

# RouteAbout Access EI

---

## Installation and Configuration

Part Number: EK-DEXBR-IN. A01

April 1996

This manual describes how to install and configure the RouteAbout Access EI.

**Revision/Update Information:** This is a new document.

Digital Equipment Corporation makes no representations that the use of its products in the manner described in this publication will not infringe on existing or future patent rights, nor do the descriptions contained in this publication imply the granting of licenses to make, use, or sell equipment or software in accordance with the description.

Possession, use, or copying of the software described in this publication is authorized only pursuant to a valid written license from Digital or an authorized sublicensor.

© Digital Equipment Corporation 1996. All rights reserved. Printed in U.S.A

The following are trademarks of Digital Equipment Corporation: DEC, DECagent, DECbridge, DECconnect, DEChub, DECnet, DEChub ONE, DECpeater, DECserver, Digital, HUBwatch, MultiSwitch, OpenVMS, RouteAbout, ThinWire, ULTRIX, VAX, VMS, and the Digital logo.

The following are third-party trademarks:

AppleTalk is a registered trademark of Apple Computer, Inc.  
Novell and IPX are registered trademarks of Novell, Inc.

All other trademarks and registered trademarks are the property of their respective holders.

**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 Funkstörwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

**Attention!**

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

# Contents

---

## Preface

## Safety

## 1 Product Introduction

Overview .....	1-1
Introduction.....	1-1
In This Chapter .....	1-1
What is the RouteAbout Access EI? .....	1-2
Features .....	1-3
Hot Swap.....	1-3
ISDN.....	1-3
Configuration and Management .....	1-3
Front and Side Panel Features .....	1-4
Back Panel Features.....	1-7

## 2 Installing the Module

Overview .....	2-1
Introduction.....	2-1
In This Chapter .....	2-1
Removing the Back Cover .....	2-2
Installing the Module as a Standalone Unit .....	2-3
Installing the Module into a DEChub 90.....	2-6
Task 1: Seat the Module.....	2-7
Task 2: Verify Initial LED Operation .....	2-9
Task 3: Connect the Cables .....	2-10
Installing the Module into a DEChub 900 MultiSwitch .....	2-12
Task 1: Compare the Power Ratings .....	2-13
Task 2: Seat the Module.....	2-14

Task 3: Verify Initial LED Operation .....	2-16
Task 4: Connect the Cables .....	2-17

### 3 Connecting the Port Cables

Overview .....	3-1
Introduction .....	3-1
In This Chapter .....	3-1
Signaling Standards .....	3-2
Port Device Cabling .....	3-3
Connecting the Setup Port on the DEchub 900 .....	3-4
Connecting the Console Port .....	3-6

### 4 Configuring the Module in a Standalone Unit

Overview .....	4-1
Introduction .....	4-1
In This Chapter .....	4-1
Configuring as a Standalone Unit .....	4-2
[1] Restart with Factory Defaults .....	4-4
[2] Restart with Current Settings .....	4-5
[3] Show Current Settings .....	4-6
[4] IP Configuration .....	4-7
[1] Set SNMP Read/Write Community .....	4-8
[2] Set In-Band Interface IP Address .....	4-9
[3] Set Default Gateway .....	4-10
[5] Go to Local Console .....	4-11
Go To Local Console (Qconfig) .....	4-11
Go To Local Console (Commands) .....	4-12

### 5 Configuring the Module in a DEChub 90 and DEChub 900

Overview .....	5-1
Introduction .....	5-1
In This Chapter .....	5-1
Configuring in a DEChub 90 .....	5-2
Using the Console Port .....	5-3
Assigning an IP Address (DEChub 900) .....	5-4
DEChub 900 MultiSwitch Installation Menu .....	5-5
[9] Start Redirect Mode .....	5-6

Using Menus to Setup the Module. . . . .	5-7
[1] Restart with Factory Defaults. . . . .	5-9
[2] Restart with Current Settings . . . . .	5-10
[3] Show Current Settings . . . . .	5-11
[4] IP Configuration. . . . .	5-12
[1] Set SNMP Read/Write Community . . . . .	5-13
[2] Set In-Band Interface IP Address. . . . .	5-14
[3] Set Out-of-Band Interface IP Address . . . . .	5-15
[4] Set Default Gateway . . . . .	5-16

## 6 Supporting ISDN

Overview . . . . .	6-1
Introduction. . . . .	6-1
In This Chapter . . . . .	6-1
Ordering Your ISDN Line . . . . .	6-2
Obtaining a Network Termination Device. . . . .	6-3

## 7 Configuring the ISDN Port

Overview . . . . .	7-1
Introduction. . . . .	7-1
In This Chapter . . . . .	7-1
Configuring the ISDN Port . . . . .	7-2
To Exit and Restart . . . . .	7-2
Adding ISDN Addresses . . . . .	7-3
Configuring ISDN Parameters. . . . .	7-4
Setting the Local Number . . . . .	7-4
Setting the Remote Dial Number . . . . .	7-4
Creating the PPP Circuit. . . . .	7-5
Configuring the ISDN Net . . . . .	7-5
Assigning ISDN to your PPP Dial Circuit . . . . .	7-6
Accepting Calls. . . . .	7-7
Set Calls INBOUND/OUTBOUND/BOTH. . . . .	7-7
Set INBOUND Destination . . . . .	7-8
Verifying Configuration. . . . .	7-9

## 8 Removing the Module

Overview .....	8-1
Introduction.....	8-1
In This Chapter .....	8-1
Removing the Cables .....	8-2
Unseating the Module .....	8-3
DEChub 90 .....	8-3
DEChub 900 .....	8-4

## A Problem Solving

Overview .....	A-1
Introduction.....	A-1
In This Appendix .....	A-1
Normal Power Up .....	A-2
LED Descriptions.....	A-3
Problem Solving Using the LEDs .....	A-4

## B Connector Assignments, Adapters and Cable Connections

Overview .....	B-1
In This Appendix .....	B-1
Connector Assignments.....	B-2
10BaseT Port (8-pin MJ) Connector.....	B-2
ISDN (8-pin MJ) Connector.....	B-3
Adapters.....	B-4
H8571-J Adapter.....	B-4
H8575-A Adapter .....	B-5
Cable Connections .....	B-6
Console Port Pin Assignments.....	B-13

## C Installation Information – United Kingdom

Overview .....	C-1
In This Appendix .....	C-1
Power Rating, Module Isolation and Safety Status .....	C-2
Host Power Rating .....	C-2
Module Isolation.....	C-2
Safety Status .....	C-2

Cable Approval .....	C-3
Supported Cables .....	C-3
Equipment Between the Approved Module and a Digital Circuit (PTT) .....	C-4

## D Product Specifications

Overview .....	D-1
In This Appendix .....	D-1
Product Specifications .....	D-2
Acoustical Specifications .....	D-3
Connectors .....	D-4
Parts List .....	D-5

## Figures

LEDs and Connectors on Front and Side Panels .....	1-5
Back Panel Features .....	1-8
Removing the Back Cover .....	2-2
Installing the Module as a Standalone Unit .....	2-5
Seating the Module in the DEChub 90 .....	2-8
Location of LED Indicators .....	2-10
Cable Connection .....	2-11
Compare the Power Ratings .....	2-13
Seating the Module in the DEChub 900 MultiSwitch .....	2-15
Cable Connection .....	2-18
Setup Port Cabling Components .....	3-5
Console Port Cabling Components .....	3-7
Removing the Cables .....	8-2
Unseating the Module from the DEChub 90 .....	8-3
Unseating the Module from the DEChub 900 .....	8-4
10BaseT 8-pin MJ Connector .....	B-2
ISDN 8-pin MJ Connector .....	B-3
H8571-J Adapter .....	B-4
H8575-A Adapter .....	B-5

## Tables

LED Indicators and Connectors .....	1-4
Back Panel Features .....	1-7
Module LED States .....	A-3
LED States .....	A-4
10BaseT 8-pin MJ Connector Assignments .....	B-2
ISDN 8-pin MJ Connector Assignments .....	B-3
X.21 Cable Connections (BC12F-06, 17-03580-01) .....	B-6
EIA422/V.11/V.36 Cable Connections (BC12H-06, 17-03767-01) .....	B-7
V.35 Connection (BC12G-06, 17-03766-01) .....	B-9
EIA530A Cable Connections (BC12J-06, 17-03760-01) .....	B-10
EIA423/V.10 Cable Connections (BC12K-06, 17-03761-01) .....	B-11
V.28/EIA232 Cable Connections (BC12L-06, 17-03762-01) .....	B-12
Console Port Pin Assignments .....	B-13
Module Power .....	C-2
Cables Supported by the Approved Module .....	C-3
Operating Specifications .....	D-2
Physical Specifications .....	D-3
Acoustical Specifications .....	D-5
RouteAbout Access EI Parts List .....	D-6



---

# Preface

---

## Overview

This manual describes how to install and set up the RouteAbout Access EI module for both the IP and MP software packages. It also provides problem-solving and connector pin assignment information.

## Intended Audience

This manual is intended for use by personnel who will install and set up the RouteAbout Access EI.

---

## Organization

This manual is organized as follows:

<b>Section</b>	<b>Description</b>
Chapter 1	Provides a description of the RouteAbout Access EI and its features, indicators and connectors.
Chapter 2	Provides installation instructions for the RouteAbout Access EI in a standalone unit, a DEChub 90, and a DEChub 900 MultiSwitch.
Chapter 3	Provides information on how to connect the setup port cable.
Chapter 4	Describes how to configure the RouteAbout Access EI when it resides in a standalone unit.
Chapter 5	Describes how to configure the RouteAbout Access EI when it resides in a DEChub 90 or a DEChub 900 MultiSwitch.
Chapter 6	Defines what you will need to support ISDN.
Chapter 7	Describes how to configure the ISDN port.
Chapter 8	Describes how to remove the RouteAbout Access EI from a DEChub 90 or a DEChub 900 MultiSwitch.
Appendix A	Describes the LED functions and problem solving information.
Appendix B	Describes connectors, adapters, pin assignments and cable connections.
Appendix C	Provides installation information required for the United Kingdom.
Appendix D	Provides a list of available parts for the RouteAbout Access EI.

---

---

## Conventions and Terms

### Overview

This manual uses the following conventions:

Convention	Description
Special Type	This special type in examples indicates system output or user input.
<b>Boldface</b>	Boldface type in examples indicates user input.
<Return>	Indicates that you should press the Return key.

### Terms Used in This Manual

This manual uses the following terms:

Term	Definition
Ethernet	Digital's term for its product compatibility with ISO 8802-3/ANSI/IEEE 802.3 standards and the Ethernet standards for CSMA/CD local area networks (LANs).
ISDN	Integrated Services Digital Network, the next generation of telecommunication services offered by telephone companies. ISDN delivers digital communication at a rate of 128 Kbps without compression.
NT1	Network Termination 1. Located at the end-user side of the ISDN connection, this functional device represents the termination of the ISDN system at the end user's location.
SNMP	Simple Network Management Protocol, an industry standard protocol for network management.
ThinWire Cable	IEEE 10base2 Coaxial cable that carries Ethernet signals.

---

## Associated Documents

The following documents provide related information about the module. For information on how to order additional documentation, see the ordering information provided in this preface.

<b>Title and Order</b>	<b>Description</b>
<i>Bridging Configuration Guide</i> AA-QL29C-TE	Describes bridging methods, operational features of bridging, configuration methods and basic configurations, and monitoring of bridging software.
<i>DEChub 90 Owner's Guide</i> EK-DEHUB-OM	Provides installation, use, security, and troubleshooting information for the DEChub 90.
<i>DEChub 900 MultiSwitch Owner's Manual</i> EK-DH2MS-OM	Provides installation, use, security, and troubleshooting information for the DEChub 900 MultiSwitch.
<i>Event Logging System Messages Guide</i> AA-QL2AC-TE	Describes messages logged by the Event Logging System.
<i>Network Interface Operations Guide</i> AA-QL2BC-TE	Describes the configuring and monitoring of the network interfaces in the Distributed Routing Software.
<i>Distributed Routing Software Router Protocols Reference Guide</i> AA-QL2CC-TE	Provides detailed reference information about the micro-operating system structure and the protocols and interfaces that the bridging routers support.
<i>Distributed Routing Software Routing Protocols Users Guide</i> AA-QL2DC-TE	Explains how to configure and monitor the routing protocol software.
<i>System Network Architecture Guide</i> AA-QV5SA-TE	Describes IBM/DLSw support.
<i>System Software Guide</i> AA-QL2EC-TE	Describes the installation, configuration, and operation of the Distributed Routing Software.

---

<b>Title and Order</b>	<b>Description</b>
<i>HUBwatch Installation and Configuration</i> AA-Q358D-TE	Provides information for installing and configuring HUBwatch for OpenVMS and HUBwatch for Windows.
<i>HUBwatch Use</i> AA-PW4BE-TE	Describes how to use the HUBwatch network management software. Provides information for installing and configuring HUBwatch for OpenVMS and/or Digital UNIX operating system environments.
<i>HUBwatch for Windows Use</i> AA-Q3S3C-TE	Describes how to use the HUBwatch network management software in an MS-Windows operating environment.

---

---

## 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:

---

<b>To Order:</b>	<b>Contact:</b>
By Telephone	Continental USA: 1-800-DIGITAL (1-800-344-4825) Canada: 1-800-267-6215 Alaska, New Hampshire, and Hawaii: 1-603-884-6660
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 030601-1260 (Place prepaid orders from Puerto Rico with the local Digital subsidiary: 809-754-7575)
By Mail (Canada)	DIGITAL EQUIPMENT CORPORATION LTD. 940 Belfast Road Ottawa, Ontario, Canada K1G 4C2 Attn: A&SG Business Manager
Internationally	DIGITAL EQUIPMENT CORPORATION 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 030601-1260

---





---

# Safety

---

## Overview

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

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

---

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

---

<b>CAUTION</b>	This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost.
<b>ACHTUNG</b>	Bei diesem Vorgang werden alle Konfigurationseinstellungen gelöscht und die Werkseinstellungen wieder eingesetzt. Alle Konfigurationsdaten gehen verloren.
<b>ATTENTION</b>	Cette action supprime tous les paramètres de configuration et les remplace par des valeurs prédéfinies. Tous les paramètres de configuration seront perdus.
<b>PRECAUCIÓN</b>	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.

---

# Chapter 1

---

## Product Introduction

---

### Overview

#### Introduction

This chapter provides a description of the RouteAbout Access EI module and its features, indicators, and connectors.

#### In This Chapter

Topic	Page
What is the RouteAbout Access EI?	1-2
Features	1-3
Front and Side Panel Features	1-4
Back Panel Features	1-7

What is the RouteAbout Access EI?

---

## What is the RouteAbout Access EI?

The RouteAbout Access EI Remote Access Router (referred to in this manual as the module) provides multiprotocol solutions for linking remote Ethernet LANs to corporate networks. The RouteAbout Access EI also delivers digital communications via Integrated Services Digital Network (ISDN).

The module can be installed in a DEChub 90, a DEChub 900 MultiSwitch or as a standalone unit.

