
telecommunications cabling into the optical bypass relay connector.

The Optical Bypass Relay (OBR) feature on the module maintains FDDI dual-ring
integrity if the module fails or if power to the module is turned off. When the module
is installed in a DEChub ONE-MX the OBR in the DEChub ONE-MX overrides the
OBR in the module.

Figure C-1 shows the OBR 6-pin MJ connector and its pin assignments. Refer to this
information when selecting optical bypass devices.

Figure C-1: Optical Bypass Relay

Pin   6 ◀—— 1
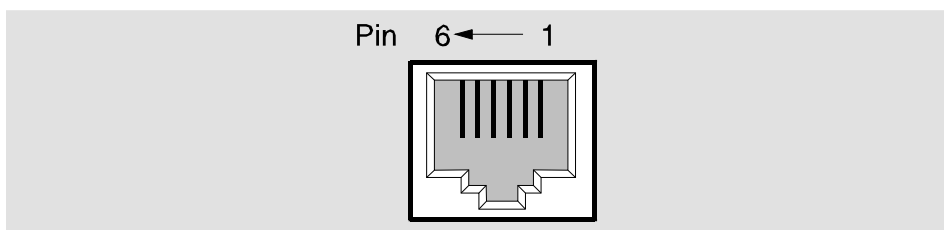
NPG-0193-95F

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

Multimode Fiber ModPMD

Figure C-2 shows the multimode fiber (MMF) ModPMD connector and the transmitter and receiver location on the front bezel.
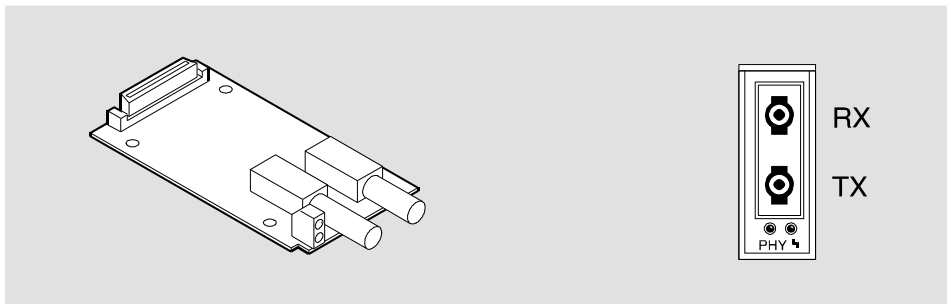
Figure C-2: Multimode Fiber ModPMD
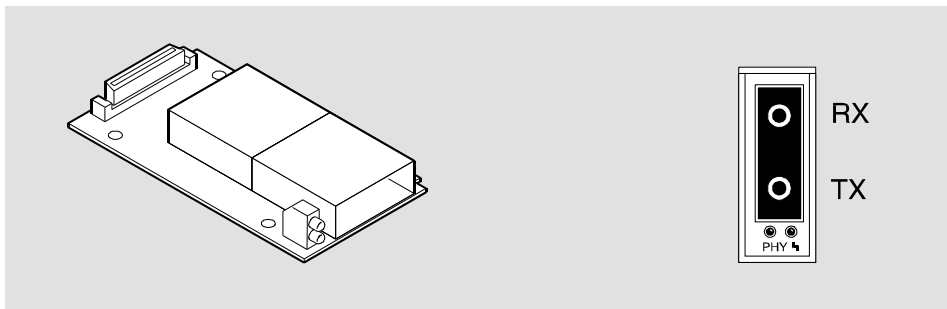
LKG-9041-95F

