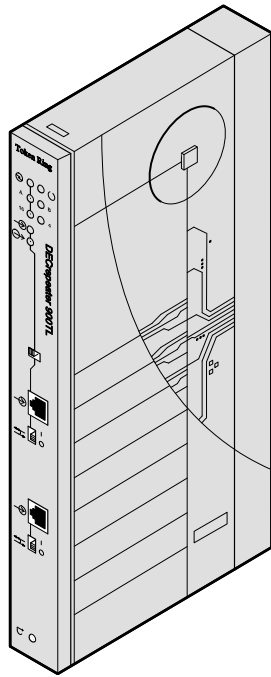
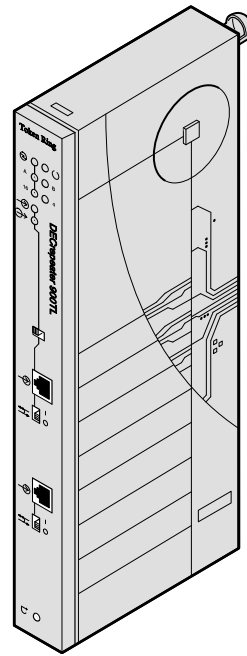




DECrepeater 900TL INSTALLATION



DEChub ONE Repeater 900TL



LKG-8176-931

DECrepeater 900TL

The DECrepeater 900TL is a Token Ring repeater that operates at a speed of 4 or 16 Mb/s. It extends trunk and lobe distances for unshielded and shielded 100-ohm cable. As a member of Digital's Token Ring product family, it operates in a DEChub 900 MultiSwitch, or as a standalone unit (DEChub ONE Repeater 900TL). The DECrepeater 900TL can also be managed by optional HUBwatch management software.

EK-DTROR-IN. A01

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August 1993

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

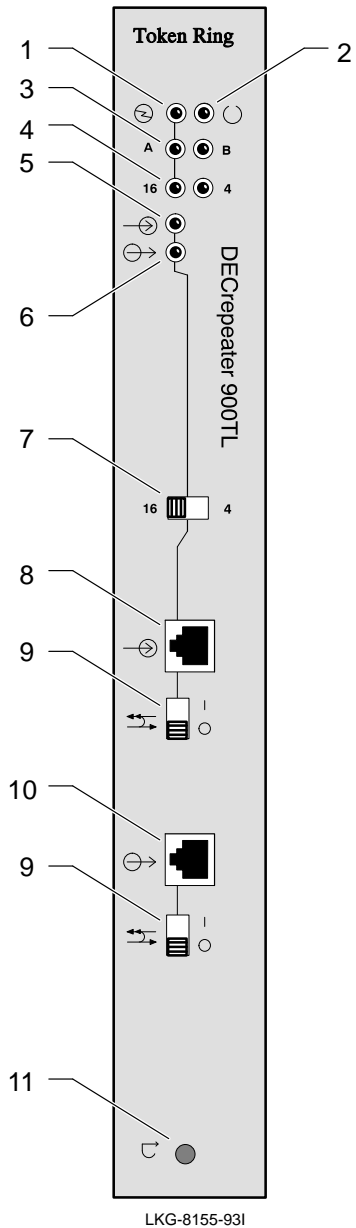
VCCI NOTICE – Class 1 Computing Device:

This equipment is in the 1st Class category (information equipment to be used in commercial and/or industrial areas) and conforms to the standards set by the Voluntary Control Council for Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in commercial and/or industrial areas.

Consequently, when used in a residential area or in an adjacent area thereto, radio interference may be caused to radios and TV receivers, etc.

Read the instructions for correct handling.