The RouteAbout Access EI a wide area router/bridge that has one console port, and three interfaces consisting of one Ethernet interface, in either ThinWire (10Base2) or twisted pair (10BaseT), one ISDN basic rate interface port, and one synchronous serial port.

The RouteAbout Access EI is available with the following two software packages:

- Internet Protocol (IP)
- Multiprotocol (MP)

The Internet Protocol package supports:

IP (RIP, EGP, OSPF, BGP-4)	Bandwidth Reservation
Bridging	Dial Backup
Frame Relay	PPP
X.25	

The Multiprotocol software supports all the IP software protocols available in the IP plus:

AppleTalk	DECnet Phase IV
DECnet/OSI	DLSw
IPX	SDLC Relay

The RouteAbout Access EI standards-compliant technology (IEEE 802.1d, 802.2, and 802.3) ensures operability in multivendor networks.

## Features

Your RouteAbout Access EI module includes the following features:

### Hot Swap

The module's hot swap capability allows you to install or remove the module from a DEChub 90 or 900 without turning off the power.

### ISDN

The module supports an S/T interface ISDN basic rate port.

## Configuration and Management





The following configuration and management options are available:

- Support for configuration and management through a command line interface in two ways:
  - Locally via the setup port
  - Remotely via Telnet
- Upgradeable device firmware (in nonvolatile Flash memory) using Trivial File Transfer Protocol (TFTP)
- Easily managed by Simple Network Management Protocol (SNMP) through HUBwatch or other network management systems.

## Front and Side Panel Features

The LED indicators and connectors on the front and side panels of the RouteAbout Access EI are listed below in Table 1-1. Figure 1-1 shows the location of each item listed. For problem-solving information using the LEDs, refer to Appendix A, LED Indicators and Connectors.

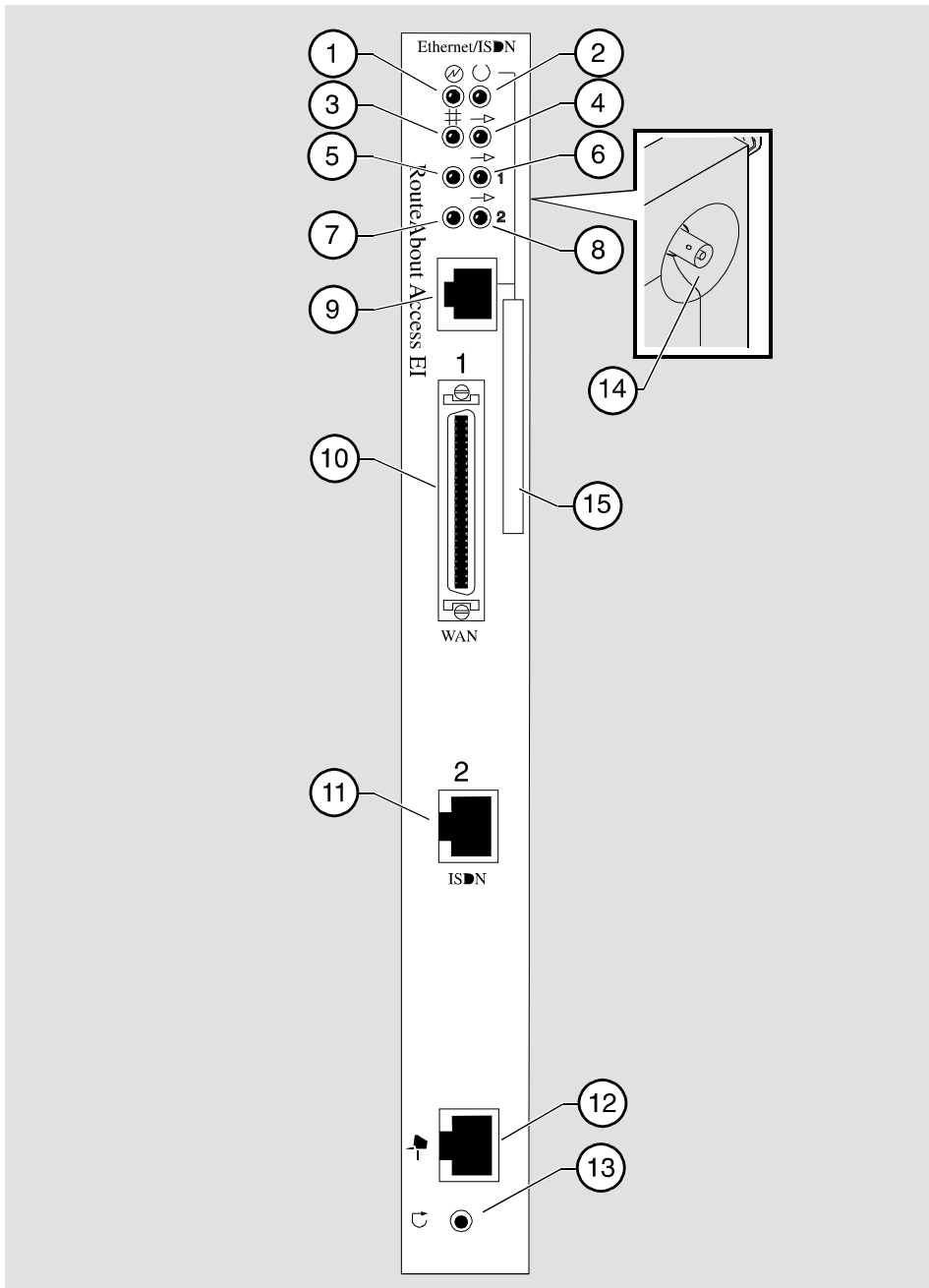
**Table 1-1: LED Indicators and Connectors**

Item	Icon	Name	Description
1		Power LED	<b>On:</b> the module has power. <b>Off:</b> the module has no power. <b>Blinking:</b> faulty power connection or insufficient power.
2		Module OK LED	<b>On:</b> the module passed self-test. <b>Off:</b> the module failed self-test.
3		Network OK LED	<b>On:</b> the ThinWire 10Base2 port or twisted pair 10BaseT port is connected to a properly terminated and operational LAN. <b>Off:</b> the ThinWire 10Base2 port or twisted pair 10BaseT port is <i>not</i> connected to a properly terminated and operational LAN.
4		Network Activity LED	<b>On:</b> network traffic. <b>Blinking:</b> blinks more rapidly and appears brighter as network traffic increases. <b>Off:</b> no network traffic.
5		Port 1 Serial Line OK Indicator	<b>On:</b> normal operation. <b>Blinking:</b> self-test mode. <b>Off:</b> self-test failure.
6		Port 1 Serial Line Activity Indicator	<b>On:</b> Port 1 is transmitting or receiving data. <b>Off:</b> Port 1 is <i>not</i> currently transmitting or receiving data.

*continued . . .*


Front and Side Panel Features

Figure 1-1: LEDs and Connectors on Front and Side Panels



NPG-0279-951

## Front and Side Panel Features

Item	Icon	Name	Description
7		ISDN port OK Indicator	<b>On:</b> normal operation. <b>Off:</b> self-test failure. <b>Blinking:</b> self-test mode.
8		ISDN port Activity Indicator	<b>On:</b> port is transmitting or receiving data. <b>Off:</b> port is not transmitting or receiving data.
9		Twisted Pair Connector	Connects the module to a 10BaseT twisted pair.
10		Synchronous Serial Port 1 Connection	Supports the following standards: EIA530A, RS232/V.28, RS422/V.11, RS423/V.10, V.35, X.21 Leased Lines (LL).
11		ISDN Port Connection	Connects the module to an ISDN segment. Uses an 8-pin MJ connector.
12		Console Port Connection	Connects a console terminal that is used to manage the module. Uses an 8-pin MJ connector.
13		Dump Button	If pressed during power-on diagnostics testing (from shortly after power on until the LEDs blink three times in sequence), it causes the diagnostic state to reset to factory defaults and the power-on sequence to stop at the boot prompt to manually clear configuration memory.
14		Ethernet Network Connector (BNC)	Connects the module to the Ethernet ThinWire segment. Not used when the module is installed in either a DEChub 90 or DEChub 900 MultiSwitch or connected through the twisted pair (10BaseT) connector.
15		Ethernet Label	Lists the Ethernet address.



---

## Back Panel Features

The features on the back panel of the RouteAbout Access EI are listed below in Table 1-2. Figure 1-2 shows the location of each item listed.

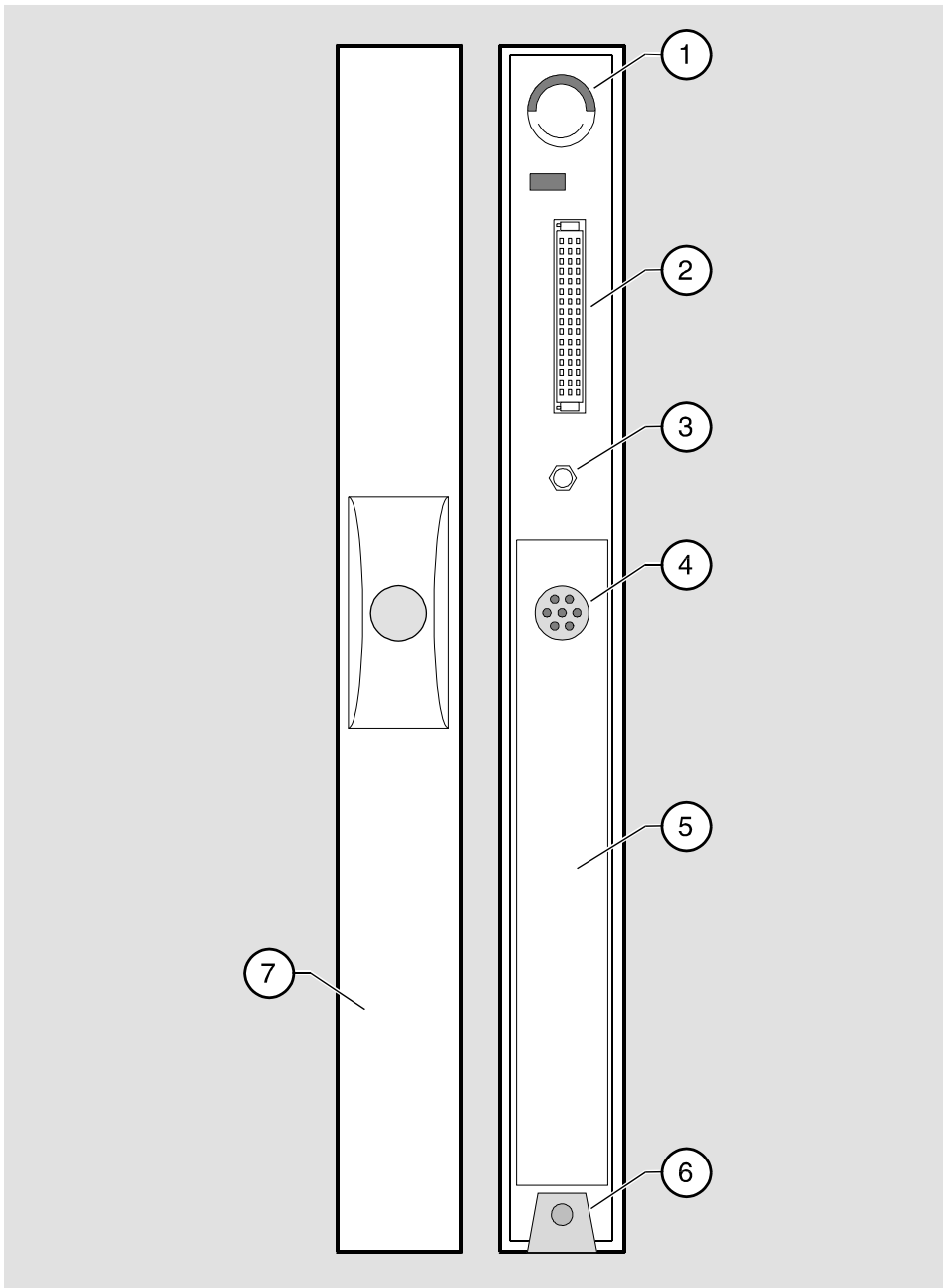
**Table 1-2: Back Panel Features**

Item	Name	Description
1	Locking tab	Locks the module into the DEChub 90 or DEChub 900 MultiSwitch backplane.
2	48-pin connector	Provides network and power connections to the module when the module is installed in a DEChub 90 or DEChub 900 MultiSwitch.
3	Grounding bolt	Provides a chassis grounding connection to the module when the module is installed into a DEChub 90 or DEChub 900 MultiSwitch.
4	Power connector	Receives dc current from the power supply. This feature is used for standalone operation only.
5	Manufacturing label	Lists the module part number, serial number, revision level, and power requirements.
6	Mounting tab	Secures the module to the backplane when the module is installed into a DEChub 90 or DEChub 900 MultiSwitch.
7	Back cover	The back cover is used only when the module is a standalone unit.

---

Back Panel Features

Figure 1-2: Back Panel Features



NPG-0022-95F

## Chapter 2

---

# Installing the Module

---

## Overview

### Introduction

This chapter tells you how to install the RouteAbout Access EI as a standalone unit, into a DEChub 90, or a DEChub 900 Multiswitch backplane.

### In This Chapter

Topic	Page
Removing the Back Cover	2-2
Installing the Module as a Standalone Unit	2-3
Installing the Module in a DEChub 90	2-6
Installing the Module in a DEChub 900 MultiSwitch	2-12

## Removing the Back Cover

---

### Removing the Back Cover

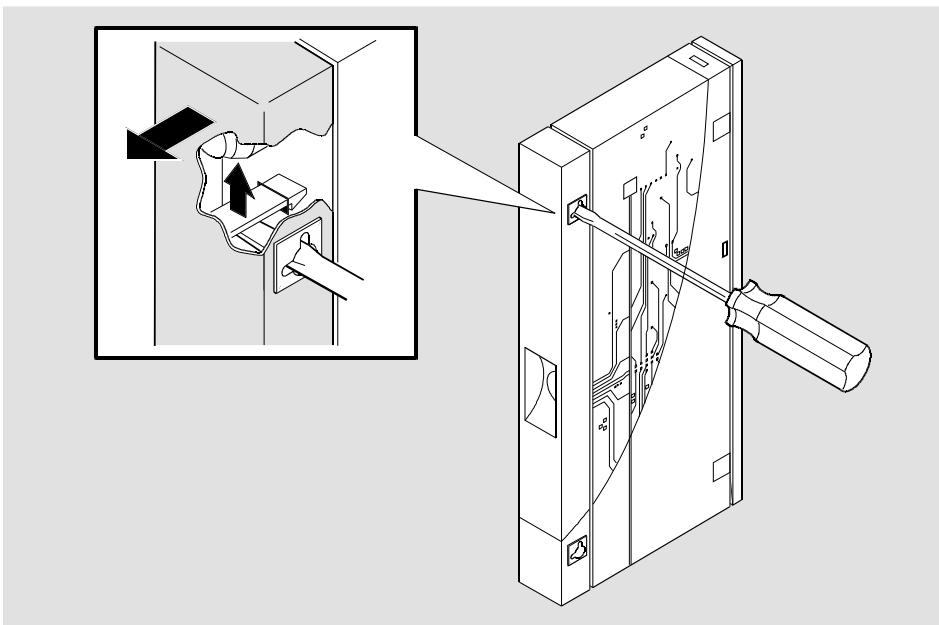
If you are installing a module into a DEChub 90, or a DEChub 900 MultiSwitch, remove the back cover as follows (refer to Figure 2-1).