Single-Mode Fiber ModPMD

Figure C-3 shows the single-mode fiber (SMF) ModPMD connector and the transmitter and receiver location on the front bezel.
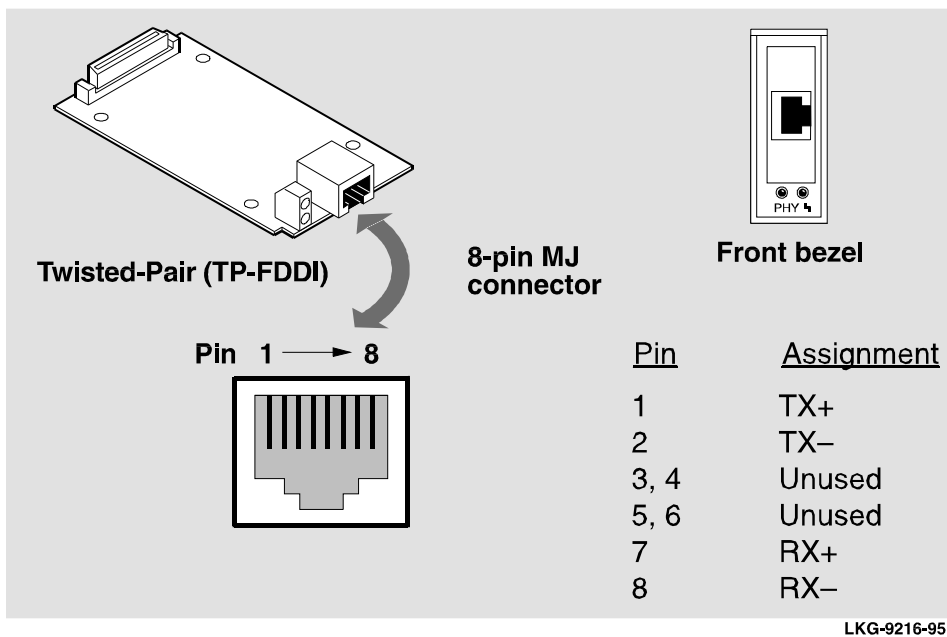
Figure C-3: Single-Mode Fiber ModPMD

LKG-8853-95F

Twisted-Pair for FDDI ModPMD

Figure C-4 shows the TP-FDDI ModPMD connector and its pin assignments.

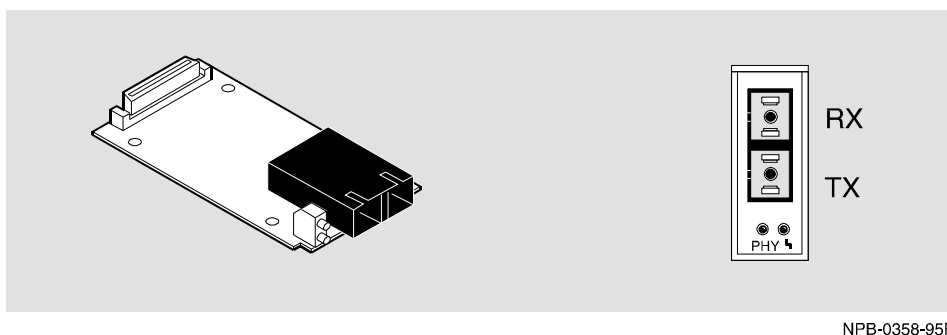**Figure C-4: Twisted-Pair for FDDI ModPMD**

LKG-9216-95F

SC Optic

Figure C-5 shows the twisted-pair for SC Optic connector and the transmitter and receiver location on the front bezel.
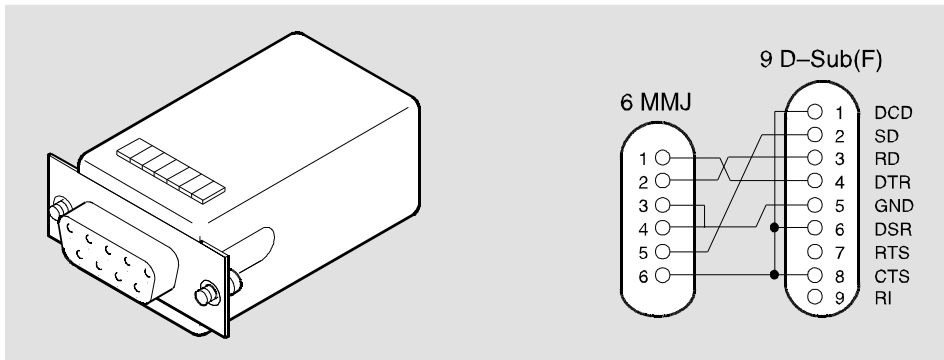
Figure C-5: SC Optic ModPMD

