digital

DIGITAL Gigabit Ethernet Interface Module

DELVM-UA User's Guide

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Part Number: 9032764

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This manual describes the DELVM-UA features. It also describes how to install and troubleshoot this device.

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SAFETY INFORMATION

CLASS 1 LASER TRANSCEIVERS

THE DELG1-UA AND DELG9-UA GIGABIT ETHERNET MODULES USE CLASS 1 LASER TRANSCEIVERS. READ THE FOLLOWING SAFETY INFORMATION BEFORE INSTALLING OR OPERATING THIS ADAPTER.

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 x 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 W cm^{-2} or 8 x 10^{3} W m^{2} 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.

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** **PO Box 5005** **Rochester, NH 03867**
European Representative Name:	**Mr. J. Solari**
European Representative Address:	**Cabletron Systems Limited** **Nexus House, Newbury Business Park** **London Road, Newbury** **Berkshire RG13 2PZ, England**
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	Legal Representative in Europe
Mr. Ronald Fotino	Mr. J. Solari
Full Name	Full Name
Principal Compliance Engineer	Managing Director - E.M.E.A.
Title	Title
Rochester, NH, USA	Newbury, Berkshire, England
Location	Location

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PREFACE

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

USING THIS GUIDE

A general working knowledge of Gigabit Ethernet and Draft IEEE 802.3z/D5.0 type data communications networks and their physical layer components is helpful when installing the DELVM-UA.Read through this manual completely to familiarize yourself with its content and to gain an understanding of the features and capabilities of the DELVM-UA.

STRUCTURE OF THIS GUIDE

The following list provides an overview of each section of this manual:

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

Chapter 2, **Installation**, describes how to install a DELVM-UA into an interface module.

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

Chapter 4, **Local Managementt**, gives information on Local Management for the DELVM-UA.

Appendix A, **DELVM-UA Specifications**, lists the operating specifications and regulatory compliance for the DELVM-UA.

Appendix B, **GPIM 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 device in which the DELVM-UA is to be installed provides additional information about the setup of the DELVM-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 in 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

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

North America:	http://www.networks.digital.com
Europe:	http://www.networks.europe.digital.com
Asia Pacific:	http://www.networks.digital.com.au

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 Tot 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	The DELG1-UA and DELG9-UA 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	DELG1-UA und DELG9-UA verwenden 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	Les appareils DELG1-UA et DELG9-UA utilisent 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 DELG1-UA y el DELG9-UA usan 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

CAUTION	The DELVM-UA, GPIM, 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 the DELVM-UA or host module.
ACHTUNG	Der DELVM-UA, GPIM, 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, GPIM, 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, GPIM 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	When installing the DELVM-UA, ensure that the pins on the module align with the connector to prevent bending the pins. This can damage both the DELVM-UA and the module.
ACHTUNG	Wenn der DELVM-UA installiert wird, achten Sie darauf, daß der Stecker des Moduls gerade am Anschluß ausgerichtet ist und die Steckernadeln nicht verbogen werden, da sonst sowohl der DELVM-UA als auch das Modul beschädigt werden können.

ATTENTION	Lors de l'installation du DELVM-UA, assurez-vous que les broches du modules sont alignées avec le connecteur, afin d'éviter de les tordre et ainsi d'endommager le DELVM-UA et le module.
PRECAUCIÓN	Al instalar el DELVM-UA, asegúrese de que las patillas del módulo están alineadas con el conector, para evitar doblarlas. De lo contrario, podría deteriorar el DELVM-UA y el módulo.
CAUTION	The DELVM-UA and the device 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 the DELVM-UA or device.
ACHTUNG	Der DELVM-UA und das Gerät 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	Le DELVM-UA et l'appareil 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	El DELVM-UA y el dispositivo son sensibles a las descargas de electricidad 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	When inserting the DELVM-UA onto the device pins, ensure that the pins do not bend, as this can damage both the device and the DELVM-UA.

ACHTUNG	Wenn Sie den DELVM-UA mit dem Gerät verbinden, achten Sie darauf, die Steckernadeln nicht zu verbiegen, da sonst sowohl das Gerät als auch der DELVM-UA beschädigt werden können.
ATTENTION	Lors de l'installation du DELVM-UA sur l'appareil, assurez-vous que les broches sont alignées, afin d'éviter d'endommager l'appareil et le DELVM-UA.
PRECAUCIÓN	Al insertar el DELVM-UA en las patillas del dispositivo, asegúrese de que éstas no se doblen, puesto que ello podría deteriorar el dispositivo y el DELVM-UA.
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 transmission. 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 Staubreiniger (z.B. einem speziellen 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 DELVM-UA (Figure 1-1) has two Gigabit Ethernet Port Interface Module (GPIM) ports that provide Gigabit Ethernet connections. The GPIMs are hot swappable, allowing the user to reconfigure the DELVM-UA when it is installed and the host device has power applied to it. One port is active and the other is redundant. Redundancy is triggered based on link activity. GPIM 1 is the active port by default.

