

DECagent 90

Installation and Configuration

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This manual describes how to install and configure the DECagent 90.

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EK-DENMA-IN. A01

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DECagent 90 Installation and Configuration

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Introduction

The DECagent 90 network module (also referred to in this manual as the module) is a Simple Network Management Protocol (SNMP) proxy agent for the WorkGroup family. It has one ThinWire port and one console RS-232 port.

The DECagent 90 network module provides SNMP proxy support for the DECbridge 90, DECbridge 90FL, DECserver 90L, DECserver 90L+, DECrepeater 90C, DECrepeater 90T, DECrepeater 90FA, and DECrepeater 90FL.

As a proxy management agent, the DECagent 90 network module responds to SNMP queries on behalf of those devices. The DECagent 90 accepts SNMP data packets from the network management station (NMS) and translates them into MOP/CC for the DECserver products and Remote Bridge Management Software (RBMS) for the DECbridge products. DECrepeater modules are managed on the DEChub management bus from the DECagent 90 or via a DECbridge 90.

The DECagent 90 uses the autodiscovery feature and automatically finds all devices (except DECserver 90L and DECserver 90L+) located in its community. If a DECagent discovers a DECbridge in its community and the DECbridge is managing a repeater, the DECagent begins managing any repeaters previously managed by the DECbridge.

Management is accomplished using the DECagent 90 network module with a PC or workstation that supports native SNMP, and HUBwatch software.

One DECagent 90 can manage as many as 16 interconnected hub communities and 64 network modules. All hubs are identified by their unique community string.

The DECagent 90 accepts SNMP messages on behalf of its client network modules, sends an appropriate command to the queried client network module, and waits for a response from the client network module. After receiving a response from the client network module, the DECagent 90 sends an SNMP response to the querying NMS.

The DECagent 90 has a single IP address. It implements the protocols required for SNMP-based proxy access.

System managers using HUBwatch software with the DECagent 90 can manage their network from a PC workstation connected to the hub. They can access and query the network at any level from an individual port to the overall network structure.

Introduction (Cont.)

Features

The DECagent 90 features:

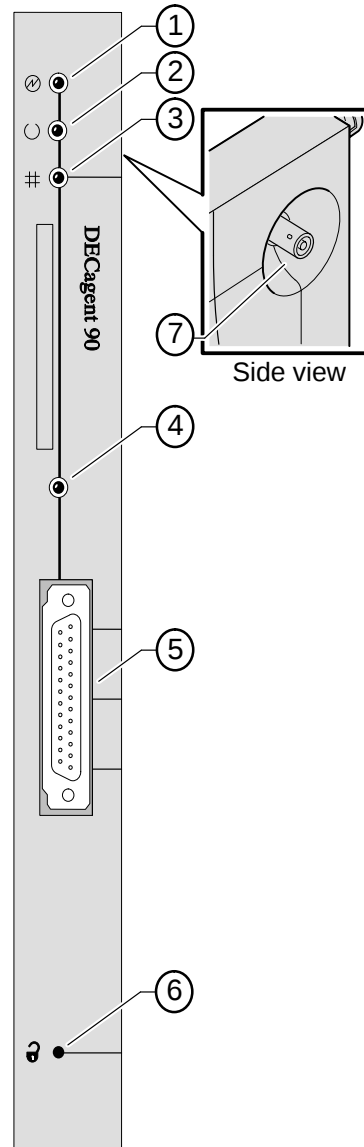
- Hot-swap capability
- No need for a downline load at powerup
- Support of the Serial Line Internet Protocol (SLIP)
- Support of the Trivial File Transfer Protocol (TFTP)
- The ability to downline load for firmware upgrades using MOP or TFTP
- The ability to downline load for firmware upgrades using DECndu Plus software
- Can be directly managed through SNMP
- Storage of management information base (MIB) settings in battery-backed RAM
- Supports out-of-band management (OBM) using SLIP over the setup port
- Emergency management capability using an ASCII console
- Direct DEChub 90 backplane management support (DECbridge modules are not required for DEChub population and DECpeater module management)
- Error-logging capabilities
- SNMP proxy management of DECbridge 90, DECbridge 90FL, DECserver 90L, DECserver 90L+, DECserver 90L++, DECpeater 90T, DECpeater 90C, and DECpeater 90FL
- Supports up to 16 communities and up to 64 modules
- Provides enterprise-specific traps for population change, module/port status change, and more
- Can be configured in a DEChub 90, DEChub 900 MultiSwitch, or as a standalone unit.

Front Panel

- 1)  **Power LED** – Lights when the module has power.
- 2)  **Module OK LED** – Lights when the module passes self-test. If the module fails self-test, the Module OK LED remains off.
- 3)  **Network OK LED** – Shows the status of the network port by an on, off, or flashing state.
- 4) **Network Activity LED** – Indicates network traffic level.

NOTE: Refer to the LED Summary section for more information about LED operation.

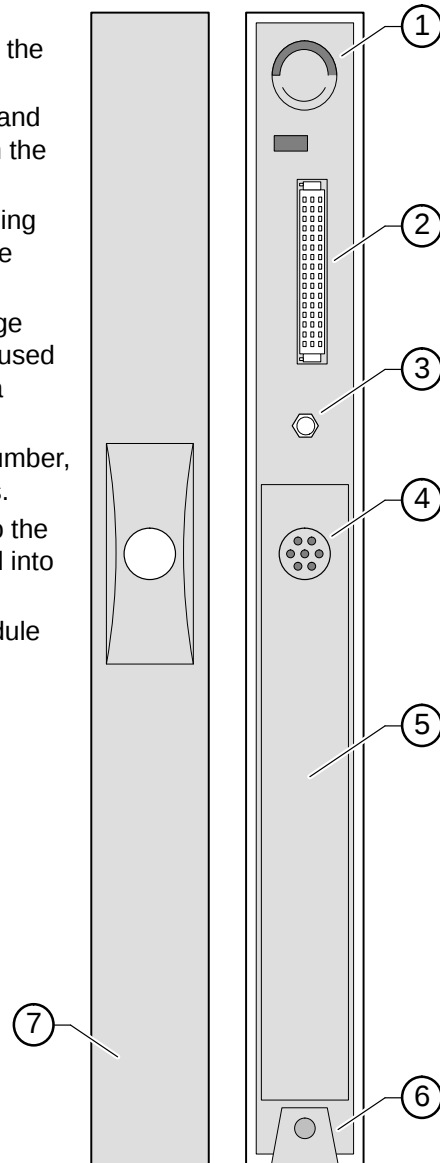
- 5) **Setup port connector** – Provides an interface to the DECagent 90 through a terminal or PC.
- 6) **Reset to Factory Defaults switch** – Resets the DECagent 90 to the factory default settings. To activate the reset, press the switch before power is enabled and hold it in until diagnostics are completed.
- 7) **Network connector** – Connects the DECagent 90 to the ThinWire segment. This feature is not used when the DECagent 90 is installed in a DEChub.



