RouteAbout Central EW

Installation and Configuration

Part Number: EK-DEZ8R-IN .A01

April 1996

This manual describes how to install the RouteAbout Central EW.

Revision/Update Information: This is a new manual.

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Preface

Overview

Purpose of This Document

This manual describes how to install and set up the RouteAbout Central EW module. It also provides problem solving, connector and adapter, and pin assignment information.

Intended Audience

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

Organization

This manual is organized as follows:

Section	Description
Chapter 1	Provides an overview of the RouteAbout Central EW and describes its features.
Chapter 2	Provides instructions for installing the RouteAbout Central EW in a DEChub 900 MultiSwitch.
Chapter 3	Provides instructions for installing the setup port on the RouteAbout Central EW.
Chapter 4	Provides information on setting up and configuring the RouteAbout Central EW in a DEChub ONE.
Chapter 5	Provides configuration information when the module is installed in a DEChub 900 MultiSwitch.
Chapter 6	Provides information on how to remove the module from the DEChub 900 MultiSwitch.
Appendix A	Provides installation-specific problem solving information using the LEDs.
Appendix B	Provides connector and pin assignment information.
Appendix C	Contains installation information that is specific to the United Kingdom only.
Appendix D	Provides product specifications and a parts list.

Conventions and Terms

Overview

This book uses the following conventions.

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

Terms Used in This Manual

This book 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).
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.

Title and Order	Description
Bridging Configuration Guide *AA-QL29A-TE*	Describes bridging methods, operational features of bridging, configuration methods and basic configurations, and monitoring of bridging software.
DEChub 900 MultiSwitch Owner's Manual EK-DH2MS-OM	Provides installation, use, security, and troubleshooting information for the DEChub 900 MultiSwitch.
Event Logging System Messages Guide AA-QL2AA-TE	Describes messages logged by the Event Logging System.
Network Interface Operations Guide AA-QL2BA-TE	Describes the configuring and monitoring of the network interfaces in the Distributed Routing Software.
Router Protocols Reference Guide AA-QL2CA-TE	Provides detailed reference information about the micro-operating system structure and the protocols and interfaces that the bridging routers support.
Routing Protocols Users Guide AA-QL2DA-TE	Explains how to configure and monitor the routing protocol software.
System Software Guide AA-QL2EA-TE	Describes the installation, configuration, and operation of the Distributed Routing Software.
HUBwatch Installation and Configuration AA-Q358D-TE	Provides information for installing and configuring HUBwatch for OpenVMS and HUBwatch for Windows.

Title and Order	Description
HUBwatch Use 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.
HUBwatch for Windows Use AA-Q3S3C-TE	Describes how to use the HUBwatch network management software in an MS-Windows operating environment.
DEChub ONE Installation EK-DEHUA-IN	Provides installation and operation guidelines for single-slot hub configuration, including rack-mount options and cabling.

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
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Safety

Overview

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

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

CAUTION	This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost.
ACHTUNG	Bei diesem Vorgang werden alle Konfigurationseinstellungen gelöscht und die Werkseinstellungen wieder eingesetzt. Alle Konfigurationsdaten gehen verloren.
ATTENTION	Cette action supprime tous les paramètres de configuration et les remplace par des valeurs prédéfinies. Tous les paramètres de configuration seront perdus.
PRECAUCIÓN	Esta intervención borrará todos los parámetros de configuración y los sustituirá por valores por defecto definidos de fábrica. Se perderán todos los parámetros de configuración.

Chapter 1

Product Introduction

Overview

Introduction

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

In This Chapter

What is the RouteAbout Central EW?

The RouteAbout Central EW remote access router (also referred to in this manual as the module) provides multiprotocol routing for linking remote sites through its wide area network (WAN) connections.

The module can be configured in the DEChub 900 MultiSwitch or as a standalone unit into a DEChub ONE docking station (see the *DEChub ONE Installation* manual).

The RouteAbout Central EW is available with the following two protocol packages:

- Internet Protocol (IP)
- Multiprotocol (MP)

The Internet Protocol package supports:

ARP ASRT BGP DVMPR

EGP HST OSPF RIP

SNMP

The Multiprotocol package supports all the protocols available in the IP package, with the following additional functions:

AppleTalk ® DLSws DECnet Phase IV

DECnet/OSI DLSsw IPX

SDLC Relay

The RouteAbout Central EW has two independent Ethernet channels that can be switched to the front panel or to the DEChub MultiSwitch 900 matrix channels. The module supports eight (8) WAN ports capable of T1/E1 rates.

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

Features

Your RouteAbout Central EW router module includes the following features.

Hot Swap

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

Performance and Memory

The following performance and memory options are available:

- The RouteAbout Central EW supports industry standard processors operating at clock rates of 25 Mhz and 32 bit address and data buses.
- 8 Mbytes of system memory using PC compatible memory DSIMMS.
- Memory accesses are parity protected on a byte wide basis.

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 in a DEChub ONE docking station
  - — Remotely via Telnet in both the DEChub 900 and the DEChub ONE docking station.
- Upgradeable device firmware (in nonvolatile Flash memory) using Trivial File Transfer Protocol (TFTP).
- Out-of-Band Management (OBM) over Serial Line Internet Protocol (SLIP) through the OBM connector as an alternative to in-band management.
- Support using LAN hopping and launching of Telnet windows via Digital's HUBwatch product.
- Simple Network Management Protocol (SNMP) for monitoring.
- When the module is installed into a DEChub ONE docking station, it provides the option of directing the port 2 Ethernet channels to either the DEChub ONE's AUI port or to the RouteAbout Central EW's front panel.
- Ports are individually switchable with HUBwatch manager.

- Supports product environmental management features, including automatic fan speed control, overtemperature warning and overtemperature shutdown.

Bridging

The following bridging options are supported:

- Spanning tree loop detection protocol IEEE 802.1d.
- Source Route Bridging (SR).
- Source Route Translational Bridging (SR-TB).
- Ability to enable or disable spanning tree algorithm on individual switch ports.
- High-speed local traffic filtering and forwarding.
- Flexible filtering (source address, destination address, and protocol) for greater network control, increased security and bandwidth utilization, and reduced propagation of network problems.
- Option to turn off automatic learning and manually load the address database.

SNMP

Built-in SNMP agent support for the following RFCs is provided:

- SNMP management
- Management Information Base
- Bridge MIB
- Ethernet MIB

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

- SNMP support for Gets and for the following standard Traps, along with many proprietary traps:
- coldStart
- linkUp
- linkDown

Front Panel Features

LEDs and Connectors

The LED indicators and connectors on the front panel of the RouteAbout Central EW 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.

Table 1-1: LED Indicators and Connectors

Item	Icon	Name	Description
1		Power LED	**On:** the module has power. **Off:** the module has no power.
2		Module OK LED	**On:** the module passed self-test. **Flashing:** a non-fatal error. **Off:** the module failed self-test.
3		Network OK LED 1 and 2	**Off:** a bad connection, or unconnected. **On, yellow, not flashing:** a port hardware failure. **On, green, not flashing:** the port is in a forwarding state. **On, green, flashing:** the port is in backup or listening state or the management is disabled.
4		Network Activity LED 1	**Off:** no network traffic. **Flashing, green:** connection through the front. The flash rate approximates traffic load. **Flashing, yellow:** connection through the back (for example either through the DEChub 900 MultiSwitch thinwire channel or one of the six flex channels).

continued . . .

