

# DECagent 90

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## Installation and Configuration

Part Number: EK-DENMA-IN. B01

**May, 1995**

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

**Revision/Update Information:** This is a revised manual.

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May, 1995

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**Attention!**

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

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## Safety

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

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<b>WARNING</b>	Contains information to prevent personal injury.
<b>CAUTION</b>	Contains information to prevent damage to equipment.

---

<b>VORSICHT</b>	Enthält Informationen, die beachtet werden müssen, um den Benutzer vor Schaden zu bewahren.
<b>ACHTUNG</b>	Enthält Informationen, die beachtet werden müssen, um die Geräte vor Schaden zu bewahren.

---

<b>DANGER</b>	Signale les informations destinées à prévenir les accidents corporels.
<b>ATTENTION</b>	Signale les informations destinées à prévenir la détérioration du matériel.

---

<b>AVISO</b>	Contiene información para evitar daños personales.
<b>PRECAUCIÓN</b>	Contiene información para evitar daños al equipo.

---

## Safety (Cont.)

---

### CAUTION

This action deletes all configured settings and replaces them with factory default values. All configuration settings will be lost. [Page 17.]

### 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.

---

## 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 and responds to SNMP queries for those devices listed in Table 1.

**Table 1: Devices Receiving SNMP Proxy Support from DECagent 90**

Existing Devices	New Devices	Upgraded Devices
DECbridge 90	DECrepeater 90T-16	DECrepeater 90FS (V2.0)
DECbridge 90FL		DECrepeater 90TS (V2.0)
DECrepeater 90C		
DECrepeater 90FA		
DECrepeater 90FL		
DECrepeater 90T		
DECrepeater 90T+		
DECserver 90L		
DECserver 90L+		

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 90. The DECagent 90 can manage all DECrepeaters in a hub using the DEChub management bus, and manages some DECrepeaters in a remote hub where a DECbridge 90 is installed. Those DECrepeaters that can be managed in a remote hub with a DECbridge 90 are: DECrepeater 90C, DECrepeater 90T and DECrepeater 90T+, DECrepeater FA, and DECrepeater FL.

## Introduction (Cont.)

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

**NOTE:** The DECserver 90L and DECserver 90L+ must be manually added to the DECagent configuration using a Network Management Station (NMS), such as HUBwatch. The DECagent 90 recognizes the DECserver 90L+ using the autodiscovery feature for hardware revision B02, C02, and D02, and firmware revision 5.2 or higher.

One DECagent 90 can manage as many as 16 interconnected hub communities (a group of network modules connected to a common hub) and 48 network modules. All hubs are identified by their unique community string.

The DECagent 90 continually polls modules for certain critical data and stores the data in cache. When SNMP requests this data, it is returned from cache. Storing module information in cache speeds up the SNMP response time.

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

System managers using the HUBwatch software with the DECagent 90 can manage their network from a PC or workstation that supports native SNMP and is 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

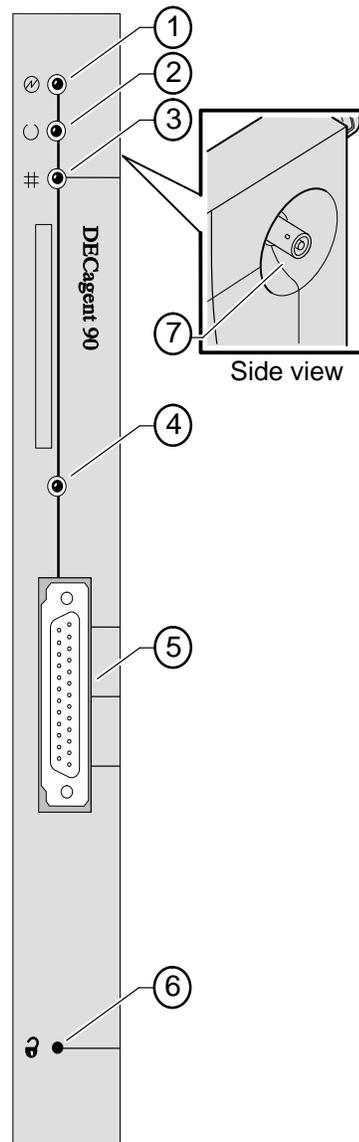
The DECagent 90 network module:

- Has hot-swap capability
- Does not need a downline load at powerup
- Supports the Serial Line Internet Protocol (SLIP)
- Supports the Trivial File Transfer Protocol (TFTP)
- Can downline load the agent's firmware using the HUBwatch HUBloader software or any system that supports the TFTP protocol
- Can be directly managed through SNMP
- Stores management information base (MIB) settings in battery-backed RAM
- Supports out-of-band management (OBM) using SLIP over the setup port
- Has emergency management capability using an ASCII console
- Supports direct DEChub 90 backplane management (DECbridge modules are not required for DEChub population and DECreepeater module management)
- Has error-logging capabilities
- Uses SNMP proxy management. See Table 1, for a list of devices.
- Supports up to 16 communities and up to 48 modules
- Provides enterprise-specific traps for population change, module/port status change, and more
- Can be configured in a DEChub 90, DEChub 900 MultiSwitch, Digital's stackable products, 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 blackplane Ethernet port by an on, off, or flashing state.
- 4) **Network Activity LED** – Indicates network traffic level.
- 5) **Setup port connector** – Provides a connection to the DECagent 90 through a terminal or PC.
- 6) **Reset to Factory Defaults switch** – Resets the DECagent 90 to its 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 when operating as a standalone unit or in a Digital stackable product. This feature is not used when the DECagent 90 is installed in a DEChub.

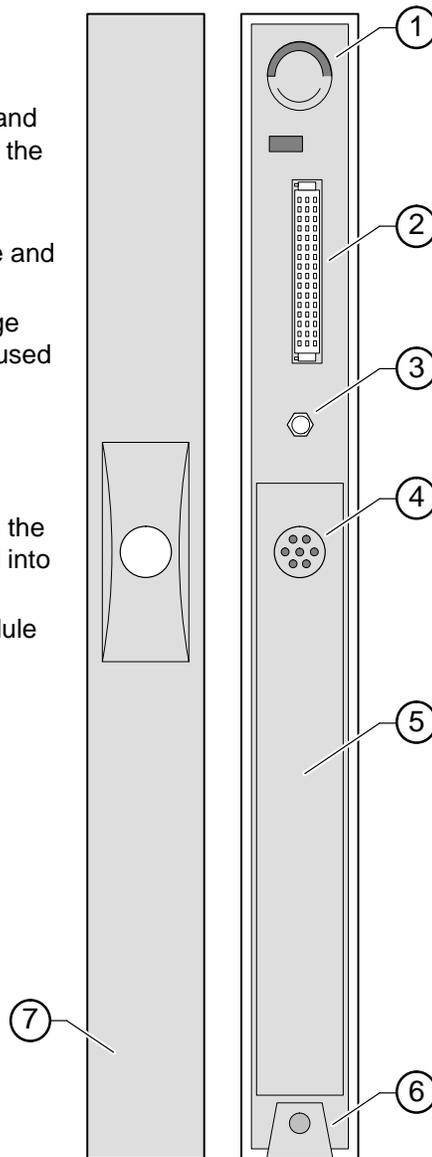
**NOTE:** Refer to the LED Description section for more information about LED operation.



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## Back Panel

- 1) **Locking tab** – Locks the module into a DEChub backplane.
- 2) **48-pin connector** – Provides network and power connections to the module when the module is installed in a DEChub.
- 3) **Grounding bolt** – Provides a common ground 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 standalone.
- 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.



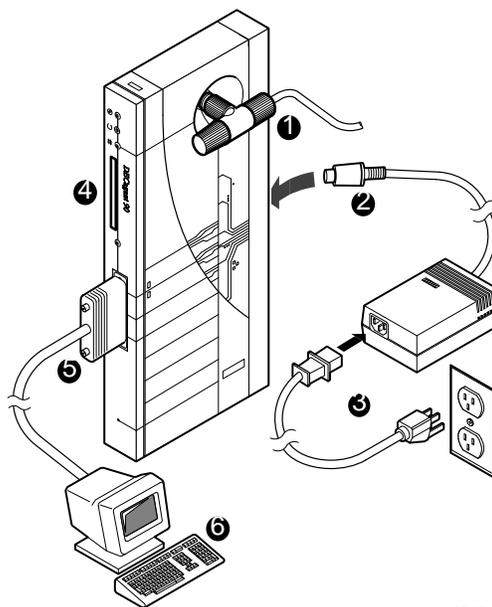
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## Installing the Module

### Installing the Module as a Standalone Unit

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 10 for cable types.
- 6 Press  a few times to establish a terminal connection.



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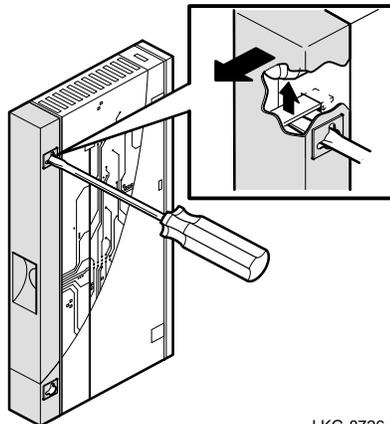
## Installing the Module (Cont.)