---

Step	Action
1	Lift up the latch on the back cover by inserting a flat-blade screwdriver into the top mounting hole.
2	With the latch up, pull the top of the back cover away, pivoting at the bottom of the module.

---

**Figure 2-1: Removing the Back Cover**



NPG-9146-95F

If your module does not have a back cover and you are installing the module into a DEChub 90, go to section Installing the Module into a DEChub 90.

If your module does not have a back cover and you are installing the module into a DEChub 900 MultiSwitch, go to section Installing the Module into a DEChub 900 MultiSwitch.

---

## Installing the Module as a Standalone Unit

You can use the RouteAbout Access EI as a standalone unit by placing it on a table, mounting it on a wall, or by installing it into a standard 19-inch rack using a shelf assembly (Digital Part No. H9544-MS). To install the module as a standalone unit, complete the following steps (refer to Figure2-2).

---

Step	Action
1	Connect the cable from the power supply to the power connector (1) on the back of the module.
2	Plug the ac power supply cable (2) into the power supply, then into a wall outlet.
3	Upon receiving power, verify that the module's Power LED lights immediately, that the Module OK LED lights within five seconds, and that the module performs a self-test. <u>Note:</u> The self-test requires 25 seconds to complete. After the module completes self-test, and if the module is unconfigured, the Port LEDs (Ethernet, Serial Port and ISDN port) will flash. <u>Note:</u> If the LEDs do not operate as described, refer to Appendix A.

---

*continued . . .*

## Installing the Module as a Standalone Unit

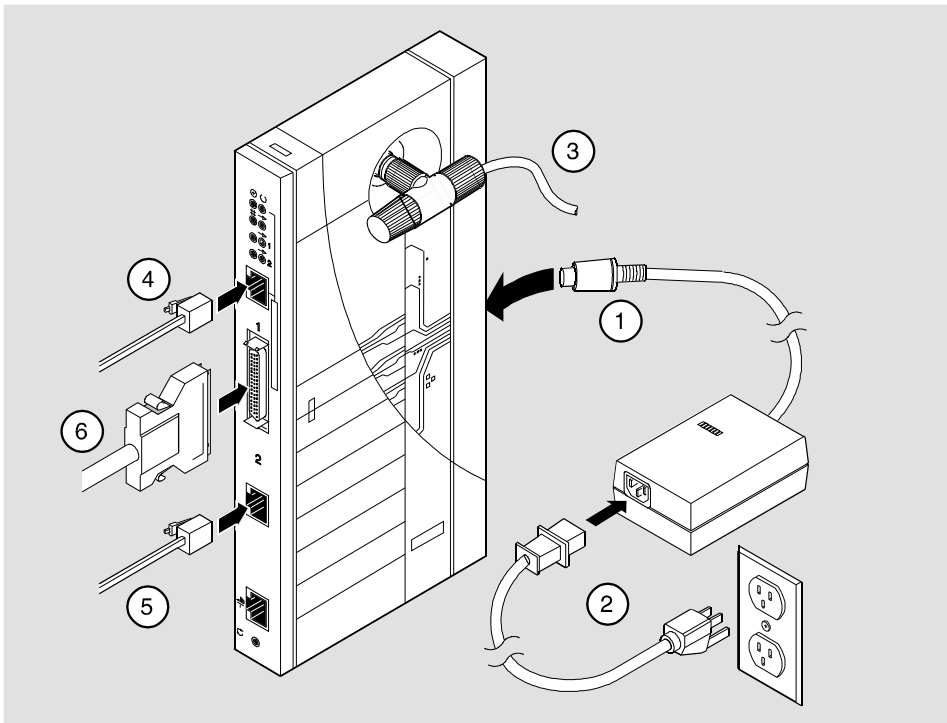
---

<b>Step</b>	<b>Action</b>
<b>4</b>	<p>Connect the ThinWire T-connector <b>(3)</b> <b>OR</b> the Twisted Pair Connector <b>(4)</b>:</p> <p>a Attach the ThinWire T-connector <b>(3)</b> to the BNC network connector and turn the connector one-quarter turn clockwise until it locks into place. Terminate the connection with a 50-ohm terminator or extend the Ethernet segment to the next device.</p> <p>To disconnect the ThinWire T-connector, turn the connector one-quarter turn counter-clockwise until the connector clears the BNC connector stem, then disconnect the cable.</p> <p>b <b>OR</b>, connect the 10BaseT cable <b>(4)</b> to the twisted pair connector (8-pin MJ Ethernet connector).</p> <p><b>Caution:</b> Do not use both ThinWire and twisted pair connectors simultaneously.</p>
<b>5</b>	Connect the ISDN <b>(5)</b> connector.
<b>6</b>	Connect the serial cable <b>(6)</b> to Port 1 of the module.
<b>7</b>	Connect the console cable using the 8-pin MJ connector. Use a H-8584-AC adapter if necessary.
<b>8</b>	After successful installation and power-up, configuration information will appear on the console monitor, including questions about your network topology.

---

Installing the Module as a Standalone Unit

Figure 2-2: Installing the Module as a Standalone Unit



NPB-0284-951

## Installing the Module into a DEChub 90

The RouteAbout Access EI hot-swap feature allows you to install the module into the DEChub 90 without turning off power. Seating the module initiates the power-up. Installing the module involves the following tasks:

<b>Task</b>	<b>Page</b>
1 Seat the module.	2-7
2 Verify initial LED operation.	2-9
3 Connect the cables.	2-10



---

## Task 1: Seat the Module

To seat the module into a DEChub 90, complete the following steps (refer to Figure 2-3).

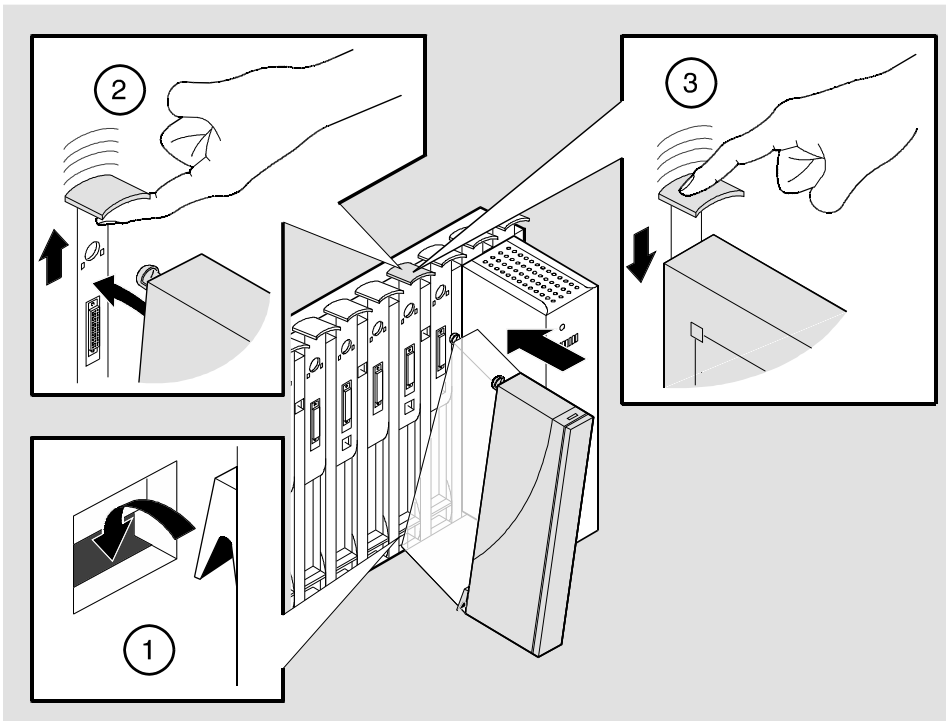
---

<b>Step</b>	<b>Action</b>
<b>1</b>	Place the module's mounting tab into a mounting slot <b>(1)</b> on the DEChub 90.
<b>2</b>	Pull up on the release lever <b>(2)</b> to its unlocked position and hold.
<b>3</b>	Pivot the module on the mounting tab and align the connectors.
<b>4</b>	Firmly push the module onto the backplane connectors.
<b>5</b>	Press down on the release lever <b>(3)</b> to ensure that it is locked.

---

Task 1: Seat the Module

Figure 2-3: Seating the Module in the DEChub 90



NPG-0056-95F

---

## Task 2: Verify Initial LED Operation

If this is a new installation, turn on the power to the DEChub 90. If the module was installed while the DEChub 90 was powered up, seating the module will initiate the module's power-up sequence. To see the locations of the module's LEDs, refer to Figure 1-1.

Stage	Description
Self-test	Upon receiving power, verify that the module's Power LED lights immediately and that the Module OK LED lights within five seconds. Also upon receiving power, the module performs a self-test. <u>Note:</u> The self-test requires 25 seconds for completion.
After self-test	After the module completes self-test, and if the module is unconfigured, the Port LEDs will flash. <u>Note:</u> If the LEDs do not operate as described, refer to Appendix A, Problem Solving.

## Task 3: Connect the Cables

---

### Task 3: Connect the Cables

After the RouteAbout Access EI has been installed in the DEChub 90, complete the following steps to install the serial and ISDN cables, while referring to Figure 2-5:

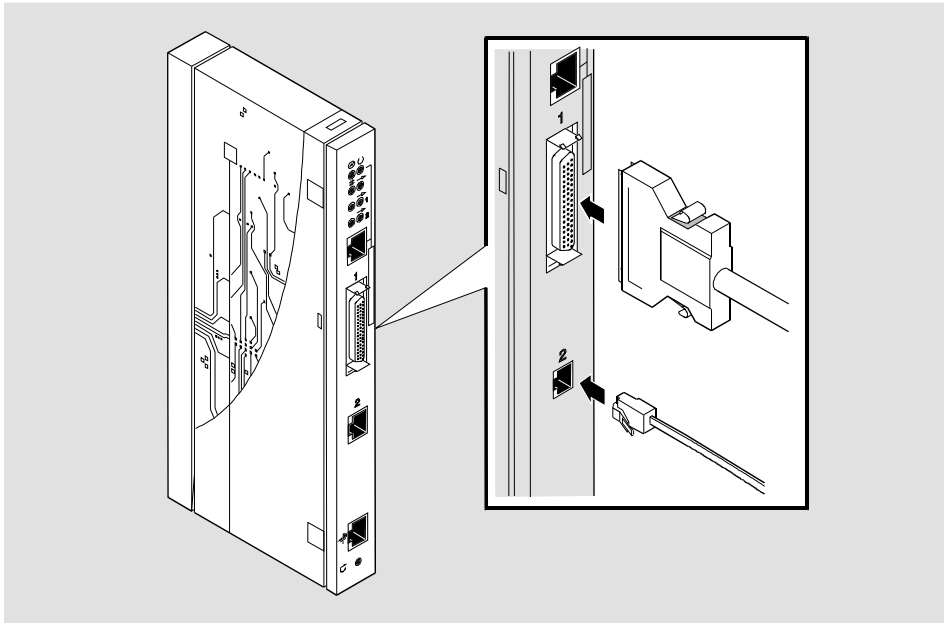
---

<b>Step</b>	<b>Action</b>
<b>1</b>	Insert the module's serial cable into the connector, ensuring that the release tabs snap into the locked position. See Appendix B for cable information.
<b>2</b>	Align the release tab on the ISDN cable plug with the keyway on the module's ISDN port connector. <u>Note:</u> Depending on your country, an NT1 device may be required. Consult your telephone company for information.
<b>3</b>	Insert the ISDN line phone cord into the ISDN port, ensuring the release tab snaps into the locked position.
<b>4</b>	Connect the other end of the cable into the NT1 device.

---

Task 3: Connect the Cables

Figure 2-4: Cable Connection



NPG-0295-95F

---

## Installing the Module into a DEChub 900 MultiSwitch

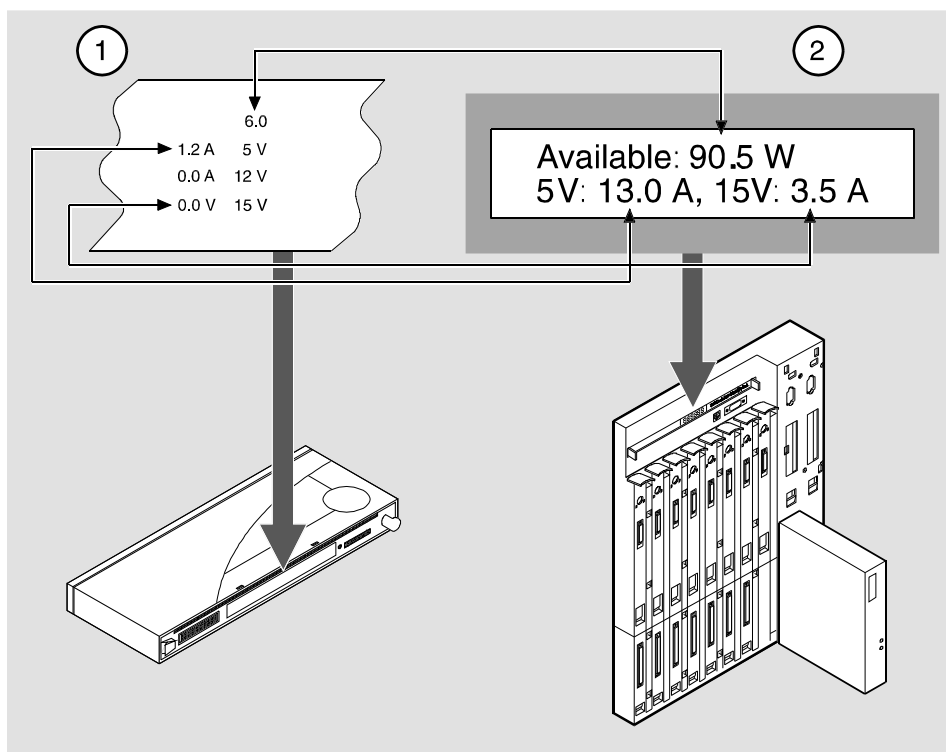
The RouteAbout Access EI hot-swap feature allows you to install the module into the DEChub 900 MultiSwitch without turning off power. Seating the module initiates the power-up. Installing the module involves the following tasks:

<b>Task</b>	<b>Page</b>
1 Compare the power ratings.	2-13
2 Seat the module.	2-14
3 Verify initial LED operation.	2-16
4 Connect the cables.	2-17

## Task 1: Compare the Power Ratings

Compare the module's power ratings with the values shown in the Hub Manager Status display (refer to Figure 2-6).