Figure 1-1: LEDs and Connectors on Front Panel

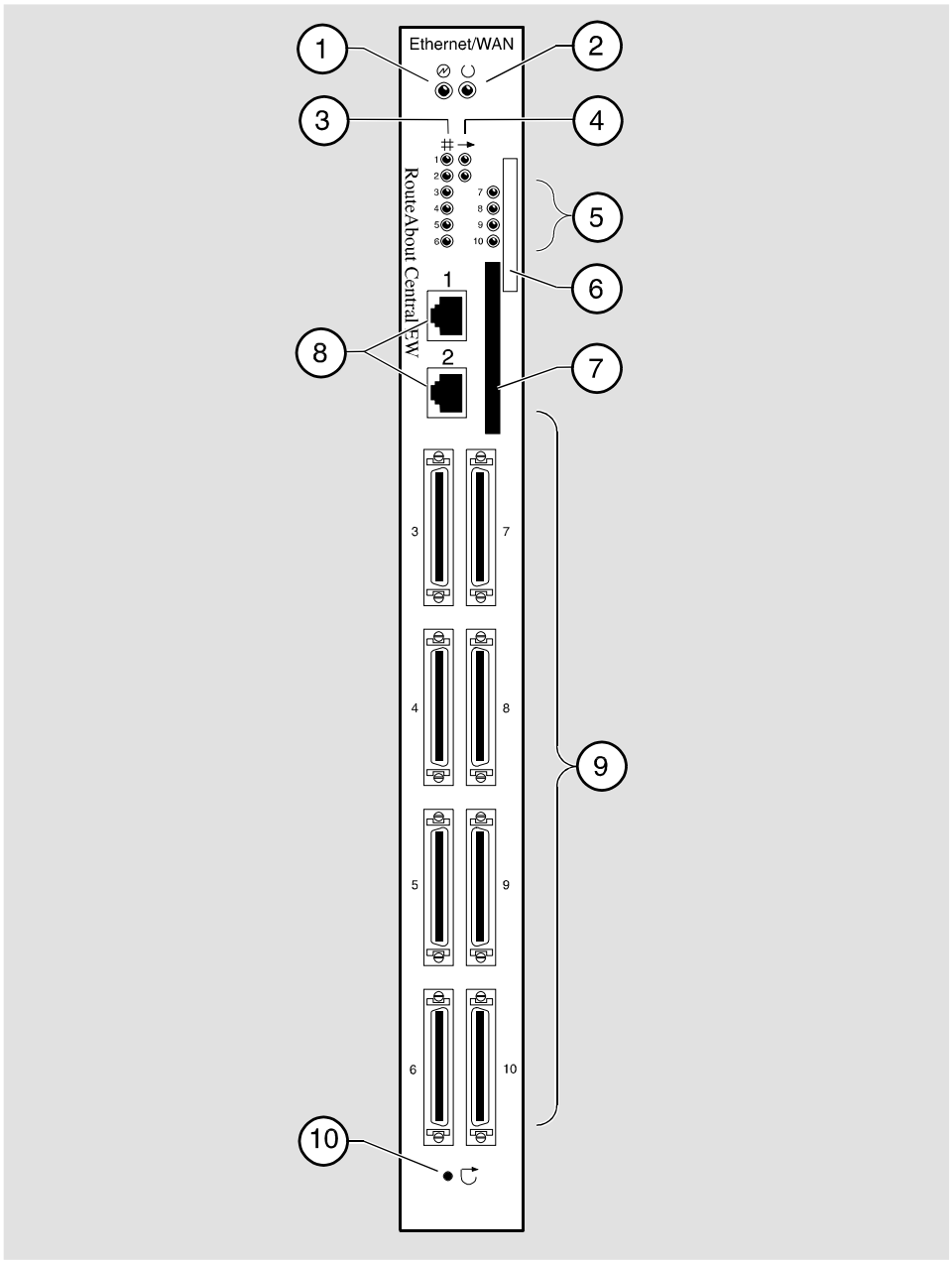


Table 1-1: LED Indicators and Connectors (continued)

Item	Icon	Name	Description
4 (cont)		Network Activity LED 2	**Off:** no network traffic. **Flashing, green:** connection through the front, or if in a DEChub ONE, the connection is through the AUI port. **Flashing, orange:** connection through one of the six DEChub 900 MultiSwitch flex channels.
5		Port 3-10 Serial Line OK LED	**On:** normal operation. **Flashing:** self-test mode or management is disabled. **Off:** self-test failure, or the port is not connected, or the CSU/DSU connected to the port is not powered up.
6		Ethernet Label	Lists the Ethernet address of the module.
7		PCMCIA Slot	Reserved for Digital Use Only.
8		Twisted Pair (10BaseT) Connector	Connects the module to a 10BaseT network.
9		Synchronous Serial Port Connections (labeled 3 through 10)	These ports support the following standards: EIA530A RS232/V.28 RS422/V.11 V.35 X.21 Leased Lines (LL) Compatibility is also provided for the following standard: RS423/V.10
10		Dump Button	If pressed during the execution of power-on diagnostics (from shortly after power on until the LEDs blink three times in sequence), it causes the diagnostic state to reset to the factory defaults and the power-on sequence to stop at the boot prompt to allow for manual clearing of configuration memory.

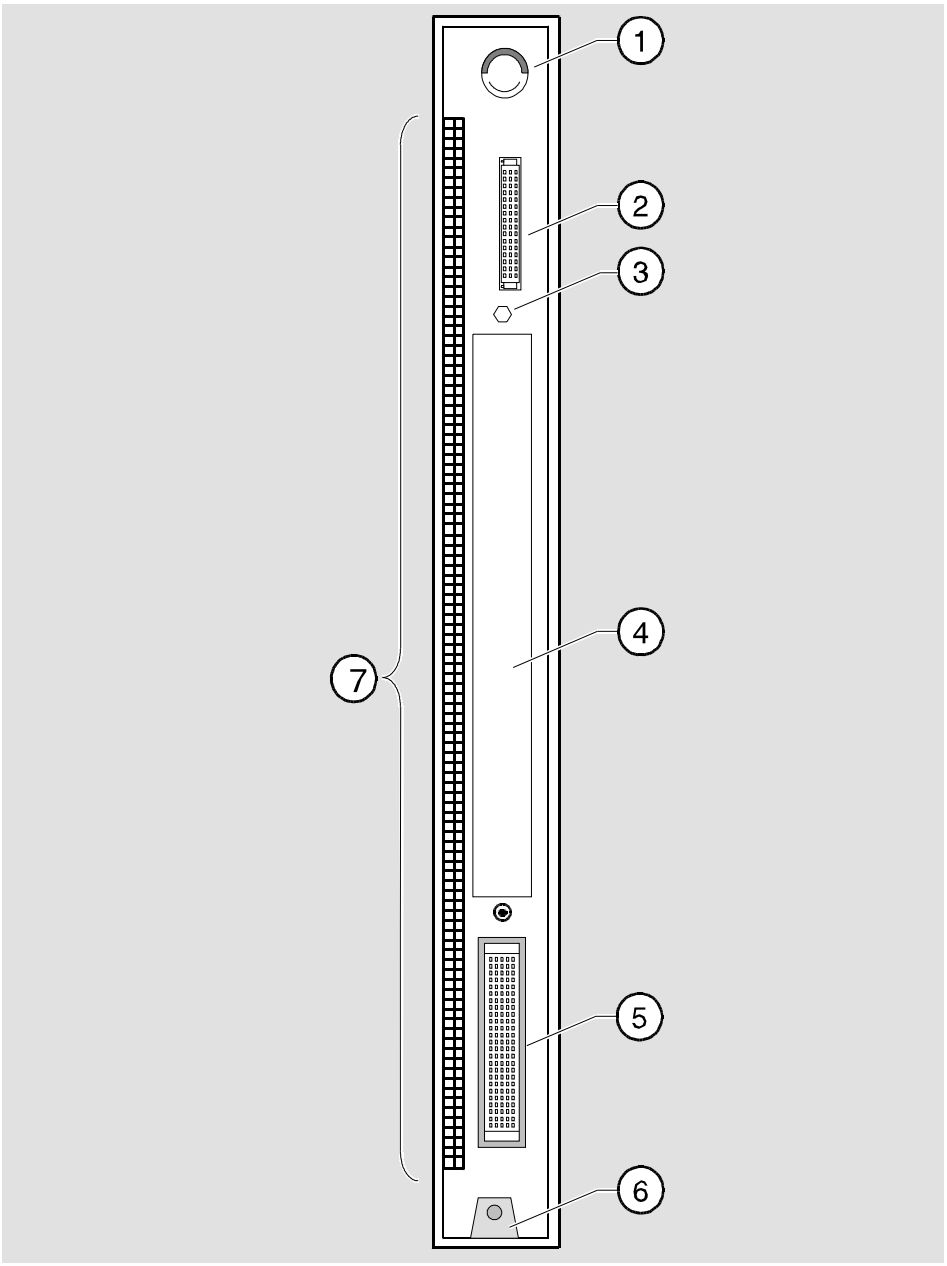
Back Panel Features

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

Table 1-2: Back Panel Features

Item No.	Name	Description
1	Locking tab	Locks the module into the DEChub 900 MultiSwitch backplane or into a DEChub ONE docking station.
2	48–pin connector	Provides network and power connections to the module when the module is installed in a DEChub 900 MultiSwitch or a DEChub ONE docking station.
3	Grounding bolt	Provides a chassis grounding connection to the module when the module is installed into a DEChub 900 MultiSwitch or a DEChub ONE docking station.
4	Manufacturing label	Lists the module part number, serial number, revision level, and power requirements.
5	160–pin connector	Provides network and power connections to the module when the module is installed into a DEChub 900 or DEChub ONE docking station.
6	Mounting tab	Secures the module to the backplane when the module is installed into a DEChub 900 MultiSwitch or a DEChub ONE docking station.
7	EMI/RFI Gasket	Insures conductive contact along the rear of the box to the strip of plating on the backplane enclosure. Controls EMI/ RFI interference within the box.