### 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. A small, flat-blade screwdriver is required for installation.

#### 1 Remove the back cover of the DECagent 90.

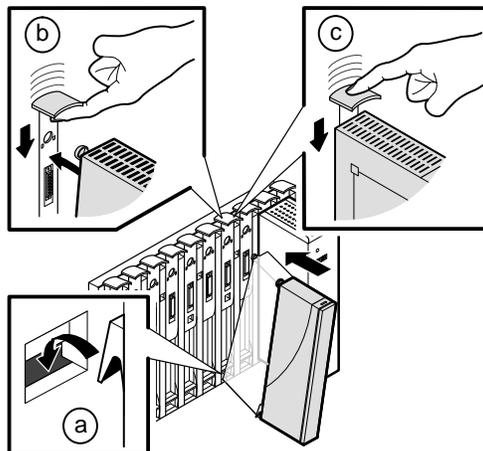
- a. Lift up the latch on the back cover by inserting a small, flat-blade screwdriver into the top mounting hole.
- b. With the latch up, pull the top of the back cover away, pivoting it around the bottom of the module.



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#### 2 Seat the DECagent 90 into the DEChub 90, slot 7 or 8.

- a. Pivot the module on the mounting tab and align the connectors as illustrated.
- b. Pull up on the release lever and firmly push the module onto the backplane connectors until the release lever clicks.
- c. Press down on the release lever to ensure that it is locked.

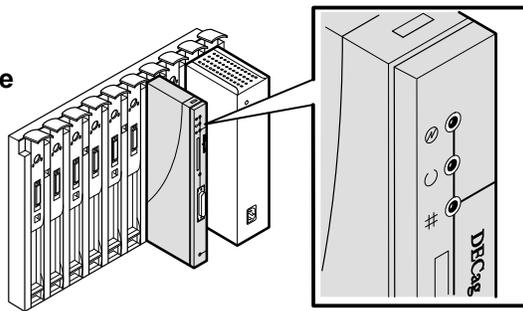


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## Installing the Module (Cont.)

**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.

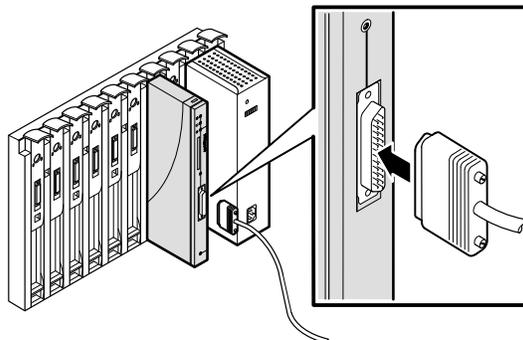


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**NOTE:** Refer to the Problem Solving Using the LEDs section if the LEDs do not operate as described.

**4** Connect the setup port cable.

- a. Connect a terminal cable to the setup port connector on the front of the module. Refer to the Setup Port Cabling section for cable types.
- b. Press  a few times on the console terminal to establish a connection.

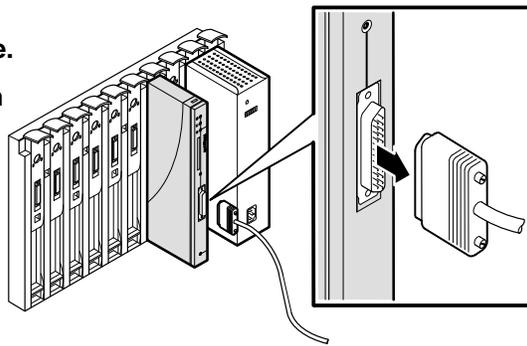


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## Removing the Module

### 1 Disconnect the setup port cable.

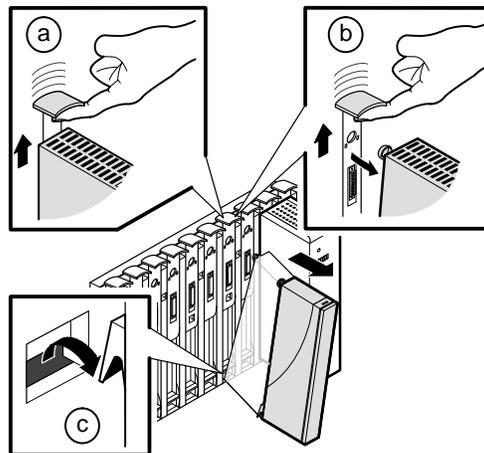
Remove the setup port cable from the setup port connector.



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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. While keeping the release lever lifted, pivot the module back on its bottom mounting tab.
- c. Lift the module from the backplane.