NPB-0358-95F

Adapter Assignments

H8571-J Adapter

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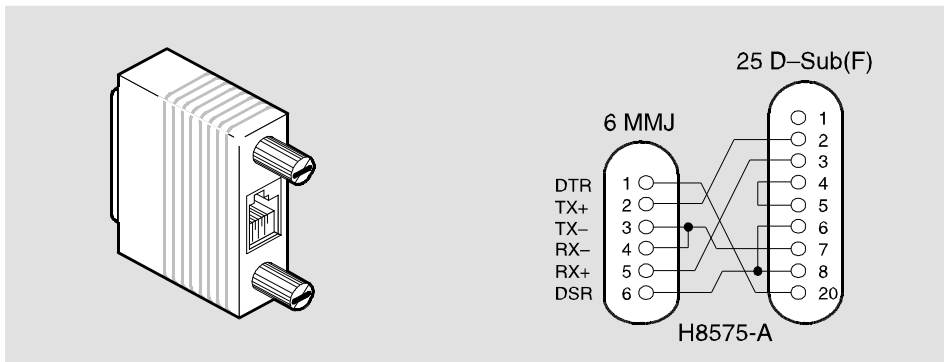
Figure C-6: H8571-J adapter

NPG-5342-95F

H8575-A Adapter

Figure C-7 shows the H8575-A adapter (6-pin MMJ to 25-pin D-Sub connector) and its pin assignments.

Figure C-7: H8575-A adapter

NPG-8793-95F

Appendix D

Product Specifications

Overview

Introduction

This appendix lists the operating specifications and the acoustical specifications for the DECconcentrator 900FH module.

In This Appendix

Topic	Page
Operating Specifications	D-2
Environment Specifications	D-3
Acoustical Specifications	D-4

Operating Specifications

The following table shows the operating environment specifications.

Parameter	Specifications
Operating temperature	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	57 W, total power
	9.7 A, 5Vdc
	0.1 A, 12Vdc
	0.6 A, 15Vdc

For sites above 4900 m (16,000 ft), decrease the operating temperature specification by 1.85C for each 1000 m or 3.25F for each 3200 ft.

The following table shows connector specifications.

Connector	Specifications
DECconcentrator 900FH	One shielded 6-pin MJ (OBR), 12 fixed (SC Optic) ports and as many as two ModPMDs of the following types: • Multimode fiber (MMF) • Single-mode fiber (SMF) • Twisted-pair for FDDI (TP-FDDI) • SC Optics
DEChub ONE	One 8-pin MJ, one DB-9, and one 15-pin D-Sub (AUI connector)
DEChub ONE MX	One 8-pin MJ, one 6-pin MJ (OBR), one DB-9, one 15-pin D-Sub, one redundant power connector (D-Sub), and as many as two ModPMDs.

The following table shows the physical specifications and certification.

Parameter	Specifications
Height	44.45 cm (17.5 in
Width	4.45 cm (1.75 in)
Depth	15.25 cm (6 in)
Weight	1.6 kg (3.5 lb)
Certification: CE, CSA, FCC,TÜV, UL,VCCI	

Environment Specifications

The module is designed to operate in an office or equipment room environment such as telephone closets or satelllite equipment rooms. It is not intended to operate in an air plenum.

Acoustical Specifications

This section shows the acoustical specifications.

The following table shows accountical specifications, declared values per ISO 9296 and ISO 7779.

Product	Sound Power Level LwAd, B	Sound Pressure Level LpAm, dBA (bystander positions)
	Idle/Operate:	Idle/Operate:
DECconcentrator 900FH (DEFHM)	5.3	39
DECconcentrator 900FH and DEChub ONE (DEFHM+DEHUA)	5.5	41
DECconcentrator 900FH and DEChub ONE-MX (DEFHM+DEF1H)	5.5	41

Current values for specific configurations are available from Digital representatives (1 B = 10 dBA).

Operating Specifications

The following table shows accountical specifications in German, declared values per
ISO 9296 and ISO 7779/DIN EN27779.

Schallemissionswerte - Werteangaben nach ISO 9296 und ISO 7779/DIN EN27779

Produkt	Schalleistungspegel LwAd, B	Schalldruckpegel LpAm, dBA (Zuschauerpositionen)
	Leerlauf/Betrieb:	Leerlauf/Betrieb:
DECconcentrator 900FH (DEFHM)	5,3	39
DECconcentrator 900FH und DEChub ONE (DEFHM+DEHUA)	5,5	41
DECconcentrator 900FH und DEChub ONE-MX (DEFHM+DEF1H)	5,5	41

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