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Back Panel

- 1) **Locking tab** – Locks the module when the module is installed into a DEChub.
- 2) **48-pin connector** – Provides network and power connections to the module when the module is installed in a DEChub.
- 3) **Grounding bolt** – Provides the grounding connection between the module and the DEChub backplane.
- 4) **Power connector** – Receives dc voltage from the power supply. This feature is used only when the module is installed into a DEChub.
- 5) **Label** – Lists the part number, serial number, revision level, and agency certifications.
- 6) **Mounting tab** – Secures the module to the backplane when the module is installed into a DEChub.
- 7) **Back cover** – Used only when the module is a standalone unit.



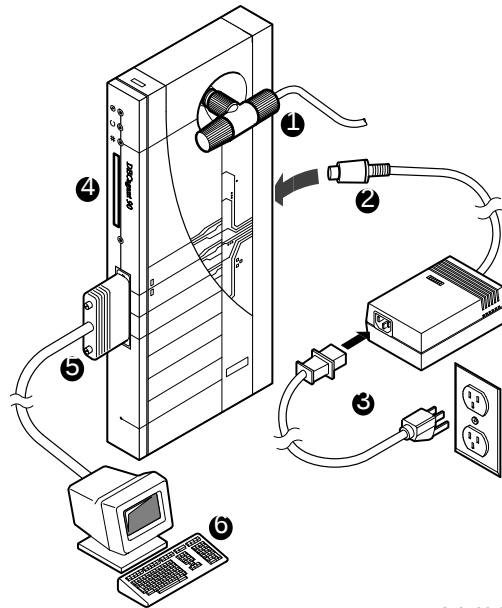
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Installing the Module

Installing the Module as a Standalone Unit

You can place the DECagent 90 on a table, mount it on a wall, or install it in a standard 19-inch rack using a shelf assembly, Digital part number H9544-MS.

- 1 Connect the Ethernet ThinWire T-connector to the network connector on the side of the module.
- 2 Connect the cable from the power supply to the 7-pin power connector on the back of the module.
- 3 Plug the power supply cable into the power supply, then into a wall outlet.
- 4 With power on, verify that the Power and Module OK LEDs are lit.
- 5 Connect a terminal cable to the setup port connector on the front of the module. Refer to page 9 for cable types.
- 6 Press Return a few times to establish a terminal connection.



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Installing the Module (Cont.)

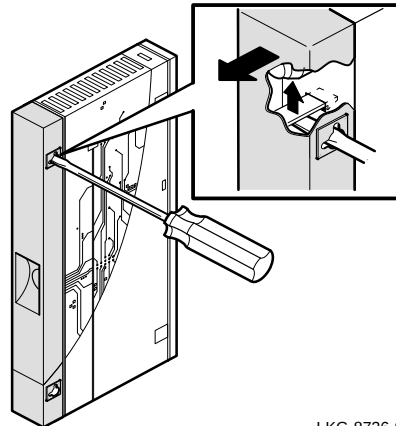
Installing the Module into a DEChub 90

The DECagent 90 hot-swap feature allows you to install the module into the DEChub 90 without turning off power to the hub. Seating the module initiates the powerup sequence.

1 Remove the back cover of the module.

If you want to install a standalone unit into a hub, you need to remove the back cover.

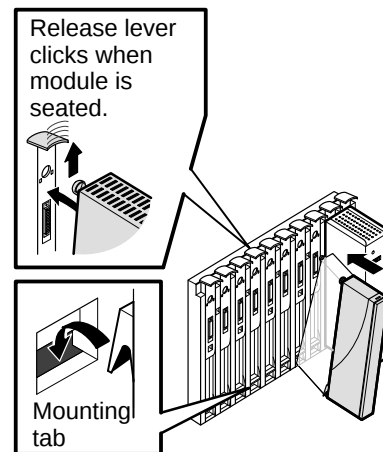
- a. Lift up the latch on the back cover by inserting a small, flat-blade screwdriver into the top mounting hole.
- b. With the latch up, pull the top of the back cover away, pivoting it around the bottom of the module.



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2 Seat the module into the DEChub 90.

- a. Place the module's mounting tab into slot 7 or 8 on the DEChub 90.
- b. Pivot the module on the mounting tab and align the connectors.
- c. Firmly push the module onto the backplane connectors until the release lever clicks.
- d. Press down on the release lever to ensure that it is locked.

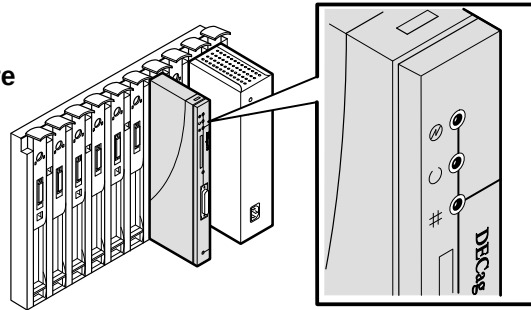


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Installing the Module (Cont.)

3 Verify that the module's Power LED and the Module OK LED are lit.

- a. The Power LED lights, and then the module performs a self-test.
- b. After the module completes the self-test, the Module OK LED lights and remains lit.

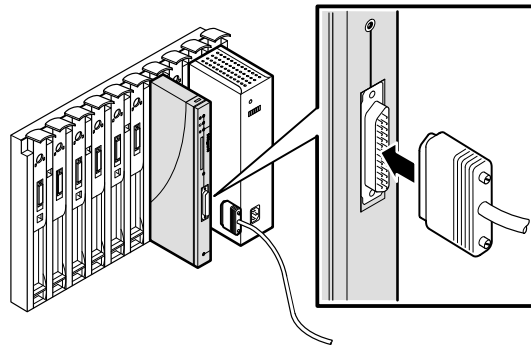


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NOTE: Refer to the Problem Solving Using the LEDs section if the LEDs do not operate as described.

4 Connect the setup port cable.

- a. Connect a terminal cable to the setup port connector on the front of the module. Refer to page 9 for cable types.
- b. Press **Return** a few times to establish a terminal connection.

