



# DIGITAL Fast Ethernet Interface Module

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## DELHE-UA User's Guide



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## DELHE-UA User's Guide

Part Number: 9032765

**September 1998**

This book describes the DELHE-UA features and how to install and troubleshoot the equipment.

**Revision/Update Information:** This is a new document.

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## SAFETY INFORMATION

### CLASS 1 LASER TRANSCEIVERS

#### **THE DELHE-UA GIGABIT ETHERNET MODULES USE CLASS 1 LASER TRANSCEIVERS. READ THE FOLLOWING SAFETY INFORMATION BEFORE INSTALLING OR OPERATING THESE ADAPTERS.**

The Class 1 laser transceivers use an optical feedback loop to maintain Class 1 operation limits. This control loop eliminates the need for maintenance checks or adjustments. The output is factory set, and does not allow any user adjustment. Class 1 laser transceivers comply with the following safety standards:

- 21 CFR 1040.10 and 1040.11 U.S. Department of Health and Human Services (FDA).
- IEC Publication 825 (International Electrotechnical Commission).
- CENELEC EN 60825 (European Committee for Electrotechnical Standardization).

When operating within their performance limitations, laser transceiver output meets the Class 1 accessible emission limit of all three standards. Class 1 levels of laser radiation are not considered hazardous.

## SAFETY INFORMATION

### CLASS 1 LASER TRANSCEIVERS

#### **LASER RADIATION AND CONNECTORS**

When the connector is in place, all laser radiation remains within the fiber. The maximum amount of radiant power exiting the fiber (under normal conditions) is -12.6 dBm or  $55 \times 10^{-6}$  watts.

Removing the optical connector from the transceiver allows laser radiation to emit directly from the optical port. The maximum radiance from the optical port (under worst case conditions) is  $0.8 \text{ W cm}^{-2}$  or  $8 \times 10^3 \text{ W m}^{-2} \text{ sr}^{-1}$ .

**Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.**

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## DECLARATION OF CONFORMITY

Application of Council Directive(s): **89/336/EEC**  
**73/23/EEC**

Manufacturer's Name: **Cabletron Systems, Inc.**

Manufacturer's Address: **35 Industrial Way**  
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**Nexus House, Newbury Business Park**  
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Conformance to Directive(s)/Product Standards: **EC Directive 89/336/EEC**  
**EC Directive 73/23/EEC**  
**EN 55022**  
**EN 50082-1**  
**EN 60950**

Equipment Type/Environment: **Networking Equipment, for use in a**  
**Commercial or Light Industrial**  
**Environment.**

We the undersigned, hereby declare, under our sole responsibility, that the equipment packaged with this notice conforms to the above directives.

Manufacturer

Mr. Ronald Fotino

Full Name

Principal Compliance Engineer

Title

Rochester, NH, USA

Location

Legal Representative in Europe

Mr. J. Solari

Full Name

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# PREFACE

Welcome to the *DIGITAL Fast Ethernet Interface Module DELHE-UA User's Guide*. This manual describes the DELHE-UA and provides information concerning features, installation, troubleshooting, information on Local Management, and specifications for the DELHE-UA. The DELVM-UA is a Fast Ethernet interface module. This manual refers to the DELHE-UA as an HSIM (High Speed Interface Module).

## USING THIS GUIDE

Reading through this manual completely will help you understand the features and capabilities of the DELHE-UA.

A general working knowledge of Ethernet and data communications networks and their physical layer components is helpful when installing this device.

## STRUCTURE OF THIS GUIDE

This guide is organized as follows:

Chapter 1, **Introduction**, describes the DELHE-UA features.

Chapter 2, **Installation**, describes how to install a DELHE-UA into an interface module (host platform).



The term “host platform” is used to describe the interface module into which the DELHE-UA can be installed.

Chapter 3, **LANVIEW LEDs**, describes how to use the DELHE-UA LEDs to monitor performance and status.

Appendix A, **DELHE-UA Specifications**, lists the operating specifications and regulatory compliance of the DELHE-UA.

Appendix B, **FEPIM Specifications**, lists the operating specifications and regulatory compliance for the GPIMs.

### DOCUMENT CONVENTIONS

Throughout this guide, the following symbols are used to call attention to important information.



**Note** symbol. Calls the reader's attention to any item of information that may be of special importance.



**Caution** symbol. Contains information essential to avoid damage to the equipment.



**Electrical Hazard Warning** symbol. Warns against an action that could result in personal injury or death due to an electrical hazard.

### RELATED DOCUMENTATION

The documentation for the host device in which the DELHE-UA is to be installed provides additional information about the setup of the DELHE-UA. This user's guide references procedures in these documents, where appropriate, but does not repeat them.

These documents can be obtained on the World Wide Web in Adobe Acrobat Portable Document Format (PDF) at the sites listed in the World Wide Web section of this Preface.