Figure 1-2: Back Panel Features



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Chapter 2

Installing the Module

Overview

Introduction

This chapter describes how to install the RouteAbout Central EW in a DEChub 900 MultiSwitch. To install a module in a DEChub ONE docking station refer to the *DEChub ONE Installation* manual.

In This Chapter

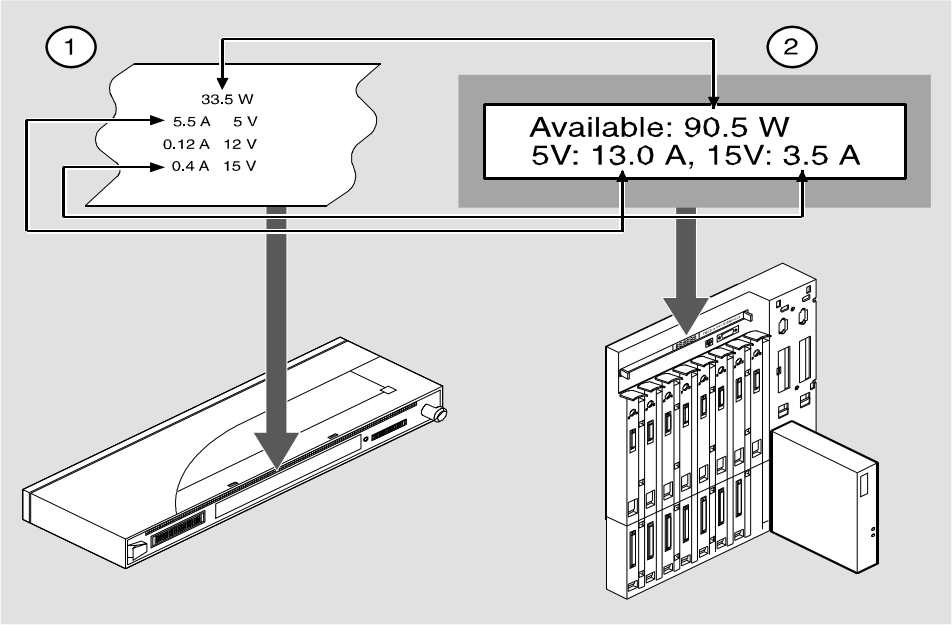
Installing the Module into a DEChub 900 MultiSwitch

The RouteAbout Central EW 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 five tasks, which are listed in the following table:

Task 1: Compare the Power Ratings

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

Figure 2-1: Power Ratings



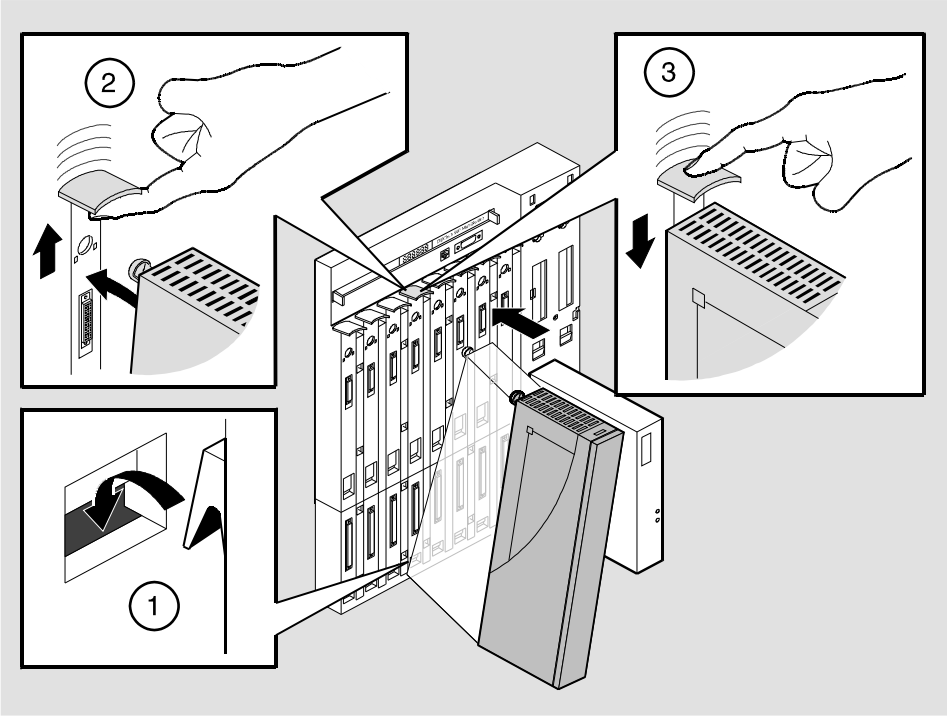
If	Then
The power values on the module's manufacturing label **(1)** do not exceed the values shown in the Hub Manager status display **(2)**	Go to Task 2 to seat the module into the DEChub 900 MultiSwitch.
The power values on the module's manufacturing label **(1)** exceed the values shown in the Hub Manager status display **(2)**	Add another power supply to the DEChub 900 MultiSwitch (refer to the *DEChub 900 MultiSwitch Owner's Manual*.)

Task 2: Seat the Module into the DEChub 900

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

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

Figure 2-2: Seating the Module



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Task 3: Verify Initial LED Operation

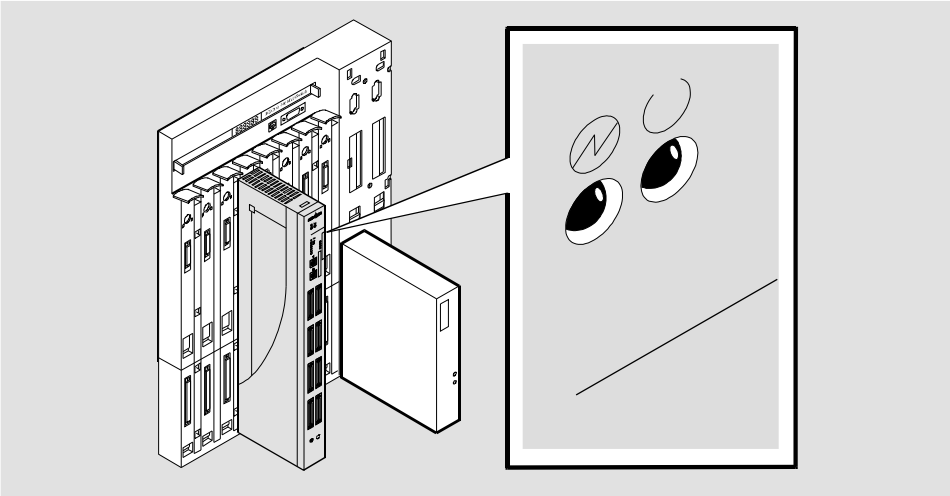
Verify that the module's Power LED and the Module OK LED light within a few seconds (see Figure 2-3).

Step	Action
1	The Power LED lights when power is applied to the DEChub 900, then the module performs a self-test. **Note:** The self-test takes 1 minute 40 seconds (8 MB) to complete.
2	After the module completes self-test, the Module OK LED remains lit. The Port LEDs flash approximately once per second if the module has never been configured. The Hub Manager status display identifies the module as the `RtAbt Cntrl EW/MP`.

NOTE

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

Figure 2-3: LED Location



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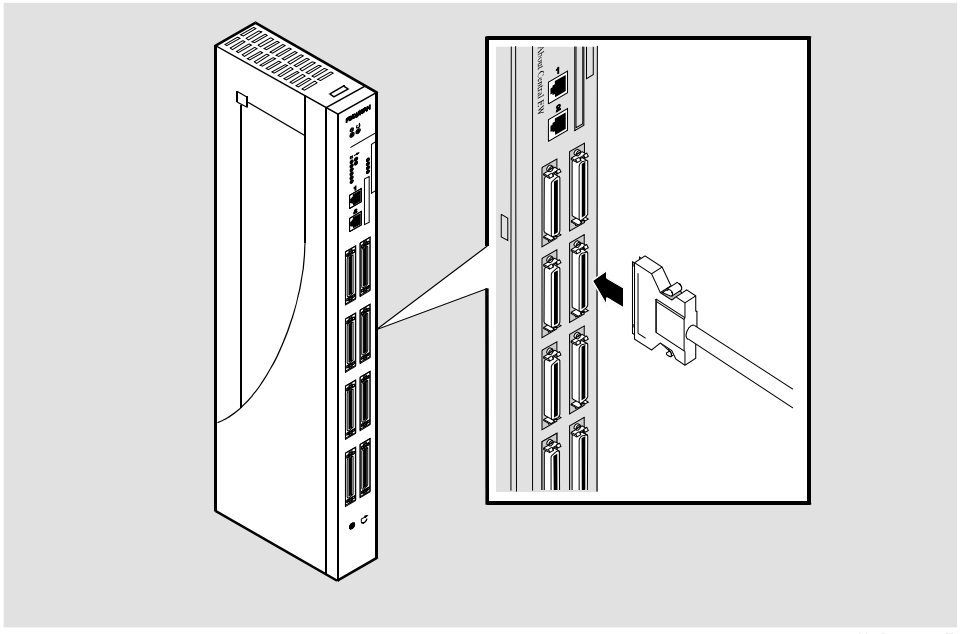
Task 4: Connect the Serial Cable

To connect the serial cable, complete the following steps (see Figure 2-4).