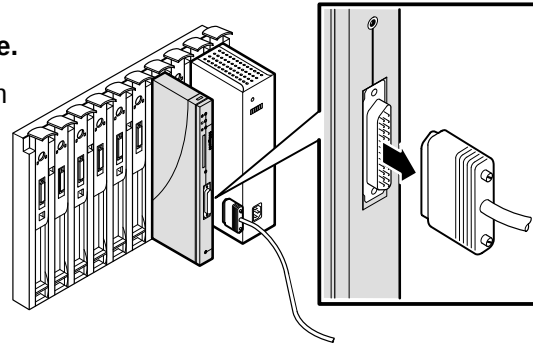


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Removing the Module

1 Disconnect the setup port cable.

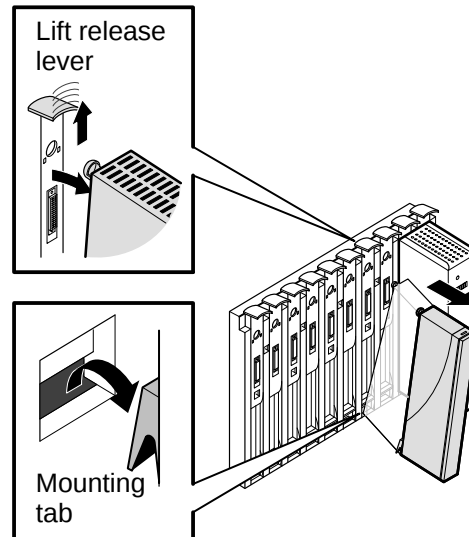
Remove the setup port cable from the setup port connector.



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2 Unseat the module from the DEChub 90.

- a. Lift the release lever located on the top of the DEChub 90 slot.
- b. Pivot the module back on its bottom mounting tab, and disengage the module from the backplane.



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Configuring the Module

Setup Port Description

The setup port allows you to access and set DECagent 90 parameters when the module is initially installed, and provides two methods of using out-of-band management. This section describes how to access the module from the setup port on the DECagent 90.

The signals from the DECagent 90 setup port conform to the EIA-232D signaling standard from 600 baud to 19.2k baud. The DECagent 90 provides an autobaud feature which sets the module port speed to the same baud rate as the setup port device. To the user, the port appears as a data terminal equipment (DTE) device.

The DECagent 90 allows you to set the IP address by using BOOTP services, or by selecting option 4 in the Agent Installation Menu. All other Agent Installation Menu options can be configured using Hubwatch.

Setup Port Cabling

The setup port on the DECagent 90 is a DB25 connector that can be connected to a setup port device (a terminal or personal computer), using the following cables and adapters.

Cable/Adapter Type ¹	Connecting Device
BC16E-xx/H8575-A	Terminal with 6-pin MMJ connector
BC22D-xx ²	Terminal with 25-pin D-Sub connector
H8575-A/BC16E-xx/H8571-J	PC with 9-pin D-Sub communications port

¹ Refer to the Connector Pin Assignments section for more information.

² BC22D is a standard 25-pin to 25-pin D-Sub null-modem cable.

Configuring the Module (Cont.)

Accessing the Setup Port on the Module

To access the setup port on the DECagent 90 module, do the following:

1. Connect the setup port device cable to the setup port connector on the DECagent 90.
2. Press **Return** on the setup port device a few times until the DECagent 90 Agent Installation Menu appears.

NOTE: If a password is set, you are required to enter the password to access the Agent Installation Menu. The factory default is no password.

Optional Setup Procedures

Once the Agent Installation Menu appears, you can configure the module by performing any of the following steps.

1. Select menu option 4, Set Agent IP Address/Gateway, and enter an IP address. If you want to obtain the IP address using BOOTP services, then leave the IP address set to the default of 0.0.0.0. If trap destinations extend beyond the subnet, you must enter a default gateway address.
2. If you need to change the read/write community string from the default value of PUBLIC, select menu option 5, Set Agent Read/Write Community. You can also change the read/write community string by using an SNMP manager, such as HUBwatch.
3. If you want to add trap addresses, select menu option 6, Add/Remove Trap Address. You can also modify the trap addresses by using an SNMP manager such as HUBwatch. If trap destinations extend beyond the subnet, you must enter a default gateway address by selecting menu option 4, Set IP Address/Gateway.

NOTE: If a DECagent 90 is configured in a DEChub 90, it discovers other modules in the hub except for a DECserver 90L and a DECserver 90L+. You must add these two module types manually by using an SNMP manager, such as HUBwatch.

Configuring the Module (Cont.)

Configuring Additional Hubs

The DECagent 90 is capable of managing up to 16 communities and up to 64 modules. A community can consist of an 8- or 16-slot DEChub 90, or an arbitrary grouping of standalone modules. The grouping of standalone modules is useful if you are managing more than 16 standalone DECserver 90L modules, for example. Configuring additional communities is accomplished by using an SNMP manager, such as HUBwatch.

Affecting Configuration Changes

The DECagent 90 provides nonvolatile storage of port name and administrative status parameters for all proxied repeater modules. Therefore, if a repeater is removed from a DEChub and the parameters have changed from their default values, the DECagent 90 saves the parameter status and uses it when the repeater is reinstalled in the same slot.

If a module other than a repeater is reinstalled in the slot, the DECagent 90 does not accept this new module, and a conflict message is displayed (both via readable SNMP objects and by the issuing of an SNMP trap). The DECagent 90 maintains the integrity of any manually set status information until the information is changed by the SNMP manager.

If you remove the initial repeater status information, the module can be removed from the DEChub. If a new module has replaced that repeater, it would be discovered at that time. If a repeater is removed from the hub, and the port names and administrative status remain at default values, then the repeater will be automatically removed from the configuration on the next poll cycle.

The DECserver 90L and early versions of the DECserver 90L+ are not autodiscovered, and you must manually add the module by using an SNMP manager, such as HUBwatch. Because these modules are added manually, you must ensure that they are installed into the correct DEChub and the correct DEChub slot; otherwise they eventually cause conflicts. You can resolve these conflicts by removing the DECserver 90L or DECserver 90L+ and then installing it in its correct location.

If you remove a DECserver 90L or a DECserver 90L+ from one hub and install it in another hub, you must manually delete it from its previous location and then add it to its new location by using an SNMP manager, such as HUBwatch.

Configuring the Module (Cont.)

Two Methods of Using Out-Of-Band Management

The DECagent 90 provides you with two methods of using out-of-band management.

- By using Agent Installation Menu options 13, 14, and 15, you can manage all devices listed in the Introduction section. Menu option 13 views module information, including module reachability and individual port status. Menu option 14 manages DECrepeater 90 modules. Menu option 15 manages DECbridge 90 modules or DECserver 90L or DECserver 90L+ modules.
- By using Agent Installation Menu option 12, you can switch the setup port into SLIP mode. In this mode, the setup port does not access the setup menu options, but instead provides a SLIP connection over which an SNMP manager communicates with the DECagent 90. The physical connection from the DECagent 90 setup port can be a direct line to the network management station by use of a modem, or by use of a serial line to a terminal server that supports SLIP.

Configuring the Module (Cont.)

DECagent 90 Agent Installation Menu

This section shows setup options available to you from the DECagent 90 Agent Installation Menu and describes the menu options.

