EK-DELNI-IN-002

DELNI

Installation/Owner's Manual

Prepared by Educational Services
of
Digital Equipment Corporation

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This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with specifications in Subpart J of part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient the receiving antenna
- relocate the computer with respect to the receiver
- move the computer away from the receiver
- plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems."

This booklet is available from the US Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

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digital	DELNI		UNIBUS
DEC	DIGITAL	P/OS	VAX
DECmate	ETHERJACK	Professional	VMS
DECnet	LA	Rainbow	VT
DECUS	MASSBUS	RSTS	Work Processor
DECwriter	PDP	RSX	

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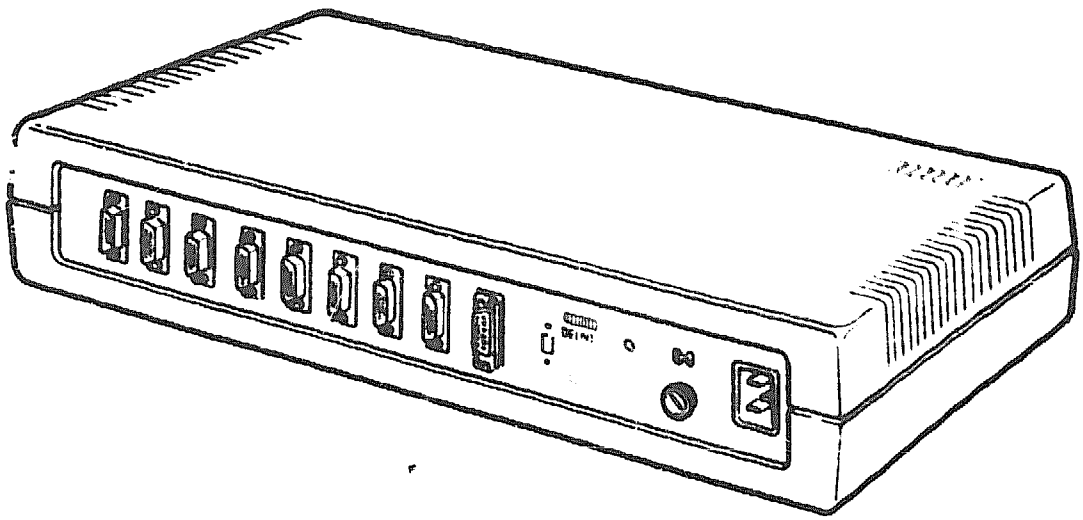
1

INTRODUCTION

Overview

The DELNI (DIGITAL ETHERNET Local Network Interconnect) unit is an electronic device which permits work stations (ETHERNET devices) to communicate by using the ETHERNET network transmission system.

You do not need to know how ETHERNET works to install the unit. You need only follow the instructions for your work stations and network system software.



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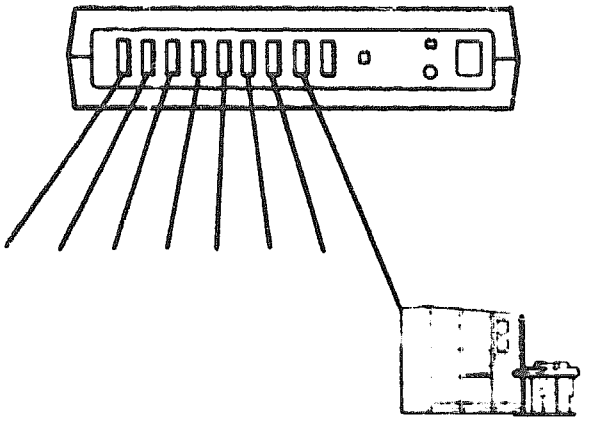
This unit can work with DECnet or other ETHERNET communication software. Under the ETHERNET system, work stations communicate by using a single coaxial cable, without interfering with each other. The network system is divided into levels of hardware and software, each level more technically sophisticated than the previous level. The DELNI unit is part of the lowest level (the physical level) of the ETHERNET system; it has no adjustments.

DELNI Arrangements

You can connect up to eight work stations to a DELNI group called a standalone DELNI LAN (Local Area Network).

STANDALONE
DELNI LAN



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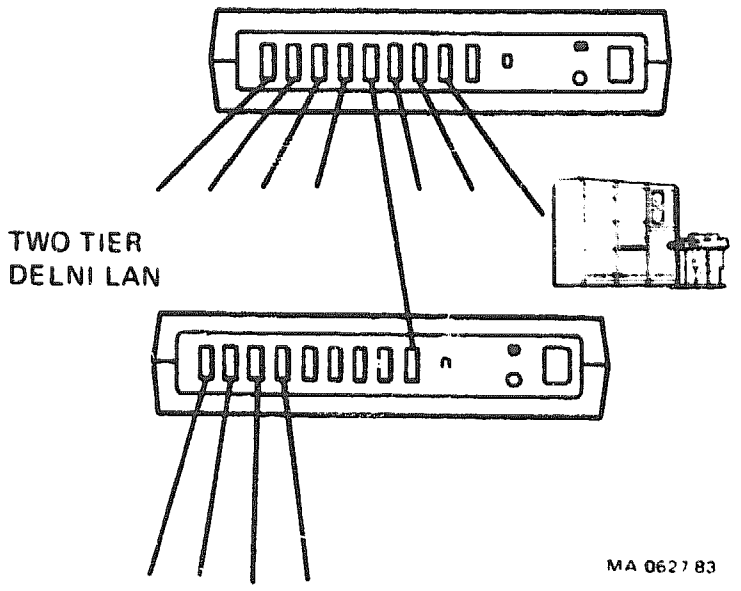
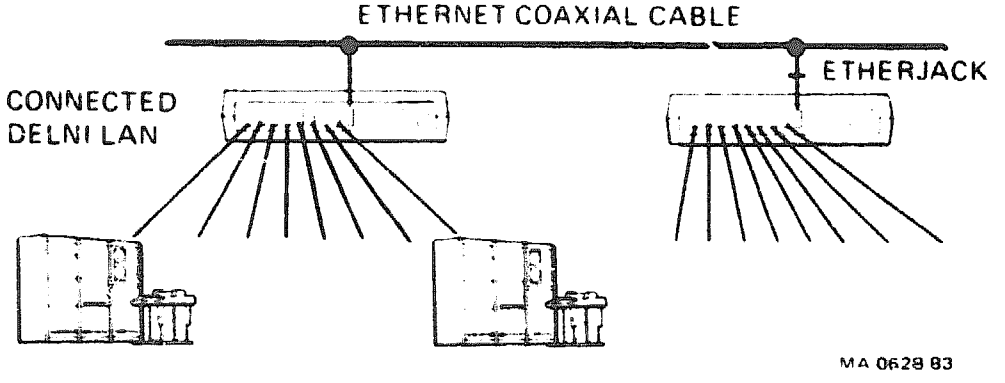
If work stations in different DELNI LANs need to exchange information, you can connect DELNI units to each other as shown in the following figure. One unit can connect to eight other DELNI LANs, which lets many stations communicate with each other. And, you can still connect work stations to any of the eight DELNI device connectors.



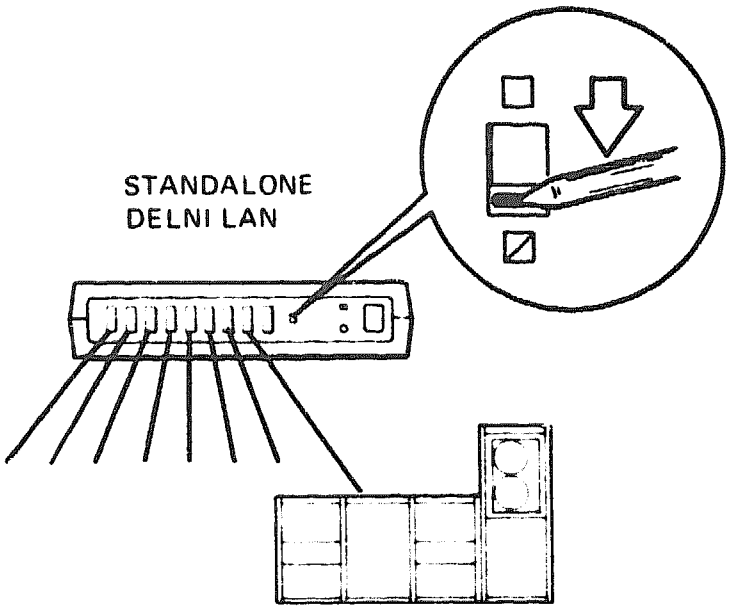
If you plan to have a large ETHERNET system which connects many work stations or covers a wide area, you can connect DELNI LANs to the ETHERNET system with an ETHERJACK junction box, or directly to an ETHERNET transceiver. Refer to Appendix A for information on connecting to these devices.