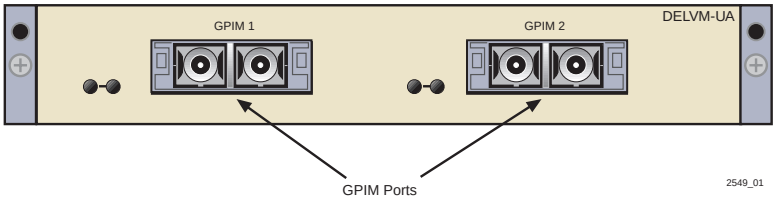

Figure 1-1 DELVM-UA (shown with fiber GPIMs)

The acronym “GPIM” stands for Gigabit (Ethernet) Port Interface Module. In this manual, GPIM is used to designate any type of GPIM. When referring to a specific GPIM, the specific name is used, e.g., DELG4-UA.

1.1 OVERVIEW

The DELVM-UA has two ports that support Gigabit Ethernet Port Interface Modules (GPIMs), which allow the user to make either fiber or copper connections to Gigabit Ethernet networks. Available GPIMs include the DELG1-UA and DELG9-UA for fiber support, and the DELG4-UA for twisted pair support.

The DELVM-UA extends the functionality of various Digital Equipment Corporation interface modules by providing high-speed uplink capability through Gigabit Ethernet technology. DELVM-UA features include the following:

- Customized configuration of GPIMs
- RMON support (Statistics, History, Alarms, Events)
- Management
- Flow control (802.3z)

1.1.1 Connectivity

The DELVM-UA supports one active and one redundant Gigabit Ethernet Interface Module (GPIM) interface, with three different hot-swappable GPIMs available, providing connectivity to Gigabit Ethernet using fiber or copper. Any combination of the fiber and copper GPIMs can be configured in the DELVM-UA.

The DELVM-UA module supports the 1000Base-SX, 1000Base-LX, and 1000Base-CX specifications using the GPIMs. 1000Base-SX is supported with the DELG1-UA providing one SC fiber optic connector for 50 or 62.5 micron multimode fiber optic cable. 1000Base-LX is supported with the DELG9-UA providing one SC fiber optic connector for 50 or 62.5 micron multimode fiber optic cable, or 10 micron single mode fiber optic cable. 1000Base-CX is supported with the DELG4-UA providing a connection to style-2 shielded twisted pair copper cable.

For more specifications on GPIMs, see Appendix B.

The DELVM-UA operates in full duplex mode, and follows the 802.3x specifications for auto-negotiation.

1.1.2 LANVIEW Diagnostic LEDs

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

1.1.3 Options

The options for the DELVM-UA are GPIMs, as listed in Table 1-1. The GPIMs support high speed connections at full duplex Gigabit speeds.

Table 1-1 GPIM Options

Part Number	Description	Application
DELG1-UA	SC fiber connector	Supports 50 or 62.5 micron multimode fiber.
DELG9-UA	SC fiber connector	Supports single mode (10 micron) or multimode (50 or 62.5 micron) fiber.
DELG4-UA	Style-2 copper connector	Supports 802.3z compliant 150 ohm shielded twisted pair.

CHAPTER 2
INSTALLATION

Only qualified personnel should install or service this unit.

To install the DELVM-UA you need the following items:

- Phillips screwdriver
- Antistatic wrist strap (shipped with the DELVM-UA)
- Standoff screws (shipped with the DELVM-UA)

Before attempting to use the DELVM-UA you should be familiar with the *IEEE Draft P802.3z/D5.0* specification. The network installation must meet the guidelines contained in the draft specification to ensure satisfactory performance.

2.1 UNPACKING THE DELVM-UA

The DELVM-UA and the host module or device (platform) 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 the DELVM-UA or host platform.

Unpack the DELVM-UA as follows:

1. Remove the DELVM-UA from the shipping box. Leave the module in the antistatic bag until you are ready to install it.

2. Attach the antistatic wrist strap. When installing the DELVM-UA in an interface module, refer to the applicable interface module User's Guide.

3. After removing the DELVM-UA from the antistatic bag, visually inspect the device. If there is any sign of damage, contact a DIGITAL representative immediately. Save the antistatic bag in the event the DELVM-UA must be reshipped.

2.2 INSTALLING THE DELVM-UA

You can install a DELVM-UA in any Digital Equipment Corporation device that supports VHSIM technology (e.g., DLE52-MA).

Refer to the release notes for the version of firmware running on the Digital Equipment Corporation device to ensure that the DELVM-UA is supported.

The following subsections provide instructions for installing a DELVM-UA in an interface module. Refer to your specific interface module documentation for exact VHSIM slot and connector locations.

2.2.1 Installing the DELVM-UA in an Interface Module

To install a DELVM-UA in an interface module that supports VHSIM 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 in the interface module User's Guide).

The DELVM-UA and the host module 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 the DELVM-UA or host module.

3. If the module is installed in a chassis, unlock the top and bottom plastic locking tabs of the module faceplate, and remove the module from the chassis.