Step	Action
1	Push the module's serial cable into the connector until you hear the release tabs click.
2	Repeat step 1 to connect additional serial cables.

Figure 2-4: Serial Cable Connection



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Task 5: Connect the UTP/ScTP Cable

The RouteAbout Central EW uses straight-through, 10BaseT , 8-pin, MJ port connectors. Select the appropriate UTP/ScTP cable type, crossover or straight-through, to ensure that the module's transmit/receive signals connect correctly to the transmitter/receiver of the connected device.

Before connecting the cables to the module, note the following rules:

If the device you are connecting to the module uses	Then use
Straight-through connectors	Crossover cables
Crossover connectors	Straight-through cables

NOTES

The sum of crossovers must always equal an odd number.

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

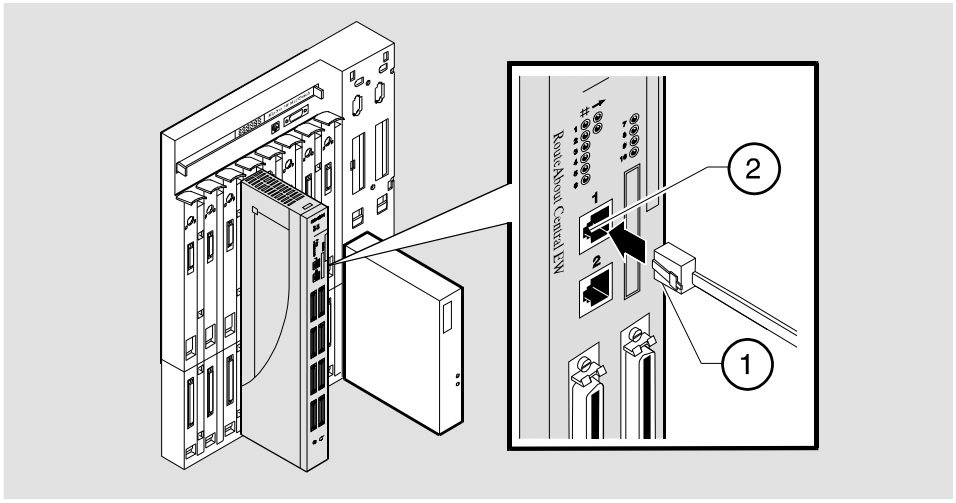
If you need help determining the appropriate cable type to use, refer to Appendix B.

Task 5: Connect the UTP/ScTP Cable

To connect the UTP/ScTP cable, complete the following steps:

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

Figure 2-5: UTP/ScTP Cable Connection



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Chapter 3

Installing the Setup Port Cable

Overview

Introduction

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

In This Chapter

Signaling Standards

Signals from the DEChub 900 MultiSwitch Hub Manager setup port conform to the EIA-232D signaling standard at 9600 baud. To the user, the port appears as a data terminal equipment (DTE) device.

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

Setup Port Device Cabling

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

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

[1] xx indicates cable length in meters.

Connecting the Setup Port

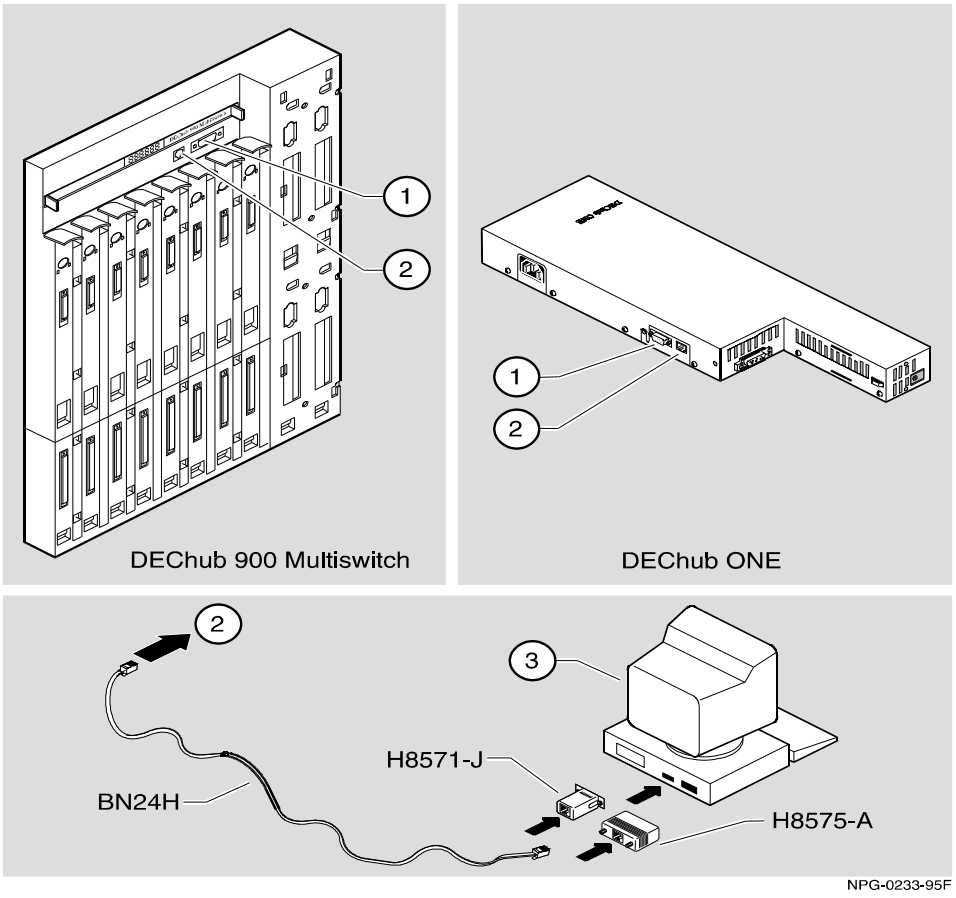
To connect the setup port on the RouteAbout Central EW module, complete the following steps:

Step	Action
1	Ensure that the transmit and receive baud rates on the setup port device are set to 9600 baud.
2	Connect the setup port device to the setup port connector on either the DEChub 900 MultiSwitch or the DEChub ONE docking station (see Figure 3-1).

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

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

Figure 3-1: Setup Port Cabling Components



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

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

Chapter 4

Configuring the Module in a DEChub ONE

Overview

Introduction

This chapter describes how to setup and configure your RouteAbout Central EW when it is installed in a DEChub ONE docking station. For DEChub ONE installation procedures refer to the *DEChub ONE Installation* manual.

In This Chapter

Accessing the Setup Port

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

- An IP address
- A subnet mask
- A default gateway

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

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

To access the setup menus, press the <Return> key on the setup port device until the `RtAbt Cntrl EW/MP INSTALLATION MENU` appears.

To configure the module using	Go to the section titled
Menus	Using Menus to Setup the Module
Commands	Go to Local Console

Using Menus to Setup the Module

This section describes the options that are available from the `RtAbt Cntrl EW INSTALLATION MENU` when the module is installed in the DEChub ONE docking station.

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

```
RtAbt Cntrl EW/MP
============================================

        RtAbt Cntrl EW/MP INSTALLATION MENU

    [1] Restart with Factory Defaults
    [2] Restart with Current Settings
    [3] Show Current Settings
    [4] IP Configuration
    [5] Out-of-Band Port Configuration
    [6] Go to Local Console
============================================
    Enter selection:
```

NOTE

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

If the module was previously configured, the following example shows the dialog associated with this option.

```
RtAbt Cntrl EW/MP
=======================================================

       RtAbt Cntrl EW/MP INSTALLATION MENU

* * *  * * * * * * * * * * * * * * * * * * * * * * * * * * *
*   To fully manage this router 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>
       Press Return for Main Menu ...
```

The following pages describe the installation menu options available on the `RtAbt Cntrl EW Installation Menu:`

Option	Page
Restart with Factory Defaults	4-5
Restart with Current Settings	4-6
Show Current Settings	4-7
IP Configuration	4-8
Out-of-Band Port Configuration	4-13
Go to Local Console	4-16

[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 Cntrl EW/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]:  <Return>

                   Press Return for Main Menu ...
```

If you select Y, then the `RtAbt Cntrl EW/MP INSTALLATION MENU` appears.

[2] Restart with Current Settings

This option restarts the module but leaves the module's configure 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 Cntrl EW/MP
================================================

        RESTART WITH CURRENT SETTINGS

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

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

If you select Y, then the `RtAbt Cntrl EW/MP INSTALLATION MENU` appears.

[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 Cntrl EW/MP
================================================================
RtAbt Cntrl EW/MP, Brouter: 2  Enet 8T1, HW=1,#1489,SW=v1.0.000
SysUpTime                              : 00:00:52  28 restarts
SNMP Read/Write Community              : smith95
Out-of-Band (OBM) Management RTS       : Disabled
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                                      9600 bps
----------------------------------------------------------------
================================================================
               Press Return for Main Menu ...
```

[4] IP Configuration

The IP Configuration option provides you with five selections.