Standalone and Connected Operation

If you use either the two-tier or connected arrangement, you have to use the ninth connector. Next to this connector there is a switch which disconnects the DELNI LAN from the larger system and makes this DELNI LAN a standalone arrangement. There is no effect on the DELNI LAN or the larger network. You can reconnect the standalone DELNI LAN to the larger network at any time by switching back to the ☐ position.

You can add or remove work stations at any time, in either mode, without disturbing the network.



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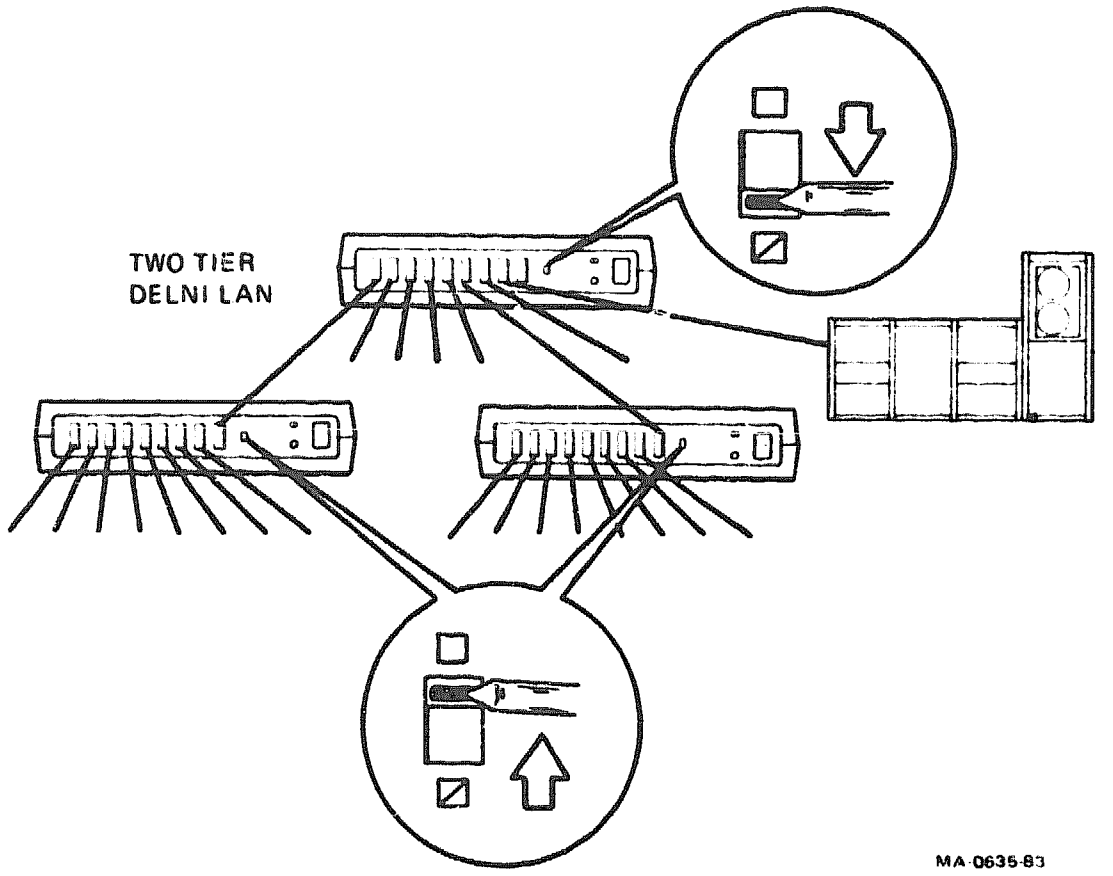

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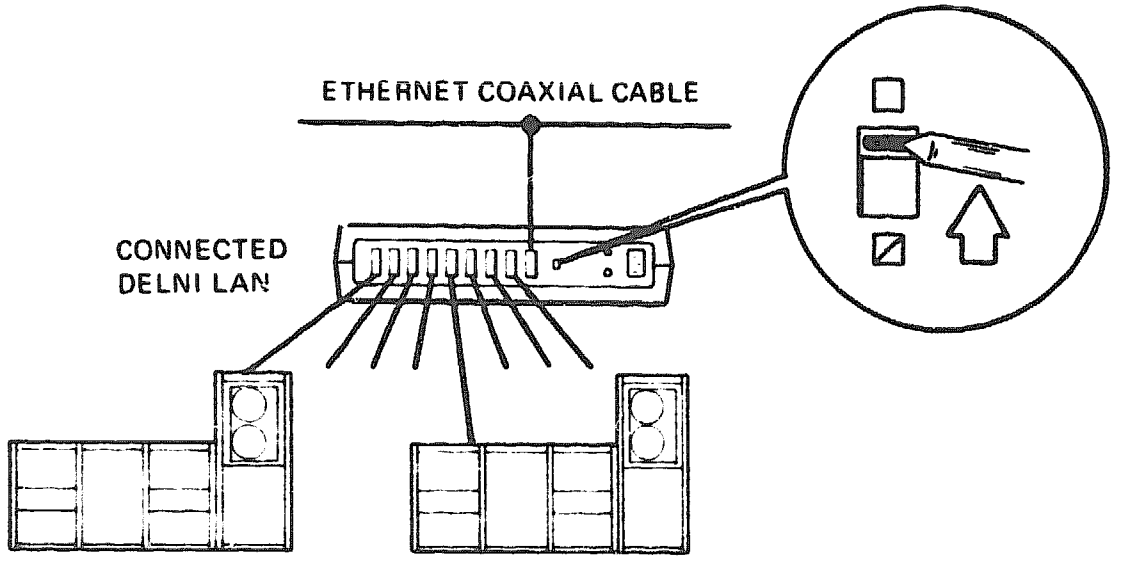

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Installation

Chapter 2 explains how to install your DELNI unit. Before you install your unit, plan your arrangement. You need to know how long connecting cables can be so that you can better plan where to place the unit. For this information, refer to the manuals that come with the ETHERNET controller modules for the work stations you want to connect. Refer to Appendix A for information on connecting to an ETHERJACK box and ETHERNET network transceiver.

Make sure all the work stations are working correctly before you connect them to the unit.

Rack Mount Option

If you want to mount the DELNI unit in a 19 inch (48 centimeter) rack, you can get an optional rackmount assembly (DEXRM) from Digital Equipment Corporation through the DECdirect catalog, or by contacting your local Digital sales office.

Related Documentation

For more information, the ETHERNET Installation Guide (EK-ETHER-IN) and the appropriate ETHERNET Controller Manuals are available.