Front Panel



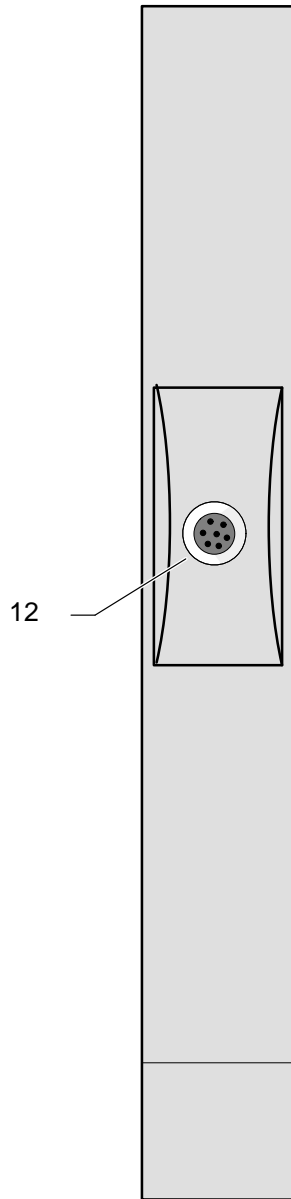
- 1) **Power LED.** Lights when the repeater has power.
- 2) **Module OK LED.** Lights when the repeater passes self-test. If the repeater fails self-test, the Module OK LED is off.
- 3) **Ring A/B LEDs.** In a DEChub 900 MultiSwitch, when either the A LED or the B LED is on, the respective A or B ring is active. In a standalone repeater, both Ring LEDs are always off.
- 4) **Speed LEDs.** Either the 16 LED or the 4 LED is on to show the ring speed.
- 5) **Ring In LED.** Lights when a Ring In connection is active.
- 6) **Ring Out LED.** Lights when a Ring Out connection is active.
- 7) **Speed Switch.** Sets speed. Set to 16 when the network speed is 16 Mb/s. Set to 4 when the network speed is 4 Mb/s. Network management cannot override Speed switch settings.
- 8) **Ring In Port.** Connects Ring In to the Ring Out port of a repeater or Multistation Access Unit (MAU).
- 9) **Autowrap Switches.** Determine whether or not the repeater automatically loops back when it detects a disconnected link on Ring In or Ring Out. If the Ring In or Ring Out port connects to a device with Digital's Autowrap, set the switch to 1 to enable Autowrap. If the Ring In or Ring Out port connects to a device without Digital's Autowrap, set the switch to 0 to disable Autowrap.
- 10) **Ring Out Port.** Connects Ring Out to the Ring In port of a repeater or Multistation Access Unit (MAU).
- 11) **Reset Switch.** Resets all settings, except for the Speed switch setting, to their factory defaults. To reset: while turning on the power, press the reset switch with a pen or screwdriver.

Rear Panel of DEChub ONE Repeater 900TL

Note:

The rear panel shown here is used only when the repeater is in a standalone configuration.

- 12) Power Connector.** Provides power connection for the repeater. (DEChub ONE only)



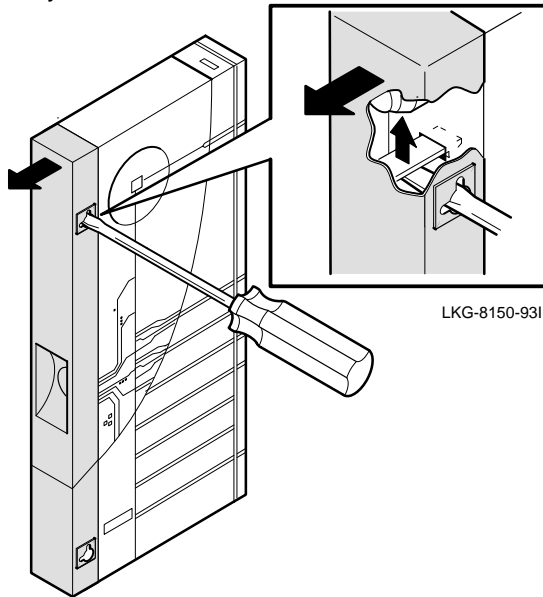
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Installing a Repeater in a DEChub 900 MultiSwitch

When you install a repeater in the DEChub 900 MultiSwitch, you do not have to turn off the hub power.

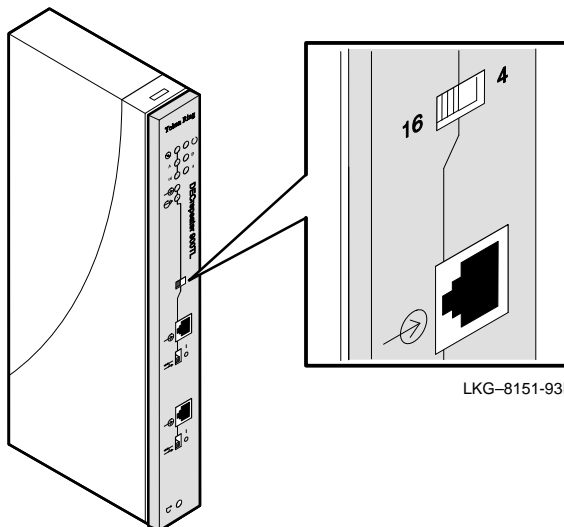
1 Remove the rear cover (if necessary).