## CORRESPONDENCE

### Documentation Comments

If you have comments or suggestions about this manual, send them to DIGITAL Network Products:

Attn.:	Documentation Project Manager
E-MAIL:	doc_quality@lkg.mts.dec.com

### World Wide Web

To locate product-specific information, refer to the DIGITAL Network products Home Page on the World Wide Web at the following locations:

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<b>Asia Pacific:</b>	<a href="http://www.networks.digital.com.au">http://www.networks.digital.com.au</a>

## GETTING HELP

Contact your DIGITAL representative for technical support. Before calling, have the following information ready:

- A description of the failure
- A description of any action(s) already taken to resolve the problem (e.g., changing mode switches, rebooting the unit, etc.)
- A description of your network environment (layout, cable type, etc.)
- Network load and frame size at the time of trouble (if known)
- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)







# SAFETY


## OVERVIEW

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


	WARNING	Warns against an action that could result in equipment damage, personal injury, or death.
	VORSICHT	Warnt den Benutzer vor Aktionen, die das Gerät beschädigen, Personen verletzen oder sogar zum Tod führen könnten.
	DANGER	Déconseille à l'utilisateur d'exécuter une action pouvant entraîner des dommages matériels, corporels voire même la mort.
	AVISO	Previene contra una acción que podría dañar el equipo, provocar daños personales o la muerte.
	CAUTION	Contains information essential to avoid damage to the equipment.
	ACHTUNG	Liefert wichtige Informationen, um einen Geräteschaden zu vermeiden.
	ATTENTION	Informations indispensables permettant d'éviter les dommages matériels.
	PRECAUCIÓN	Contiene información esencial para evitar daños al equipo.

## SAFETY REQUIREMENTS

The warnings or cautions that must be observed for the hardware described in this manual are listed below in English, German, French, and Spanish.

	WARNING	Only qualified personnel should install or service this unit.
	VORSICHT	Diese Einheit darf nur von qualifizierten Fachleuten installiert oder gewartet werden.
	DANGER	L'installation et la maintenance de cet appareil sont réservées à un personnel qualifié.
	AVISO	Sólo el personal cualificado debe instalar o dar mantenimiento a esta unidad.
	WARNING	Ensure that the chassis cover is in place before reconnecting the power cord.
	VORSICHT	Das Gehäuse sollte ordnungsgemäß angebracht sein, bevor das Netzkabel wieder angeschlossen wird.
	DANGER	Avant de rebrancher le cordon d'alimentation, vérifiez que le couvercle du châssis est bien en place.
	AVISO	Asegúrese de que la cubierta del chasis esté en su sitio antes de volver a conectar el cable de alimentación.
	WARNING	Certain FEPIMs use Class 1 lasers. Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.
	VORSICHT	Einige FEPIMs benutzen Laser der Klasse 1. Zum Ansehen der Laserausgabe dürfen keine optischen Geräte benutzt werden, da dadurch das Risiko von Augenverletzungen erhöht wird. Vor dem Ansehen des optischen Ausgangsanschlusses muß der Netzwerkadapter vom Stromanschluß getrennt werden.

DANGER	Certains FEPIM utilisent des lasers de classe 1. Ne pas utiliser d'instruments optiques pour visualiser la sortie laser, car ces instruments augmentent les risques oculaires. Pour visualiser le port optique, débrancher l'adaptateur secteur.
AVISO	Ciertos FEPIMs utilizan rayos láser de Clase 1. No utilice instrumentos ópticos para ver la salida láser. El uso de estos instrumentos para tal fin aumenta el peligro para la visión. Cuando mire al puerto óptico de salida, se debe eliminar la alimentación del adaptador de red.
WARNING	The DELF3-UI uses Class 1 lasers. Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.
VORSICHT	DELF3-UI verwendet Laser der Klasse 1. Verwenden Sie keine optischen Geräte, um den Laserausgang zu betrachten, da dies die Gefahr für die Augen erhöhen würde. Wenn Sie den optischen Laserausgang betrachten wollen, muß zuvor die Stromversorgung des Netzwerkadapters ausgeschaltet werden.
DANGER	L'appareil DELF3-UI utilise des lasers de classe 1. N'utilisez pas d'instruments optiques pour visualiser la sortie laser, car ces instruments augmentent les risques oculaires. Pour visualiser le port optique, débrancher l'adaptateur secteur
AVISO	El DELF3-UI utiliza láser de clase 1. No use instrumentos ópticos para ver la salida de láser. El uso de instrumentos ópticos para ver la salida de láser aumenta el riesgo para la vista. Cuando mire al puerto óptico de salida, asegúrese siempre de haber desconectado la alimentación eléctrica del adaptador de red.

	CAUTION	The DELVM-UA, FEPIM, and the host module or hub are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to this equipment
	ACHTUNG	Der DELVM-UA, FEPIMs und das Host-Modul bzw. der Hub sind für statische Entladungen empfindlich. Benutzen Sie deshalb ein Antistatikarmband, und beachten Sie während dieses Verfahrens alle diesbezüglichen Vorsichtsmaßnahmen. Bei Nichtbeachtung könnte das Gerät beschädigt werden.
	ATTENTION	L'appareil DELVM-UA, les connecteurs FEPIM et le concentrateur ou le module hôte sont sensibles à l'électricité statique. Au cours de cette procédure, utilisez des bracelets antistatiques et respectez toutes les précautions relatives à l'électricité statique. Si vous ne tenez pas compte de ces conseils, vous risquez d'endommager cet équipement.
	PRECAUCIÓN	DELVM-UA, FPIMs y el hub o módulo de host es sensible a la descarga estática. Utilice una banda antiestática para la muñeca y observe todas las precauciones sobre estática durante este procedimiento. Si no se cumple con estos requisitos, se puede dañar el equipo.
	CAUTION	Before installing a DELFX-UI or DELF3-UI module into the host module, remove the protective cover on the SC connector.
	ACHTUNG	Vor der Installation eines DELFX-UI- oder DELF3-UI-Moduls in das Hostsystemmodul muß der Gummistöpsel vom SC-Anschlußstecker entfernt werden.
	ATTENTION	Avant d'installer un module DELFX-UI ou DELF3-UI dans le module hôte, retirer le bouchon de protection du connecteur SC
	PRECAUCIÓN	Antes de instalar un módulo DELFX-UI o DELF3-UI en el módulo del sistema central, retire la cubierta protectora del conector SC.