**Figure 2-5: Compare the Power Ratings**



NPG-0296-951

If the power values on the module's manufacturing label do not exceed the values shown in the Hub Manager status display, go to Task 2 to seat the module into the DEChub 900 MultiSwitch.

If the power values on the module's manufacturing label exceed the values shown in the Hub Manager status display, add another power supply to the DEChub 900 MultiSwitch (refer to the *DEChub 900 MultiSwitch Owner's Manual*.)

## Task 2: Seat the Module

---

### Task 2: Seat the Module

To seat the module into the DEChub 900 MultiSwitch, complete the following steps. (refer to Figure 2-7).

---

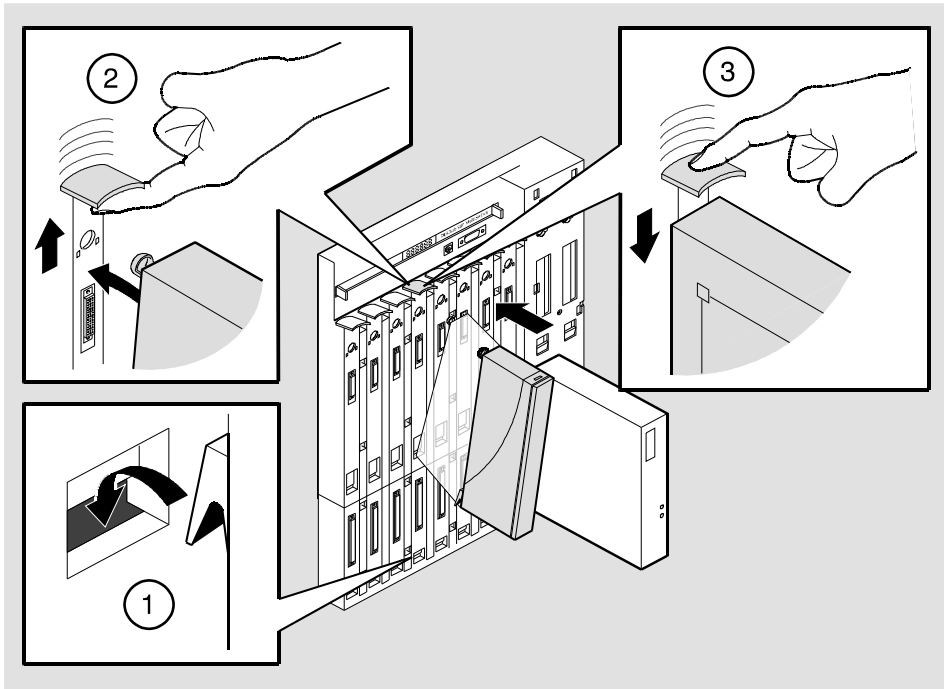
<b>Step</b>	<b>Action</b>
<b>1</b>	Place the module's mounting tab into a mounting slot <b>(1)</b> on the DEChub 900.
<b>2</b>	Pull up on the release lever <b>(2)</b> to its unlocked position and hold.
<b>3</b>	Pivot the module on the mounting tab and align the connectors.
<b>4</b>	Firmly push the module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

---



Task 2: Seat the Module

Figure 2-6: Seating the Module in the DEChub 900 MultiSwitch



NPG-0026-95F

## Task 3: Verify Initial LED Operation

---

### Task 3: Verify Initial LED Operation

If this is a new installation, turn on the power to the DEChub 900 MultiSwitch. If the module was installed while the DEChub 900 MultiSwitch was powered up, seating the module will initiate the module's power-up sequence. To see the locations of the module's LEDs, refer to Figure 1-1.

---

Stage	Description
1	Upon receiving power, verify that the module's Power LED lights immediately and that the Module OK LED lights within five seconds. Also upon receiving power, the module performs a self-test. <u>Note:</u> The self-test requires 25 seconds for completion.
2	After the module completes self-test, and if the module is unconfigured, the Port LEDs will flash. <u>Note:</u> If the LEDs do not operate as described, refer to Appendix A, Problem Solving.

---

---

## Task 4: Connect the Cables

After the RouteAbout Access EI has been installed in the DEChub 900 MultiSwitch, complete the following steps to connect the serial and ISDN port cable (refer to Figure 2-8):

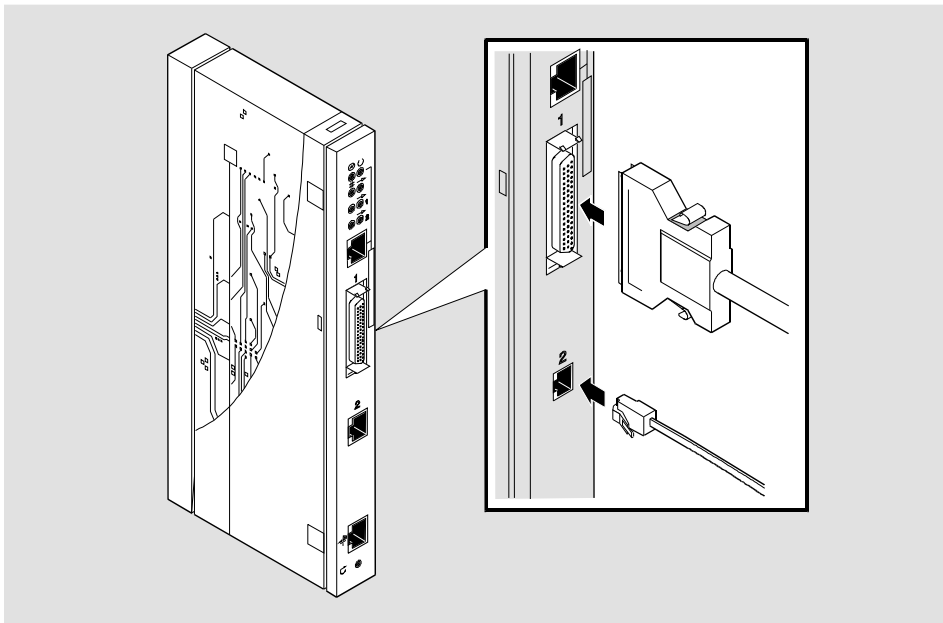
---

<b>Step</b>	<b>Action</b>
<b>1</b>	Insert the module's serial cable into the connector, ensuring that the release tabs snap into the locked position. See Appendix B for cable information.
<b>2</b>	Align the release tab on the ISDN cable plug with the keyway on the module's ISDN port connector. <u>Note:</u> Depending on your country, an NT1 device may be required. Consult your local telephone company for information.
<b>3</b>	Insert the ISDN line phone cord into the ISDN port, ensuring the release tab snaps into the locked position.
<b>4</b>	Connect the other end of the cable into the NT1 device.

---

#### Task 4: Connect the Cables

**Figure 2-7: Cable Connection**



NPG-0295-95F

After the module is successfully installed, the DEChub 900 MultiSwitch message screen will read:

```
RtAbt Acces EI/MP  
up
```

This message means that the DEChub 900 MultiSwitch only recognizes the *presence* of the module. It does not mean that the module is ready to run.

After successful installation and power-up, configuration information will appear on the hub manager screen and, if connected, on the module's console, including questions about your network topology.

## Chapter 3

---

# Connecting the Port Cables

---

## Overview

### Introduction

This chapter describes how to connect the RouteAbout Access EI module to the setup port when the module resides in a DEChub 900 MultiSwitch, and how to connect to the console port when the module resides in a DEChub 90 or standalone.

### In This Chapter

Topic	Page
Signaling Standards	3-2
Port Device Cabling	3-3
Connecting the Setup Port on the DEChub 900	3-4
Connecting the Console Port on the DEChub 90	3-6

## **Signaling Standards**

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

---

## Port Device Cabling

The setup port (see Figure 3-1) on the DEChub 900 MultiSwitch and the console port (see Figure 3-2) on the module can be connected to a port device (a terminal or personal computer), using the following cables and adapters:

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

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

## Connecting the Setup Port on the DEchub 900

To connect to the setup port on the DEchub 900 MultiSwitch, complete the following steps:

---

<b>Step</b>	<b>Action</b>
<b>1</b>	Ensure that the transmit and receive baud rates on the setup port device are set to 9600 baud.
<b>2</b>	Connect the setup port device to the setup port connector on the DEchub 900 MultiSwitch (see Figure 3-1).

---

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

---

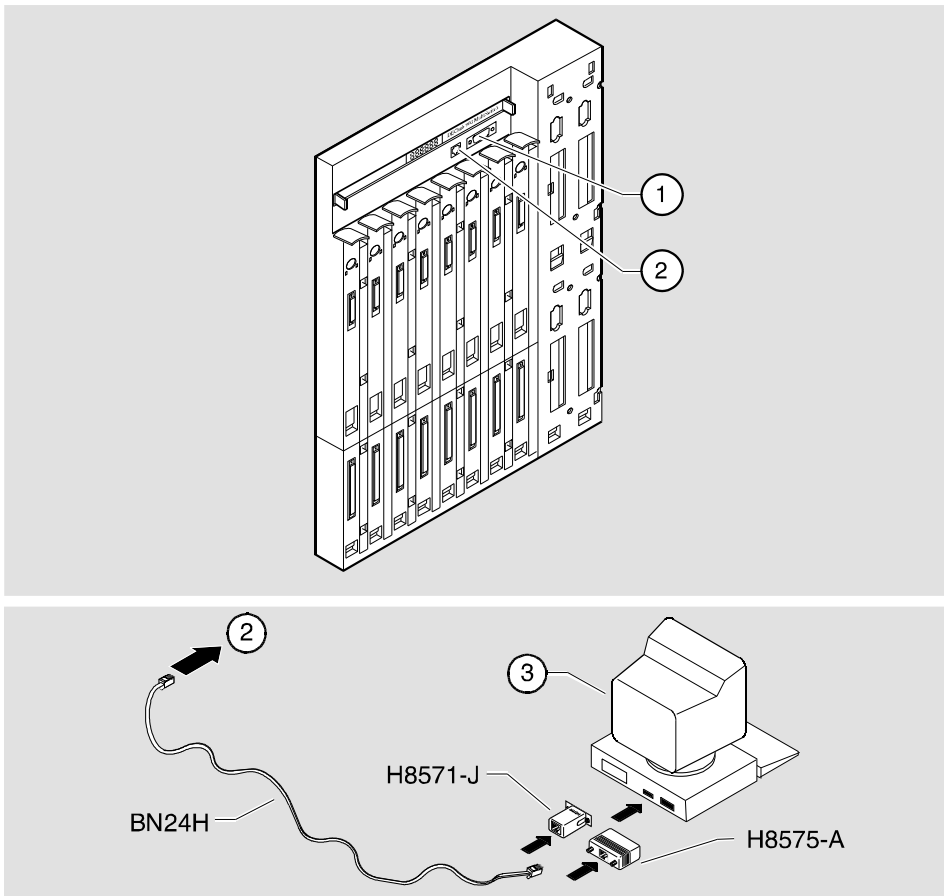
<b>Item</b>	<b>Description</b>
<b>1</b>	OBM Port
<b>2</b>	Setup Port
<b>3</b>	Port Device

---



## Connecting the Setup Port on the DEchub 900

**Figure 3-1: Setup Port Cabling Components**



NPG-0194-95F

## Connecting the Console Port

When the module resides in a DEChub 90 or a standalone unit, connection is made through the console port on the module. To connect the console port on the RouteAbout Access EI module, complete the following steps:

---

<b>Step</b>	<b>Action</b>
<b>1</b>	Ensure that the transmit and receive baud rates on the console port device are set to 9600 baud.
<b>2</b>	Connect the console port device to the console port connector on the module.

---

The following legend identifies the console port cabling in Figure 3-2:

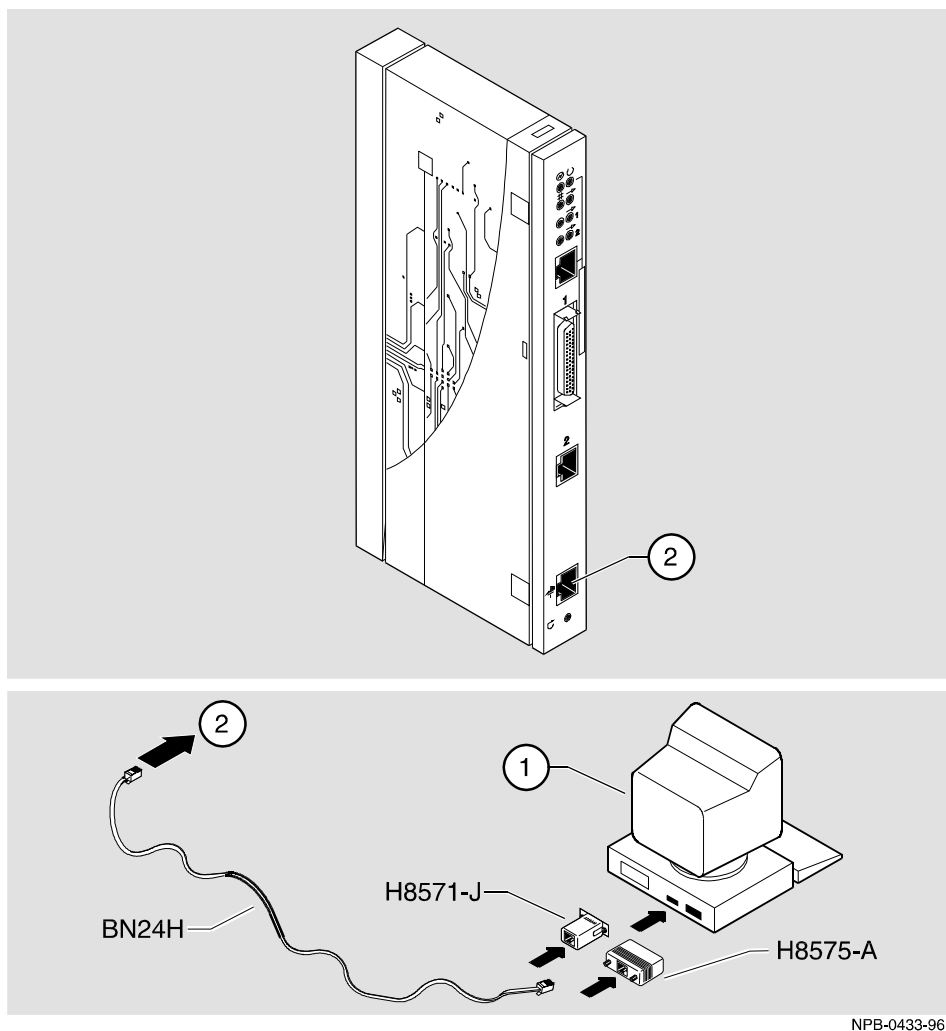
---

<b>Item</b>	<b>Description</b>
<b>1</b>	Port Device
<b>2</b>	Console Port

---

## Connecting the Console Port

**Figure 3-2: Console Port Cabling Components**



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

To	Go to
Configure the module in a standalone unit	Chapter 4
Configure the module in a DEChub 90	Chapter 5
Configure the module in a DEChub 900	Chapter 5



## Chapter 4

---

# Configuring the Module in a Standalone Unit

---

## Overview

### Introduction

This chapter describes how to setup and configure your RouteAbout Access EI when it is installed in a standalone unit.