If you want to install a DEChub ONE Repeater 900TL in a hub, you need to remove the rear cover.



- a. Lift up the latch on the rear cover by inserting a small flat-blade screw driver into the top mounting hole.
- b. With the latch up, pull the top of the rear cover away, pivoting around the bottom of the repeater.

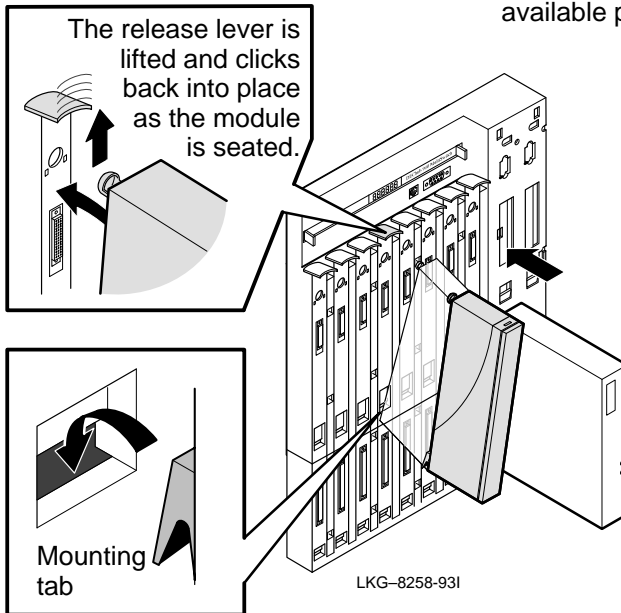
2 Set Speed switch.



Set the Speed switch to 16 when the network speed is 16 Mb/s or 4 when the speed is 4 Mb/s.

Installing a Repeater in a DEChub 900 MultiSwitch (continued)

3 Install the repeater on the hub.

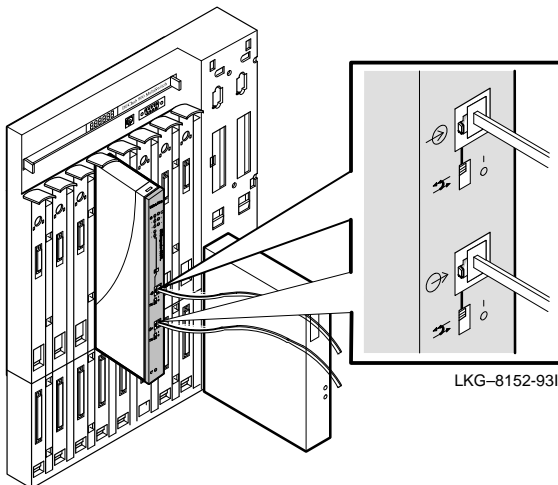


Note:

Before installing the module in a hub, verify that the module's input power rating does not exceed the available power that the Hub Manager LCD displays.

- Align the repeater's 48-pin connector with any available 48-pin slot in the hub.
- Place the repeater's bottom mounting tab into the mounting slot on the hub.
- Pivot the repeater into place. You hear a click when the repeater is seated.
- Press down on the release lever to ensure that it is locked.
- With power on in the hub, verify that the Power, Module OK, and Speed LEDs are on. If there is traffic on the network, the Ring A or B LED will also be on.

4 Connect hubs or station.



To connect two hubs . . .

- Set the Ring In and the Ring Out Autowrap switches to 1 to enable Autowrap.
- Connect the repeater's Ring Out port to the Ring In port of the repeater in the adjacent hub. Also connect the repeater's Ring In port to the Ring Out port of the repeater in the adjacent hub.
- Once the ring becomes active, verify that the Ring In and Ring Out LEDs are on.

To use as a lobe extender . . .

- Set the Ring In and the Ring Out Autowrap switches to 1 to enable Autowrap.
- Connect the station to the Ring Out port.
- Once the ring becomes active, verify that the Ring Out LED is on.