CAUTION	Ensure that the FEPIM or DELVM-UA connector aligns with the DELVM-UA, module, or device connector pins to prevent bending the pins. Failure to do so can damage the DELVM-UA, FEPIM, module or device.
ACHTUNG	Vergewissern Sie sich, daß der FEPIM- oder DELHE-UA-Stecker gerade in den DELHE-UA, das Modul oder den Geräteanschluß eingesetzt wird und die Nadeln nicht gebogen werden. Wird er schräg eingesetzt, könnten DELHE-UA, FEPIM, das Modul oder das Gerät beschädigt werden.
ATTENTION	S'assurer que les connecteurs FEPIM ou DELHE-UA (selon le cas) sont bien enfichés. Dans le cas contraire, les appareils DELHE-UA et FEPIM risquent d'être endommagés.
PRECAUCIÓN	Asegúrese de que el conector FEPIM o DELHE-UA está alineado con el DELHE-UA, módulo o patillas del conector del dispositivo para evitar la curvatura de las patillas. Si no se hace así, se pueden producir daños en el DELHE-UA, FEPIM, módulo o dispositivo.
CAUTION	Do not touch the ends of the fiber optic strands, and do not let the ends come in contact with dust, dirt, or other contaminants. Contamination of the ends causes problems in data transmissions. If the ends become contaminated, blow the surfaces clean with a canned duster. A fiber port cleaning swab saturated with optical-grade isopropyl alcohol may also be used to clean the ends.

ACHTUNG	Das Ende an beiden Seiten des Glasfaserkabels darf nicht berührt werden oder mit Staub, Schmutz und anderen Stoffen in Berührung kommen, die zur Verunreinigung führen und Datenübertragungsprobleme verursachen könnten. In einem solchen Fall müssen die Enden mit einem eigens dazu bestimmten Staubspray oder einem in Isopropylalkohol getauchten Wattestäbchen) sorgfältig gereinigt werden.
ATTENTION	Evitez de toucher les extrémités des fils en fibre optique et assurez-vous que ceux-ci n'entrent pas en contact avec de la poussière, de la saleté ou autres agents contaminants, pouvant provoquer des erreurs de transmission de données. Si les extrémités sont sales, nettoyez-les à l'aide d'un chiffon. Un tampon de nettoyage de port optique imbibé d'alcool isopropylique peut également être utilisé.
PRECAUCIÓN	No toque los extremos de los filamentos de la fibra óptica, ni permita que dichos extremos entren en contacto con polvo, suciedad u otros contaminantes. La contaminación de los extremos origina problemas en la transmisión de los datos. Si los extremos se contaminan, limpie su superficie con un plumero hermético. Un cepillo especial de limpieza para puertos de fibra óptica con alcohol isopropílico de calidad óptica también puede resultar útil para limpiar los extremos.

# CHAPTER 1

## INTRODUCTION

The DELHE-UA has two Fast Ethernet ports in which Fast Ethernet (Port) Interface Modules (FEPIMs) can be installed. Figure 1-1 shows the DELHE-UA.

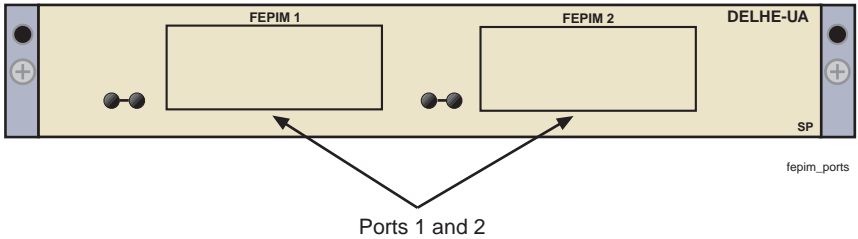


Figure 1-1 DELHE-UA

## 1.1 OVERVIEW

The DELHE-UA extends the functionality of certain DIGITAL interface modules by providing high-speed uplink capability through Fast Ethernet technology with different types of media.

### 1.1.1 Connectivity

The DELHE-UA module supports Fast Ethernet technology, using interchangeable Fast Ethernet Port Interface Modules (FEPIMs). The FEPIMs support three types of media connectivity: RJ45 Category 5 unshielded twisted pair, and SC connectors for either single or multimode fiber. The FEPIMs support an uplink to 100 Mbps Fast Ethernet backbones or a high speed connection to a local server.

## 1.1.2 Local Management

The DELHE-UA is managed through the host device in which it is installed. For information concerning Local Management for the DELHE-UA, refer to the manual for the host platform. For details on obtaining the host platform manual, refer to Related Documentation in the Preface.

## 1.1.3 Full Duplex Switched Ethernet

The optional Fast Ethernet (Port) Interface Modules for the DELHE-UA can be configured to operate in Full Duplex Switched Ethernet mode.

## 1.1.4 LANVIEW Diagnostic LEDs

Cabletron Systems provides a visual diagnostic and monitoring system called LANVIEW. The DELHE-UA LANVIEW LEDs help you quickly identify transmit and receive status. Chapter 3 provides information on the DELHE-UA LEDs and the DELTX-UI LED.

## 1.2 FEPIM OPTIONS

The FEPIM options for the DELHE-UA are listed in Table 1-1. Check the Release Notes with the host platform for changes or additions to this list.