### In This Chapter

Topic	Page
Configuring as a Standalone Unit	4-2
[1] Restart with Factory Defaults	4-4
[2] Restart with Current Settings	4-5
[3] Show Current Settings	4-6
[4] IP Configuration	4-7
[5] Go to Local Console	4-11

## Configuring as a Standalone Unit

Upon power up of the module, the system displays the following bootstrap monitor information.

```
Will start FLASH GW image in 5 seconds
Hit <ctl>C or enter cmd with <CR> to abort

Digital RouteAbout Access EI bootstrap monitor V1.0 [Jan 15 1996]
Copyright (C) 1996, Digital Equipment Corporation
Copyright 1990-1994 Proteon, Inc.
>
```

---

### NOTE

If the **<Return>** key is hit during the bootstrap operation, execute the stored image by entering the following command:

```
> e
```

---

After 5 seconds, if the module is unconfigured, the system displays the following dialog.

```
RtAbt Acces EI/MP
=====
          RtAbt Acces EI/MP INSTALLATION MENU

          [1] Restart with Factory Defaults
          [2] Restart with Current Settings
          [3] Show Current Settings
          [4] IP Configuration
          [5] Go to Local Console
=====
Enter selection: [n] <Return>
```

---

### NOTE

The /MP that appears in menus will be replaced with /IP when using the Internet Protocol package.

---

## Configuring as a Standalone Unit

If the RouteAbout Access EI has been configured, then the following menu appears.

```
RtAbt Acces EI
=====

          RtAbt Acces EI/MP INSTALLATION MENU

*****
To fully manage this device Telnet to one of the following
IP addresses.
Out-of-Band: Not Configured
In-Band: 16.20.100.233
*****

          [1] Restart with Factory Defaults
          [2] Restart with Current Settings
          [3] Go to Local Console

=====

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

The following pages describe the installation menu options available on the RtAbt Acces EI INSTALLATION MENU:

Option	Page
[1] Restart with Factory Defaults	4-4
[2] Restart with Current Settings	4-5
[3] Show Current Settings	4-6
[4] IP Configuration	4-7
[5] Go to Local Console	4-11

[1] Restart with Factory Defaults

---

## [1] Restart with Factory Defaults

This option initializes the router's configuration to factory default values by resetting the module's nonvolatile configuration storage parameters and restarting the module. (To retain the current values, use Option [2] Restart with Current Settings). 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 selection : 1
RtAbt Access EI/MP
=====
                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]: Y <Return>
```

If you select **Y**, then the RtAbt Acces EI INSTALLATION MENU appears.



---

## [2] Restart with Current Settings

This option restarts the module but leaves the module's configured nonvolatile configuration storage 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 selection: 2
RtAbt Acces EI/MP
=====

                RESTART WITH CURRENT SETTINGS

This selection will restart your system with the
current configuration settings.

=====

Press Y to confirm [N]: Y <Return>
```

If you select Y, then the RtAbt Acces EI INSTALLATION MENU appears.

[3] Show Current Settings

---

### [3] Show Current Settings

This option shows the module's current settings. If the module is being configured for the first time, some of the fields will be blank. The following example shows the dialog associated with this option.

```
Enter selection : 3
RtAbt Acces EI/MP
=====
RtAbt Acces EI/MP, Brouter: 1  Enet 1BRI, HW=1,#3943,SW=v1.1.000
SysUpTime                : 00:00:52  8 resets
SNMP Read/Write Community : smith95
Default Gateway           : 16.126.16.254
-----
Interface   IP Address   Subnet Mask   Other Info
Ethernet    16.126.16.116 255.255.255.0
-----
=====

Press Return for Main Menu ...
```

## [4] IP Configuration

The IP Configuration option provides you with four selections. If you change the settings using the menu options, you must go back to the RtAbt Acces EI/MP INSTALLATION MENU and select [ 2 ] Restart with Current Settings for the changes to take effect.

The following example shows the dialog associated with this option.

```

Enter selection: 4
RtAbt Acces EI/MP
=====

                IP CONFIGURATION

* * * * *
Configuration will not take effect until module
is restarted.
* * * * *

    [1] Set SNMP Read/Write Community
    [2] Set In-Band Interface IP Address
    [3] Set Default Gateway
    [4] Return to Main Menu

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

The following pages describe the IP Configuration options.

Option	Page
[1] Set SNMP Read/Write Community	4-8
[2] Set In-Band Interface IP Address	4-9
[3] Set Default Gateway	4-10

#### [4] IP Configuration

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

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

The following example shows the dialog associated with this option.

```
Enter selection: 1
RtAbt Acces EI/MP
=====

          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] Set In-Band Interface IP Address

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

The format for these values is the standard 4-octet dotted decimal notation, where each octet of the address is represented as a decimal value, separated by a decimal point (.).

The following example shows the dialog associated with this option.

```

Enter selection:  2
RtAbt Access EI/MP
=====

                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       Other Info
Ethernet
-----
=====
IP address [ ]:  16.126.16.116 <Return>
Subnet Mask [ ] : 255.255.255.0

Press Return for IP Configuration Menu ...

```

## [4] IP Configuration

### [3] Set Default Gateway

This option sets the default gateway, if necessary. This is the address of a router that the module uses when communicating to a remote host. The default gateway address must be in the same subnet as your in-band address.

The following example shows the dialog associated with this option.

```
Enter selection : 4
RtAbt Access EI/MP
=====
                SET IN-BAND INTERFACE DEFAULT GATEWAY ADDRESS

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.
=====
Default Gateway [] : 16.126.16.254 <Return>

                Default Gateway Address Set.

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

If you need additional configuration information, refer to the *System Software Guide*.

---

## [5] Go to Local Console

You must configure the module before it is operational. There are two configuration options that you can use.

---

### NOTE

If the RouteAbout Access EI has been configured, this will appear as [ 3 ] Go to Local Console on the RtAbt Acces EI INSTALLATION MENU.

---

The first option runs a quick configuration interactive question and answer dialog. This method (qconfig) allows fast configuration of interfaces, basic bridging, and routing protocol configuration.

The second option allows you to configure the module using commands to configure interfaces, bridging, and routing protocols (for example, IPX and IP).

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

If you selected	Go to Page
Go to Local Console (Qconfig)	4-11
Go to Local Console (Commands)	4-12

### Go To Local Console (Qconfig)

This selection runs quick configuration. If you reset to factory default and go to local console without having configured the router via the installation menu, you will automatically enter **qconfig**.

You can exit quick configuration and accept the changes you made by typing: **quit**. The system displays the following messages:

```
Quick Config Done
```

```
Type RESTART at Config (only)> prompt for the configuration to take effect.
```

```
Config (only)>
```

## [5] Go to Local Console

If you type **Restart** at the `Config (only)>` prompt, the following message appears:

```
Are you sure you want to restart the gateway? (Yes [No]):Y
```

The module is now configured and the `RtAbt Acces EI INSTALLATION MENU` appears.

## Go To Local Console (Commands)

If you have configured the module then the following menu appears. Select [ 3 ] `Go To Local Console` to modify the configuration.

```
RtAbt Acces EI
=====

          RtAbt Acces EI/MP INSTALLATION MENU

* * * * *
*To fully manage this device Telnet to one of its IP      *
*addresses or select item [3] below.                       *
* * * * *

          [1] Restart with Factory Defaults
          [2] Restart with Current Settings
          [3] Go to Local Console

=====

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

The system displays copyright statements and the following prompt:

```
Copyright 1995, 1996 Digital Equipment Corporation
MOS Operator Control
*
```

From the `*` prompt, you can perform additional configuration. Refer to the *System Software Guide* for additional configuration information.



## Chapter 5

---

# Configuring the Module in a DEChub 90 and DEChub 900

---

## Overview

### Introduction

This chapter describes how to configure your RouteAbout Access EI when it resides in a DEChub 90 or a DEChub 900 MultiSwitch.

### In This Chapter

---

Topic	Page
Configuring in a DEChub 90	5-2
Assigning an IP Address (DEChub 900)	5-4
DEChub 900 MultiSwitch Installation Menu	5-5
Using Menus to Setup the Module	5-7

---

## Configuring in a DEChub 90

Upon power up of the module, the system displays the following bootstrap monitor information.

```
Will start FLASH GW image in 5 seconds
Hit <ctl>C or enter cmd with <CR> to abort

Digital RouteAbout Access EI bootstrap monitor V1.0 [Jan 15 1996]
Copyright (C) 1996, Digital Equipment Corporation
Copyright 1990-1994 Proteon, Inc.
>
```

---

### NOTE

If the **<Return>** key is hit during the bootstrap operation, execute the stored image by entering the following command:

```
> e
```

---

After 5 seconds, the system displays the copyright statements and the MOS Operator Control prompt, as follows:

```
Copyright 1995, 1996 Digital Equipment Corp.

MOS Operator Control
*
```

From the \* prompt, you can perform additional configuration. Refer to the *System Software Guide* for additional configuration information.

## Using the Console Port

If the module is not configured, you must configure the module through the console port before it is operational. This is done through **qconfig**. This runs a quick configuration interactive question and answer dialog. This method allows fast configuration of interfaces, basic bridging, and routing protocol configuration.

The module will enter **qconfig** and the following prompt will appear after a series of messages:

```
*****  
Interfaces Configuration  
*****  
Type 'Yes' to Configure Interfaces  
Type 'No' to skip Interface Connection  
Type 'Quit' to exit Quick Config  
Configure Interfaces? (Yes, No, Quit): [Yes]
```

You can exit quick configuration and accept the changes you made by typing: **quit**. The system displays the following messages:

```
Quick Config Done  
  
Type RESTART at Config (only)> prompt for the configuration to take  
effect.  
Config (only)>
```

If you type **Restart** at the `Config (only)>` prompt, the following message appears:

```
Are you sure you want to restart the gateway? (Yes [No]): Y
```

---

## Assigning an IP Address (DEChub 900)

After the module has been installed in a DEChub 900 MultiSwitch, and the cables connected, you will need to configure the desired protocols. This is done through either of the following methods:

- A Telnet session
  - or
- Through the console configuration interface which is accessed through a terminal connected to the console port on the module

If you configure through the setup port, the following menu will appear:

```
*****  
Interfaces Configuration  
*****  
Type 'Yes' to Configure Interfaces  
Type 'No' to skip Interface Connection  
Type 'Quit' to exit Quick Config  
  
Configure Interfaces? (Yes, No, Quit): [Yes]
```

To perform a Telnet session, you must assign an IP address. To do this, perform the following steps:

---

Step	Action
1	Install the module into a slot on the DEChub 900 MultiSwitch.
2	Redirect the DEChub 900 MultiSwitch Hub manager setup port to the RouteAbout Access EI slot.
3	Select the IP Configuration option from the menu.
4	Set the In-Band IP address.
5	Set the Default Gateway, if necessary.
6	Return to the DEChub 900 MultiSwitch Installation Menu and select Restart with Current Settings.
7	Perform a Telnet session into the module from the management station for further configuration.

---

---

## 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>
```

## DEChub 900 MultiSwitch Installation Menu

### [9] Start Redirect Mode

The `Start Redirect Mode` option redirects the DEChub 900 MultiSwitch Hub Manager set-up port to the set-up port of any network module (such as the RouteAbout Access EI) 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, the screen display prompts you for a slot number (8) as shown in the following example. After you enter the number of the slot in which the RouteAbout Access EI 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 selection: 9
=====
Enter the slot number for redirection (1-8): 8 <Return>
Console redirected to 8: RtAbt Acces EI/MP
Attempting connection [Ctrl/C to abort]...
```

If the redirection is successful after you press the **<Return>** key, the `RtAbt Acces EI 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 RtAbt Acces EI INSTALLATION MENU when the module is installed in the DEChub 900 MultiSwitch.

The following example shows the dialog associated with this option.

```
RtAbt Acces EI/MP - slot 8
=====
      RtAbt Acces EI/MP INSTALLATION MENU

      [1] Restart with Factory Defaults
      [2] Restart with Current Settings
      [3] Show Current Settings
      [4] IP Configuration

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

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

The following table describes the RtAbt Acces EI INSTALLATION MENU options.

Topic	Page
[1] Restart with Factory Defaults	5-9
[2] Restart with Current Settings	5-10
[3] Show Current Settings	5-11
[4] IP Configuration	5-12

---

### NOTE

The /MP that appears in menus will be replaced with /IP when using the Internet Protocol package.

---

## Using Menus to Setup the Module

If the module was previously configured and restarted, the menu provides only two options, as shown in the following example.

```
RtAbt Acces EI
=====

                RtAbt Acces EI/MP INSTALLATION MENU

* * * * *
To fully manage this device Telnet to one of
the following IP addresses.
Out-of-Band: Not Configured
In-Band: 16.20.108.233
* * * * *

                [1] Restart with Factory Defaults
                [2] Restart with Current Settings

                [CTRL/C] Return to Hub Manager Menu

=====

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



---

## [1] Restart with Factory Defaults

This option restarts the module, causing the module's configured nonvolatile configuration storage parameters to be initialized to factory default values. (To retain current values, use option [2] Restart with Current Settings). 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 selection: 1
RtAbt Acces EI/MP - slot 8
=====
                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]: Y <Return>
Module Removed! Connection closed!

                Press Return for Main Menu ...
```

[2] Restart with Current Settings

---

## [2] Restart with Current Settings

This option restarts the module but leaves the module's configured nonvolatile configuration storage parameters at their current values.

---

### NOTE

You will be returned to the DEChub 900 MultiSwitch INSTALLATION MENU after the module is restarted.

---

The following example shows the dialog associated with this option.

```
Enter selection: 2
RtAbt Acces EI/MP - slot 8
=====
                RESTART WITH CURRENT SETTINGS

This selection will restart your system with the
current configuration settings.
=====

Press Y to confirm [N] : Y <Return>
Module Removed! Connection closed!

                Press Return for Main Menu ...
```

---

## [3] Show Current Settings

This option shows the module's current settings. The following example shows the dialog associated with this option.

```
Enter selection: 3
RtAbt Acces EI/MP - slot 8
=====
RtAbt Cntrl EW/MP, Brouter: 1 Enet 1BRI,HW=1,#3943,SW=v01.1.1.000
SysUpTime           : 00:03:42   8 resets
SNMP Read/Write Community : smith95
Default Gateway     : 16.126.16.254
-----
Interface   IP Address      Subnet Mask   Other Info
Ethernet    16.126.16.116   255.255.255.0
Out-of-Band 16.126.16.114   Not Configured
-----
=====

Press Return for Main Menu ...
```

---

## [4] IP Configuration

The IP Configuration option provides you with five selections. Once you have made your changes using the menu options, you must return to the RtAbt Acces INSTALLATION MENU and select [2] Reset with Current Settings.