The following example shows the dialog associated with this option.

```
    Enter selection: 4
RtAbt Cntrl EW/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 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
Set SNMP Read/Write Community	4-9
Set In-Band Interface IP Address	4-10
Set Out-of-Band Interface IP Address	4-11
Set Default Gateway	4-12

[4] IP Configuration (Cont.)

[1] Set SNMP Read/Write Community

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

The following example shows the dialog associated with this option.

```
           Enter selection:  1
RtAbt Cntrl EW/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 ...
```

[4] IP Configuration (Cont.)

[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. You can only configure one in-band interface at a time. The module does not need to be configured with a subnet mask for SNMP communications when management stations are on the same subnet as the module.

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 Cntrl EW/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
 Out-of-Band
------------------------------------------------------------
============================================================
        Port Number (1-2) [ ]: 2
        IP address [ ]:  16.126.16.116 <Return>
        Subnet Mask [ ] : 255.255.255.0
        Press Return for IP Configuration Menu ...
```

[4] IP Configuration (Cont.)

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

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

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

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

The following example shows the dialog associated with this option.

```
   Enter selection:  3
RtAbt Cntrl EW/MP
============================================================

       OUT-OF-BAND INTERFACE IP ADDRESS CONFIGURATION

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

              example: 16.20.40.156

   To delete the address, enter 0 in the appropriate
   address field.
------------------------------------------------------------
Interface  IP Address     Subnet Mask       Other Info
Ethernet   16.126.16.116  255.255.255.0
Out-of-Band                                 Speed 9600 bps
------------------------------------------------------------
============================================================
   IP address [ ]:  16.126.16.114  <Return>
   Subnet Mask [ ] : 255.255.0.0
       Press Return for IP Configuration Menu ...
```

[4] IP Configuration (cont.)

[4] Set Default Gateway

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

The following example shows the dialog associated with this option.

```
    Enter selection : 4
RtAbt Cntrl EW/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 ...
```

[5] Out-of-Band Port Configuration

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

NOTE

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

The following example shows the dialog associated with this option.

```
   Enter selection: 5
RtAbt Cntrl EW/MP
================================================================

               OUT-OF-BAND PORT CONFIGURATION

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

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

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

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

The following pages describe out-of-band configuration options.

Option	Page
Set Port Speed	4-14
Enable/Disable RTS	4-15

[5] Out-of-Band Port Configuration (Cont.)

[1] Set Port Speed

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

The following example shows the dialog associated with this option.

```
    Enter selection: 1
RtAbt Cntrl EW/MP
=======================================================

            SET OUT-OF-BAND (OBM) PORT SPEED

            [1]  2400 baud
            [2]  9600 baud
            [3]  38400 baud

=======================================================
    Enter selection [2] (9600): [n]  <Return>

            Press Return for Main Menu ...
```

[5] Out-of-Band Port Configuration (Cont.)

[2] Enable/Disable RTS

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

If the RTS is disabled, the following dialog appears on the screen.

```
           Enter selection: 2
RtAbt Cntrl EW/MP
=================================================================

               ENABLE/DISABLE OUT-OF-BAND PORT RTS

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

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

    RTS is Disabled. Would you like to ENABLE RTS? [N]  <Return>

           Press Return for Main Menu ...
```

If RTS is enabled, the screen shows:

```
RTS is Enabled. Would you like to Disable RTS?
```

Go to Local Console

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

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

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
[6] Go to Local Console (Qconfig)	4-16
[3] Go to Local Console (Commands)	4-18

[6] 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)>
```

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

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

Then the following menu displays.

```
RtAbt Cntrl EW/MP
================================================================

           RtAbt Cntrl EW/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 following pages describe the installation menu options.

Option	Page
Restart with Factory Defaults	4-5
Restart with Current Settings	4-6
Go to Local Console (Commands)	4-18

[3] 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 Cntrl EW/MP
================================================================

           RtAbt Cntrl EW/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:

```
MOS Operator Control
*
```

After the system prompt (*) appears, go to the section titled CONFIG Commands.

CONFIG Commands

This section describes commands that are unique to the RouteAbout Central EW. Other CONFIG commands needed to configure the RouteAbout Central EW can be found in the *System Software Guide*. Commands listed in this manual include a command description, syntax requirements, and an example.

NOTE

You can configure the module at any time using Quick Configuration, by typing **qconfig** at the `Config>` prompt

To configure the module using commands, perform the following steps:

Step	Action
1	At the system prompt (*), enter: **talk 6**
2	Select one of the following options.

Option	Page
Configure Ethernet Port Connection	4-20
Configure OBM	4-21

Configuring Ethernet Port Connection

This section describes how to configure the Ethernet Port from the module and from the connector on the DEChub ONE.

To configure from the module, perform the following steps:

Step	Action
1	At the `Config>` prompt enter: **net 1**
2	At the `ETH config>` prompt enter: **connector-type RJ45**

To configure from the connector on the DEChub ONE:

Step	Action
1	At the `Config>` prompt enter: **net q**
2	At the `ETH config>` prompt enter: **connector-type AUI**

To Exit and Restart

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

Command	Type at the
exit	ETH Config prompt (ETH `Config>`)
control/p	CONFIG prompt (`Config>`)
restart	System prompt (*)

If you need to configure additional software, refer to the *System Software Guide.*

Configuring OBM

This section describes how to set the OBM IP address, speed, and enable RTS. After entering **talk 6**, at the `Config>` prompt you can set the following three OBM parameters as follows:

Parameter	Description	Default
set obm ip 16.40.156.20	Sets the out-of-band management port IP-address (for example, 16.40.156.20).	current IP-address
set obm speed 38400	Sets the OBM port speed (2400, 9600, or 38400 bps).	9600
set obm rts enable	Sets data transmission Request to Send (RTS) to Enable or Disable.	Disable

To Exit and Restart

When you modify parameters, you must restart the router for the change to take effect. Enter the following commands.

Command	Type at the
control/p	CONFIG prompt (`Config>`)
restart	System prompt (*)

If you need to configure additional software, refer to the *System Software Guide.*

Chapter 5

Configuring the Module in a DEChub 900

Overview

Introduction

This chapter describes how to configure your RouteAbout Central EW when it resides in a DEChub 900 MultiSwitch.

In This Chapter

DEChub 900 MultiSwitch Installation Menu

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

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

The following example shows the dialog associated with this option.

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


        DEChub 900 MultiSwitch INSTALLATION MENU

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

[9] Start Redirect Mode

The `Start Redirect Mode` option redirects the DEChub 900 MultiSwitch Hub Manager set-up port to the set-up port of any network module (such as the RouteAbout Central EW) 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 Central EW 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 Cntrl EW/MP
Attempting connection [Ctrl/C to abort]...
```

If the redirection is successful after you press the <Return> key, the `RtAbt Cntrl EW/MP 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 Cntrl EW/MP INSTALLATION MENU` when the module is installed in the DEChub 900 MultiSwitch.

The following example shows the dialog associated with this option.

```
RtAbt Cntrl EW/MP - slot 8
================================================

       RtAbt Cntrl EW/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>

       Press Return for Main Menu ...
```

The following table describes the installation menu options.

Topic	Page
Restart with Factory Defaults	5-6
Restart with Current Settings	5-7
Show Current Settings	5-8
IP Configuration	5-9

NOTE

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

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

```
RtAbt Cntrl EW/MP - slot 8
============================================================


               RtAbt Cntrl EW/MP INSTALLATION MENU


* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*   To fully manage this device Telnet to one of its IP     *
*   addresses.                                             *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *


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

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


                 Enter selection number:  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 Cntrl EW/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]:  <Return>
                  Press Return for Main Menu ...
```

[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 1 minute for the module to Restart.