Table 1-1 FEPIM Options

Part Number	Connector	Media type
DELTX-UI	RJ45	category 5 unshielded twisted pair
DELFX-UI	SC fiber	multimode fiber
DELF3-UI	SC fiber	single mode fiber



# CHAPTER 2

## INSTALLATION

To install the DELHE-UA the following items are required:

- Antistatic wrist strap
- Phillips screwdriver
- Fast Ethernet (Port) Interface Modules (FEPIMs) in the appropriate media



Before attempting to use the DELHE-UA you should be familiar with the *IEEE 802.3, 802.3 10BASE-T, and 802.3u 100BASE-T Specifications*.

### 2.1 UNPACKING THE DELHE-UA



The DELHE-UA and the host platform are sensitive to static discharges. Use an antistatic strap and observe all static precautions during this procedure. Failure to do so could result in damage to the DELHE-UA, host module or device.

Unpack the DELHE-UA as follows:

1. Remove the DELHE-UA from the shipping box.
2. Leave the module in its antistatic bag until you are ready to install it.
3. Attach the antistatic wrist strap (refer to the instructions on the antistatic wrist strap package for proper use).

4. After removing the module from its antistatic bag, visually inspect the device. If you notice any sign of damage, contact a DIGITAL representative immediately. Save the antistatic bag in the event the module must be reshipped.

## **2.2 INSTALLING FAST ETHERNET (PORT) INTERFACE MODULES**



Only qualified personnel should perform installation procedures.

Fast Ethernet (Port) Interface Modules (FEPIMs) must be installed in the DELHE-UA before installing the DELHE-UA in the host device. The FEPIMs provide connectivity to the network. At least one FEPIM must be installed in either port one or port two. To install an FEPIM in the DELHE-UA, proceed as follows:



The DELF3-UI uses Class 1 lasers. Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.

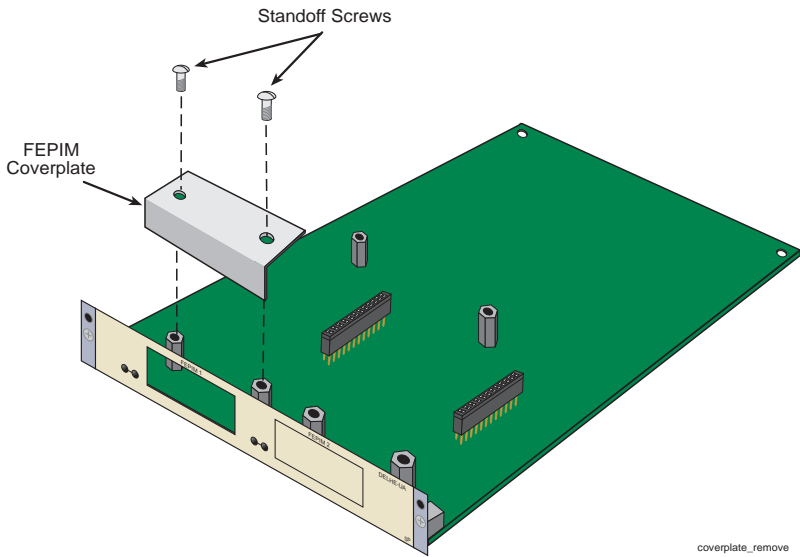


The FEPIM and the DELHE-UA are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could damage the FEPIM or the DELHE-UA.

1. Remove the coverplate from the port slot where the FEPIM will be installed.

To remove the coverplate, refer to Figure 2-1 and proceed as follows:

- a. Remove the two screws fastening the coverplate to the standoffs. Save the screws.
- b. Lift and remove the coverplate from the top of the front standoffs.



**Figure 2-1 Removing the FEPIM Coverplate**



Before installing a DELFX-UI or DELF3-UI module into the host module, remove the protective cover on the SC connector.

2. Refer to Figure 2-2. Gently pull the faceplate of the DELHE-UA forward to allow room for the FEPIM to be aligned over the connector.
3. Align the FEPIM connector into the DELHE-UA connector pins. See Figure 2-2.



Ensure that the FEPIM connector aligns with the DELHE-UA connector pins to prevent bending the pins. This can damage both the DELHE-UA and the FEPIM.

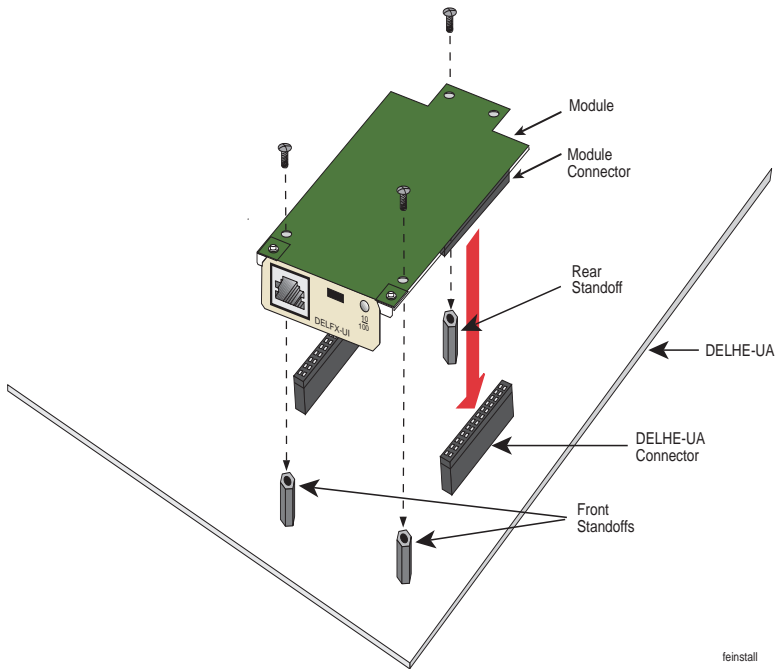


Figure 2-2 Installing the FEPIM

4. Press down firmly on the FEPIM until the pins slide all the way into the DELHE-UA connector. Ensure that the FEPIM seats flush on the standoffs.
5. Secure the FEPIM using the screws enclosed in the FEPIM packaging. The screw used to attach the rear of the FEPIM to the standoff is optional and not necessary for proper installation. Refer to Figure 2-2.