Specifications

Dimensions	Table Top 3 1/2 inches (8.9 cm) high 19 1/4 inches (48.9 cm) wide 7 3/4 inches (19.7 cm) deep Rack Mount 2 1/2 inches (6.4 cm) high 17 1/2 inches (44.5 cm) wide 7 inches (17.8 cm) deep
Weight	14 lb (6.4 kg)
Connectors	8 (to workstations) 15-pin male D-connector 1 (to transceiver or DELNI unit) 15-pin female D-connector 1 (ac power) 3-connector grounded
Electrical	
120 Vac	90 V - 128 V
240 Vac	180 V - 256 V
Frequency	47 to 63 Hz
Connected	17 W (nominal), 26 W (maximum)
Standalone	12 W (nominal), 19 W (maximum)
Fuse	3 AG, 0.5 A (time delay) (5 X 20 mm, 0.5 A, T)
Data transfer rate	10 Mbits/second
Operating temperature range	5°C (41°F) to 50°C (122°F)

2

INSTALLATION

Before You Start

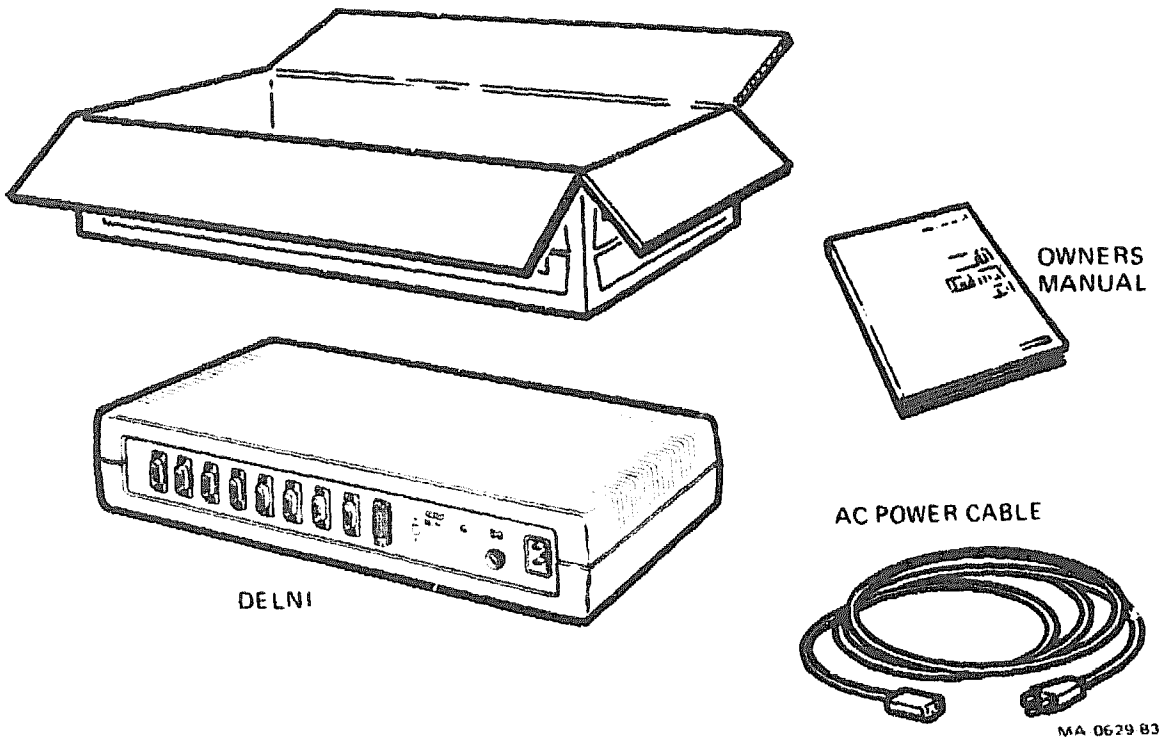
First, make sure all the work stations you plan to connect work correctly. Next, install the ETHERNET controllers and then your work station cables.

Cables are available with either straight or right angle connectors. If you mount your unit on the floor, use straight connectors; otherwise, use either.

NOTE: Check for any cable length restrictions by referring to the appropriate installation manual for each station's ETHERNET controller. Refer to the ETHERNET Installation Guide for more information.

NOTE: If you plan to connect the DELNI unit to another DELNI unit, an ETHERNET transceiver, or an ETHERJACK box, you must have a separate cable (Part Number BNE3, ordered separately). Contact your Digital Sales Office for more information.

1. Open the box and check the contents. Save the box and shipping material.



2. If there are any missing items:

   - Identify items
   - Contact your sales representative delivery agent

3. If there is any damage:

   - Stop unpacking
   - Contact your sales representative and delivery agent.

4. If you need help:

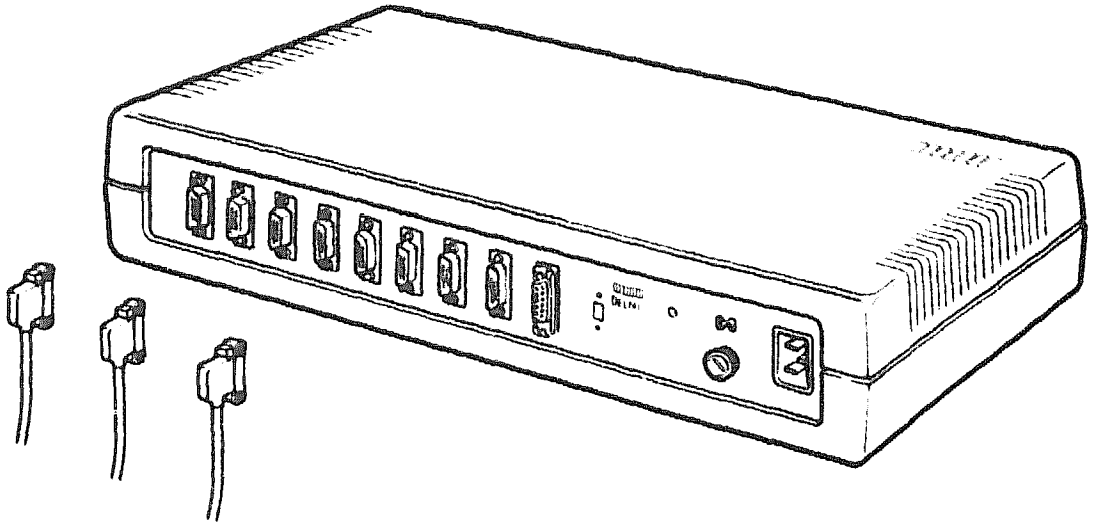
   - Call Digital at one of the phone numbers listed in Chapter 4.

Installing DELNI Unit

Place the DELNI unit in a convenient location.

- Make sure cables from the stations can reach the unit.
- Place the unit within 2 meters (6 feet) of the power source.
- Avoid dusty locations.
- Avoid direct sunlight, heat vents, and warm air exhaust from other equipment.

CAUTION: If the unit is fully loaded with all nine cables, do not place it more than 76 centimeters (30 inches) above the floor. The weight of the cables may cause tipping.



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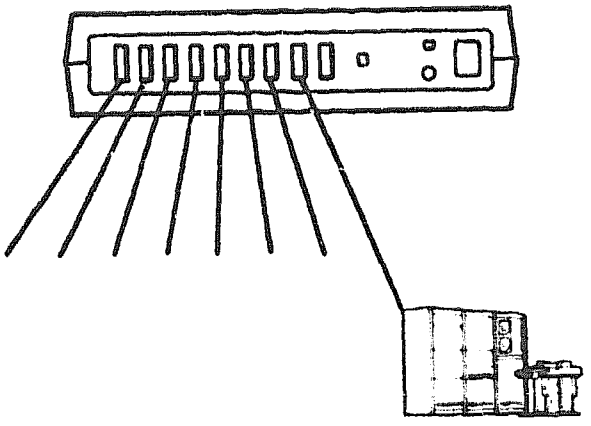
The following illustrations show some DELNI arrangements.