NOTE: The Agent Installation Menu screen displays illustrated in this manual may vary slightly from the actual screen displays on your setup port device.

```
DECagent 90                                     All Rights Reserved
=====

                                AGENT INSTALLATION MENU

[ 1] Reset to Factory Defaults                    [10] Configure/Perform Downline Load
[ 2] Reset with Current Settings                  [11] Set Console Password
[ 3] Show Current Settings                       [12] Switch to SLIP Mode
[ 4] Set Agent IP Address/Gateway                [13] Show Community
[ 5] Set Agent Read/Write Community              [14] Enable/Disable Repeater Port
[ 6] Add/Remove Trap Address                    [15] Connect MOP
[ 7] Enable/Disable SNMP Sets                   [16] Start Event Logger
[ 8] Enable/Disable Downline Load              [17] Display Error Log Entries
[ 9] Enable/Disable Backplane Management        [18] Exit Console

=====

                                Enter selection :
```

Configuring the Module (Cont.)

[1] Reset to Factory Defaults

This option resets the module to the factory default settings. Selecting this option clears all the information the DECagent 90 knows about all communities and modules. The factory default state sets the module as a standalone agent with a community of 1.

Caution: If you enter y to confirm this selection, the current configuration settings are deleted and your agent is reset with the factory defaults. **All configuration settings will be lost.** Agent Installation Menu options 4 to 12, and 14, will be reset to the factory default settings.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 1 
DECagent 90                                           All Rights Reserved
=====

RESET AGENT TO FACTORY DEFAULTS

CAUTION: If you enter y to confirm this selection,
the current configuration settings are deleted
and your agent is reset with the factory defaults.

Press y to confirm [n] : y 

Resetting the DECagent 90 to factory defaults...
```

Configuring the Module (Cont.)

[2] Reset with Current Settings

This option resets the module using the current stored parameters.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 2 
DECagent 90                                     All Rights Reserved
=====

RESET AGENT

CAUTION: If you enter y to confirm this selection,
         the agent is reset. The current configuration
         settings are not affected.

Press y to confirm [n] : y 

Resetting the DECagent 90...
```

Configuring the Module (Cont.)

[3] Show Current Settings

This option shows the module's current settings.

NOTE: If the module is being configured for the first time, note that the configuration will be set to the factory default settings, and some fields will be blank.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 3 
DECagent 90                                     All Rights Reserved
=====

                          SHOW CURRENT SETTINGS

System Up Time           : 2:05:01
System Name              :
System Contact           :
System Location          :
Ethernet Address         : 08-00-2B-35-7C-C6
IP Address               : 16.20.40.156
Default Gateway          : 0.0.0.0
Read/Write Community     : test_lab
Console Port Speed       : 9600
Version Information      : HW=D01 ROM=BL05.00 SW=V2.0.0
=====

                          Press any key for Main Menu ...
```

Configuring the Module (Cont.)

[4] Set Agent IP Address/Gateway

This option prompts you for an IP address and a gateway address.

The format for an IP and gateway address is the standard 4-octet dotted decimal notation, where each octet of the address is represented as a decimal value, separated by a decimal point (.). A valid value in each field is 0 to 255 decimal.

The factory default of this menu option sets the IP address and the gateway address to 0.0.0.0.

NOTE: To remove an IP address or gateway address, enter 0.0.0.0 at the appropriate address prompt.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
                                Enter selection  :  4  
DECagent 90                                     All Rights Reserved
=====

                                IP ADDRESS CONFIGURATION

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

                                         example: 16.20.40.156

                                WARNING:  Setting the IP address to zero will initiate a reset
                                         of the agent. Upon restart, the agent will issue a
                                         BOOTP request to obtain an IP address.

=====

                                IP address [0.0.0.0] :  16.20.40.156 
                                IP address set!
                                Default Gateway Address [0.0.0.0] :  
                                Press any key for Main Menu...
```

Configuring the Module (Cont.)

[5] Set Agent Read/Write Community

This option prompts you to enter the community name.

The format for a community name is a string, consisting of up to 32 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.

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

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 5 
DECagent 90                                     All Rights Reserved
=====

SET AGENT READ/WRITE COMMUNITY

FORMAT: The SNMP read/write community string
        must be from 1 to 32 characters in length.

=====

R/W community string [public]: test_lab 
Read/Write Community name changed!

Press any key for Main Menu...
```

Configuring the Module (Cont.)

[6] Add/Remove Trap Address

This option allows you to add or remove SNMP trap addresses to or from the community trap address table. The maximum number of entries is eight.

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

The factory default of this menu option sets all trap addresses to 0.0.0.0.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
                                Enter selection : 6 
DECagent 90                                All Rights Reserved
=====

                                ADD/REMOVE TRAP ADDRESSES

Trap addresses for Community 1 (test_lab):

1.  0.0.0.0                                5.  0.0.0.0
2.  0.0.0.0                                6.  0.0.0.0
3.  0.0.0.0                                7.  0.0.0.0
4.  0.0.0.0                                8.  0.0.0.0

[ Note: Set an address to 0.0.0.0 to remove it. ]
=====

Change which address (1 - 8)> 1 
Enter new address [0.0.0.0] > 16.20.80.70 
New trap address stored.

Change which address (1 - 8)>
```

Configuring the Module (Cont.)

[7] Enable/Disable SNMP Sets

This option prompts you to enable or disable SNMP set commands. When SNMP sets are enabled, you can read module information and make changes to modules. When SNMP sets are disabled, you can read module information, but you cannot change module information.

The factory default of this menu option sets enable/disable SNMP sets to enable.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 7 
DECagent 90                                     All Rights Reserved
=====
ENABLE/DISABLE SNMP SETS
SNMP SETS is currently enabled.
=====
Disable SNMP SETS [n]? y 
SNMP Sets disabled.
Press any key for Main Menu...
```

Configuring the Module (Cont.)

[8] Enable/Disable Downline Load

This option prompts you to enable or disable downline loads to the DECagent 90.

The factory default of this menu option sets enable/disable downline load to enable.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 8 
DECagent 90                                     All Rights Reserved
=====
ENABLE/DISABLE DOWNLINE LOAD
DOWNLINE LOAD is currently enabled.
=====
Disable DOWNLINE LOAD [n]? y 
Downline load disabled.
Press any key for Main Menu...
```

Configuring the Module (Cont.)

[9] Enable/Disable Backplane Management

This option allows you to enable or disable network management capabilities from the DEChub 90 backplane. When this option is enabled, the DECagent 90 is capable of discovering all DECrepeaters modules, all DECbridge modules, and most DECserver modules that are located in the same backplane as the DECagent 90.

NOTE: This option is set to enable when only one DECagent 90 is installed in a hub. If multiple DECagent 90 modules are installed in a hub, you should enable only one, ensuring consistent backplane management on powerup. All other DECagent 90 modules should have this option set to disable.