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## Configuring the Module

This section describes how to configure the DECagent 90 network module. It uses menus and screens to illustrate processes and uses **boldface** type to show user input in screen dialogs.

### 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 (typically a terminal). 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), with the following cables and adapters.

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

<sup>1</sup> Refer to the Connector Pin Assignments section for more information.

<sup>2</sup> BC22D is a standard 25-pin to 25-pin D-Sub null-modem cable.

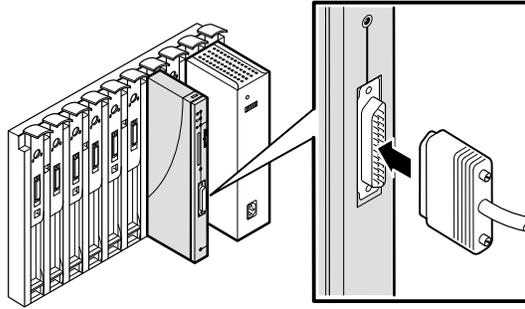
## Configuring the Module (Cont.)

### Accessing the Setup Port on the Module

---

**1** Connect the setup port cable.

- a. Connect the setup port device cable to the setup port connector on the DECagent 90.
- b. Press return on the setup port device a few times until the DECagent 90 Agent Installation Menu appears.



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

## Configuring the Module (Cont.)

### Optional Setup Procedures

Once the Agent Installation Menu appears, you can configure the module by performing any of the following three options:

- Select menu option 4, Set Agent IP Address/Gateway/Subnet, 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.
- Select menu option 5, Set Agent Read/Write Community, if you need to change the read/write community string from the default value of PUBLIC. You can also change the read/write community string by using an SNMP manager, such as HUBwatch.
- Select menu option 6, Add/Remove Trap Address, if you want to add trap addresses. 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/Subnet.

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

## Configuring the Module (Cont.)

### Changing the Hub Configuration

The DECagent 90 can manage up to 16 communities and up to 48 modules. A community can consist of an 8- or 16-slot DEChub 90, a Digital stackable product, or an arbitrary grouping of standalone modules. Grouping the standalone modules is useful if you are managing more than 16 standalone DECserver 90L modules, for example.

### Adding Components

Configuring additional communities is accomplished by using an SNMP manager, such as HUBwatch.

If a module other than a repeater is reinstalled in the same DEChub slot that is reinstated, the DECagent 90 does not accept this new module, and a conflict message is displayed (in 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.

### Removing Components

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 its parameters are changed from their default values, the DECagent 90 saves the changed parameters and uses them if the repeater is reinstalled in the same DEChub slot.

### Replacing Components

The module can be removed without conflict only if you delete the initial repeater status information from the DEChub. If a new module has replaced that repeater, it would be discovered when the replacement is made. 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.

## Configuring the Module (Cont.)

### Configuring the DECserver 90L and the DECserver 90L+

The DECserver 90L and early versions of the DECserver 90L+ are not autodiscovered, and you must manually add the module 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 Table 1. Menu option 13 views module information, including module accessibility 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 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 version of the manual may vary slightly from the actual software version's 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/Subnet         [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.)

### DECagent 90 Agent Installation Menu (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 from all communities and modules. The factory default state sets the module as a standalone agent with a community of 1.

**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 
DECagent 90                                     All Rights Reserved
=====

RESET AGENT TO FACTORY DEFAULTS

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

Press y to confirm [n] : y 

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

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (Cont.)

#### [ 2] Reset with Current Settings

This option resets the module but restores the current parameters after resetting. (The stored parameters are not deleted.)

The following example shows the dialog associated with this option.

```
=====
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.)

### DECagent 90 Agent Installation Menu (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 example shows the dialog associated with this option.

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

                SHOW CURRENT SETTINGS

System Up Time      : 0 00:05:25    2 resets
System Name        : Lab DECagent 90
System Contact     : Lab Administrator
System Location    : LKG2-2 Lab
Ethernet Address   : 08-00-2B-29-4D-87
IP Address         : 16.21.1.64
Default Gateway    : 16.21.0.1
Subnet Mask        : 255.255.0.0
Read/Write Community : public
Console Port Speed : 19200
Version Information : HW=D01 ROM=BL05.00 SW=V3.0.0
=====

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

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (Cont.)

#### [ 4] Set Agent IP Address/Gateway/Subnet

This option prompts you for an IP address, gateway address, and subnet mask. The format of these parameters 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 these parameters to 0.0.0.0.

The following example shows the dialog associated with this option.

```
=====
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] : 16.20.1.64 
IP address set!
Default Gateway Address [0.0.0.0] : 16.20.0.1 
Gateway address set!
Subnet Mask [0.0.0.0] : 255.255.0.0 
Subnet Mask set!
Press any key for Main Menu...
```

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

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (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 used by the sending SNMP entity to confirm the community name.

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

The following example shows the dialog associated with this option.