STANDALONE
DELNI LAN



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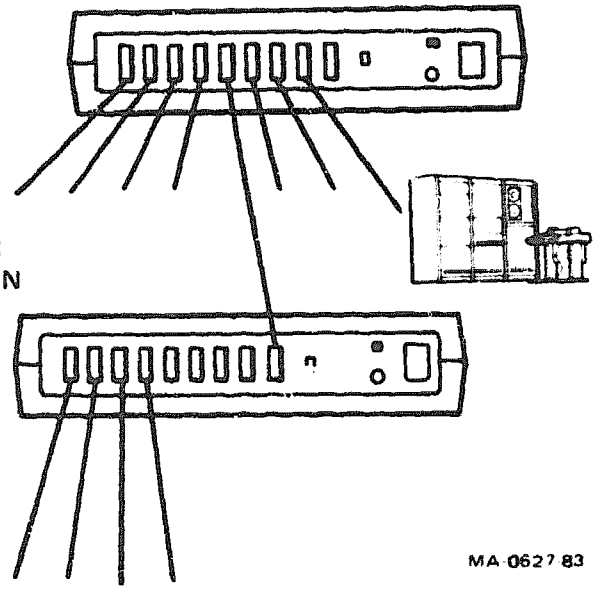
TWO TIER
DELNI LAN



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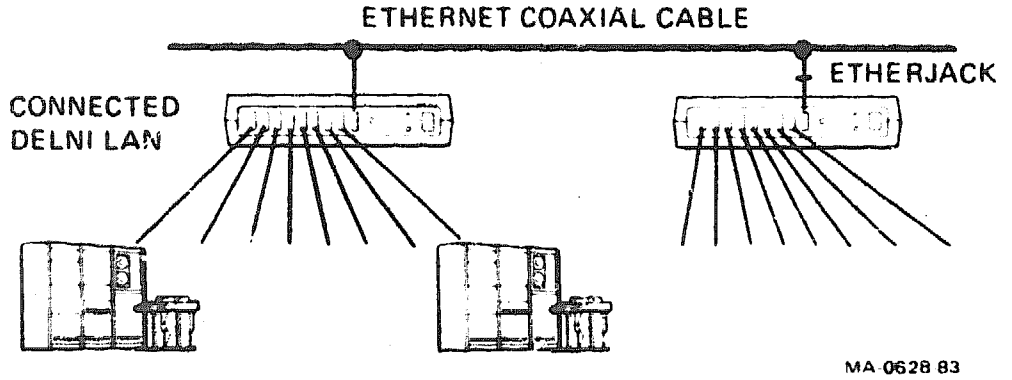
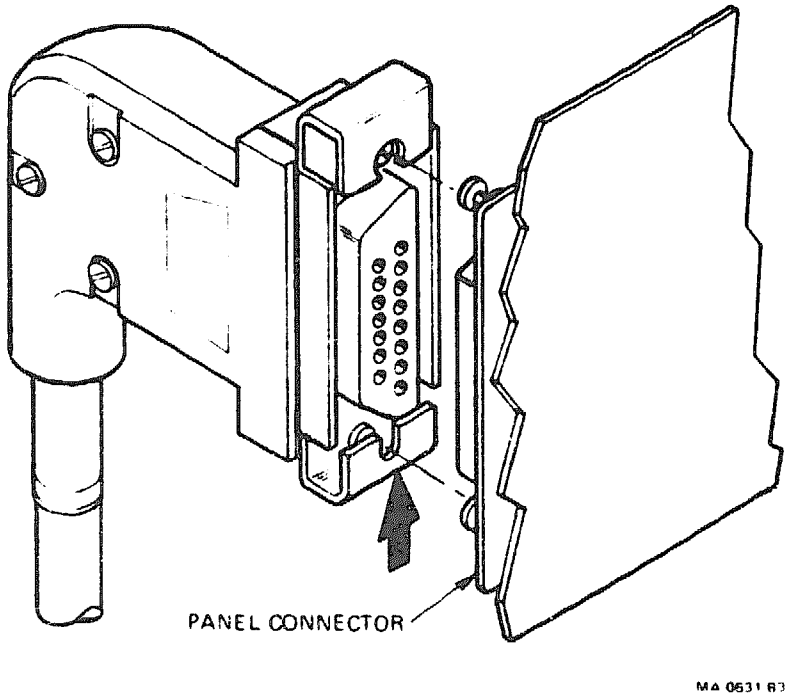


1. Find a transceiver cable from a work station (it has a D-shaped connector).

2. Align the cable's D-shaped connector with the D-shaped DELNI panel connector.

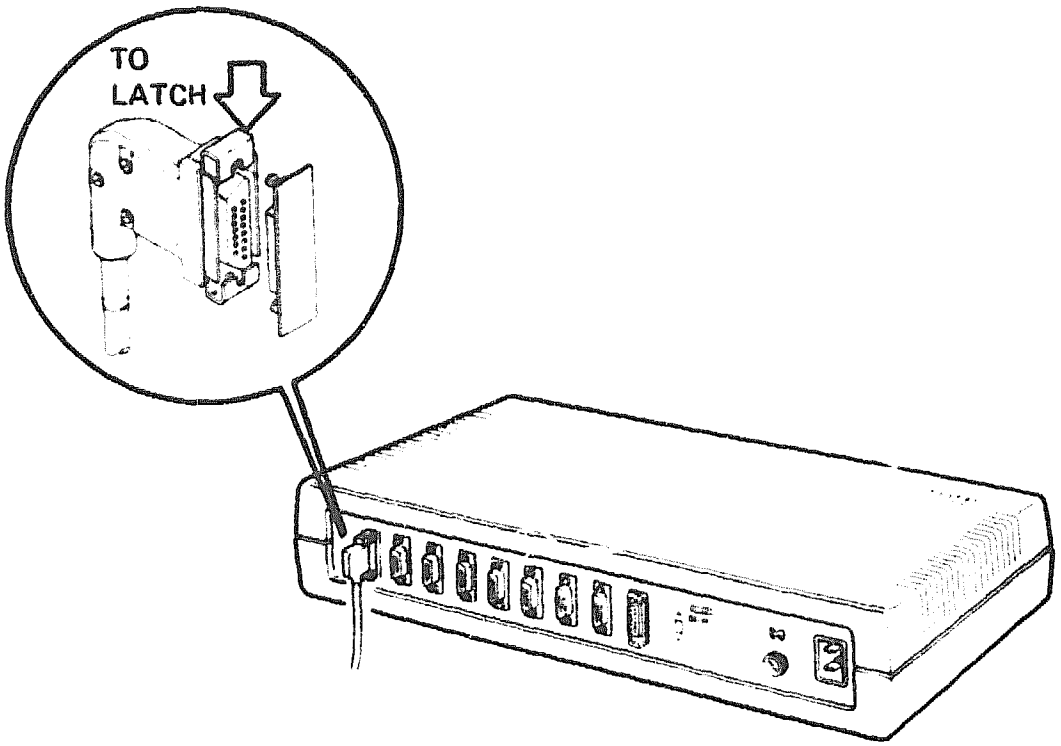
3. Slide the cable connector latch up with your finger (if latch is not already up).



4. Slide the cable connector on any panel connector (1–8). Make sure it is on all the way.

5. Slide the cable connector latch down with your thumb.

6. Gently pull the connector to make sure it is on firmly.



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NOTE: If you are connecting the cable to another DELNI unit or transceiver use connector 9 and follow these steps.

- *Push slide on panel connector up.*
- *Push connector on.*
- *Slide latch down.*
- *Gently pull to make sure connector is on firmly.*

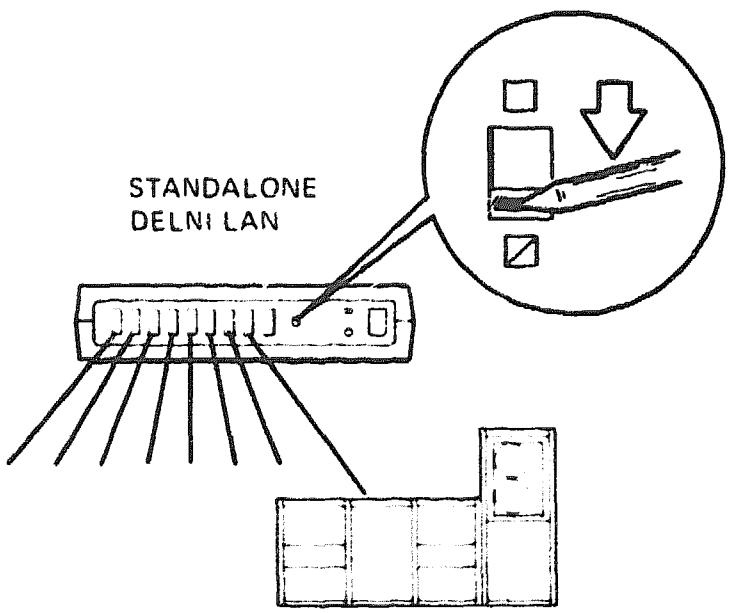
7. Find another work station cable and attach it to any other connector (1-8) in the same way.