The factory default of this menu option sets enable/disable backplane management to enable.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 9 

DECagent 90                                     All Rights Reserved
=====

      ENABLE/DISABLE BACKPLANE MANAGEMENT

      BACKPLANE MANAGEMENT is currently enabled.

=====

Disable BACKPLANE MANAGEMENT [n]? y 
Backplane Management disabled.

      Press any key for Main Menu ...
```

Configuring the Module (Cont.)

[10] Configure/Perform Downline Load

This option allows you to configure or downline load DECagent 90 firmware.

The factory default of this menu option sets the host IP address to 0.0.0.0.

The following is an example of the dialog associate with this option (user response is in boldface type).

```
=====
                                Enter selection : 10 
DECagent 90                                All Rights Reserved
=====
                                CONFIGURE TFTP DOWNLINE LOAD

                                You will be prompted for the IP host address and Load filename.
                                You may then initiate a load if desired.

=====

                                HOST IP ADDRESS

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

                                example: 16.20.40.156

=====

                                (The last TFTP load status was: None)

                                Host IP address [0.0.0.0] : 16.20.40.156 
                                Load Filename (1-64 chars)
                                Old:
                                New: filename.ext 
                                START LOAD NOW [n]? y 

                                Load in Progress ...
```

NOTE: Once the downline load is complete (1 to 2 minutes), press a few times to return to the Agent Installation Menu.

Configuring the Module (Cont.)

[11] Set Console Password

This option prompts you to set or remove a password for the console. A password must contain a minimum of 1 character and not exceed a maximum of 15 characters. The password is not echoed on the screen.

The DECagent 90 is shipped from the factory without a password. Once a password is entered and saved, it is stored in nonvolatile memory until a new password is selected or until the word `delete` is entered. Resetting or turning off power to the DECagent 90 does not destroy the password.

The factory default of this menu option deletes the password.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 11 

DECagent 90                                     All Rights Reserved
=====

SET CONSOLE PASSWORD

FORMAT: The password may not exceed 15 characters.
Only letters [a-z, A-Z] and digits [0-9] are allowed.
To remove the password entirely, enter the word
'delete' at both prompts. Note that the password
is not case sensitive.

=====

Enter new password >
Verify new password >
New password saved.

Press any key for Main Menu ...
```

Configuring the Module (Cont.)

[12] Switch to SLIP Mode

This option allows you to use out-of-band management (OBM) using the Serial Line Internet Protocol (SLIP). Once you switch to this mode, you can manage the DECagent 90 using any SNMP-compliant network management station (NMS) that supports a SLIP connection.

When you select this option, the screen prompts you to ensure that you want to switch to this mode. Once you switch to SLIP mode, you can return to console mode only by recycling the DECagent power or by resetting the DECagent through network management software, such as HUBwatch.

The factory default of this menu option sets the SLIP mode to reset.

To switch to SLIP mode, perform the following steps:

1. From the Agent Installation Menu, select option 12, Switch to SLIP Mode, and press .
2. At the Set to SLIP mode [n]? prompt, press **y** and .
3. Disconnect the cable from the terminal to the DECagent 90.
4. Connect the cable from the network management station, PC, or modem to the DECagent 90.

Configuring the Module (Cont.)

[12] Switch to SLIP Mode (Cont.)

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 12 
DECagent 90                                     All Rights Reserved
=====

SET CONSOLE TO SLIP MODE

Caution: Enabling SLIP mode terminates this console session.
Console operation may only be reestablished via a reset.

=====

Set to SLIP mode [n]? y 

SLIP mode enabled.
```

Configuring the Module (Cont.)

[13] Show Community

This option allows you to display detailed community information.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 13 
DECagent 90                                     All Rights Reserved
=====

                        SHOW COMMUNITY

Index      Type      Community
-----
1          DEHub 90-8  test_lab
2          Standalone private1
3          DEHub 90-16 finance
4          DEHub 90-8  accounting
5          Standalone private2
6          DEHub 90-8  public1
7          Standalone private3
8          DEHub 90-8  public2
=====

Enter Community Index : 1 
```

Configuring the Module (Cont.)

[13] Show Community (Cont.)

```
Enter Community Index : 1

DECagent 90                                     All Rights Reserved
=====

Community 1 : test_lab

Slot      Type      Mac/IP Address      Reachable  Port Status Map
      1 2 3 4 5 6 7 8
-----
1  DECRepeater 90T          Yes      x x x x x - + +
2  DECRepeater 90T          Yes      x x x x x - + +
3  DECRepeater 90FL        Yes      x x x x
4  DECserver 90L+  08-00-2B-2F-71-3D  Yes      - - - - - - -
5  DECRepeater 90C          Yes      x x x x x -
6  DECserver 90TL  08-00-2B-A3-50-69
7  DECagent 90    08-00-2B-35-7C-C6  Yes
8  DECbridge 90   08-00-2B-1D-DD-0E  Yes      + +

[ (+) Active (-) Inactive (x) Management Disabled (?) Data Unavailable ]

Press any key for Main Menu ...
```

Configuring the Module (Cont.)

[14] Enable/Disable Repeater Port

This option prompts you to enable or disable repeater ports.

The factory default of this menu option sets enable/disable repeater port to enable.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 14 
DECagent 90                                     All Rights Reserved
=====

      ENABLE/DISABLE REPEATER PORTS

  FORMAT: Enter the community number and slot number of the
          repeater, separated by the '/' character.
          example: 1/6

      Or, enter the community name and slot number,
          separated by the '/' character.
          example: test_lab/6

=====

Repeater community/slot > 1/1 
```

Configuring the Module (Cont.)

[14] Enable/Disable Repeater Port (Cont.)

```
Repeater community/slot > 1/1
```

```
Community 1 (test_lab) Slot 1: DECrepeater 90T
```

Port	Admin Status
1	disabled
2	enabled
3	enabled
4	enabled
5	enabled
6	enabled
7	enabled
8	enabled

```
Toggle which port > 3  
Repeater port 3 has been enabled.
```

```
Press any key for Main Menu ...
```

Configuring the Module (Cont.)

[15] Connect MOP

This option prompts you to connect to a remote device when using the MOP protocol. By establishing a remote console session, you can manage remote devices, such as servers and bridges, or manage a DECrepeaters via a DECbridge. You can specify the device by either its network address or its community/slot number.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 15 
DECagent 90                                     All Rights Reserved
=====

CONNECT MOP

FORMAT: The standard 6 octet dashed hexadecimal notation in
        which each hex octet is separated by the '-' character.
        example: 08-00-2b-12-34-56

Or, enter the community number and slot number,
        separated by the '/' character.
        example: 1/6

Or, enter the community name and slot number,
        separated by the '/' character.
        example: test_lab/6

=====

Connect to : 2/6 
```

Configuring the Module (Cont.)