```
=====
Enter selection : 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.)

### DECagent 90 Agent Installation Menu (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 .

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (Cont.)

#### [ 6] Add/Remove Trap Address (Cont.)

The following example shows the dialog associated with this option.

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

ADD/REMOVE TRAP ADDRESSES

Trap addresses for Community 1 (public):

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] > 16.21.32.99 
New trap address stored.

Change which address (1 - 8)> 2 
Enter new address [0.0.0.0] > 16.21.1.65 
New trap address stored.

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

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (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 and change module information. When SNMP sets are disabled, you can read but cannot change module information.

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

The following example shows the dialog associated with this option.

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

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (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 example shows the dialog associated with this option.

```
=====
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.)

### DECagent 90 Agent Installation Menu (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 DECrepeater modules, all DECbridge modules, and most DECserver modules that are located in the same backplane or a Digital stackable product 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 example shows the dialog associated with this option.

```
=====
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.)

### DECagent 90 Agent Installation Menu (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.

**NOTE:** A downline load should complete within 2 minutes. When complete, press  a few times to return to the Agent Installation Menu. If the load doesn't complete within 5 minutes, the DECagent 90 resets and returns to normal operation.

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (Cont.)

#### [10] Configure/Perform Downline Load (Cont.)

The following example shows the dialog associated with this option.

```
=====
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 dotted 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] : 16.20.32.5 
Load Filename (1-64 chars)
Old:
New: denma_v3_0_0.sys 
START LOAD NOW [n]? y 
Load in Progress ...
```

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (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 example shows the dialog associated with this option.

```
=====
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.)

### DECagent 90 Agent Installation Menu (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, the setup port remains in SLIP mode even through normal resets of the DECagent 90. The baud rate remains fixed at the rate used when switching to SLIP mode.

You can return the setup port to console mode in one of three ways:

- Once the DECagent 90 has powered up and completed diagnostics, press the front panel switch to return the setup port to console mode.

**NOTE:** DO NOT press the front panel switch during diagnostics. This will perform a reset-to-defaults, deleting all user configured information.

- A reset-to-defaults of the DECagent 90 returns the setup port to console mode, and deletes user configured information.
- Using the DECagent 90 setup port status MIB object.

The factory default of this menu option sets the setup port to console mode.

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (Cont.)

#### [12] Switch to SLIP Mode (Cont.)

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.

The following example shows the dialog associated with this option.

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

SET CONSOLE TO SLIP MODE

Caution: Enabling SLIP mode terminates this console session.
          SLIP mode is retained through agent resets.
Console operation may only be reestablished by pressing the reset
switch on the Front Panel. Wait for diagnostics to complete
          before pressing this switch.

=====

Set to SLIP mode [n]? y 

SLIP mode enabled.
```

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (Cont.)

#### [13] Show Community

This option allows you to display detailed community information.

The following example shows the dialog associated with this option.

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

Index      Type      Community
-----
1          DEChub 90-8  lab_agent
2          DEChub 90-16  finance
3          DEChub 90-8  accounting
4          Standalone  private
5          DEChub 90-8  offices

=====
Enter Community Index : 1 
```

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (Cont.)

#### [13] Show Community (Cont.)

The following example shows additional dialog associated with this option.

```
Enter Community Index : 1

DECagent 90                                     All Rights Reserved
=====

Community 1 : lab_agent

Slot      Type          Mac/IP Address          Reachable
-----
1  DECrepeater 90C
2  Empty
3  DECserver 90L+    08-00-2B-2D-31-0F      Yes
4  DECrepeater 90FL
5  Empty
6  DECrepeater 90T-16
7  DECagent 90       08-00-2B-29-4D-87      Yes
8  DECbridge 90      08-00-2B-1D-00-00      Yes

Press Return for Port Status Map ...
```

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (Cont.)

#### [13] Show Community (Cont.)

The following example shows additional dialog associated with this option.

```
DECagent 90                                     All Rights Reserved
=====
                                     Community 1 : public

                                     Port Status Map
Slot      Type                          0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 2 2 2 2
                                     1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4
-----
1  DECrepeater 90C  - - - - -
2  Empty
3  DECserver 90L+  - - - - -
4  DECrepeater 90FL - - - -
5  Empty
6  DECrepeater 90T-16 - - - - -
7  DECagent 90
8  DECbridge 90    + +

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

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

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (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 example shows the dialog associated with this option.

```
=====
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: 2/6

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

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (Cont.)

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

The following example shows additional dialog associated with this option.

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

Community 1 (public)
Slot 1: DECrepeater 90C

Port      Admin Status
-----
1         Enabled.
2         Enabled.
3         Enabled.
4         Enabled.
5         Enabled.
6         Enabled.

Toggle which port > 3
Repeater port 3 has been disabled.

Toggle which port > 
Repeater community/slot >
```

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (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 DECrepeater through a DECbridge. You can specify the device by either its network address or its community/slot number.