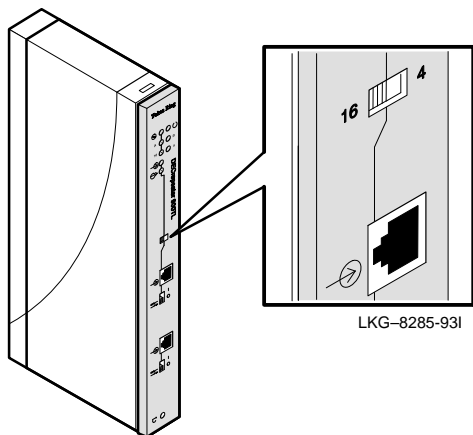
Installing a DEChub ONE Repeater 900TL

1 Mount repeater (optional).

You can place the repeater 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.

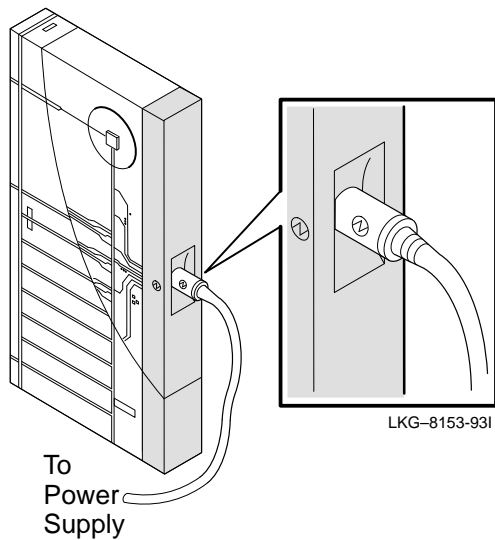
For a wall mounting, position two screws 19.7 centimeters (7.75 inches) apart on the wall. Turn the screws until tight, and then back off two turns. Hang the repeater using the keyholes.

2 Set Speed switch.



Set the Speed switch to 16 when the network speed is 16 Mb/s or 4 when the speed is 4 Mb/s.

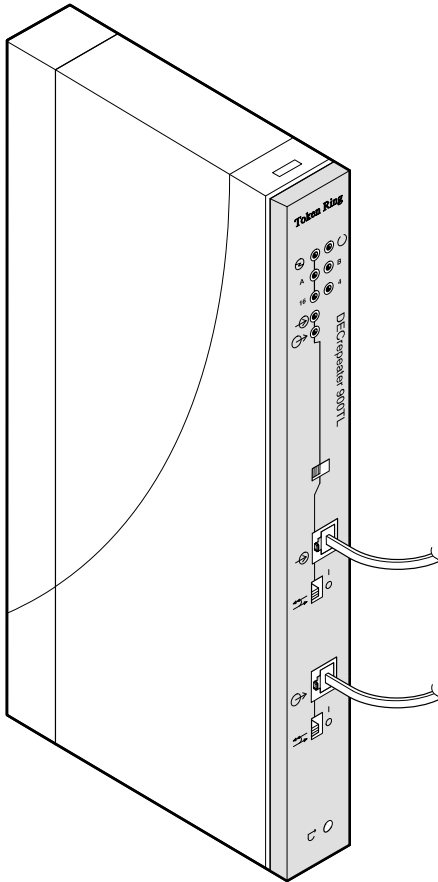
3 Connect power supply.



- Connect the power supply cable to the power connector.
- Plug the power supply into a wall outlet.
- With power on, verify that the Power and Module OK LEDs are on.

Installing a DEChub ONE Repeater 900TL (continued)

4 Connect a MAU, repeater, or station.



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To connect an adjacent MAU or repeater . . .

- Set the Ring In and the Ring Out Autowrap switches to 1 or 0. Refer to page 3 for information on the Autowrap switch settings.
- Connect the repeater's Ring Out port to the Ring In port of the adjacent MAU or repeater.
- Connect the repeater's Ring In port to the Ring Out port of the adjacent MAU or repeater.
- Once the ring becomes active, verify that the Ring In and Ring Out LEDs are on.

To use as a lobe extender . . .

- Set the Ring In and the Ring Out Autowrap switches to 1 to enable Autowrap.
- Connect the station to the Ring Out port.
- Connect the Ring In port to a station port on a MAU.
- Once the station becomes active, verify that the Ring Out LED is on.