[15] Connect MOP (Cont.)

```
Connect to : 2/6

Attempting connection to: 08-00-2B-1D-DD-0E

Press ^D to end MOP session.

DECbridge 90 V1.14 08-00-2B-1D-DD-0E ©1991 Digital Equipment Corp
FPRM V3.1 ©1991,93 Digital Equip Corp 5-APR-93

DECbridge> SHOW BRIDGE
DECbridge 90 V1.14 08-00-2B-1D-DD-0E ©1991 Digital Equipment Corp
FPRM V3.1 ©1991,93 Digital Equip Corp 5-APR-93
Bridge states:
  Console owner: 08-00-2B-35-7C-C6 Uptime: 92,912.88 seconds
  Bridge state: 17                               Work group size: 2
  Hub mgmt enable: 1                             Spanning tree enable: 1
  Flash ROM erasures: 4                         Address lifetime: 455*2 sec.
Event counters:
  Sys buffer unavail. errors: 0
  WG size exceeded errors: 0

Spanning tree parameters:
  Bridge id:      FF-FF-08-00-2B-1D-DD-0E      Root port: 1
  Designated_root: 00-80-08-00-2B-03-4E-69    Root path cost: 20
  Current Forward delay: 15, Hello interval: 1, Listen time: 15
  Def. Forward delay: 15, Hello interval: 1, Listen time: 15
  Topology change flag: 0   Topology change timer: 30
  Bad hello limit: 15      Bad hello reset interval: 5
  Epoch_mode: 1Epoch1 who: 00-00-00-00-00-00  Mode changes: 1
  Epoch 1 poll time: 18 seconds   Epoch 1 response time: 15 seconds

DECbridge> Ctrl + D
Remote MOP session disconnected!

Press any key to return to local console...
```

Configuring the Module (Cont.)

[16] Start Event Logger

This option prompts you to start the event logger.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 16 
DECagent 90                                     All Rights Reserved
=====

START EVENT LOGGER

The Event Logger reports changes in module population
and module status.

Press any key to start event log [^C to abort] ...

Starting Event Logger
Press ^C to abort at any time

0:04:45 Community 1 (test_lab) Slot 3 Removed
0:05:05 Community 1 (test_lab) Slot 3 DECrepeater 90T Inserted
0:05:25 Community 1 (test_lab) Slot 1 DECrepeater 90T Conflict
Conflict: Discovered type = Empty
```

Configuring the Module (Cont.)

[17] Display Error Log Entries

This option prompts you to display error log entries. The eight most recent events are stored in the error log table and are displayed using this option. The types of events that can be logged include software fatal errors, traps, processor exceptions, factory resets, and software updates.

The following is an example of the dialog associated with this option (user response is in boldface type).

```
=====
Enter selection : 17 

DECagent 90                                     All Rights Reserved
=====

      ERROR LOG DISPLAY
      (Most Recent First)

User requested reset-to-factory settings.
      Reset count: 11, Timestamp:  0 0:17:21
Fatal Trap, Line: 270, File: db_dynamic.c
      Reset count: 10, Timestamp:  0 2:18:34
Bus/Address Error Trap, PC: 014806, SR: 2600, Address: 014879
      Reset count:  7, Timestamp:  0 11:17:13
User requested reset-to-factory settings.
      Reset count:  3, Timestamp:  0 18:33:09
Front panel reset-to-factory settings.
      Reset count:  1, Timestamp:  0 23:28:00

      Press any key for Main Menu ...
```

Configuring the Module (Cont.)

[18] Exit Console

This option allows you to exit console mode. If a console password is set, you will need it to reestablish a console session. If a password is not set, this option does not ask you to enter a password.

Once the Ending console session... message is displayed, press **Return** a few times. Either the Agent Installation Menu appears if a password is not set, or the Enter password > message appears if a password is set.

The following is an example of the dialog associated with this selection (user response is in boldface type).