The following example shows the dialog associated with this option.

```
=====
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: 2/6

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

=====

Connect to : 1/3 
```

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (Cont.)

#### [15] Connect MOP (Cont.)

The following example shows additional dialog associated with this option.

```
Connect to : 1/3

Attempting connection to: 08-00-2B-2D-31-0F

Press ^D to end MOP session.

->show server
DECserver 90L+ V2.0 BL4.7          Address: 08-00-2B-2D-31-0F
Protocol: LAT V5.2                Name:    LAT_08002B2D310F

Frames Received:      1425  Seconds Since Zeroed:      751
Frames Sent:          605   Send Failures:              0
Multicast Frames Rcv'd: 773  Receive Failures:          0
Multicast Frames Sent: 2    Unrecognized Destinations: 0
Frames Sent, Deferred: 2    Data Overrun:               0
Frames Sent, 1 Collision: 0  User Buffer Unavailable:     0
Frames Sent, 2+ Collisions: 0 System Buffer Unavailable:    0

Messages Received:    0    Duplicates Received:        0
Messages Transmitted: 0    Messages Re-Transmitted:    0
Solicitations Accepted: 0  Illegal Messages Rcv'd:     0
Solicitations Rejected: 0  Illegal Slots Rcv'd:        0
                          Illegal Multicasts Rcv'd:    0

Keepalive Timer:      20    Security:                    Disabled
Retransmit Limit:     8    NVRAM:                       OK
Prompt                ->   Network:                        OK
-> ^D

Remote MOP session disconnected!
Press any key for Main Menu...
```

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (Cont.)

#### [16] Start Event Logger

This option prompts you to start the event logger.

The following example shows the dialog associated with this option.

```
=====
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

0:00:27:40 Community 1 (public) Slot 1 DECrepeater 90C Conflict
Conflict: Discovered type = DECrepeater 90FL

0:00:27:40 Community 1 (public) Slot 4 Removed

0:00:27:45 Community 1 (public) Slot 3 DECserver 90L+ Reachable

0:00:28:10 Community 1 (public) Slot 3 DECserver 90L+ Unreachable
```