The following example shows the dialog associated with this option.

```
Enter selection: 4
RtAbt Acces EI/MP - slot 8
=====
                IP CONFIGURATION
* * * * *
Configuration will not take effect until module
is restarted.
* * * * *

[1] Set SNMP Read/Write Community
[2] Set In-Band Interface IP Address
[3] Set Out-of-Band Interface IP Address
[4] Set Default Gateway
[5] Return to Main Menu
=====

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

The following pages describe the IP Configuration options.

Option	Page
[1] Set SNMP Read/Write Community	5-13
[2] Set In-Band Interface IP Address	5-14
[3] Set Out-of-Band Interface IP Address	5-15
[4] Set Default Gateway	5-16

## [1] Set SNMP Read/Write Community

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

The following example shows the dialog associated with this option.

```
Enter selection: 1
RtAbt Acces EI/MP - slot 8
=====

      SET SNMP READ/WRITE COMMUNITY

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

Enter the community string [public]: smith95 <Return>

SNMP Read/Write community string set.

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

#### [4] IP Configuration

### [2] Set In-Band Interface IP Address

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

The format for these values is the standard 4-octet dotted decimal notation, where each octet of the address is represented as a decimal value, separated by a decimal point (.).

The following example shows the dialog associated with this option.

```
Enter selection: 2
RtAbt Acces EI/MP - slot 8
=====

                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      Other Info
Ethernet
Out-of-Band
-----
=====
IP address [ ]: 16.20.54.156 <Return>
Subnet Mask [ ] : 255.255.225.0

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

### [3] Set Out-of-Band Interface IP Address

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

The format for these values is the standard 4-octet dotted decimal notation, where each octet of the address is represented as a decimal value, separated by a decimal point (.).

The following example shows the dialog associated with this option.

```
Enter selection: 3
RtAbt Acces EI/MP - slot 8
=====

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: 16.20.80.40

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

-----
Interface  IP Address      Subnet Mask   Other Info
Ethernet   16.20.40.0          255.255.255.0
Out-of-Band                               Speed 9600 bps
-----
=====
IP address [ ]: 16.20.54.20 <Return>
Subnet Mask [ ]:
.
Press Return for IP Configuration Menu ...
```

#### [4] IP Configuration

### [4] Set Default Gateway

This option sets the default gateway, if necessary. This is the address of a router that the module uses when communicating to a remote host. The default gateway address must be in the same subnet as your in-band address.

The following example shows the dialog associated with this option.

```
Enter selection : 4
RtAbt Acces EI/MP - slot 8
=====

SET IN-BAND INTERFACE DEFAULT GATEWAY ADDRESS

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.
=====
Default Gateway [ ] : 16.156.126.88 <Return>

Default Gateway Address Set.

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

If you need additional configuration information, refer to the *System Software Guide*.



# Chapter 6

---

## Supporting ISDN

---

### Overview

#### Introduction

Before you begin to configure your RouteAbout EI, you must make sure you have completed the necessary steps in obtaining ISDN support.

This chapter defines what you will need to do to obtain the proper ISDN support.

#### In This Chapter

Topic	Page
Ordering Your ISDN Line	6-2
Obtaining a Network Termination Device	6-3

## Ordering Your ISDN Line

You should order your ISDN service from your local telephone company. The telephone company may provide you with a switch type. The type of switch to which the ISDN interface is connected are NET3, INS64, VN3, 5ESS, DMS100, or NI1.

You will need to specify your grade of service and you will need to have at least circuit-switched data service on the B1 channel.

If a fixed TEI (Terminal Endpoint Interface) of the switch to which the ISDN interface is connected is required, the telephone company will provide more TEIs. The TEI is required when the switch does not support automatic TEI assignment.

If you are within North America, you will need to supply the telephone company with the following information:

- Local area code and phone number to verify availability of service.
- Grade of service required.

The telephone company will provide the following information:

- Primary Directory Number (PDN). A telephone number assigned to each ISDN line.
- Directory Number (DN), which is the address or telephone number for the ISDN line assigned by the telephone company. The telephone company will provide more directory numbers, if necessary.
- Service Profile Identifier (SPID). A number assigned to each device connected to the ISDN line (Optional).
- Type of Switch.

It is recommended that you write this information down so it will be available when you configure the RouteAbout Access EI.

If you are outside North America, use the information you receive from the telephone company to configure the module.

## Obtaining a Network Termination Device

In the United States the telephone company provides you with a U-interface connection. Because of this, you need a network termination device (NT1) to convert the U-interface to the S/T-interface. In Europe and other parts of the world, an NT1 is not required as an S/T-interface is provided.

The network termination device (NT1) looks like a modem. The device provides network termination functions to your basic rate interface (BRI) connection. The NT1 device allows you to add S/T-interface devices to your ISDN connection.

Depending on your country, you may need an NT1 device to connect the RouteAbout EI to your ISDN line. Check with your local telephone company or your authorized Digital reseller to see if they can provide one for you.

Make sure the NT1 device you choose has the following items necessary to connect the module to the ISDN line:

- Power supply, either integrated or separate.
- Cable to attach the NT1 device.



## Chapter 7

---

# Configuring the ISDN Port

---

## Overview

### Introduction

After you have installed the RouteAbout Access EI, you will need to configure the ISDN port. The ISDN port allows you to pass data in and out of the RouteAbout Access EI.

The instructions provided in this chapter describe how to setup and configure the ISDN port. For more information on Configuring ISDN Interfaces and Monitoring ISDN interfaces, see Chapter 20 in the *Network Interface Operations Guide*.

### In This Chapter

Topic	Page
Configuring the ISDN Port	7-2
Adding ISDN Addresses	7-3
Configuring ISDN Parameters	7-4
Verifying Configuration	7-9

## Configuring the ISDN Port

This section describes the commands that are unique to the RouteAbout Access EI. To begin configuring the ISDN port, at the \* prompt enter the following command:

```
* talk 6
```

### To Exit and Restart

When you modify parameters, you must restart the module for the change to take effect. Enter the following three commands in the order shown:

Type at this prompt	Command
Circuit Config>	<b>exit</b>
Config>	<b>control/p</b>
*	<b>restart</b> and answer "Yes" at the prompt

The following sections describe how to add information that is obtained from the telephone company to your ISDN configuration.

---

## Adding ISDN Addresses

You need to add an ISDN address for each ISDN interface, as well as for each destination. The ISDN address includes:

- *Address name.* Description of the address. You can use any string of up to 23 printable ASCII characters. Address names are case sensitive.
- *Network dial address.* Telephone numbers of the local or destination port. You can enter up to 15 numbers as well as 16 other characters, including spaces and punctuation. The router uses only the numbers.
- *Network subdial address.* Optional. Additional part of the telephone number, such as an extension, that gets passed through the telephone network and interpreted by the customer equipment. Not all telephone companies support subaddressing. You can enter up to 20 numbers as well as 11 additional spaces and punctuations. The router uses only the numbers

## Configuring ISDN Parameters

This section describes how to configure the ISDN parameters.

### Setting the Local Number

To add your local ISDN information, perform the following steps when prompted:

---

Step	Action
1	Config> <b>add isdn-address</b>
2	Assign address name [1-23] chars []? <b>myaddress</b>
3	Assign network dial address [1-15 digits] []? <b>1-222-555-1000</b> <i>Note:</i> The number provided here is an example. You must enter your assigned ISDN number here.
4	Assign subdial address [0-15 digits] [] <b>&lt;Return&gt;</b>

---

### Setting the Remote Dial Number

To add your remote ISDN information, perform the following steps when prompted:

---

Step	Action
1	Config> <b>add isdn-address</b>
2	Assign address name [1-23] chars []? <b>remoteaddress</b>
3	Assign network dial address [1-15 digits] []? <b>1-222-555-2000</b> This is the actual number that will be sent to the switch when making a call. You must add required access codes, for example, some PBX's require a leading <b>9</b> to access an outside line. <i>Note:</i> In the United States, 1+area code may not be allowed when calling within the area code.
4	Assign subdial address [0-15 digits] []? <b>999</b> <i>Note:</i> The subdial address is optional. It can be selected by the user, if needed.

---



## Creating the PPP Circuit

To add the names and telephone numbers of remote sites you will be communicating with, perform the following steps for each site when prompted:

Step	Action
1	<p>Config&gt; <b>add device dial</b></p> <p>The following message appears:</p> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; margin: 10px 0;"> <pre>Adding device as interface 3 Defaulting Data-link protocol to PPP User "net 3" command to configure circuit parameters</pre> </div> <p><u>Note:</u> If more than one dial circuit is added, a number other than 3 will appear.</p>

## Configuring the ISDN Net

To configure your ISDN net, perform the following steps when prompted:

Step	Action
1	<p>Config&gt; <b>net 2</b></p> <p>The ISDN Config&gt; prompt appears.</p> <p>At any time you can view a list of current parameters by entering <b>list</b> at the ISDN Config&gt; prompt.</p>
2	<p>ISDN Config&gt; <b>list</b></p> <p>A list of current configurations appear.</p>
3	<p>Config&gt; <b>set switch-variant</b></p> <p>This sets the type of switch to which the ISDN interface is connected. The options are NET3, INS64, VN3, 5ESS, DMS100, and NI1.</p> <p><u>Note:</u> You can list parameters at any time to confirm your changes.</p>
4	<p>Switch-Variant-Model [ ]?&gt; <b>net3</b></p> <p>If you set the switch-variant to NET3 or VN3, set the directory number of the local port. Use the <b>set dn0</b> (directory number 0) command. Enter the network dial address (telephone number) of the ISDN address that you entered using <b>dn0 myaddress</b>.</p>

*continued . . .*

## Configuring ISDN Parameters

### Configuring the ISDN Net (continued)

---

Step	Action
5	ISDN Config> <b>set local myaddress</b> This sets the local network ISDN address with the name you assigned earlier for your number.
6	ISDN Config> <b>set dn0 myaddress</b> This sets your dial number. This setting is not required for all switch types. Use your ISDN dial number.
7	ISDN Config> <b>list</b> A list of current configurations appear.
8	ISDN Config> <b>exit</b> You are returned to the Config> prompt.

---

### Assigning ISDN to your PPP Dial Circuit

To assign ISDN to the PPP dial circuit, perform the following steps when prompted:

---

Step	Action
1	Config> <b>net 3</b> The module responds with <code>Circuit Configuration</code> . The <code>Circuit Config&gt;</code> prompt appears. At any time you can view a list of current parameters by entering <b>list</b> at the <code>ISDN Config&gt;</code> prompt.
2	Circuit Config> <b>set net</b>
3	Base net for this circuit [ ]?> <b>2</b>
4	Circuit Config> <b>set destination</b> This selects the number that the module will call.
5	Assign destination address name [ ]? <b>remoteaddress</b> You are returned to the Config> prompt.
6	Circuit Config> <b>list</b> This confirms settings.

---

## Accepting Calls

If calls from any number will be accepted, perform the following steps when prompted:

Step	Action
1	Config> <b>net 3</b> The module responds with <code>Circuit Configuration</code> . The <code>Circuit Config&gt;</code> prompt appears. At any time you can view a list of current parameters by entering <b>list</b> at the <code>ISDN Config&gt;</code> prompt.
2	Circuit Config> <b>set any</b> This sets the device to accept calls from any number.
3	Circuit Config> <b>list</b> This confirms the listing of settings.

## Set Calls INBOUND/OUTBOUND/BOTH

You have the option to restrict the circuit to be used for inbound calls only, outbound calls only, or both (the default). To set the type of calls that will be accepted, perform the following steps when prompted:

Step	Action
1	Config> <b>net 3</b> The module responds with <code>Circuit Configuration</code> . The <code>Circuit Config&gt;</code> prompt appears.
2	Circuit Config> <b>set calls</b> The options are INBOUND, OUTBOUND, or BOTH.
3	Circuit Config> <b>list</b> This confirms the listing of settings.

## Configuring ISDN Parameters

### Set INBOUND Destination

If you wish to set the inbound destination , perform the following steps when prompted:

<b>Step</b>	<b>Action</b>
<b>1</b>	<code>Config&gt; net 3</code> The module responds with <code>Circuit Configuration</code> . The <code>Circuit Config&gt;</code> prompt appears.
<b>2</b>	<code>Circuit Config&gt; set inbound remoteaddress</code> On an incoming call, the caller's phone number will be matched against this address assigned to this circuit. The <b>remoteaddress</b> that was previously assigned is the destination.
<b>3</b>	<code>Circuit Config&gt; list</code> This confirms the listing of settings.

---

## Verifying Configuration

After you exit and restart the module for the changes to take effect, you can view your configuration by performing the following steps:

Step	Action
1	At the system prompt (*) enter: <b>talk 5</b> The following message appears: CGW Operator Console
2	At the prompt (+) enter: <b>config</b>

The following example shows the dialog associated with this option:

```
RtAbt Acces EI/MP, Access: 1 Enet 1T1
lBRI,HW=1,RO=1,#1606,SW=X01.5.000
Hostname: [not configured]
Boot ROM Version 1.0 Watchdog timer enabled Auto-boot switch enabled
Console baud rate: 9600

  Num      Name      Protocol
  0        IP        DOD-IP
  3        ARP        Address Resolution
  11       SNMP       Simple Network Management Protocol

  NumName  Feature
  2        MCF MAC Filtering

  4 Networks:Net InterfaceMAC/Data-Link      Hardware      State
  0        Eth/0      Ethernet/IEEE 802.3  SCC Ethernet  Up
  1        PPP/0      Point to Point      SCC Serial Line  Up
  2        ISDN/0     ISDN Base Net       ISDN Basic Rate Interface Up
  3        PPP/1      Point to Point      ISDN Basic Rate Interface Up
```



## Chapter 8

---

# Removing the Module

---

## Overview

### Introduction

This chapter describes how to remove the RouteAbout Access EI from a DEChub 900 MultiSwitch and a DEChub 90.

### In This Chapter

Topic	Page
Removing the Cables	8-2
Unseating the Module	8-3

---

## Removing the Cables

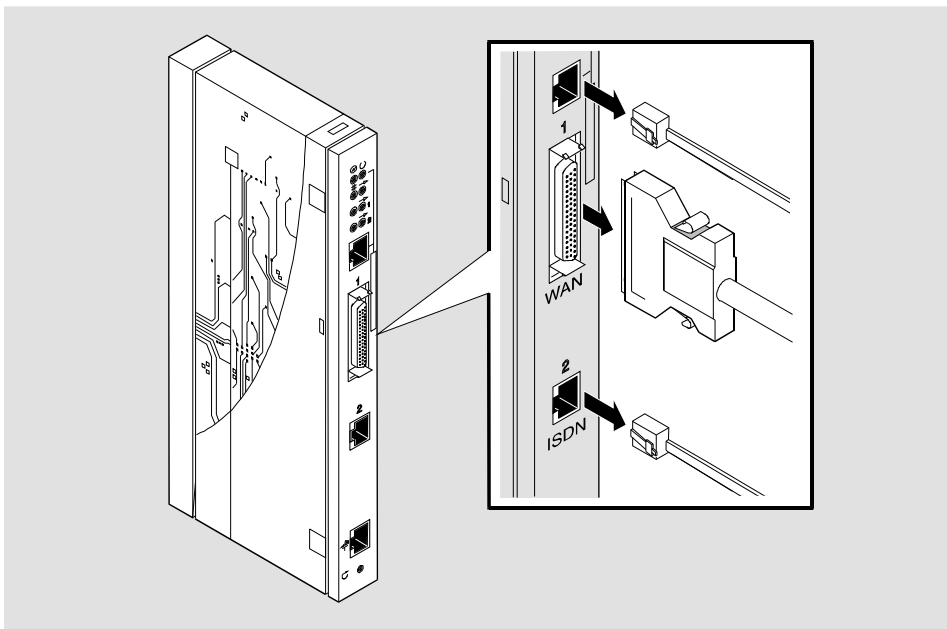
To remove cables from the module, complete the following steps (see Figure 8-1).