If SC protective covers were removed from a fiber FEPIM, replace the covers until the port is connected to the network to reduce the chance of dust and contaminants entering the port.

## 2.3 INSTALLING THE DELHE-UA



Only qualified personnel should install or service this unit.

A DELHE-UA can be installed in any DIGITAL device that supports HSIMs (High Speed Interface Module) technology (e.g., DLE52-MA, DLE28-MA).



Refer to the Release Notes for the version of firmware running on the DIGITAL host platform to ensure that the DELHE-UA is supported.

The following subsections provide generic instructions for installing a DELHE-UA in an interface module. Refer to the specific interface module documentation for exact HSIM slot and connector locations.



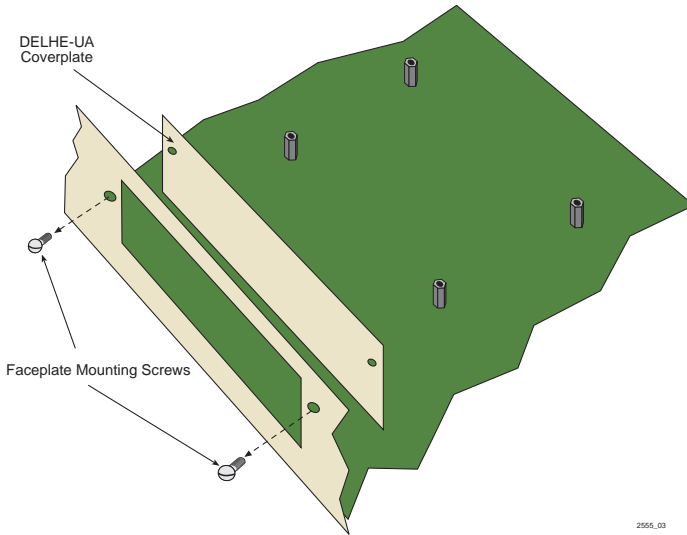
The FEPIMs should already have been installed in the DELHE-UA at this time. If the FEPIMs have not been installed, return to Section 2.2.

### 2.3.1 Installing the DELHE-UA in an Interface Module

To install a DELHE-UA in an interface module that supports HSIM technology, perform the following steps.

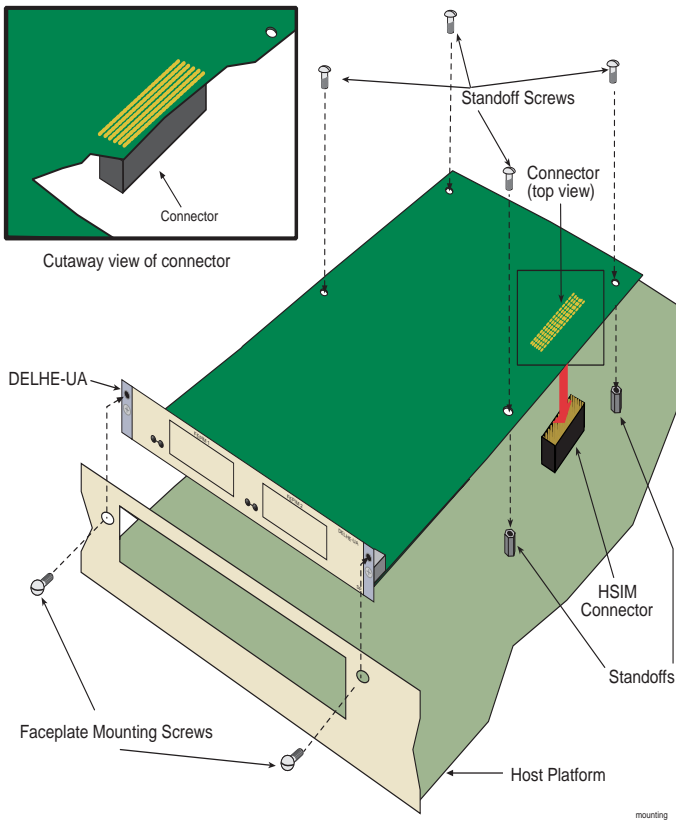
1. Note the ports of the interface module that have cables attached to them. Write down the ports and label the cables to make it easier to reattach the network properly after the installation. Then disconnect the cables from the ports.
2. Attach the antistatic wrist strap (refer to the instructions outlined on the antistatic wrist strap package).
3. If the interface module is installed in a chassis, unlock the top and bottom plastic locking tabs of the module faceplate.
4. Remove the module from the chassis, and place it down flat with the internal components facing up.

5. Remove and save the two faceplate mounting screws securing the HSIM coverplate and remove the coverplate. See Figure 2-3.