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (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 example shows the dialog associated with this option.

```
=====
Enter selection : 17 
DECagent 90                                     All Rights Reserved
=====

      ERROR LOG DISPLAY
      (Most Recent First)

TFTP Software update failed.  TFTP read failure.
      Reset count: 3, Timestamp:  0 00:00:00
User requested reset-to-factory settings.
      Reset count: 5, Timestamp:  0 00:09:08
User requested reset-to-factory settings.
      Reset count: 9, Timestamp:  0 00:00:16
Front panel reset-to-factory settings.
      Reset count: 1, Timestamp:  0 00:00:40

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

## Configuring the Module (Cont.)

### DECagent 90 Agent Installation Menu (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 example shows the dialog associated with this selection.

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

## LED Descriptions

The module LEDs provide dynamic indications of module status.

Table 2 shows the static states that are possible for four of the module LEDs: Power, Module OK, Network OK, and Network Activity.

**Table 2: Module LEDs**

LED Name	Icon	Off	On	Flashing
<b>Power</b>		No power to the module.	Module receiving power.	Faulty power connection or insufficient power.
<b>Module OK</b>		After 1 minute, self-test failed.	Module passed self-test.	Broken state
<b>Network OK</b>		No network connection.	Connected to network.	Broken state.
<b>Network Activity</b>		No network activity.	The network has heavy traffic. <sup>1</sup>	Flashes more rapidly and appears brighter as network traffic increases. <sup>1</sup>
<b>Network OK and Network Activity</b>		No network activity.	N/A	The DECagent 90 IP address is not set.

<sup>1</sup> The Network Activity LED continues to indicate network traffic levels even when the port is disabled or partitioned.

## 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 LEDs. Table 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.

### Initial Powerup

When the module is initially powered up, the following events occur:

1. The Power  LED lights and stays on. All other LEDs light for a few seconds, then turn off. This verifies that the individual LEDs are operational (defective LEDs do not light).
2. The module initiates its built-in self-test.
3. After the successful completion of self-test (within one minute), the Module OK  LED turns on, and remains on.
4. The remaining LEDs indicate their operational status.

**Table 3: Problem Solving Using the LEDs**

Symptom	Icon	Probable Cause	Corrective Action
Power LED is off.		The module is not receiving +5Vdc.	Check the power LED on the DEChub 90.  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.

(continued on next page)

## Problem Solving Using the LEDs (Cont.)

**Table 3: Problem Solving Using the LEDs (Cont.)**

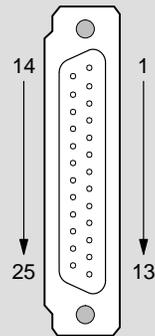
Symptom	Icon	Probable Cause	Corrective Action
Power LED is flashing.		Module connection is faulty.	Reseat the module.
		DEChub slot connection is faulty.	Reinstall the module into another slot.
		DEChub power supply is faulty.	Replace the power supply.
		Standalone power supply is faulty.	Replace the power supply.
Module OK LED is off.		DECagent 90 module is faulty.	Replace the DECagent 90 module.
		Self-test is in progress.	Wait up to 1 minute for self-test to complete.
Module OK LED is flashing.		Self-test failed.	If the LED does not light, remove the module and reseat it to repeat the self-test. If the self-test fails again, replace the module.
		FLASH firmware image is bad.	Downline load new FLASH firmware image.
Network OK LED and Network Activity LED are alternately flashing.		DECagent 90 IP address is not set.	Refer to Configuring the Module section of this manual and set the DECagent 90 IP address.

## Connector Pin Assignments

### Setup Port (DB25) Connector

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

Pin	Assignment	Pin	Assignment
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		

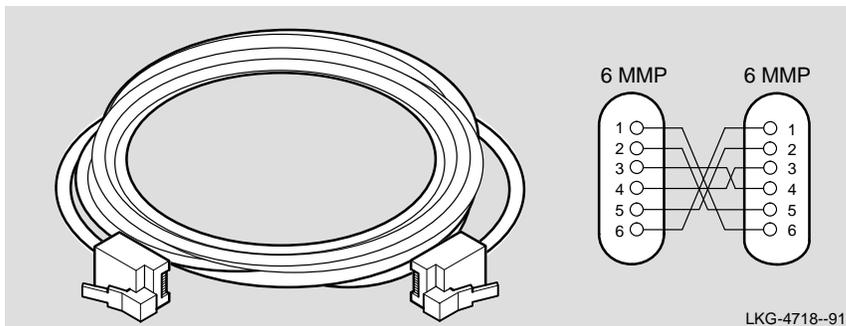


RS-232 DB25 connector

LKG-8732-931

### BC16E Cable

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

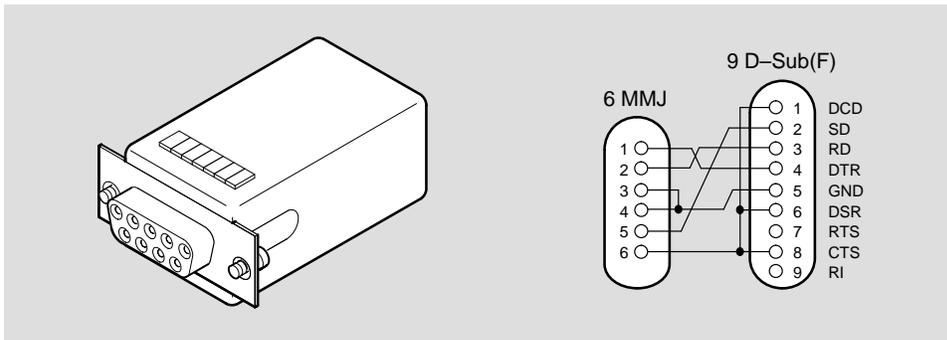


LKG-4718--911

## Connector Pin Assignments (Cont.)

### H8571-J Connector

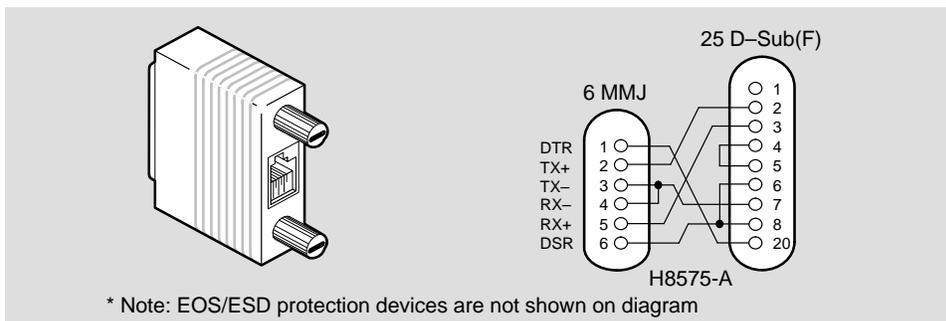
The following illustration shows a 9-pin D-Sub to 6-pin MMJ connector and its pin assignments.



LKG-5342-911

### H8575-A Connector

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



LKG-8793-931

## Accessing MIBs and RFCs

### Accessing Online Information

This section describes how to access this product's online release notes, public MIBs, Digital's private management information base (MIB), firmware images, and requests for comments (RFCs).

You can access this information from Digital's Internet ftp server at:

`ftp.digital.com (16.1.0.2)`.

To Access...	Use...
MIBs, release notes, firmware update files, and the DECndu Plus Load utility	Anonymous ftp
MIBs and release notes	ftpmail
RFCs	Electronic mail

## Accessing MIBs and RFCs (Cont.)

### Using Anonymous ftp

You can access any of Digital's DEChub MIBs, firmware update files, and release notes over the Internet by using FTP.

When you use FTP, you must include the following parameters:

- connect to `ftp.digital.com`
- for a user name, enter `anonymous`
- for a password, enter your Internet mail address, for example:

`name@system.company.com`

- change directory to:

`/pub/DEC/hub900/<directory_name>`

(See Table 4 for a list of directory names.)

**Table 4: Directory Names Available**

Name	Contents <sup>1</sup>
mibs	DEChub MIBs
firmware	DEChub firmware images
release	DEChub product release notes

<sup>1</sup> Digital suggests reading the README file in each directory to understand the contents of that directory.

You can also access these directories from the World-Wide Web using a browser, such as Mosaic. The Universal Resource Locator (URL) is:

`file://ftp.digital.com/pub/DEC/hub900/`

## Accessing MIBs and RFCs (Cont.)

The following example shows how to copy a README file. User input in the example is shown in **bold** text.

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