```
=====
Enter selection : 18 Return
DECagent 90                                     All Rights Reserved
=====
EXIT CONSOLE
Press y to confirm [n] : y Return
Ending console session...
```

LED Summary

The module LEDs provide dynamic indications of the status of the module. The LEDs can be in various states (on, off, or flashing).

Table 1 shows the static states that are possible for each of the module LEDs.

Table 1: Module LEDs

LED Name	Off	On	Flashing
Power	No power to module.	Module receiving power.	Faulty power connection, or insufficient power.
Module OK	Self-test failed.	Module passed self-test.	Broken state.
Network OK	No network connection	Connected to network.	Broken state.
Network Activity	No network activity.	Indicates the level of activity on the network.	Indicates the level of activity on the network.
Network OK and Network Activity	No network activity.	N/A	The DECagent 90 IP address is not set.

Problem Solving Using the LEDs

Table 2 lists the typical 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.

Initial Powerup

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

1. The Power LED lights and remains lit. All other LEDs light briefly and then turn off. This verifies that the individual LEDs are operational (defective LEDs do not light).
2. After the successful completion of self-test, the Module OK LED lights and remains lit.
3. The remaining LEDs (Network OK and Network Activity) now indicate their operational status, as described in Table 2.

Table 2: Problem Solving Using the LEDs

Symptom	Probable Cause	Corrective Action
Power LED is off.	The module is not receiving +5Vdc.	Check the power LED on the DEChub 90. If power LED is lit, reseal or remove the module. Inspect the module's 48-pin connector for bent, broken, or dirty pins. If the module is in a standalone configuration, check all power supply connections. If the problem persists, replace the module.

Problem Solving Using the LEDs (Cont.)

Table 2: Problem Solving Using the LEDs (Continued)

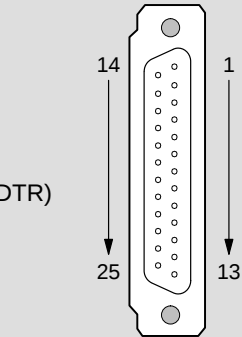
Symptom	Probable Cause	Corrective Action
Power LED is flashing.	The module connection is faulty.	Reseat the module.
	Faulty DEChub slot connection.	Reinstall the module into another slot.
	DEChub 90 power supply is faulty.	Replace the power supply.
	Standalone power supply is faulty.	Replace the power supply.
	DECagent 90 is faulty.	Replace the module.
Module OK LED is off.	Self-test is in progress.	Wait for self-test to complete.
	Self-test failed.	If the LED does not light, remove the module and reinsert it to repeat the self-test. If self-test fails again, replace the module.
Module OK LED is flashing.	FLASH firmware image is bad.	Downline load new FLASH firmware image.
Network OK LED and Network Activity LED alternately flash.	The DECagent 90 IP address is not set.	Refer to Configuring the Module section of this manual and set agent IP address.

Connector Pin Assignments

Setup Port (DB25) Connector

The following illustration shows the setup port connector and its pin assignments:

<u>Pin</u>	<u>Assignment</u>	<u>Pin</u>	<u>Assignment</u>
1	Protective Ground	14	Unused
2	Transmit Data	15	Unused
3	Receive Data	16	Unused
4	Request to Send (RTS)	17	Unused
5	Clear to Send (CTS)	18	Unused
6	Data Set Ready (DSR)	19	Unused
7	Signal Ground (GND)	20	Data Terminal Ready (DTR)
8	Carrier Detect (CD)	21	Unused
9	Unused	22	Ring Indicator (RI)
10	Unused	23	Unused
11	Unused	24	Unused
12	Unused	25	Unused
13	Unused		

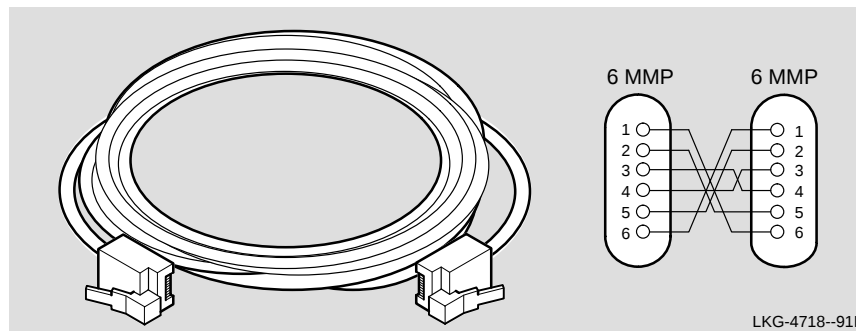


RS-232 DB25 connector

LKG-8732-93I

BC16E Cable

The following illustration shows the BC16E cable and its pin assignments.

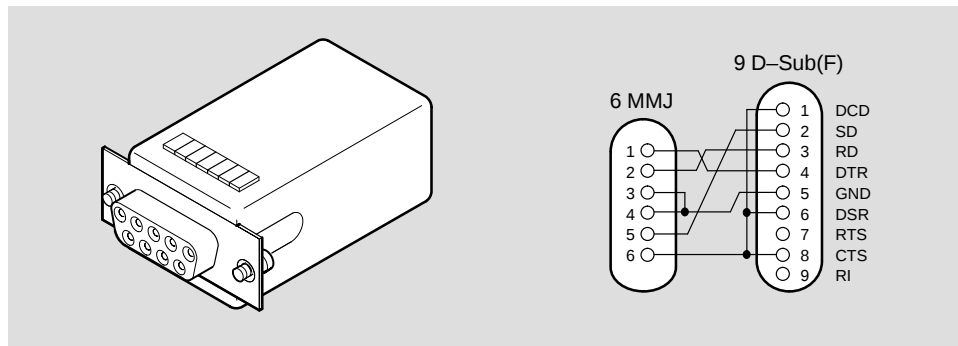


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Connector Pin Assignments (Cont.)

H8571-J Connector

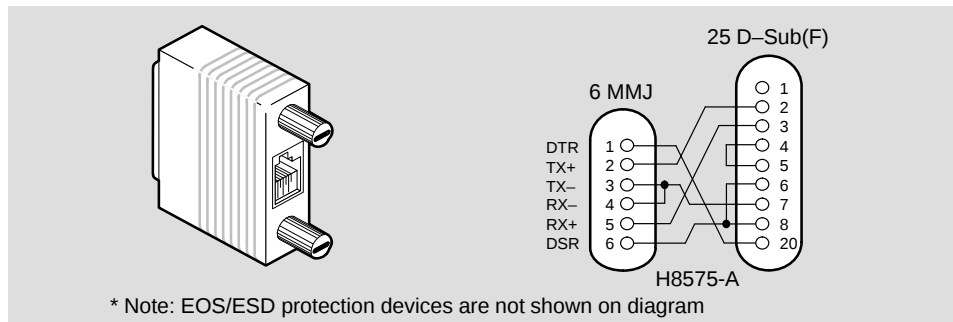
The following illustration shows a 9-pin D-Sub to 6-pin MMJ connector and its pin assignments:



LKG-5342-911

H8575-A Connector

The following illustration shows a 25-pin D-Sub to 6-pin MMJ connector and its pin assignments:



* Note: EOS/ESD protection devices are not shown on diagram

LKG-8793-931

Accessing MIBs and RFCs

This section describes how to access Digital's private Management Information Base (MIB) and Request For Comments (RFCs).

Public MIBs can be accessed over the Internet network using any of the following methods:

- Electronic mail
- `ftpmail`
- Anonymous `ftp`

You can use these methods to access up-to-date MIBs, as described in the following sections.

Using Electronic Mail

The DDN Network Information Center (NIC) of SRI International provides automated access to NIC documents and information through electronic mail. This is especially useful for people who do not have access to the NIC from a direct Internet link, such as BITNET, CSNET, or UUCP sites.

To use the mail service, follow these instructions:

1. Send a mail message to `SERVICE@NIC.DDN.MIL`.
2. In the SUBJECT field, request the type of service that you want, followed by any needed arguments.

Normally the message body is ignored, but if the SUBJECT field is empty, the first line of the message body is taken as the request. The example at the end of the Using `ftpmail` section lists some of the services available.

Requests are processed automatically once a day. Large files are broken down into separate messages. However, a few files are too large to be mailed.

Accessing MIBs and RFCs

Using ftpmail

Digital offers Internet `ftpmail` access to private MIB information, in ASCII text form, at `GATEKEEPER.DEC.COM`, with up-to-date documents stored in the directory `/private/mib`. Check the `INDEX` file and the `README` file for the current contents.

To use `ftpmail`, follow these instructions:

1. Send a mail message to `ftpmail@gatekeeper.dec.com`.
2. Ignore the subject line.
3. Include the word "connect" in the first line of the body.
4. Include `get` commands for each document required, for example:
`get /private/mib/README`

Requests are acknowledged, then queued and processed every 30 minutes. Because of the number of requests, it may take a day or two before you receive a reply.

NOTE

For more timely access, consider using anonymous `ftp` (refer to the Using Anonymous `ftp` section).

Accessing MIBs and RFCs

The following are example SUBJECT lines to obtain DDN NIC documents:

HELP

RFC 822

RFC INDEX

RFC 1119.PS

FYI 1

IETF 1IETF-DESCRIPTION.TXT

INTERNET-DRAFTS 1ID-ABSTRACTS.TXT

NETINFO DOMAIN-TEMPLATE.TXT

SEND RFC: RFC-BY-AUTHOR.TXT

SEND IETF/1WG-SUMMARY.TXT

SEND INTERNET-DRAFTS/DRAFT-IETF-NETDATA-NETDATA-00.TXT

HOST DIIS

Accessing MIBs and RFCs

Using Anonymous ftp

You can obtain RFCs and up-to-date MIBs from Digital using anonymous ftp.

Digital offers Internet anonymous ftp access to private MIB information, in ASCII text form, at GATEKEEPER.DEC.COM, with up-to-date documents stored in the directory /private/mib. Check the INDEX file and the README file for the current contents.

To use anonymous ftp to copy files, follow these instructions:

NOTE

User input is case sensitive; you must type it as shown.

1. Use the Internet application ftp to connect to gatekeeper.dec.com. The Internet address is 16.1.0.2.
2. Log in as user anonymous.
3. Use your electronic mail address as the password.
4. Use the cd command to get to the directory /private/mib.
5. Use the ascii command to specify that you are retrieving ASCII text files.
6. Use the get command to get the file, or files, that you require.
7. Use the quit command to log out when you are finished.

Accessing MIBs and RFCs

The following example shows how to copy the README file from the repository:

NOTE

In the following example, user input is shown in **bold** text.