Removing a Repeater from a DEChub 900 MultiSwitch

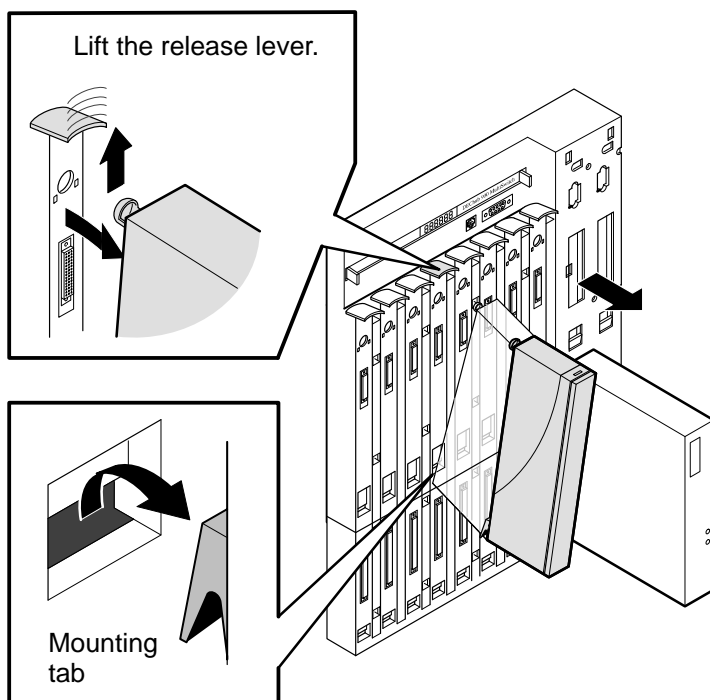
- 1 Disconnect the station and trunk connector cables from the repeater.

- 2 Remove the repeater from the hub.

Note:

When you remove a repeater from the DEChub 900 MultiSwitch, do not turn off the hub power.



- a. Lift up the release lever on the hub.
- b. Pivot the repeater back on its bottom mounting tab until it disengages from the hub.



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LED Summary

The LEDs indicate status by being on, off, and flashing. Flashing LEDs indicate special situations. There are two flashing patterns and a scroll pattern. When an LED indicates a continuous single-flash pattern, network management has disabled the port. A continuous double-flash pattern indicates the wrong speed. In a scroll pattern, the LEDs turn on and off in a set order.

| LED ¹ | Off | On | Flashing |
|--|---|-------------------------------|--|
| Power  | No power | Power OK | N/A |
| Module OK  | Self-test failed or not operating | Self-test OK | N/A |
| Speed (4/16 Mb/s) | No power, or repeater needs an upgrade. (see Ring A/B LEDs) | Valid speed | N/A |
| Ring In/ Ring Out | Inactive or wire fault | Connected to network | Continuous single flash: network management disabled port. Continuous double flash: wrong speed. |
| <u>Hub MAU ONLY:</u> | | | |
| Ring A/B | Not connected | Connected to Ring A or Ring B | Continuous single flash: network management disabled port. A and B alternately flash: repeater needs an upgrade or an upgrade is in progress. |

¹ Scroll: During power-up self-tests, all LEDs, except for the Power LED, will indicate a scrolling pattern.

Ring Speed Notes:

Even if you set the repeater's Speed switch to the wrong speed, no data will be lost or corrupted. Traffic loops back at the point where there is a speed mismatch, and the rest of the network remains operational.

The repeater's speed detection feature protects the network from devices that are set at the wrong network speed. When using some non-Digital equipment, isolating faults and reconfiguring the network may take up to 20 seconds.

Repeater Cabling

Table 1 lists the maximum distance between two adjacent repeaters, and between a repeater and a station. You can use UTP level 3 cable to extend lobe length, but do not use it as a trunk cable.

Table 1 Maximum Cable Length between Active Units¹

| Speed | UTP | |
|---------|----------------|-----------------|
| | Level 3 | Level 5 |
| 4 Mb/s | 300 m (983 ft) | 400 m (1311 ft) |
| 16 Mb/s | 130 m (426 ft) | 200 m (655 ft) |

¹ All distances include patch cables and hub connections.

Table 2 shows the industry guideline for cable length between a repeater and a passive MAU. Although cable lengths in excess of these distances are physically possible with a DECrepeater 900TL, Digital recommends that you keep cable lengths within the maximums found in the industry guideline to allow for future network expansion and upgrade.