**Figure 2-3 Removing the HSIM Coverplate**

6. Refer to Figure 2-4 and place the DELHE-UA behind the module faceplate.



**Figure 2-4 Installing the DELHE-UA**

7. Align the connector on the DELHE-UA with the connector on the module.



Ensure that the DELHE-UA connector aligns with the module connector pins to prevent bending the pins. This can damage both the DELHE-UA and the module.

8. Press down firmly on the connector area of the DELHE-UA until the connector slides all the way onto the pins. Ensure that the standoffs on the interface module align with the standoff screw holes on the DELHE-UA.

9. Secure the DELHE-UA to the module faceplate using the mounting screws saved in Step 5.
10. Secure the DELHE-UA to the module standoffs using the standoff screws included in the DELHE-UA shipping materials.
11. Reinstall the interface module in the chassis.
12. Reattach the network cabling to the interface module.

## 2.4 CONNECTING TO THE NETWORK

The DELHE-UA can be connected to the network using either fiber optic cable or twisted pair cable. The media chosen determines which type of FEPIM to be used. When using fiber optic cable, use either the DELFX-UI or the DELF3-UI. The DELFX-UI is used for multimode fiber cable, and the DELF3-UI is used for single mode fiber cable. Refer to Appendix B for details on which FEPIM to use with the appropriate fiber optic cable. To connect to the network using fiber optic cable, refer to Section 2.4.1. When using twisted pair cabling, use the DELTX-UI. To connect to the network using twisted pair cable, refer to Section 2.4.2.



## 2.4.1 Connecting a Fiber Optic Segment to the FEPIIM

DIGITAL offers fiber optic cables that use SC style connectors which are keyed to ensure proper crossover of the transmit and receive fibers.



An odd number of crossovers (preferably one) must be maintained between like devices so that the transmit port of one device is connected to the receive port of the other device and vice versa.

If the fiber optic cable being used has SC style connectors that do not resemble MIC style connectors, or has SC connectors on one end and a different type on the other, such as ST connectors, ensure that the proper crossover occurs.

1. Remove the protective covers from the fiber optic ports and from the ends of the connectors.



Leave the protective covers in place when the connectors are not in use to prevent contamination.



Certain FEPIIMs use Class 1 lasers. Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.



Do not touch the ends of the fiber optic strands, and do not let the ends come in contact with dust, dirt, or other contaminants. Contamination of the ends causes problems in data transmissions. If the ends become contaminated, blow the surfaces clean with a canned duster. A fiber port cleaning swab saturated with optical-grade isopropyl alcohol may also be used to clean the ends.

2. Insert one end of the SC connector into the FEPIM.
3. At the other end of the fiber optic cable, attach the SC connector to the other device.
4. Verify that a link exists by checking that the port receive LED is ON (flashing amber, blinking green, or solid green). If the receive LED is OFF and the transmit LED is not blinking amber, perform the following steps until it is ON:
  - a. Check that the power is turned on for the device at the other end of the link.
  - b. Verify proper crossover of fiber strands between the port on the DELHE-UA and the fiber optic device at the other end of the fiber optic link segment.
  - c. Verify that the fiber connection meets the dB loss specifications outlined in Appendix B.

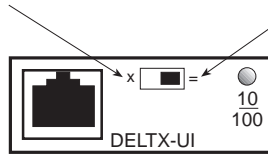
If a link has not been established, refer to Chapter 3, **LANVIEW LEDs**, before contacting a DIGITAL representative.

### 2.4.2 Connecting a Twisted Pair Segment to the DELTX-UI

A DELTX-UI has an internal crossover switch. When connecting a workstation, use a straight-through cable and set the FEPIM crossover switch shown in Figure 2-5 to the crossed over position marked with **X**. When connecting networking devices, such as another bridge, repeater, or router, use a straight-through cable and set the FEPIM crossover switch shown in Figure 2-5 to the straight-through position, marked with **=**.

Position X  
(crossed over)

- 1. RX+
- 2. RX-
- 3. TX+
- 4. NC
- 5. NC
- 6. TX-
- 7. NC
- 8. NC



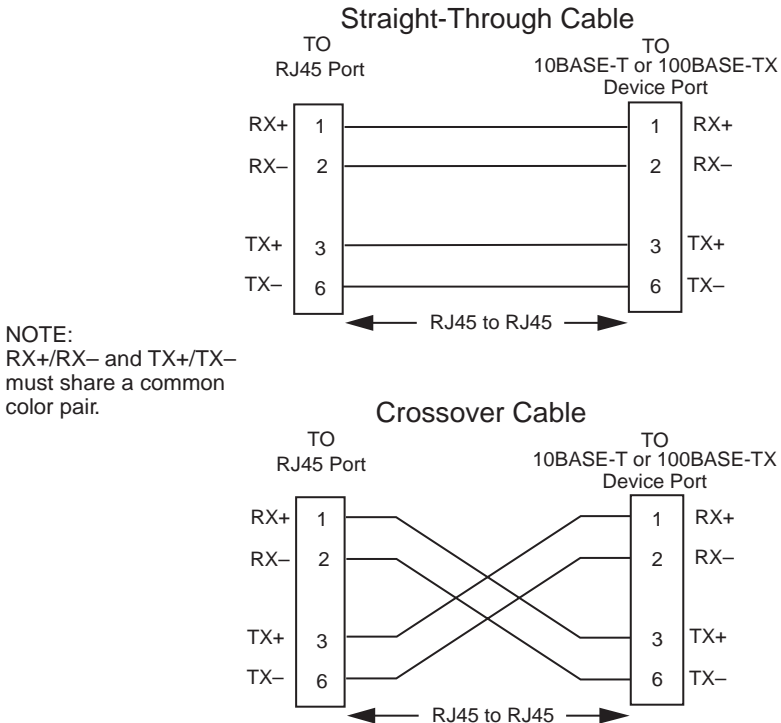
Position =  
(not crossed over)

- 1. TX+
- 2. TX-
- 3. RX+
- 4. NC
- 5. NC
- 6. RX-
- 7. NC
- 8. NC

fecrossover

**Figure 2-5 DELTX-UI Crossover Switch**

A schematic of a straight-through and a crossover cable is shown in Figure 2-6. If the wires do not cross over, use the switch on the DELTX-UI to internally cross over the RJ45 port. Figure 2-5 shows how to properly set the DELTX-UI crossover switch.