The following example shows the dialog associated with this option.

```
    Enter selection:  2
RtAbt Cntrl EW/MP - slot 8
======================================================================

             RESTART WITH CURRENT SETTINGS

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

    Press Y to confirm [N] :  <Return>

            Press Return for Main Menu ...
```

[3] Show Current Settings

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

The following example shows the screen display associated with this option.

```
       Enter selection: 3
RtAbt Cntrl EW/MP - slot 8
================================================================
RtAbt Cntrl EW/MP, Brouter: 2 Enet 8T1,HW=v1,#1489,SW=v01.0.000
SysUpTime                                : 00:03:42   8 restarts
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.

The following example shows the dialog associated with this option.

```
       Enter selection: 4
RtAbt Cntrl EW/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 number : [n]  <Return>
```

The following pages describe IP Configuration options.

[4] IP Configuration (Cont.)

[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 Cntrl EW/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 (Cont.)

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

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 Cntrl EW/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
----------------------------------------------------------------
================================================================
    Port Number (1-2) [ ]: 2
    IP address [ ]:  16.20.54.156  <Return>
    Subnet Mask [ ] : 255.255.225.0

        Press Return for Main Menu ...
```

[4] IP Configuration (Cont.)

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

This option prompts you to change or enter the IP address and subnet mask for the out-of-band interface. The module does not need to be configured with a subnet mask for SNMP communications when management stations are on the same subnet as the module.

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 Cntrl EW/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>
        IP address set.

        Press Return for Main Menu ...
```

[4] IP Configuration (Cont.)

[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 Cntrl EW/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 Main Menu ...
```

If you need to configure additional software, refer to the *System Software Guide*.

Chapter 6

Removing the Module

Overview

Introduction

This chapter describes how to remove the RouteAbout Central EW from a DEChub 900 MultiSwitch. To remove the RouteAbout Central EW from a standalone unit, refer to the *DEChub ONE Installation* manual.

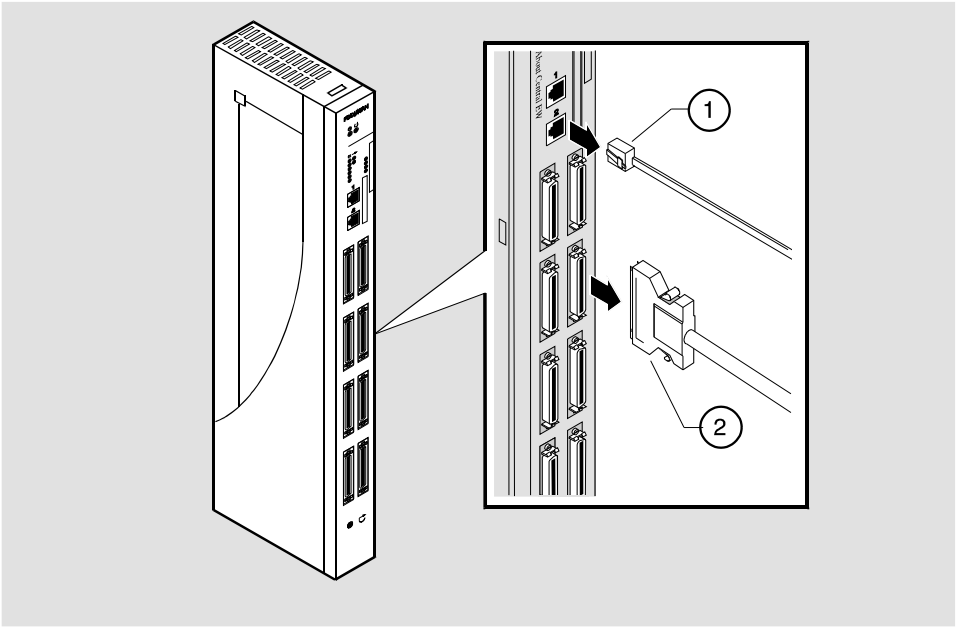
In This Chapter

Removing the Cables

To remove cables from the module, complete the steps as described in this section (see Figure 6-1).

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 6-1: Removing the Cables



NPG-0314-95F

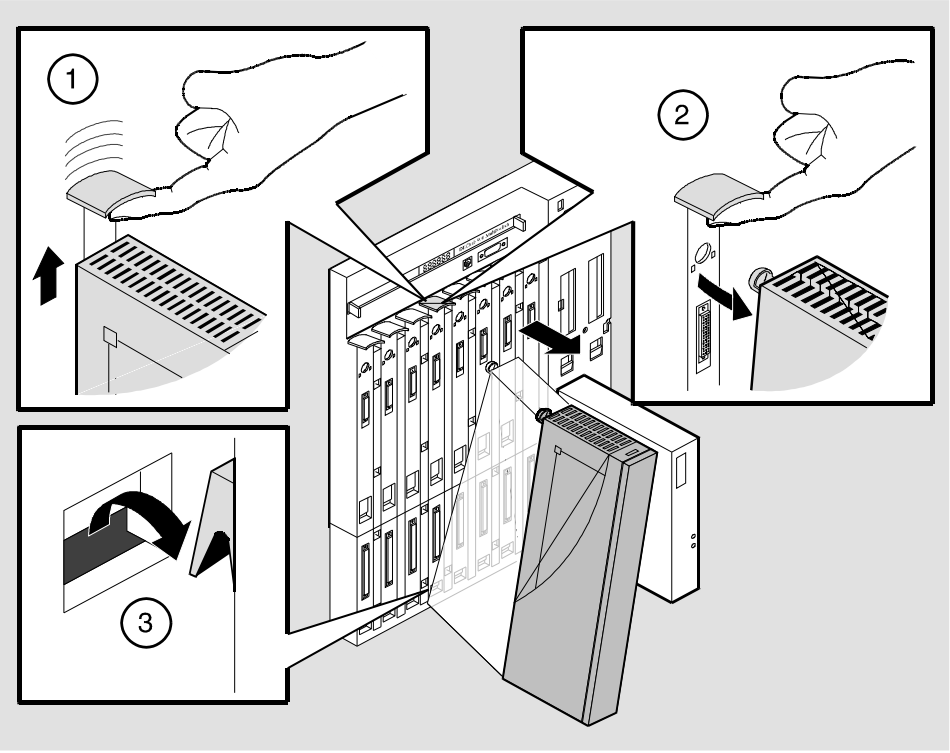
Unseating the Module

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

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, pivot the module back on its bottom mounting tab. **(2)**
3	Lift the module from the backplane. **(3)**

Unseating the Module

Figure 6-2: Unseating the Module



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

Normal Powerup

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

Event	Description
1	The module's Power LED lights as soon as power is applied to the unit.
2	The module initiates its built-in self-test. Flashing port serial line LEDs and activity LEDs indicate that the module is running various subroutines as part of the self-test. See Table A-1.
3	After the successful completion of self-test, the Module OK LED lights, and remains lit.
4	The remaining LEDs now indicate their operational status, as described in the Table A-2.

Self–Test Progress States

Upon power up, the module immediately begins a sequence of self tests and memory sizing. The following sequence of LEDs pass by so quickly that it is difficult to identify the discrete steps on a functioning module.

Should a hardware fault be detected, the LEDs will reflect the progress made into the self–test. This information can be useful when describing problems to your service representative.

NOTE

These tests are run prior to the Module OK LED being lit.

Table A-1 describes the module's self–test progress LED states.

Table A-1: Module Self Test Progress LED States

POWER OK	Module OK	1	2	3	4	5	6	
1	0	0	0	0	0	0	0	Microprocessor test and register setup
1	0	G	0	0	0	0	1	Microprocessor interrupts set up
1	0	G	0	0	0	1	0	Option card microprocessor set up
1	0	G	0	0	0	1	1	Option card interrupts set up
1	0	G	0	0	1	0	0	Memory controller port and memory set up
1	0	G	0	0	1	0	1	Peripheral controller port set up
1	0	G	0	0	1	1	0	Option card port set up (if present)
1	0	G	0	0	1	1	1	Restart configuration set up
1	0	G	0	1	0	0	0	Memory controller dpram test
1	0	G	0	1	0	0	1	Peripheral controller dpram test
1	0	G	0	1	0	1	0	Option card dpram set up (if present)
1	0	G	0	1	0	1	1	DEChub serial channel internal loopback test
1	0	G	0	1	1	0	0	Debug console internal loopback test
1	0	0	G	0	0	0	1	Memory test set up
1	0	0	G	0	0	1	0	Bank 0 simm presence test
1	0	0	G	0	0	1	1	Bank 1 simm presence test
1	0	0	G	0	1	0	0	Test for no memory present
1	0	0	G	0	1	0	1	Test for simm size, bank 0
1	0	0	G	0	1	1	0	Test for simm size, bank 1

POWER OK	Module OK	1	2	3	4	5	6	
1	0	0	G	0	1	1	1	Re-map available memory
1	0	0	G	1	0	0	0	Refresh test
1	0	0	G	1	0	0	1	Dram array test
1	0	0	G	1	0	1	0	Save dram configuration and size
1	0	0	G	1	0	1	1	Set the stack pointer and jump to manufacturing tests

1 = On, 0 = Off
G = On, Green
Ethernet activity LEDs and LEDs 7, 8, 9 and 10 are not used during the built-in self-tests.
Upon detection of a hardware failure LED 1 and LED 2 will change in color from Green to Amber.