8. Attach the rest of the work station cables in the same way. Make sure to neatly place the cables away from anywhere people may walk. You may also want to tie the cables together.

NOTE: You do not have to use all the connectors. You can connect other cables at any time.

9. Set the standalone/connected switch for your type of installation as shown in the following illustrations.

   Note the symbol above connector 9 ☐. If you are using connector 9 on this unit to connect to another DELNI unit, ETHERJACK box, or transceiver, then set the switch to that symbol ☐. Otherwise, set the switch to the other symbol ☑. Refer to Chapter 1 for information about setting this switch.



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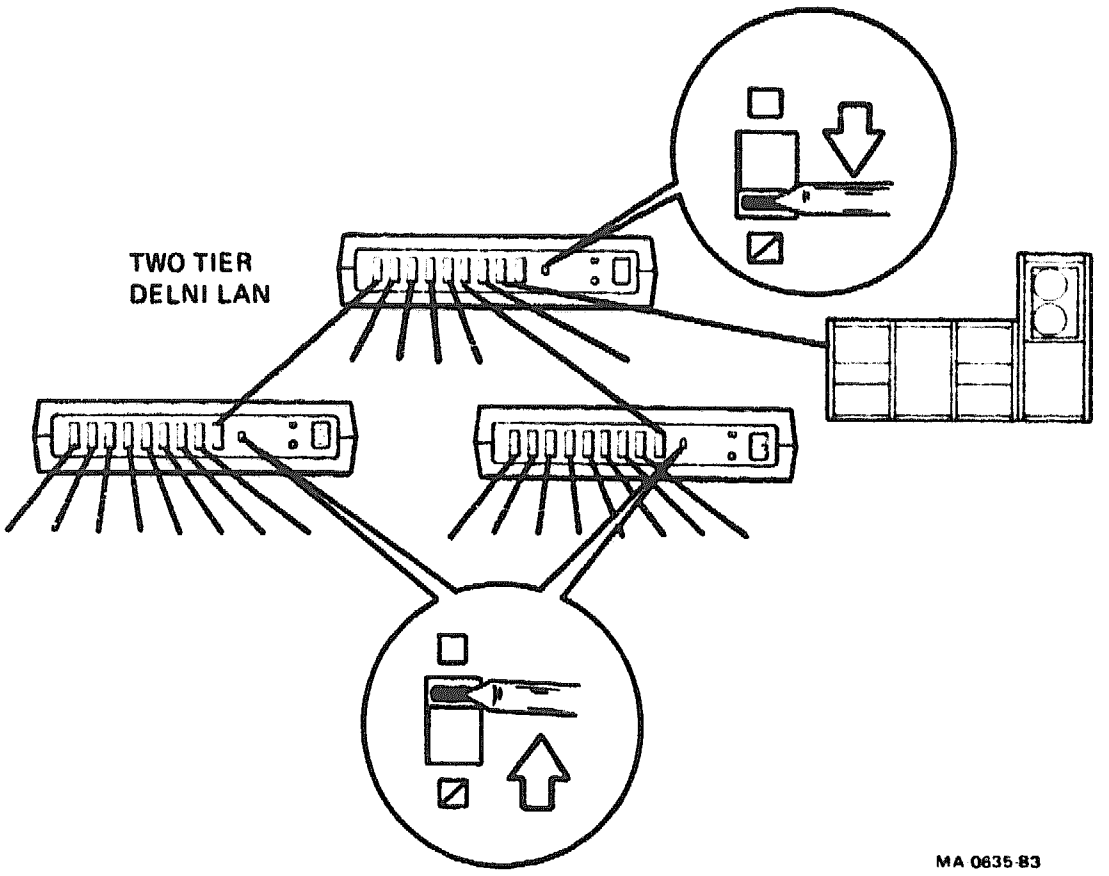

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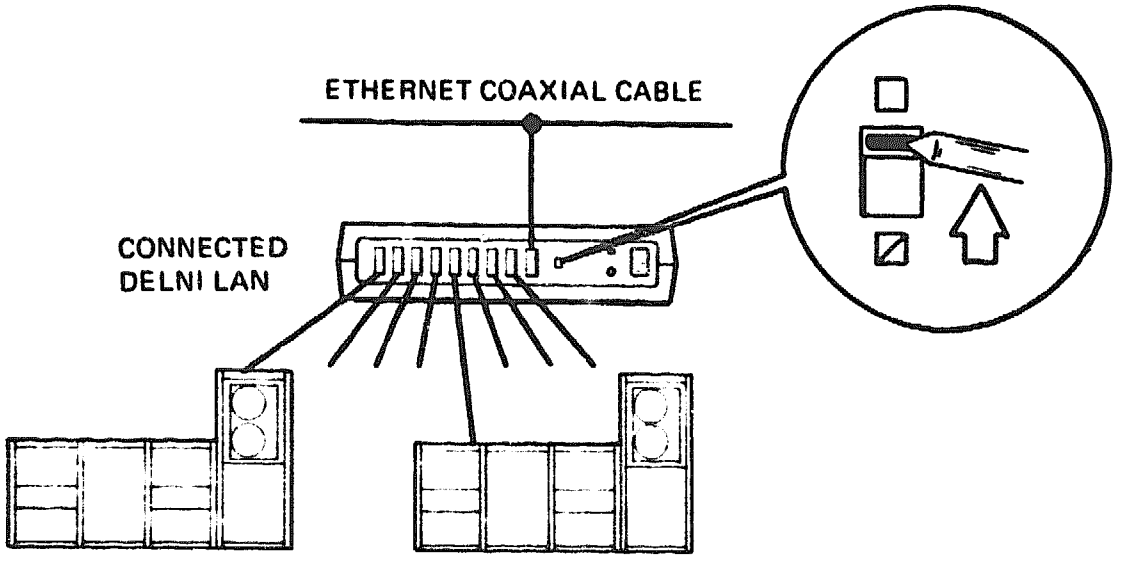

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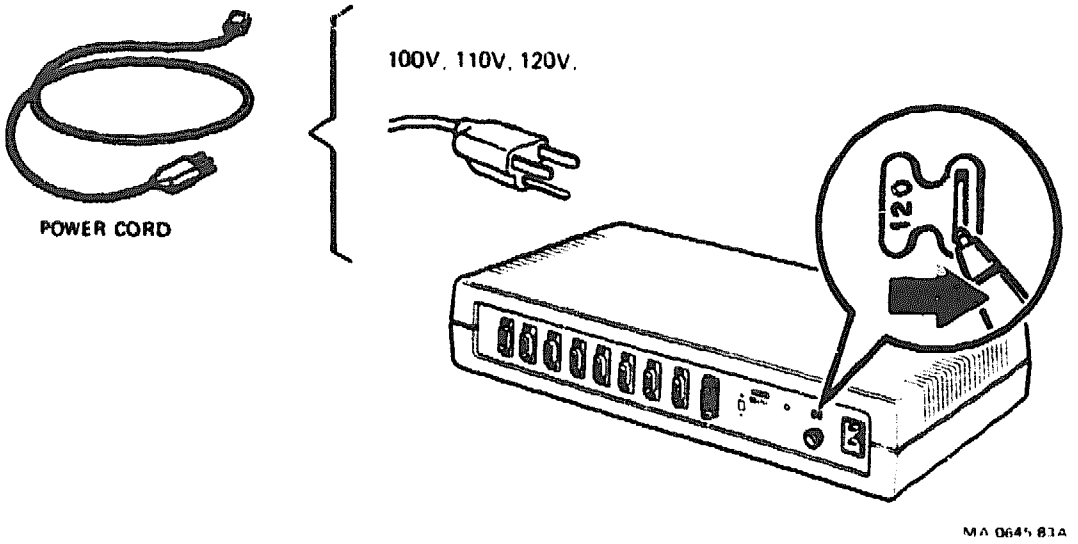
10. If your power line voltage is 100 volts-120 volts ac slide the voltage select switch to 120.