```
% ftp ftp.digital.com
Connected to ftp.digital.com
220 FTP.DIGITAL.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-May-1995
10:24-EST, job 54.
ftp> cd /pub/DEC/hub900/<directory_name> (See Table 4 for
directory names.)
331 Default name accepted. Send password to connect to
it.
ftp> ascii (see note below)
220 Type A ok.
ftp> get README
200 Port 19.54 at host nnn.nn.nn.nn accepted.
150 ASCII retrieve of /pub/DEC/hub900/mibs/README
started.
226 Transfer completed. 40239 (8) bytes transferred.
40239 bytes received in 23.65 seconds (5.8 Kbytes/s)
ftp> quit
%
```

**NOTE:** To transfer binary files, such as firmware updates, replace the `ascii` command shown in this example with `binary` or `image`.

## Accessing MIBs and RFCs (Cont.)

### Using ftpmail

Digital offers Internet ftpmail access to private MIB and release note information, in ASCII text form, at `ftp.digital.com`, with up-to-date documents stored in:

```
/pub/DEC/hub900/<directory_name>
```

(See Table 4 for a list of directory names.)

To use ftpmail, follow these instructions:

1. Send a mail message to `ftpmail@ftp.digital.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 /pub/DEC/hub900/<directory_name>/README
```

(See Table 4 for a list of directory names.)

5. `quit`

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 section titled Using Anonymous ftp).

## Accessing MIBs and RFCs (Cont.)

### 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.

## Accessing MIBs and RFCs (Cont.)

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

Requests are processed automatically once a day. Large files are broken down into separate messages.

## Product Specifications

Table 5 lists the DECagent 90 physical, environmental, and certification specifications.

Table 6 lists the DECagent 90 acoustical specifications.

**Table 5: Operating Specifications**

Parameter	DECagent 90	As a Standalone Unit
<b>Physical</b>		
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)
<b>Operating Environment</b>		
Operating Temperature <sup>1</sup>	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
<b>Certification</b>		
	CSA, FCC,TÜV, UL, VCCI, VDE	CSA, FCC,TÜV, UL, VCCI, VDE

<sup>1</sup> 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 6: Acoustical Specifications**

<b>Parameter</b>	<b>DECagent 90</b>	<b>As a Standalone Unit</b>
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-Q3S8D-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-PW4BE-TE</i>	Provides network management, DEChub module management, and DEChub functionality information.
<i>HUBwatch for Windows Use AA-Q3S3C-TE</i>	Provides network management and DEChub 900, DEChub 90, and DEChub ONE functionality information for HUBwatch for Windows V3.0.



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**DECagent 90 Installation and Configuration**  
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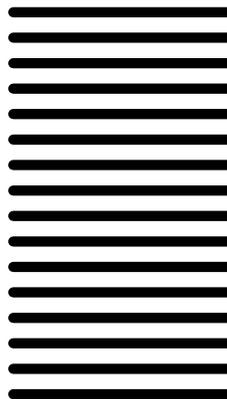
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