LED Descriptions

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

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

Table A-2: Module LED States After Self-Test Completion

LED Name	Off	On (Green)	On (Yellow)	Flashing
Power 	No power to module.	Module receiving power.	N/A	N/A
Module OK 	Self-test failed.	Module passed self-test	N/A	Non-fatal failure.
Network OK 1 and 2 	Ethernet port is not connected to a properly terminated and operational LAN.	Ethernet port is connected to a properly terminated and operational LAN.	Port hardware failed self-test.	Port is in backup or listening state or management is disabled.
Network Activity 1 	No network activity.	Connected through front.	Connected through back.	Flashes more rapidly and appears brighter as network traffic increases.

LED Name	Off	On (Green)	On (Yellow)	Flashing
Network Activity 2 →	No network activity.	Connected through front or AUI.	Connected through back.	Flashes more rapidly and appears brighter as network traffic increases.
Port 3-10 Serial Line OK	The module is not connected, or the CSU/DSU port is not powered up, or indicates port failure	Indicates normal operation.	N/A	Indicates self-test mode or management is disabled.

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-3 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-3: LED States

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

Symptom	Probable Cause	Corrective Action
Power LED is off (cont.) 	If the DEChub does not have enough power to turn on the module, then the module will not power up.	Increase the power capability of the DEChub 900 by adding on an optional power supply.
	If the module does not turn on in a known good slot, then the module is defective.	Replace the RouteAbout Central EW .
Module OK LED is off. 	Self-test in progress.	Wait for self-test to complete.
	Self-test failed.	If the LED does not light after 1 minute 40 seconds (8 MB), reseat the module to repeat the self-test. If the self-test fails again, replace the module.
Module OK LED is flashing 	Possible fan failure.	Replace the RouteAbout Central EW.
Network OK LED 1 and 2 does not stay on after the functional code begins execution. 	The network interface self-test has failed.	Refer to the *System Software Guide* to determine the network interface status and to display any logged network interface events.

Symptom	Probable Cause	Corrective Action
The Network Activity LED is off. →	There is low network activity or no network activity.	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.
	The module or any other unit in the DEChub may not be connected to an active segment.	Connect a known active segment to any unit in the DEChub.
	If the module is connected to a known active segment and the Network Activity LED is off, then the RouteAbout Central EW is defective.	Replace the RouteAbout Central EW.
Port 3-10 Serial Line OK LED does not stay on after the functional code begins execution.	Port 3-10 interface self-test has failed.	Refer to *the System Software Guide* to determine the serial port interface status and to display any logged serial port interface events.
After correctly installing the module on a DEChub 900 MultiSwitch, the information display does not read: `RtAbt Cntrl EW/MP up`	Defective module.	Replace the RouteAbout Central EW.

Symptom	Probable Cause	Corrective Action
After correctly installing the module on a DEChub 900 MultiSwitch, the hub manager does not display configuration information.	Defective module.	Replace the RouteAbout Central EW.

Appendix B

Connectors, Adapters and Cable Connections

Overview

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

In This Appendix

Connector Assignments

50-pin Connector

The following illustration shows the 50-pin connector and its pin assignments.

Figure B-1: 50-pin Connector

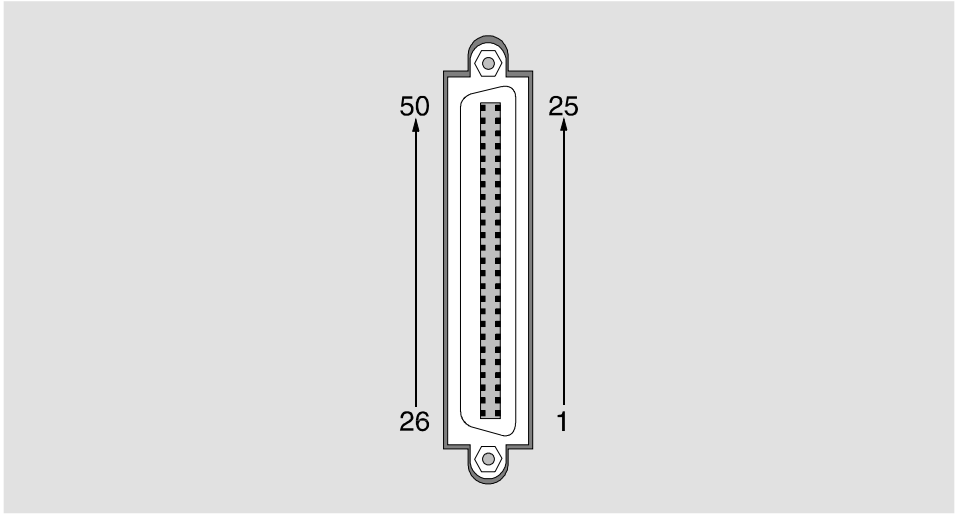


Table B-1: 50-pin Connector Assignments

Pin	Assignment	Pin	Assignment
1	Code Ground[1]	2	Cable_ID<1>
3	N/C	4	DSR A
5	TX Data A	6	DCD A
7	TX Data A	8	RTS A
9	CTS A	10	RX Data A
11	Ring Indicate	12	N/C
13	RX Clock A	14	DTR A
15	TX Clock A	16	N/C
17	TX Clock A	18	N/C
19	TX Clock A	20	LBK
21	V.35 TX Clock A	22	V.35 Clock A
23	V.35 RX Data A	24	V.35 TX Data A
25	V.35 RX Clock A	26	Cable_ID<0>
27	Cable_ID<2>	28	N/C
29	DSR B	30	TX Data B
31	DCD B	32	RTS A
33	RTS B	34	CTS B
35	RX Data B	36	N/C
37	DTE Ground[1]	38	RX Clock B
39	DTR B	40	TX Clock B
41	N/C	42	TX Clock B
43	N/C	44	DTR A
45	N/C	46	V.35 TX Clock B
47	V.35 Clock B	48	V.35 RX Data B

Pin	Assignment	Pin	Assignment
49	V.35 TX Data B	50	V.35 RX Clock B

[1] Contacts tied together.

10BaseT Port (8-pin MJ) Connector

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

Figure B-2: 8-pin MJ Connector

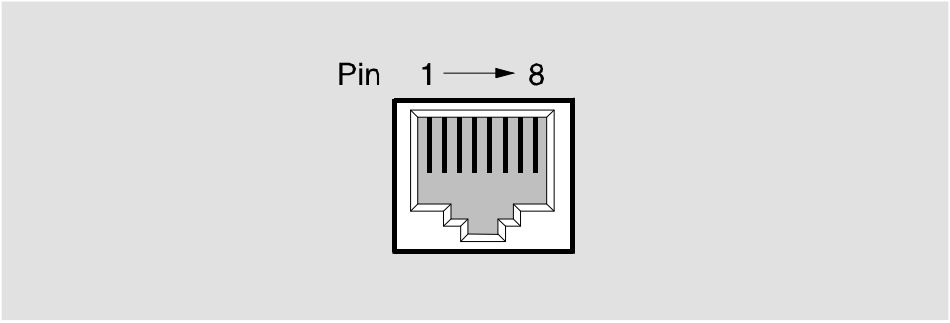


Table B-2: 8-pin Connector Assignments

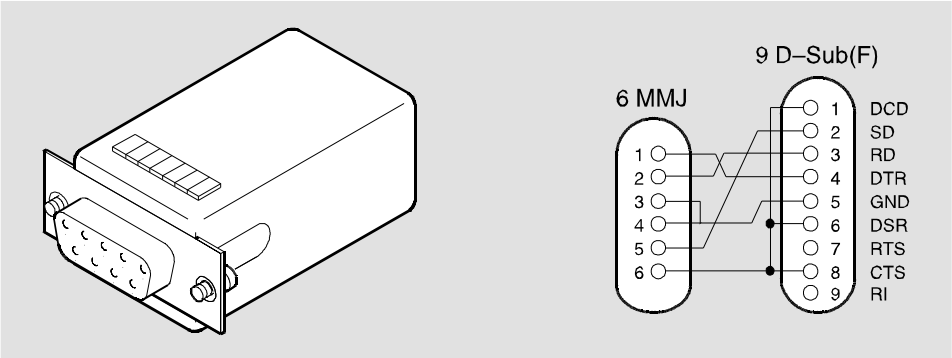
Pin	Assignment	Pin	Assignment
1	RX+	5	Unused
2	RX-	6	TX-
3	TX+	7	Unused
4	Unused	8	Unused