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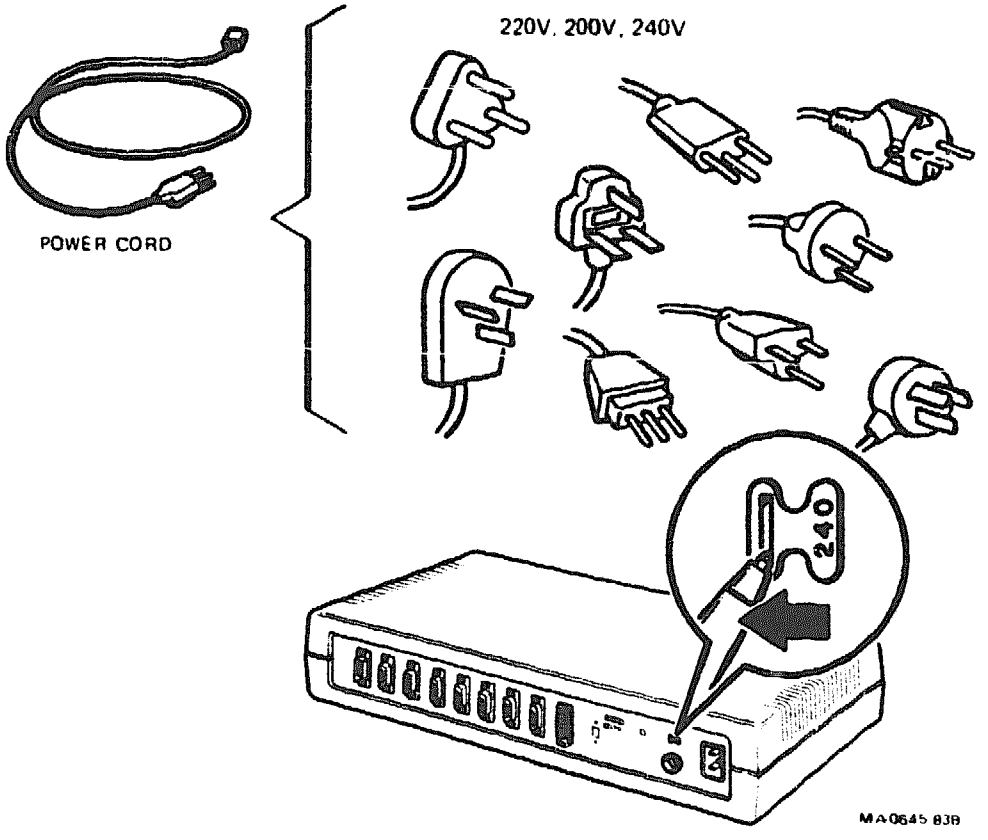
11. If your power line voltage is 220 volts-240 volts ac slide the voltage select switch to 220.



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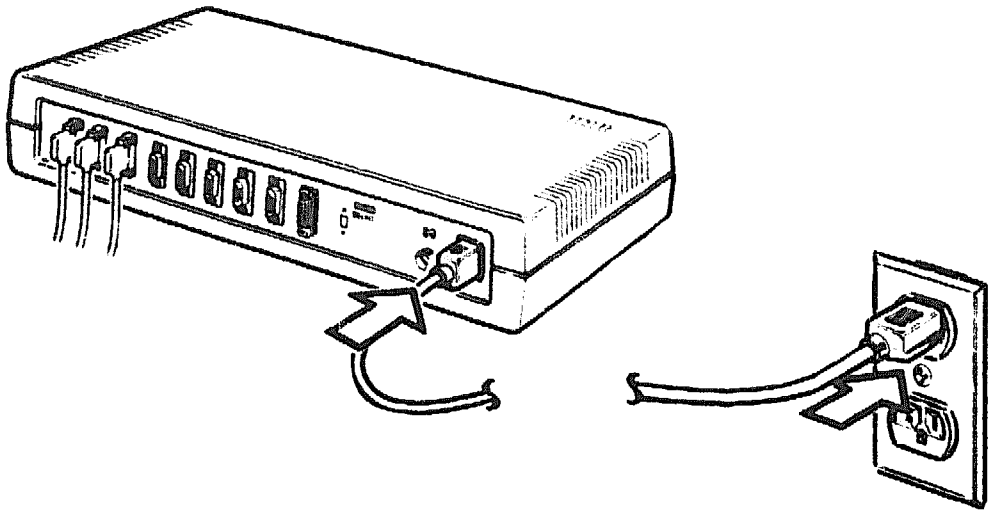
12. Insert the power cable in the socket on the DELNI panel.

13. Plug the other end of the power cable into the wall socket.



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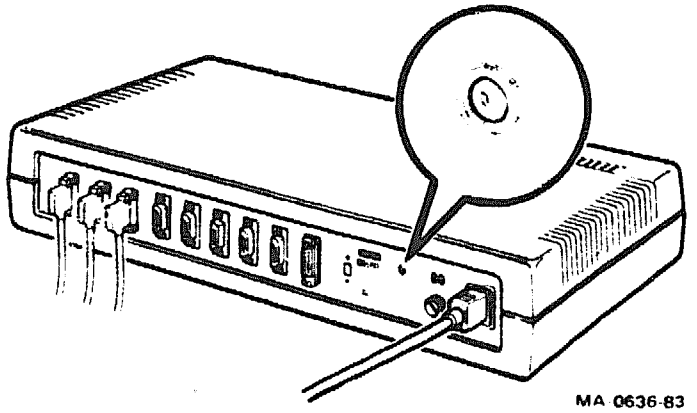
The green light on the connector panel should now be on.



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If you see the green light, you have correctly installed your DELNI unit.

You do not have to adjust your unit. Once installed, with both switches set, you can leave the unit on permanently.

If you do not see the green light, check the steps you performed in this chapter. If you performed all the steps correctly and the green light still does not go on, go to Chapter 3 for troubleshooting help.

3

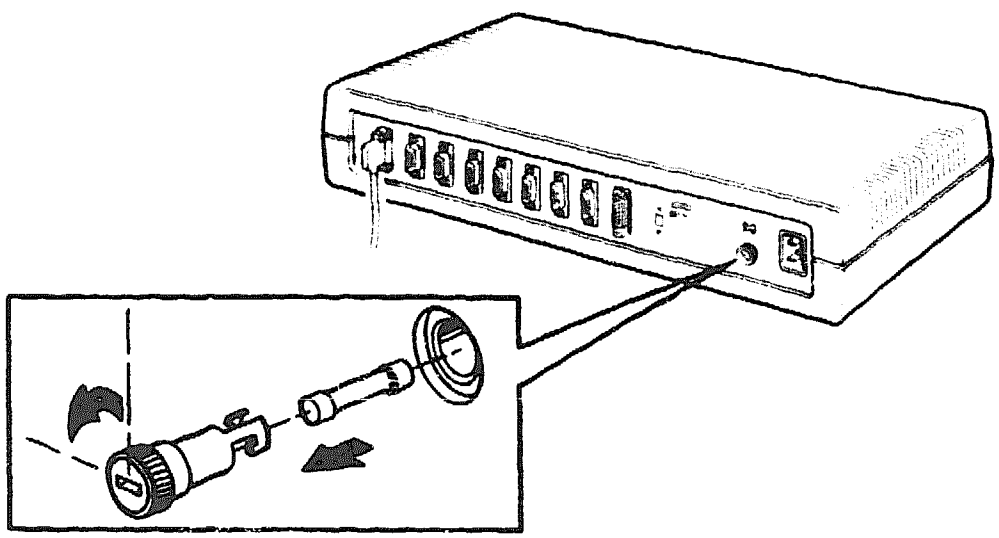
TROUBLESHOOTING

Introduction

This chapter explains how to identify problems in your DELNI unit and perform some simple procedures to fix them.

Green Light Does Not Go On

If the green light on the connector panel does not go on, there may be a power fault. First, make sure there is power at the socket (try plugging a lamp into the socket). Check the voltage selection switch as described in Chapter 2 and then check the fuse. If necessary, replace the 0.5 amp time delay fuse as shown in the figure below. If the light still does not go on, the unit must be replaced.



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Other Hardware Problems

If you have problems using the DELNI unit, the fault may be in the work station, the cable between the unit and the work station, or the unit itself. First, run any available diagnostics (refer to the work station's owner's manual). If diagnostics do not locate the problem, continue troubleshooting. Troubleshooting involves substituting working components, one by one, until you find the defective component.