---

Step	Action
1	Press the release tab (1) on the cable plug, then pull out the cable.
2	Push in the release tabs (2) on the side of the connector, then pull out the cable.

---

**Figure 8-1: Removing the Cables**



NPG-0316-95F



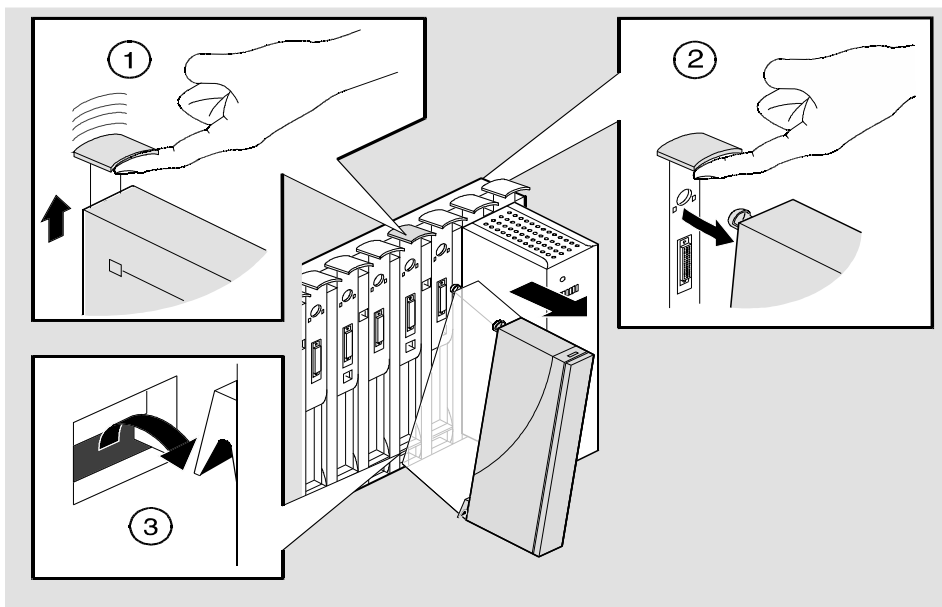
## Unseating the Module

### DEChub 90

To unseat the module from the DEChub 90, complete the following steps (refer to Figure 8-2).

Step	Action
1	Lift the release lever (1) located at the top of the DEChub 90 slot.
2	While holding up the release lever (2), pivot the module back on its bottom mounting tab.
3	Lift the module (3) from the backplane.

**Figure 8-2: Unseating the Module from the DEChub 90**



NPG-0057-95F

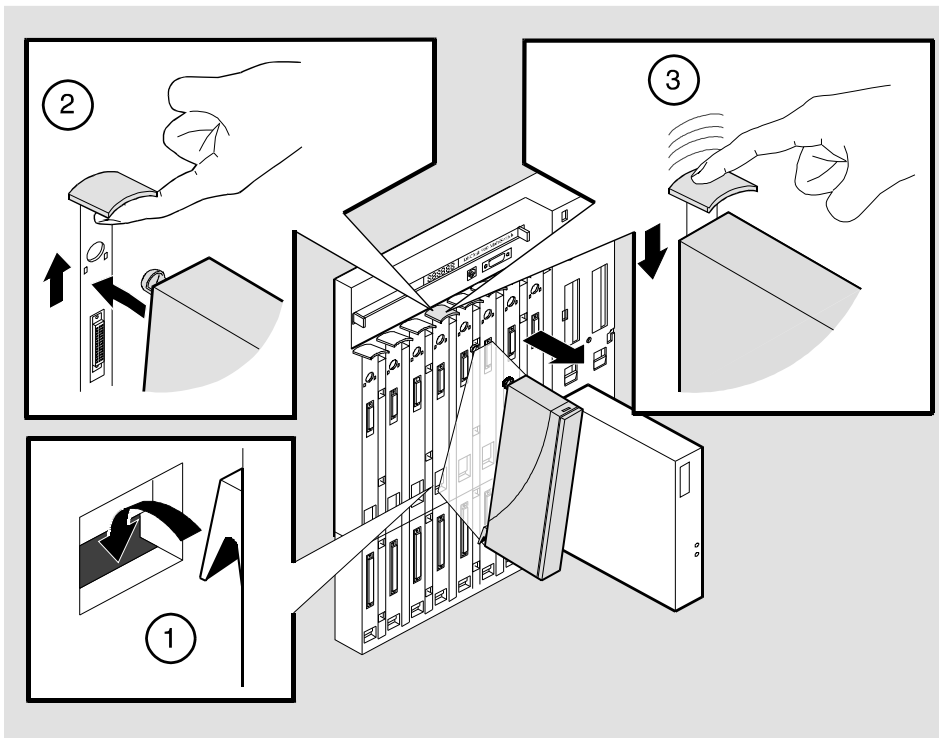
## Unseating the Module

### DEChub 900

To unseat the module from the DEChub 900 MultiSwitch, complete the following steps (refer to Figure 8-3).

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

Figure 8-3: Unseating the Module from the DEChub 900



NPG-0321-95F

# Appendix A

---

## Problem Solving

---

### Overview

#### Introduction

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

#### In This Appendix

Topic	Page
Normal Power-Up	A-2
LED Descriptions	A-3
Problem Solving Using the LEDs	A-4

## Normal Power Up

---

### Normal Power Up

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

<b>Event</b>	<b>Description</b>
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 serial line 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.

---

---

## 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).

Table A-1 shows the states that are possible for each of the module's LEDs.

**Table A-1: Module LED States**

LED Name	Off	On	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	ThinWire 10Base2 port or Twisted Pair 10BaseT port is not connected to a properly terminated and operational LAN.	Module is connected to a properly terminated and operational LAN.	N/A
Network Activity	No network activity.	There is heavy traffic on the network.	Flashes more rapidly and appears brighter as network traffic increases.
ISDN Port OK	Indicates self-test failure.	Indicates normal operation.	Indicates self-test mode.
ISDN Port Activity	No traffic on the port.	There is traffic on the port.	Flashes more rapidly and appears brighter as network traffic increases.
Serial Port 1 OK	Indicates self-test failure.	Indicates normal operation.	Indicates self-test mode.
Serial Port 1 Activity	No traffic on the port.	There is traffic on the port.	Flashes more rapidly and appears brighter as network traffic increases.

---

---

## 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 LEDs. Table A-2 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.

**Table A-2: LED States**

Symptom	Probable Cause	Corrective Action
All LEDs are off.	The module does not have power.	<p><b>If the module is installed in a standalone unit:</b></p> <p>Secure the power cables at the back cover and between the power supply and wall outlet.</p> <p>Check the wall outlet using another appliance or light, or plug the power cord into another outlet. If no power is available, check the wall outlet's circuit breaker.</p> <p>Replace the power supply or the module if the problem persists.</p> <p><b>If the module is installed in a DEChub 90 or DEChub 900 MultiSwitch:</b></p> <p>Reset the module.</p> <p>Remove the module and inspect the module's connector for bent, broken or dirty pins. If no pins are broken or bent, reinstall the module.</p> <p>Replace the module if necessary.</p>

## Problem Solving Using the LEDs

Symptom	Probable Cause	Corrective Action
	The module is not receiving +5.0 V.	Check the power LED on the DEChub 90 or 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 <i>DEChub 90 MultiSwitch Owner's guide</i> or the <i>DEChub 900 MultiSwitch Owner's manual</i> .
	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 <i>DEChub 90 MultiSwitch Owner's guide</i> or the <i>DEChub 900 MultiSwitch Owner's manual</i> .
	If the power LED turns on when reseated in the same slot, then the module was not properly seated.	Make sure the module is properly seated 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 <i>DEChub 90 MultiSwitch Owner's guide</i> or the <i>DEChub 900 MultiSwitch Owner's manual</i> .
	If the module does not turn on in a known good slot, then the module is defective.	Replace the module .
Power LED only is off	Bad Power LED.	Replace the module.

## Problem Solving Using the LEDs

Symptom	Probable Cause	Corrective Action
Module OK LED is off.	Self-test failed.	<p>If the LED does not light after 5 seconds, reset the module to repeat the self-test.</p> <p>Check console and reload flash.</p> <p>If the self-test fails again, replace the module.</p>
Module OK LED flashes.	Self-test failed with non-fatal error.	<p>Reseat the module to repeat self-test.</p> <p>If the LED continues to flash, access console port and reload flash from the software kit.</p> <p>If LED continues to flash, replace the module.</p>
Network OK LED does not stay on after the functional code begins execution.	The network interface self-test has failed.	Refer to the <i>System Software Guide</i> to determine the network interface status and to display any logged network interface events.
The Network Activity LED is off.	<p>There is low network activity or no network activity.</p> <p>The module or any other unit in the DEChub may not be connected to an active segment.</p>	<p>Ensure that there is network activity. If the Network Activity LED still fails to turn on, then turn the unit off momentarily by removing it from the power supply. Check that the Network Activity LED blinks momentarily during the LED powerup self test.</p> <p>Connect a known active segment to any unit in the DEChub.</p>



## Problem Solving Using the LEDs

Symptom	Probable Cause	Corrective Action
	If the module is connected to a known active segment and the Network Activity LED is off, then the module is defective.	Replace the module.
Port 1 Activity LED is off.	There is low serial port activity or no serial port activity.	<p>Ensure that serial port activity is present. If the Serial Port Activity LED still fails to turn on, then turn the unit off by removing it from the power supply. Check that the Serial Port Activity LED blinks during the LED powerup self-test.</p> <p>If the Serial Port Activity LED blinks, then the Serial Port Activity LED portion of testing has passed. If the Serial Port Activity LED still fails to turn on, then the module is defective.</p>
	Ensure that the cable has activity on it. If the LED still fails to turn on, then the port is defective.	Replace the module.
ISDN Port OK indicator does not stay on.	The ISDN port interface self-test failed.	<p>Check cable connections.</p> <p>Refer to <i>the System Software Guide</i> to determine the serial port interface status and to display any logged serial port interface events.</p>

## Problem Solving Using the LEDs

Symptom	Probable Cause	Corrective Action
ISDN Port OK LED is flashing.	The module is disabled or not configured. Check cable connections. Check NT1 device to ensure it is working.	Configure module.
ISDN Port Activity Indicator LED is off.	There is low ISDN port activity or no ISDN port activity.	Ensure that ISDN port activity is present. If the ISDN Port Activity LED still fails to turn on, then turn the unit off by removing it from the power supply. Check that the ISDN Port Activity LED blinks during the LED powerup self-test. Test that a call is being made. If there is no call, there is no activity. If the ISDN Port Activity LED blinks, then the ISDN Port Activity LED portion of testing has passed. Activity LED still
Console terminal does not appear work.	Wrong cable.  Wrong baud rate.  Defective module.	Try connecting the console terminal to the module using a null modem cable with the appropriate MJ8 RS232 connector on the module end.  Send a BREAK to the console and then press <Return> several times until the console responds. Proper baud rates are 300, 1200, 2400, 4800, 9600, 19200, and 38400.  Replace the module.

## Problem Solving Using the LEDs

<b>Symptom</b>	<b>Probable Cause</b>	<b>Corrective Action</b>
After correctly installing the module on a DEChub 900 MultiSwitch, the information display does not read:  RtAbt Acces EI up	Defective module.	Replace the module.



## Appendix B

---

# Connector Assignments, Adapters and Cable Connections

---

### Overview

This appendix shows detailed illustrations of the connectors, adapters, cable connections and pin assignments used on the RouteAbout Access EI.

### In This Appendix

Topic	Page
Connector Assignments	B-2
Adapters	B-4
Cable Connections	B-6
Console Port Pin Assignments	B-13

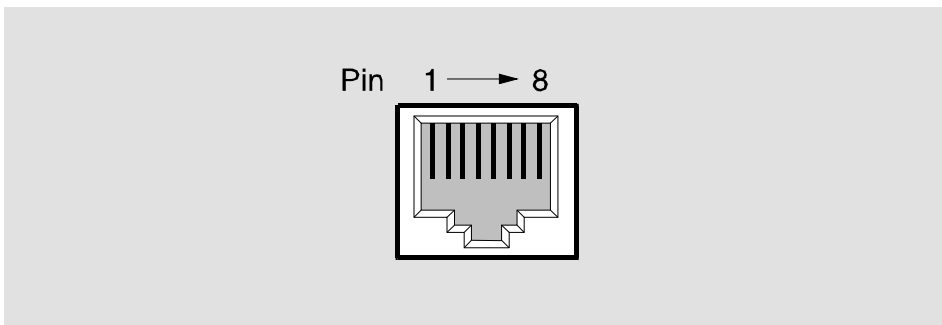
---

## Connector Assignments

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

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

**Figure B-1: 10BaseT 8-pin MJ Connector**



NPG-8719-95F

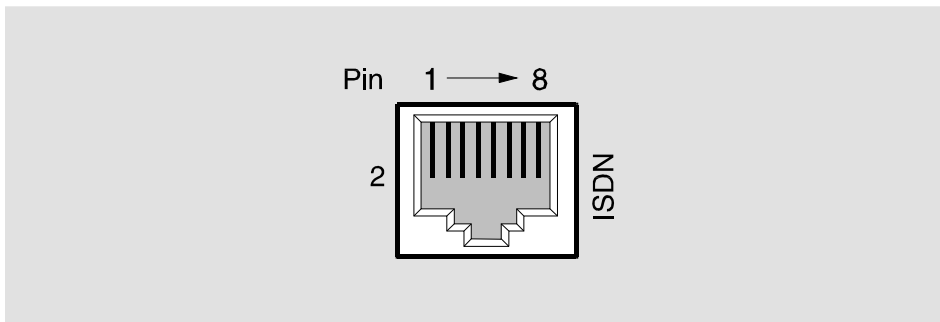
**Table B-1: 10BaseT 8-pin MJ Connector Assignments**

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

### ISDN (8-pin MJ) Connector

The following illustration shows the ISDN 8-pin MJ connector and its pin assignments:

**Figure B-2: ISDN 8-pin MJ Connector**



NPB-0425-96F

**Table B-2: ISDN 8-pin MJ Assignments**

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

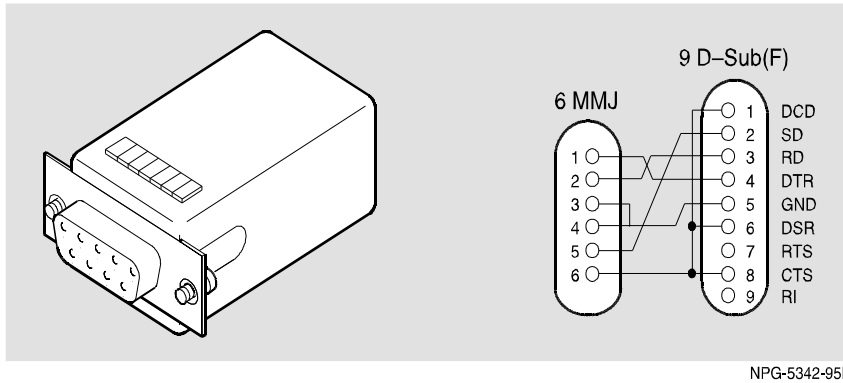
---

## Adapters

### H8571-J Adapter

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

**Figure B-3: H8571-J Adapter**



---

#### NOTE

This adapter is used with the BN24H cable at the terminal side, not on the module side.