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

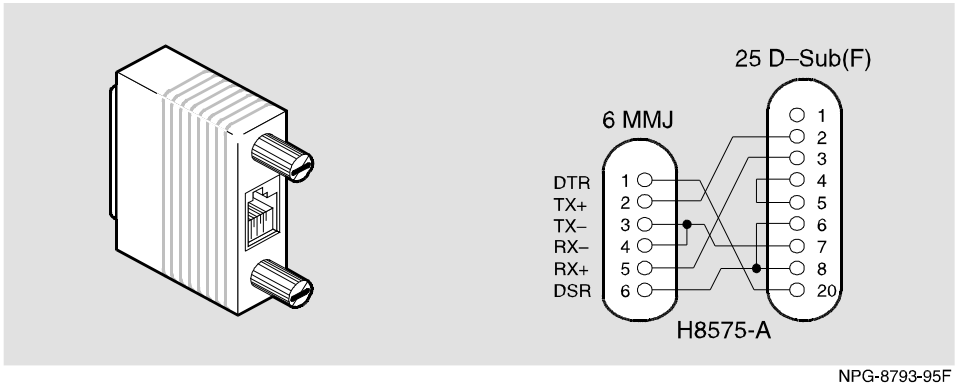


NPG-5342-95F

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



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[1]
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[2]
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[2]
17	6	S(A) TX Clock A
22	13	S(B) TX Clock B[2]
13, 15	-	RX Clock A DTE Clock B[1]
38, 40	-	RX Clock B DTE Clock B[2]
37	8	G DTE Ground

[1] Contacts tied together.

[2] 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.

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

From Pin Connector (P1)	To EIA422 Pin Connector P2)	Signal Name
1, 27	–	Code Ground[1]
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[2]
11	15	Ring Indicate
12	20	DCE Ground
13	8	RX Clock A
38	26	RX Clock B[2]
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[2]

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

[1] Contacts tied together.

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

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

From Pin Connector (P1)	To V.35 Pin Connector (P2)	Signal Name
1, 26	–	Code Ground[1]
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[1]
44	H	DTR
Shell	Braid Strap	Overall Cable Shield
20	K	Local Loop

[1]Contacts tied together.

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

From Pin Connector (P1)	To EIA530A Pin Connector (P2)	Signal Name
1, 26, 27	–	Code Ground[1]
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[2]
11	22	Ring Indicate
12	23	DCE Ground
13	17	RX Clock A
38	9	RX Clock B[2]
15	24	Clock A
40	11	Clock B
17	15	TX Clock A
42	12	TX Clock B[2]
18	25	Test Indicate
20	18	Local Loop
29, 37	7	DTE Ground[1]

From Pin Connector (P1)	To EIA530A Pin Connector (P2)	Signal Name
44	20	DTR
45	21	Remote Loop
Shell	Shell	Shield Braid

[1] Contacts tied together.

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

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

From Pin Connector (P1)	To EIA423 Pin Connector (P2)	Signal Name
1, 2, 27	–	Code Ground[1]
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
37	19, 22, 25, 30, 35, 37	DTE Ground[1]
41	16	Speed Select
44	12	DTR
45	14	Remote Loop
Shell	Shell	Shield Braid

From Pin Connector (P1)	To EIA423 Pin Connector (P2)	Signal Name
19	17	Clock

[1]Contacts tied together.

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

From Pin Connector (P1)	To V.24/EIA232 Pin Connector (P2)	Signal Name
1, 2	–	Code Ground[1]
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
12, 29, 31, 34, 35, 37, 38, 42	7	DTE Ground[1]
41	23	Speed Select
44	20	DTR
45	21	Remote Loop

[1] Contacts tied together.

Appendix C

Installation Information – United Kingdom

Overview

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

In This Appendix

Service Categories

Table C-1 lists the BABT-approved service specifications for the RouteAbout Central EW for UK compliance.

Table C-1: BABT-Approved Service Specifications

Service Requirements						**Public Telecom-munications Operators**		
Serv-ice Cate-gory	Inter face Type	Elect rical	Physi -cal	Approved Cables	Data Rate (bps)	BT	Hull	MCL
1	X.21 bis	V.24/ V.28	ISO 2110, BS.6 623 : part 1, 1985.	**Adapters:** BC12L-06, 17-03762-01 **Extension:** BC22F-xx[2] BC13P-10 (10 feet)	240048 00960 19200	Y Y Y N	Y Y Y N	Y Y Y Y
2	X.21 bis	V.35	ISO 2593, BS.6 623 :part 4, 1986.	**Adapters:** BC12G-06, 17-03766-01 **Extension:** BC19L-xx (xx feet)[2]	48K 56K 64K 2048K	Y Y N N	Y N N N	Y Y Y N

[1] BT – British Telecommunications plc.
Hull – Kingston Communications (Hull) plc.
MCL – Mercury Communications Limited.

[2] xx represents the cable length in feet. The total length of cable used must not exceed 27 feet.

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-2.

Table C-2: Module Power

Input Voltage	Max. Input Current (Amperes)
5Vdc	5.5 amps
12Vdc	0.12 amps
15Vdc	0.4 amps

Module Isolation

No special clearances or creepage distances need to be maintained as the RouteAbout Central EW 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-3. The approved module may not use all of these cables; therefore, check the instructions to determine which interface types are supported.

Table C-3: 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[1]	–	–
V.24/V.28	Extension low cap	BC13P-10[1]	–	–
V.10	Adapter	BC12K-06	Straight	50-37
V.35	Adapter	BC12G-06	Straight	50-34
V.35	Extension	BC19L-xx[1]	–	–
X.21	Adapter	BC12F-06	Straight	50-15
X.21	Extension	BC22Z-xx[1]	–	–

[1] 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 Central EW.

In This Appendix

Operating Specifications

Table D-1 lists the operating specifications for the RouteAbout Central EW module.

Table D-1: Operating Specifications

Parameter	Specification
Operating Environment	
Operating Temperature[1]	10° C to 40° C (50 ° F to 104 ° F)
Relative Humidity	10% to 95% noncondensing
Altitude	Sea level to 4900 m (16,000 ft)
Power[2]	33.5 W, total power 5.5 A, 5Vdc 0.12 A, 12Vdc 0.4 A, 15Vdc

[1]For sites above 4900 m (16,000 ft), decrease the operating temperature specification by 1.8° C for each 1000 m or 3.2°F for each 3200 ft.

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

Physical Specifications

Table D-2 lists the physical specifications for the RouteAbout Central EW module. Note the additional parameters to consider when the module is installed in a DEChub ONE docking station.

Table D-2: Physical Specifications

Product Information	Specification
Connectors	
2 MJ-8 (8-pin MJ 10BASET twisted pair) connector 8 50-pin WAN connectors	
Physical	
Height	44.45 cm (17.5 in)
Width	4.45 cm; 1.75 in
Depth	15.25 cm (6 in); 25.40 cm. (10.0 in with a DEChub ONE docking station.
Weight	1.8 Kg (4 lb)[3] 3.48 Kg (7.65 lb)[4]
Shipping carton dimensions	50.5cm x 29.3cm x 10.7cm (20x11.625x4.25 in)
Certification	
CE, CSA, FCC, TÜV, UL, VCCI	

[3] Actual module (no shipping container) include an additional 1.59 kg (3.5 lb) when attached to a DEChub ONE docking station.

[4] Total kit weight (with shipping container)

Environmental Specifications

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

Acoustical Specifications

Table D-3 lists the acoustical specifications for the module.

Table D-3: Acoustical Specifications

Declared Values per ISO 9296 and ISO 7779[1]

Product	Sound Power Level L_{WAd}, B	Sound Pressure Level L_{pAm}, dBA (bystander positions)
	Idle/Operate	Idle/Operate
DEZ8R	4.5	33
DEZ8R + DEHUA	5.2	38
DEZ8R + DEF1H	5.2	38

[1] 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[2]

Produkt	Schalleistungspegel L_{WAd}, B	Schalldruckpegel L_{pAm}, dBA (Zuschauerpositionen)
	Leerlauf*/*Betrieb	***Leerlauf*/*Betrieb***
DEZ8R	4,5	33
DEZ8R + DEHUA	5,2	38
DEZ8R + DEF1H	5,2	38

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

Parts List

Table D-4 provides a list of available parts for RouteAbout Central EW.

Table D-4: RouteAbout Central EW Parts List

Part	Part Number
RouteAbout Central EW/MP, 8 MB	DEZ8R-P
RouteAbout Central EW/IP, 8 MB	DEZ8R-Y
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