Table 2 Industry Cable Length Guideline between a Repeater and a Passive MAU¹

| Speed | UTP | |
|---------|----------------|----------------|
| | Level 3 | Level 5 |
| 4 Mb/s | 100 m (327 ft) | 100 m (327 ft) |
| 16 Mb/s | 65 m (213 ft) | 100 m (327 ft) |

¹ All distances include patch cables and hub connections.

DEChub 900 MultiSwitch Configuration

Multiple Hubs

A repeater is needed in each DEChub 900 MultiSwitch to connect hubs in a multiple hub network.

Repeater Cabling (continued)

DEChub ONE Configuration

UTP Cable:

Multiple Wiring Closets

Digital recommends that you use repeaters to segment the ring in a network with multiple wiring closets.

When distances exceed the lobe lengths in Table 2, or if the MAU does not have Digital's Autowrap functionality, two repeaters are required.

When a MAU has Autowrap enabled, only one repeater is required per wiring closet if the distance between the wiring closets does not exceed the distances shown in Table 2.

Problem Solving

| If ... | Then ... | Do This ... |
|---|---|---|
| DEChub 900 MultiSwitch and DEChub ONE | | |
| Power LED is off. | Repeater does not have power. | Verify that outlet has power. Check power connection to repeater. Replace power supply. Replace repeater. |
| Module OK LED is off. | Repeater failed self-test. | Replace repeater. |
| Ring A and B LEDs alternately flash. | Repeater needs an upgrade or an upgrade is in progress. | If you have network management, do a downline load; otherwise, replace repeater. |
| Ring In or Ring Out LED has single flash pattern. | Network management disconnected the repeater's RI or RO port. | Wait for upgrade to complete. |
| Ring In or Ring Out LED has double flash pattern. | Repeater and ring have different speed settings. | To change settings, you can use network management commands or the repeater's Reset switch. |
| | | Change the speed setting of the repeater, stations or the ring. |

Problem Solving (continued)

| If ... | Then ... | Do This ... |
|--|---|--|
| DEChub 900 MultiSwitch ONLY | | |
| <p>Ring In, Ring Out and Ring A/B LEDs flash together.</p> <p>Repeater does not connect to the hub.</p> <p>Repeater does not work in a DEChub 90.</p> | <p>Network management has disabled repeater.</p> <p>Network management will not connect repeater to hub.</p> <p>DEChub 90 only supports Ethernet networks.</p> | <p>To change settings, you can use network management commands or the repeater's Reset switch.</p> <p>Check speed and hub settings for incorrect network management overrides.</p> <p>A DEChub 900 MultiSwitch supports Token Ring networks.</p> |
| DEChub ONE ONLY | | |
| <p>Ring In and Ring Out LEDs flash together.</p> <p>Vendor's MAU or repeater causes loopback on ring.</p> <p>Network crashes when a MAU or repeater fails.</p> | <p>Network management has disabled repeater.</p> <p>Vendor's unit is incompatible with Digital's Autowrap.</p> <p>Vendor's unit does not have Digital's Autowrap.</p> | <p>To change settings, you can use network management commands or the repeater's Reset switch.</p> <p>Set Autowrap switches to 0 on the DECmau or DECrepeater adjacent to the vendor's unit.</p> <p>Set Autowrap switches to 1 on the DECmau or DECrepeater adjacent to the failed unit.</p> |
| | | |

Product Specifications

| Product Specification | In a Hub | DEChub ONE |
|---|-------------------------------------|-------------------------------------|
| 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 | 0.68kg (1.5 lb) | 0.77kg (1.7 lb) |
| Operating temperature | 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% non-condensing | 10% to 95% non-condensing |
| Altitude | Sea level to 4900 m (16,000 ft) | Sea level to 4900 m (16,000 ft) |
| Power Supply | Hub provides | Provided by: H7082-AB |
| Input Power | 7 W @ +5 Vdc | 7 W @ +5 Vdc |
| Connectors | RJ-45 | RJ-45 |
| Agency certification | CE, CSA, FCC, TÜV, UL, VCCI, VDE | CE, CSA, FCC, TÜV, UL, VCCI, VDE |
| 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

*DEChub 900 MultiSwitch
Owner's Manual*

This manual provides overview, installation, and problem solving information for the DEChub 900 MultiSwitch.