Is the Work Station at Fault?

1. Substitute a station which you know works correctly for the one that shows the problem.

2. If the new station works correctly, the station you just removed is faulty. Refer to that station's owner's manual for corrective action.

If the problem continues, the cable or unit is faulty.

Is the Cable at Fault?

1. Remove the connector for the cable between the unit and the station that shows the problem.

2. Connect a cable which you know works correctly to this connector. You can use a cable from another station.

3. Connect the other end of this cable to the same station that shows the problem.

4. If the station works correctly the cable you just removed is faulty. Replace the defective cable.

If the problem continues, the unit is faulty.

Is the DELNI unit at Fault?

If some of the DELNI panel connectors are not in use, and some of the connectors in use are not working, connect working cables and stations to the unused connectors. The unused connectors may not be faulty. If different connectors work, use these until you can arrange to have your unit serviced. If none of the connectors work perform the following test.

1. Disconnect all cables from the DELNI panel.

2. Substitute a unit which works correctly for the one that shows the problem.

3. Connect all cables to the working unit. If all stations work correctly the original unit is faulty. Replace that unit.

If the problem continues, then start over with step one above.

Software Problems

The DELNI unit does not depend on software to operate. However, if you do not have the appropriate software for your station, you may have communication problems.

Make sure you have the latest version of ETHERNET network software correctly installed in your work stations. You may want to reload this software into all appropriate stations before you test again.

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4

SERVICE OPTIONS

Introduction

Chapter 3 described which steps you should follow before you call for service. This chapter describes the repair and support services available from Digital.

How to Get Service

Digital has a central service point in your area to help you get your system running with a minimum of trouble.

If your DELNI unit is on warrantee, or if you have a service contract, you can call Digital at one of the following telephone numbers.

Before you call:

- Step through Chapter 3 in this book. Often you can solve a problem yourself.
- Write down your DELNI serial number. The serial number is on the connector panel next to the power cord.
- Summarize the problem. Make a note of what you were doing when the unit failed. Also note the steps you took and the cables and devices you switched when troubleshooting.

When you call:

- Be near the unit.
- Have all your materials available. The service person may ask you to try to recreate the problem.

Call Digital at one of the following telephone numbers.

United States

Alaska or Hawaii
call collect 1-(404)-953-9056

Georgia
call collect 1-(404)-953-9056

All other states 1-(800)-554-3333

Repacking the DELNI unit

If you have to return the system to Digital for service, you must repack the unit carefully. Use the original shipping carton and shipping material. If you do not have the original shipping materials, pad the sides to prevent damage and keep the unit from moving in the carton.

Digital Services

Digital provides a wide range of DELNI maintenance and customer services.

Digital On-Site Service

Trained service specialists perform fast, low-cost maintenance at your site. Digital provides on-site service under a service agreement or on a per-call basis.

Carry-In Service

There are 160 Digital Servicenters worldwide, offering fast, dependable service. Digital provides carry-in service under a service agreement or on a per-call basis. Call the appropriate service information number from the list above for the location of the Servicenter near you.

DECmailer

If you have troubleshooting expertise, but need help for component repair, DECmailer provides a low-cost solution: a repair service for modules and subassemblies with a five-day turnaround at a Customer Return Center.

Spare Parts

Digital's Customer Spares organization provides support in the following areas.

- Spare inventory planning
- Maintenance test equipment
- Documentation
- Emergency spare parts

For more information on any Digital services call the appropriate service information number from the list above.

Other Services

Digital also provides network planning services. These include site surveys, installation, and consultations about your network installation. There are also network maintenance agreements which can give you support for both Digital and non-Digital equipment. Call your local sales office for complete information.

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A

ETHERJACK CONNECTION

Connecting Cables to the ETHERJACK Junction Box

This appendix describes how to connect cable to an ETHERJACK junction box.

The ETHERJACK box is a connection point for two cables. You can use it between two lengths of cable, or as the connecting point for a cable and other network equipment. An H4000 transceiver is not usually accessible and therefore has a cable connected to it. This cable is installed in the ETHERJACK box for connection to other network equipment.

There may be restrictions on the total distance between equipment to be added and an H4000 transceiver or a second DELNI unit. Check the installation manual that came with your network equipment or the ETHERNET controller for your work station. You may have to rearrange your equipment if it has restrictions. Typically, the maximum distance you can have is 50 meters (164 feet, 2 inches), although some work stations allow less. For example, the DEUNA ETHERNET controller for the PDP-11 or VAX can not be more than 35 meters (114 feet, 9 inches) from a second DELNI unit or an H4000 transceiver. Contact your local Digital sales office for more information about installing your network system.

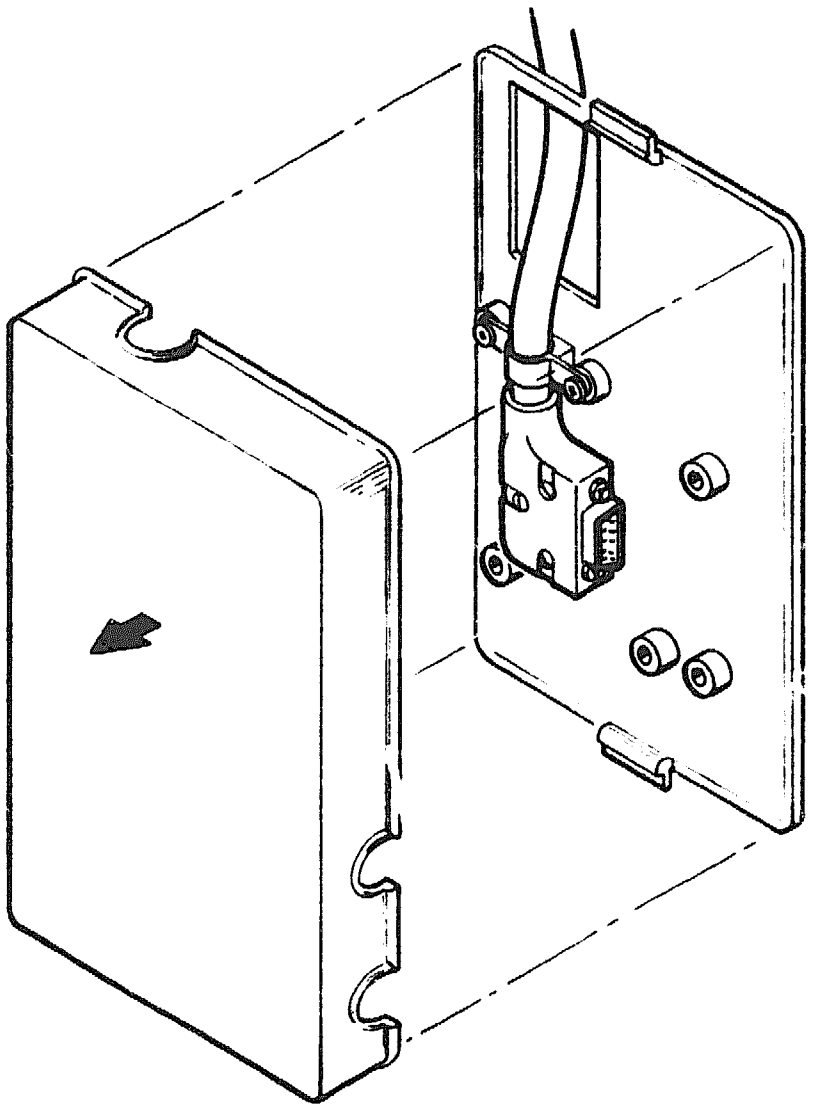
Each ETHERJACK box has a specifications label inside the cover. This label lists the length of the cable that connects the ETHERJACK box to other network equipment, DELNI unit, or H4000 transceiver. Make sure to include this length when you calculate total cable length. Another label inside the ETHERJACK cover shows several cable arrangements.

Perform the following steps to connect cables to the ETHERJACK box.

1. Snap off the ETHERJACK cover.

   a. Pry out one side.

   b. Lift off cover.