NOTE:  
RX+/RX- and TX+/TX-  
must share a common  
color pair.

25041-08

Figure 2-6 Twisted Pair Cabling

Connect a DELTX-UI to a twisted pair segment as follows:

1. Ensure that the device connected to the other end of the segment is powered ON.
2. Connect the twisted pair segment to the module by inserting the RJ45 connector on the twisted pair cable into the RJ45 port on the module shown in Figure 2-5.
3. Verify that a link exists by checking that the port receive LED is on (flashing amber, blinking green, or solid green). If the receive LED is off, perform the following steps until it is on:
  - a. Verify that the 100BASE-TX device at the other end of the twisted pair segment is powered up.

- b.** Verify that the RJ45 connector on the twisted pair segment has the proper pinouts.
- c.** Check the cable for continuity.
- d.** Make sure that the twisted pair connection meets cable specifications outlined in Appendix B.
- e.** Confirm that the crossover switch is in the correct position.

If a link is not established, refer to Chapter 3, **LANVIEW LEDs**, for information before contacting a DIGITAL representative.



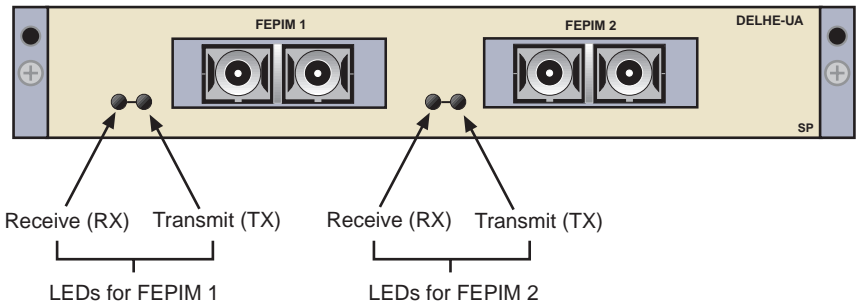
# CHAPTER 3

## LANVIEW LEDs

This chapter describes how to use the LANVIEW LEDs to monitor the DELHE-UA status and diagnose DELHE-UA problems.

### 3.1 DELHE-UA LEDs

Refer to Figure 3-1 for the location of the DELHE-UA LEDs and Table 3-1 for a description of the LED indications.



**Figure 3-1 DELHE-UA LANVIEW LEDs**



The terms **flashing**, **blinking**, and **solid** used in Table 3-1 indicate the following:

**Flashing** indicates an irregular LED pulse.

**Blinking** indicates a steady LED pulse (approximately 50% on and 50% off).

**Solid** indicates a steady LED light. No pulsing.

Table 3-1 DELHE-UA LEDs

LED	Color	Definition
Receive	Green	Link, no activity. Port enabled.
	Green (Blinking)	Link, port disabled.
	Amber (Flashing)	Link, activity. Port enabled.
	Off	No link, no activity. Port enabled or disabled.
	Red (Solid)	Diagnostic failure.
Transmit	Green (Flashing)	Activity, port enabled.
	Amber (Blinking)	Port in standby.
	Off	No activity, port enabled.
	Red (Flashing)	Collision.
	Red (Solid)	Diagnostic failure.

### 3.2 DELTX-UI LED

The optional DELTX-UI has one LED labeled 10/100. The 10/100 LED together with the RX LED allows the user to determine the link status and the operating speed of the Fast Ethernet (Port) Interface Module. The 10/100 LED and the Receive (RX) LED are shown in Figure 3-2.

Table 3-2 and Table 3-3 provide a functional description of the 10/100 LED when the RX LED is on or off, respectively.

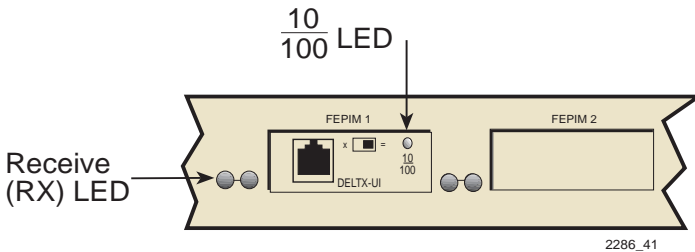


Figure 3-2 DELTX-UI LED





A link exists if the associated port RX LED is on.

**Table 3-2 10/100 LED Indications When RX LED Is On**

LED	Color	Indication
10/100	Off	DELTX-UI is operating at 10 Mbps.
	Green	DELTX-UI is operating at 100 Mbps.



No link exists if the associated port RX LED is off.

**Table 3-3 10/100 LED Indications When RX LED Is Off**

LED	Color	Indication
10/100	Off	No link or no cable attached. DELTX-UI forced to 10 Mbps operation, or is manually set to “auto-negotiate” mode.
	Green	No link or no cable attached. DELTX-UI is forced to 100 Mbps operation.