```
% ftp gatekeeper.dec.com
Connected to gatekeeper.dec.com
220 GATEKEEPER.DEC.COM FTP Service Process
Name: anonymous
331 ANONYMOUS user ok, send real ident as password.
Password: milano@netman.stateu.edu
230 User ANONYMOUS logged in at Tue 10-Aug-1993 10:24-EST, job 54.
ftp> cd /private/mib.
331 Default name accepted. Send password to connect to it.
ftp> ascii
220 Type A ok.
ftp> get README
200 Port 19.54 at host nnn.nn.nn.nn accepted.
150 ASCII retrieve of /private/mib/README started.
226 Transfer completed. 40239 (8) bytes transferred.
40239 bytes received in 23.65 seconds (5.8 Kbytes/s)
ftp> quit
%
```

Product Specifications

Table 3 lists the DECagent 90 physical, environmental, and certification specifications.

Table 4 lists the DECagent 90 acoustical specifications.

Table 3: Operating Specifications

Parameter	DECagent 90	As a Standalone Unit
Physical		
Height	27.3 cm (10.8 in)	27.3 cm (10.8 in)
Width	3.2 cm (1.2 in)	3.2 cm (1.2 in)
Depth	11.2 cm (4.4 in)	13.7 cm (5.4 in)
Weight	0.68 kg (1.5 lb)	0.77 kg (1.7 lb)
Operating Environment		
Operating Temperature ¹	5° C to 50° C (41° F to 122° F)	5° C to 50° C (41° F to 122° F)
Relative Humidity	10% to 95% noncondensing	10% to 95% noncondensing
Altitude	Sea level to 4900 m (16,000 ft)	Sea level to 4900 m (16,000 ft)
Power	7W @+5Vdc, 2W@ +12Vdc	7W @+5Vdc, 2W@ +12Vdc
Connectors	DB25	DB25
Certification		
	CSA, FCC,TÜV, UL, VCCI, VDE	CSA, FCC,TÜV, UL, VCCI, VDE

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.

Product Specifications (cont.)

Table 4: Acoustical Specifications

Parameter	DECagent 90	As a Standalone Unit
Acoustics: Preliminary declared values per ISO 9296 and ISO 7779	No acoustic noise	No acoustic noise
Schallemissionswerte: Vorläuge Werteangaben nach ISO 9296 und ISO 7779/DIN EN27779	keine meßbaren Schallemissionen	keine meßbaren Schallemissionen

Associated Documents

<i>DEChub 90 Owner's Manual EK-DEHUB-OM</i>	Provides information for installing, configuring, and troubleshooting the DEChub 90.
<i>DEChub 900 MultiSwitch Owner's Manual EK-DH2MS-OM</i>	Provides information for installing, configuring, and troubleshooting the DEChub 900.
<i>HUBwatch Installation and Configuration AA-Q0FXA-TE</i>	Provides information for installing HUBwatch software on a workstation or PC and managing the DEChub 90 and the DEChub 900.
<i>HUBwatch Use AA-PW4BB-TE</i>	Provides network management, DEChub module management, and DEChub functionality information.
<i>HUBwatch for Windows V1.1 User Information AA-Q1VVA-TE</i>	Provides network management, DEChub module management, and DEChub functionality information in a windows environment.
<i>Using DECndu Plus (MS-DOS) AV-PYVVA-TE</i>	Provides instructions to upgrade the firmware in an MS-DOS environment of selected network devices using Digital's Network Device Upgrade (DECndu) Plus utility.
<i>Using DECndu Plus (ULTRIX RISC) AV-PYVTA-TE</i>	Provides instructions to upgrade the firmware in an ULTRIX RISC environment of selected network devices using Digital's Network Device Upgrade (DECndu) Plus utility.
<i>Using DECndu Plus (OpenVMS VAX) AV-PYVRA-TE</i>	Provides instructions to upgrade the firmware in an OpenVMS VAX environment of selected network devices using Digital's Network Device Upgrade (DECndu) Plus utility.

HOW TO ORDER ADDITIONAL DOCUMENTATION

DIRECT TELEPHONE ORDERS

In Continental USA
call 1-800-DIGITAL
(1-800-344-4825)

In Canada
call 1-800-267-6215

In New Hampshire,
Alaska or Hawaii
call 1-603-884-6660

ELECTRONIC ORDERS (U.S. ONLY)

Dial 1-800-dec-demo with any VT100 or VT200
compatible terminal and a 1200 baud modem.
If you need assistance, call 1-800-DIGITAL (1-800-344-4825)

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

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

DIRECT MAIL ORDERS (Canada)

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

INTERNATIONAL

DIGITAL EQUIPMENT CORPORATION
A&SG Business Manager
c/o Digital's local subsidiary
or approved distributor

Internal orders should be placed through Publishing and Circulation Services (P&CS),
Digital Equipment Corporation, 444 Whitney Street, NRO2, Northboro, Massachusetts 01532-2597

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

DECagent 90 Installation and Configuration
EK-DENMA-IN. A01

Please return this card.

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

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

Were the instructions easy to follow? _____

Were the instructions complete? _____

Were they in the proper sequence? _____

Which chapters or sections were most helpful? _____

Did you use the appendixes? _____ Which ones? _____

Were the illustrations helpful? _____ All? _____ Some? _____ Which ones? _____

Were some illustrations unnecessary? _____ Which ones? _____

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

Thank you.

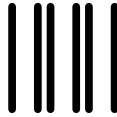
Name _____ Date _____

Title _____ Department _____

Organization _____ Street _____

City _____ State/Country _____ Zip Code _____

DO NOT CUT – FOLD HERE AND TAPE



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

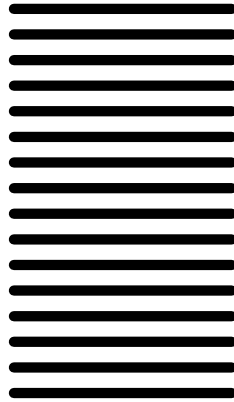
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