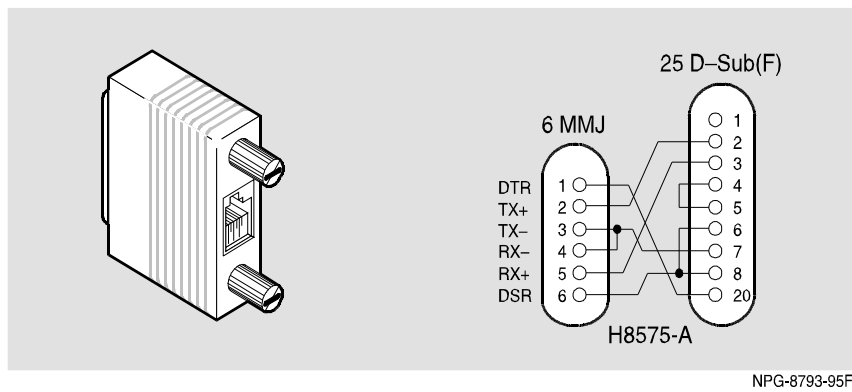
---



## H8575-A Adapter

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

**Figure B-4: H8575-A Adapter**



---

### NOTE

This adapter is used with the BN24H cable at the terminal side, not on the module side.

---

---

## Cable Connections

The following tables list the proper cable connections for the X.21, EIA422, V.35, EIA530A, EIA423, and V.24/EIA232 standards.

**Table B-3: X.21 Cable Connections (BC12F-06, 17-03580-01)**

From Pin Connector (P1)	To X.21 Pin Connector (P2)	Signal Name
1, 2, 26	–	Code Ground <sup>1</sup>
5	2	T(A) TX Data A
30	9	T(B) TX Data B
6	5	I(A) DCD A
31	12	I(B) DCD B <sup>2</sup>
8	3	C(A) RTS A
33	10	C(B) RTS B
10	4	R(A) RX Data A
35	11	R(B) RX Data B <sup>2</sup>
17	6	S(A) TX Clock A
22	13	S(B) TX Clock B <sup>2</sup>
13, 15	-	RX Clock A DTE Clock B <sup>1</sup>
38, 40	-	RX Clock B DTE Clock B <sup>2</sup>
37	8	G DTE Ground

<sup>1</sup> Contacts tied together.

<sup>2</sup> 120 OHM resistor, 1/2w between pins 6 and 31, 10 and 35, 17 and 42. The resistors are at the P1 end of the cable.

## Cable Connections

**Table B-4: EIA422/V.11/V.36 Cable Connections (BC12H-06, 17-03767-01)**

<b>From Pin Connector (P1)</b>	<b>To EIA422 Pin Connector P2)</b>	<b>Signal Name</b>
1, 27	–	Code Ground <sup>1</sup>
4	11	DSR A
29	29	DSR B
5	4	TX Data A
30	22	TX Data B
6	13	DCD/I A
31	31	DCD/I B
8	7	RTS/C A
33	25	RTS/C B
9	9	CTS A
34	27	CTS B
10	6	RX Data A
35	24	RX Data B <sup>2</sup>
11	15	Ring Indicate
12	20	DCE Ground
13	8	RX Clock A
38	26	RX Clock B <sup>2</sup>
14	12	DTR A
39	30	DTR B
15	17	Clock A
40	35	Clock B
17	5	TX Clock A
42	23	TX Clock B <sup>2</sup>

## Cable Connections

<b>From Pin Connector (P1)</b>	<b>To EIA422 Pin Connector P2)</b>	<b>Signal Name</b>
18	18	Test Indicate
37	19, 37	DTE Ground <sup>1</sup>
20	10	Local Loop
41	16	Speed Select
45	14	Remote Loop
Shell	Shell	Shield Braid

<sup>1</sup> Contacts tied together.

<sup>2</sup> 120 OHM resistor, 1/2w between pins 10 and 35, 13 and 38, 17 and 42.  
The resistors are at P1 end of cable.

Cable Connections

**Table B-5: V.35 Connection (BC12G-06, 17-03766-01)**

<b>From Pin Connector (P1)</b>	<b>To V.35 Pin Connector (P2)</b>	<b>Signal Name</b>
1, 26	–	Code Ground <sup>1</sup>
4	E	DSR A
6	F	DCD/I A
9	D	CTS A
11	J	Ring Indicate
21	Y	TX Clock A
46	A	TX Clock B
22	U	Clock A
47	W	Clock B
23	R	RX Data A
48	T	RX Data B
24	P	TX Data A
49	S	TX Data B
25	V	RX Clock A
50	X	RX Clock B
32	C	RTS
12, 29, 31, 34, 37	B	DTE Ground <sup>1</sup>
44	H	DTR
Shell	Braid Strap	Overall Cable Shield
20	K	Local Loop

<sup>1</sup>Contacts tied together.

## Cable Connections

**Table B-6: EIA530A Cable Connections (BC12J-06, 17-03760-01)**

<b>From Pin Connector (P1)</b>	<b>To EIA530A Pin Connector (P2)</b>	<b>Signal Name</b>
1, 26, 27	–	Code Ground <sup>1</sup>
4	6	DSR A
5	2	TX Data A
30	14	TX Data B
6	8	DCD/I A
31	10	DCD/I B
8	4	RTS/C A
33	19	RTS/C B
9	5	CTS A
34	13	CTS B
10	3	RX Data A
35	16	RX Data B <sup>2</sup>
11	22	Ring Indicate
12	23	DCE Ground
13	17	RX Clock A
38	9	RX Clock B <sup>2</sup>
15	24	Clock A
40	11	Clock B
17	15	TX Clock A

<sup>1</sup> Contacts tied together.

<sup>2</sup> 120 OHM resistor, 1/2W between pins 10 and 35, 13 and 38, 17 and 42.  
The resistors are at P1 end of cable.

Cable Connections

**Table B-7: EIA423/V.10 Cable Connections (BC12K-06, 17-03761-01)**

<b>From Pin Connector (P1)</b>	<b>To EIA423 Pin Connector (P2)</b>	<b>Signal Name</b>
1, 2, 27	–	Code Ground <sup>1</sup>
4	11	DSR A
29	29	DSR B
6	13	DCD/I A
31	31	DCD/I B
7	4	TX Data
9	9	CTS A
34	27	CTS B
10	6	RX Data A
35	24	RX Data B
11	15	Ring Indicate
12	20	DCE Ground
13	8	RX Clock A
38	26	RX Clock B
17	5	TX Clock A
42	23	TX Clock B
18	18	Test Indicate
20	10	Local Loop
32	7	RTS/C

<sup>1</sup>Contacts tied together.

Cable Connections

**Table B-8: V.28/EIA232 Cable Connections (BC12L-06, 17-03762-01)**

<b>From Pin Connector (P1)</b>	<b>To V.24/EIA232 Pin Connector (P2)</b>	<b>Signal Name</b>
1, 2	–	Code Ground <sup>1</sup>
4	6	DSR A
6	8	DCD/I A
7	2	TX Data
9	5	CTS A
10	3	RX Data A
11	22	Ring Indicate
13	17	RX Clock A
17	15	TX Clock A
18	25	Test Indicate
19	24	Clock
20	18	Local Loop
32	4	RTS

<sup>1</sup> Contacts tied together.



---

## Console Port Pin Assignments

Table B-9 describes the console port pin assignments.

**Table B-9: Console Port Pin Assignments**

Pin No.	Description
1	Ground
2	RXD
3	Ground
4	N/C
5	RDY_OUT L
6	TXD
7	RDY_OUT L
8	RDY_IN L



## Appendix C

---

# Installation Information – United Kingdom

---

### Overview

This appendix contains the installation information, which is required for the United Kingdom only.

### In This Appendix

Topic	Page
Power Rating, Module Isolation and Safety Status	C-2
Cable Approval	C-3
Equipment Between the Approved Module and Digital Circuit (PTT)	C-4

---

## Power Rating, Module Isolation and Safety Status

### Host Power Rating

Digital has designed all permutations of the host configuration to operate within the limits of the host power rating as shown in Table C-1.

**Table C-1: Module Power**

<b>Input Voltage</b>	<b>Max. Input Current (Amperes)</b>
+5.25 Vdc	1.2 amps

### Module Isolation

No special clearances or creepage distances need to be maintained as the RouteAbout Access EI is contained within its own cabinet, which meets all clearances for PTT approval.

### Safety Status

All interconnection points on this product are SELV circuits and should only be connected to products with like SELV circuits.

## Cable Approval

The module is approved for direct connection to a particular digital circuit. This approval includes an interconnecting cable with mating connectors that conform to the British standard BS6623, parts 1 and 4. If the module is connected to the service with anything other than its own approved cables, those cables must benefit from relevant general approval NS/G/1235/100009 or conform to any other applicable requirements, or both.

### Supported Cables

Digital supports all of the cables in Table C-2. The approved module may not use all of these cables; therefore, check the instructions to determine which interface types are supported.

**Table C-2: Cables Supported by the Approved Module**

Interface	Cable Type	Name	Molding	Pins
V.24/V.28	Adapter	BC12L-06	Straight	50-25
V.24/V.28	Extension	BC22F-xx <sup>1</sup>	–	–
V.24/V.28	Extension low cap	BC13P-10 <sup>1</sup>	–	–
V.10	Adapter	BC12K-06	Straight	50-37
V.35	Adapter	BC12G-06	Straight	50-34
V.35	Extension	BC19L-xx <sup>1</sup>	–	–
X.21	Adapter	BC12F-06	Straight	50-15
X.21	Extension	BC22Z-xx <sup>1</sup>	–	–

<sup>1</sup> Where xx is the length in feet. Total cable length with extension should never exceed 27 feet.

## **Equipment Between the Approved Module and a Digital Circuit (PTT)**

If you are going to connect any other equipment, including cables or wiring, between the approved module and the point of connection to any particular digital circuit, then that equipment must conform to the following standards:

- The overall transmission characteristics of all other equipment must not have any material effect on the electrical conditions between the equipment and the digital circuit.
- The equipment must be approved, which may be subject to limitations on its use, for the purpose of connection between it and a particular digital circuit.
- Cable or wiring must comply with a code of practice for the installation of equipment covered by this standard or other requirements that may be applicable.

# Appendix D

---

## Product Specifications

---

### Overview

This appendix lists the specifications and available parts for the RouteAbout Access EI.

### In This Appendix

Topic	Page
Product Specifications	D-2
Acoustical Specifications	D-3
Connectors	D-4
Parts List	D-5

---

## Product Specifications

Table D-1 lists the product specifications for the module.

**Table D-1: Product Specifications**

<b>Parameter</b>	<b>Specification</b>
<b>Environment</b>	
Operating Temperature <sup>1</sup>	5° C to 50° C (41 ° F to 122 ° F)
Relative Humidity	10% to 95% noncondensing
Altitude	
• Operating	Sea level to 2400 m (8,000 ft)
• Non-operating	Sea level to 4900 m (16,000 ft)
Power	6 W @ 1.2 amps, total power 1.2 A, 5Vdc 0.0 A, 12Vdc 0.0 A, 15Vdc
<b>Physical</b>	
Height	31.12 cm (12.25 in)
Width	3.2 cm (1.25 in)
Depth	11.2 cm (4.4 in); 13.5 cm (5.3 in) when installed as a standalone unit.
Weight	0.82 kg (1.51lb); 1.09 kg (2.01lb) when installed as a standalone unit.
<b>Shock (Class A/B for products weighing under 100 lbs)</b>	
10 G / 10 ms half sine pulse in three orthogonal axes	
<b>Vibration (Class C)</b>	
5 to 200 Hz sine sweep @ 0.25 G limited by 0.02" (0.5mm) displacement DA*	
200 to 500 Hz sine sweep @ 0.10 G	
<b>Certification</b>	
CE, CSA, FCC, TÜV, UL, VCCI	

<sup>1</sup>For sites above 2400 m (8,000 ft), decrease the operating temperature specification by 1.8° C for each 1000 m or 3.2°F for each 3200 ft.



---

## Acoustical Specifications

Table D-2 lists the acoustical specifications for the module.

**Table D-2: Acoustical Specifications**  
**Declared Values per ISO 9296 and ISO 7779<sup>1</sup>**

<b>Product</b>	<b>Sound Power Level <math>L_{WA,d}</math>, B</b>	<b>Sound Pressure Level <math>L_{pAm}</math>, dBA (bystander positions)</b>
	<b>Idle/Operate</b>	<b>Idle/Operate</b>
DEXBR	No measureable noise emissions.	No measureable noise emissions.

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

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

<b>Produkt</b>	<b>Schalleistungspegel <math>L_{WA,d}</math>, B</b>	<b>Schalldruckpegel <math>L_{pAm}</math>, dBA (Zuschauerpositionen)</b>
	<b>Leerlauf/Betrieb</b>	<b>Leerlauf/Betrieb</b>
DEXBR	keine meßbaren Schallemissionen	keine meßbaren Schallemissionen

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

## Connectors

---

### Connectors

Table D-3 provides a list connectors for RouteAbout Access EI.

**Table D-3: Connectors for the RouteAbout Access EI**

<b>Connectors</b>	<b>Quantity</b>
8-pin MJ (10BASET twisted pair) connector	1
8-pin MJ console connector	1
8-pin MJ ISDN basic rate interface connector	1
50-pin WAN connector	1

---

## Parts List

Table D-4 provides a list of available parts for RouteAbout Access EI.

**Table D-4: RouteAbout Access EI Parts List**

<b>Part</b>	<b>Part Number</b>
RouteAbout Access EI	DEXBR
Power Supply Class B, +5 volts and +12 volts	H7867-AA(Use only this power supply.)
Console Port Adapter	H8584-AC
ISDN Cable	17-03212-03
Cable, EIA530A	BC12J-06, 17-03760-01
Cable, RS232/V.28	BC12L-06, 17-03762-01
Cable, RS422/V.11	BC12H-06, 17-03767-01
Cable, RS423/V.10	BC12K-06, 17-03761-01
Cable, V.35	BC12G-06, 17-03766-01
Cable, X.21 (LL)	BC12F-06, 17-03580-01