### **3.3 DELHE-UA LOCAL MANAGEMENT**

For information concerning Local Management for the DELHE-UA, refer to the host device manual.



# APPENDIX A

## DELHE-UA SPECIFICATIONS

This chapter lists the specifications and regulatory requirements for the DELHE-UA. Cabletron Systems reserves the right to change these specifications at any time without notice.

### A.1 PHYSICAL PROPERTIES

Dimensions	4.8H x 15.5W x 28.6D (cm) 1.9H x 6.1W x 11.3D (in)
Weight	0.34 kg (0.75 lb)
MTBF (Predicted)	200,000 hours

### A.2 ENVIRONMENTAL REQUIREMENTS

Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-30°C to 73°C (-22°F to 164°F)
Operating Relative Humidity	5% to 90% (non-condensing)

### A.3 FEPIM OPTIONS

The FEPIM options for the DELHE-UA include the DELTX-UI, DELFX-UI, and the DELF3-UI. Refer to Appendix B for FEPIM specifications.

## **A.4 REGULATORY COMPLIANCE**

This equipment meets the following safety and electromagnetic compatibility (EMC) requirements:

Safety	UL 1950, CSA C22.2 No.950, EN 60950, IEC 950, and 73/23/EEC
Electromagnetic Compatibility (EMC)	FCC Part 15, EN 55022, CSA C108.8, EN 50082-1, VCCI V-3, 89/336/EEC, and AS/NZS 3548

# APPENDIX B

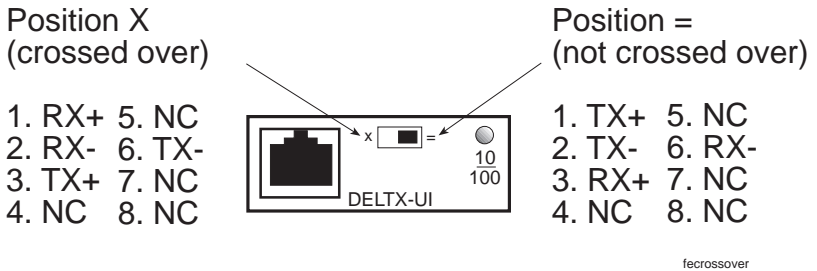
## FEPIM SPECIFICATIONS

This appendix provides specifications for the Fast Ethernet (Port) Interface Modules. Cabletron Systems reserves the right to change these specifications at any time without notice. The DELHE-UA supports the following Fast Ethernet (Port) Interface Modules: the **DELTX-UI**, the **DELFX-UI**, and the **DELFX3-UI**.

### B.1 DELTX-UI

The DELTX-UI uses an RJ45 connector supporting Category 5 (85 – 111 ohms) Unshielded Twisted Pair (UTP) and Shielded Twisted Pair (STP) cabling.

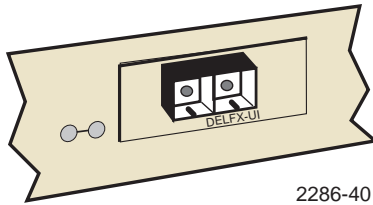
The slide switch on the DELTX-UI determines the crossover status of the cable pairs. If the switch is on the **X** side, the pairs are internally crossed over. If the switch is on the **=** side, the pairs are not internally crossed over. Figure B-1 shows the pinouts for the DELTX-UI with the switch in each position.



**Figure B-1 DELTX-UI Pinouts**

## **B.2 DELFX-UI**

The DELFX-UI shown in Figure B-2 uses an SC style connector that supports multimode fiber optic cabling. Specifications for the DELFX-UI are listed in Table B-1, below.



**Figure B-2 DELFX-UI**

**Table B-1 Transmitter Power**

<b>Cable Type</b>	<b>Worst Case Budget</b>	<b>Typical Budget</b>
50/125 $\mu\text{m}$ fiber optic	6.0 dB	9.0 dB
62.5/125 $\mu\text{m}$ fiber optic	9.0 dB	12.0 dB
100/140 $\mu\text{m}$ fiber optic	15.0 dB	18.0 dB



The transmitter power levels and receive sensitivity levels listed are peak power levels after optical overshoot. A peak power meter must be used to correctly compare the values given above to those measured on any particular port. If power levels are being measured with an average power meter, add 3 dB to the measurement to compare the measured values to the values listed above.

### B.3 DELFB3-UI

The DELFB3-UI shown in Figure B-3 uses an SC style connector that supports single mode fiber optic cabling. Specifications for the DELFB3-UI are listed in Table B-2, below.

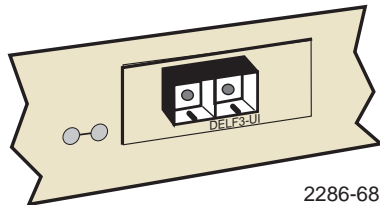


Figure B-3 DELFB3-UI

Table B-2 Transmitter Power

Cable Type	Worst Case Budget	Typical Budget
8/125 $\mu\text{m}$ fiber optic	>10.0 dB	<10.0 dB
12.5/125 $\mu\text{m}$ fiber optic	>10.0 dB	<10.0 dB



The transmitter power levels and receive sensitivity levels listed are peak power levels after optical overshoot. A peak power meter must be used to correctly compare the values given above to those measured on any particular port. If power levels are being measured with an average power meter, add 3 dB to the measurement to compare the measured values to the values listed above.







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