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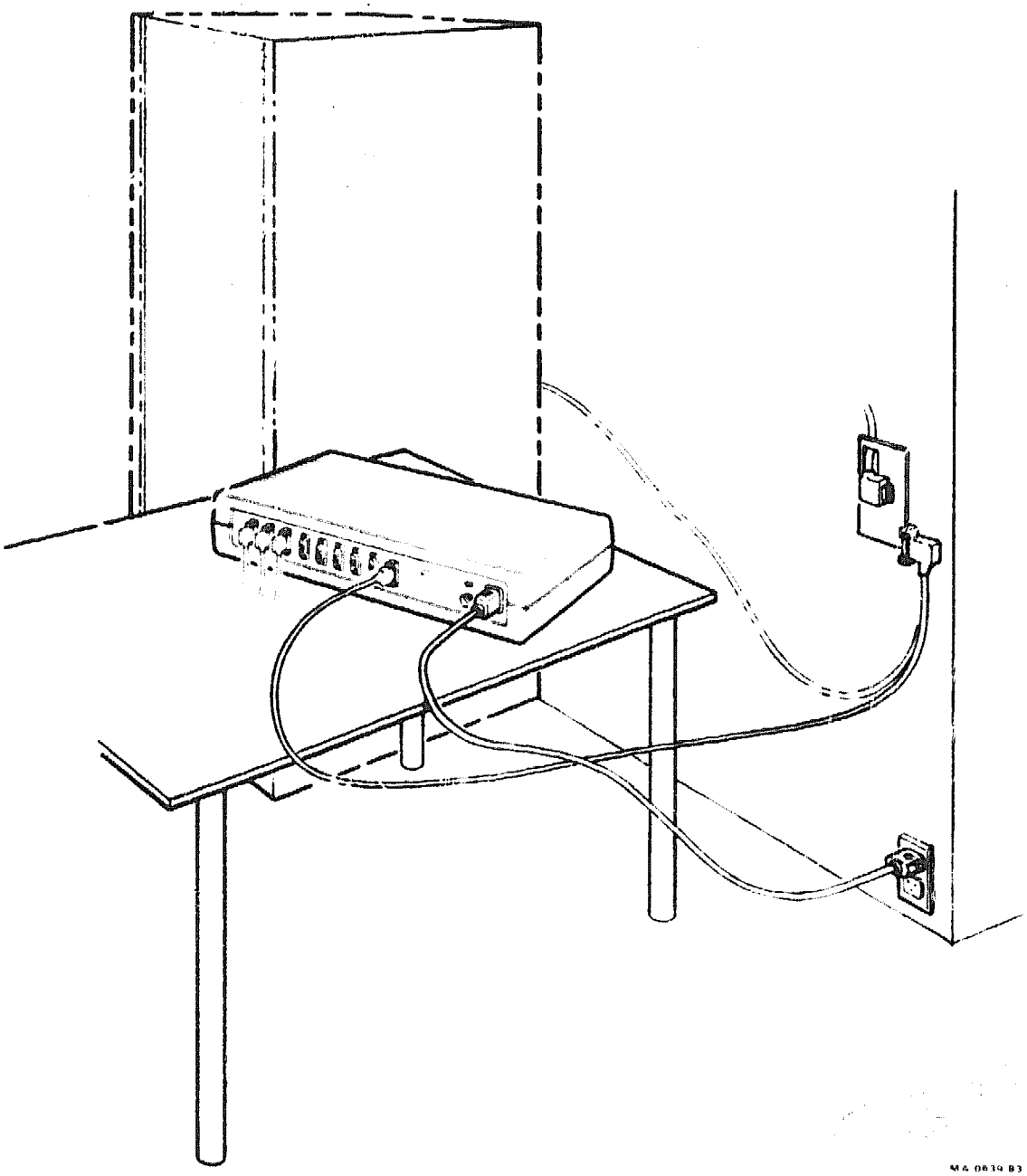
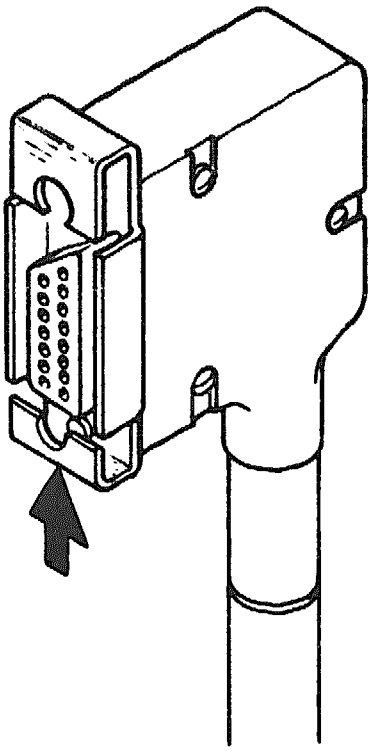
2. Bring the work station or network hardware cable and connector to the ETHERJACK box.



3. Align the connector on the cable to the connector in the ETHERJACK box.

4. With your finger, slide cable connector latch to the open position (up), if not already open.



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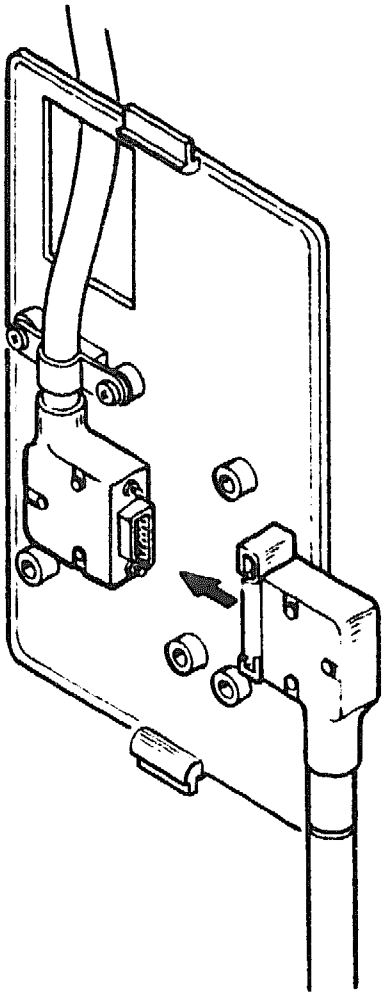
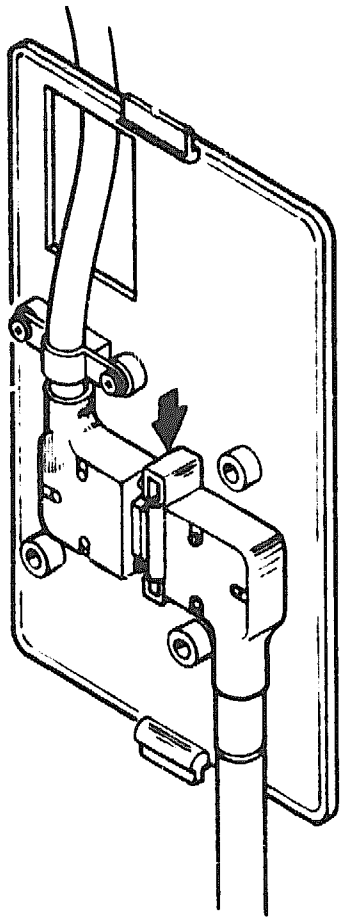
5. Push the connectors together (you may have to loosen the clamp which holds the connector in place).



6. Slide the latch in the other direction (down).
7. Pull the connectors firmly to make sure they are attached.
8. Push the cable into the strain relief clip.



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B

DEUNA CABLE LENGTH RESTRICTIONS

The DEUNA controller has certain cable length restrictions if you use any of the following computers in your ETHERNET local area network, and want to use a DELNI unit.

PDP-11/24
PDP-11/34
PDP-11/44
PDP-11/70
VAX-11/780
VAX-11/750
VAX-11/730

The following are maximum lengths for the DELNI LAN arrangements.

Standalone (local) DELNI LAN	40 meters from DEUNA to DELNI unit
Connected (global) DELNI LAN	40 meters from DEUNA to DELNI unit, 50 meters from DELNI to DELNI unit or H4000 transceiver
Two-tier DELNI LAN	35 m total length from DEUNA to DELNI unit to H4000 transceiver