4. Lay the module down with the internal components facing up.

5. Refer to Figure 2-1 and remove the two faceplate mounting screws and the VHSIM coverplate. Save the screws.

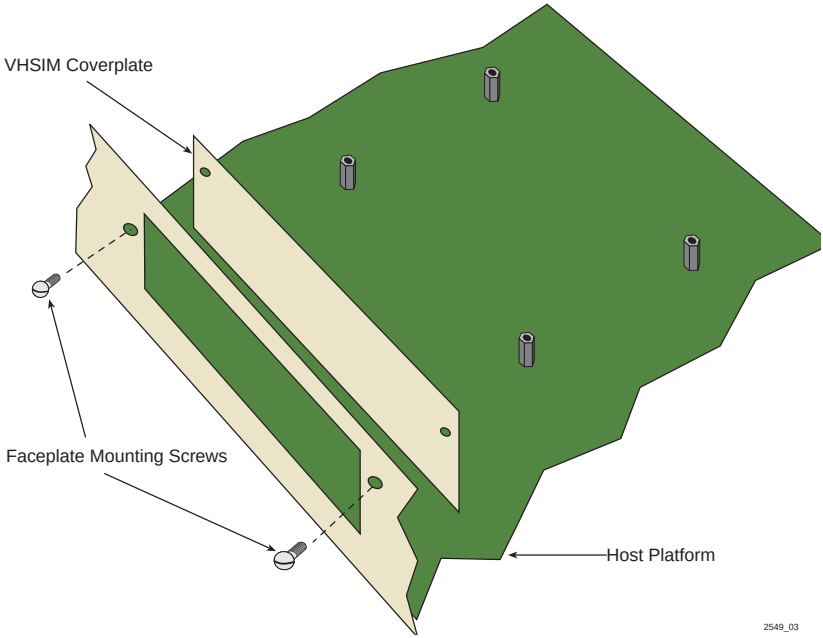

Figure 2-1 Removing the VHSIM Coverplate from the Host Device

6. Refer to Figure 2-2 and position the DELVM-UA behind the module faceplate, above the connectors.

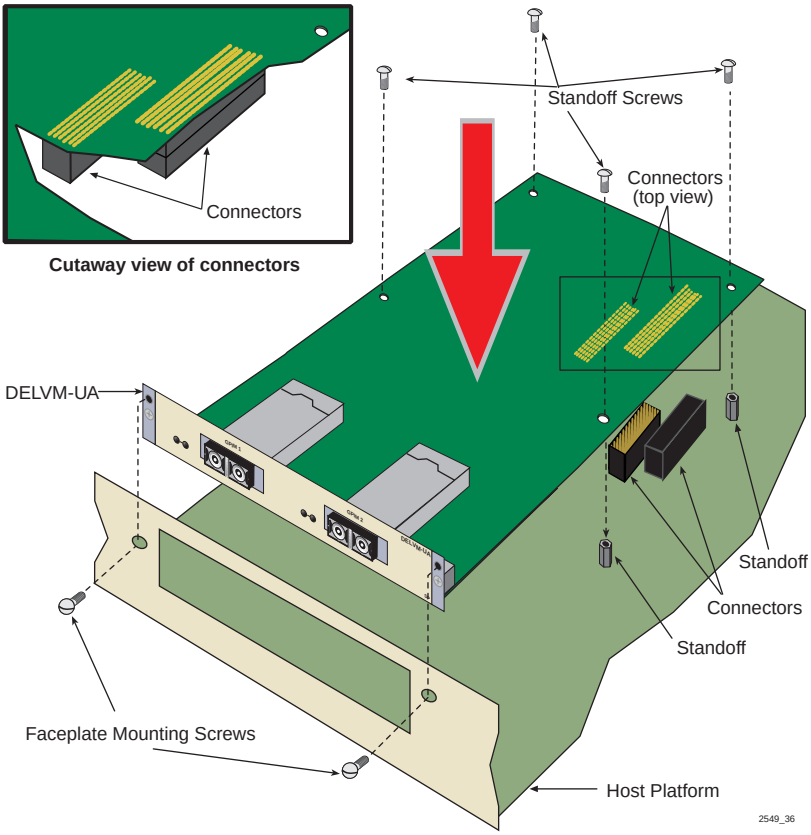

Figure 2-2 Installing the DELVM-UA in the Host Device

7. Align the DELVM-UA connectors with the VHSIM connectors on the module.

When installing the DELVM-UA, ensure that the pins on the module align with the connector to prevent bending the pins. This can damage both the DELVM-UA and the module.

8. Press down firmly on the DELVM-UA until the connectors slide all the way onto the pins. Ensure that the standoffs on the interface module align with the standoff screw holes on the DELVM-UA.

9. Secure the DELVM-UA to the module faceplate using the mounting screws saved in step 5.
10. Secure the DELVM-UA to the module standoffs using the standoff screws shipped with the DELVM-UA.
11. Reinstall the interface module in the chassis.
12. Reattach the network cabling to the interface module.

2.3 INSTALLING GPIMs

The DELVM-UA has three different GPIMs that can be installed into the DELVM-UA. All GPIMs are installed into the DELVM-UA in the same manner, as listed in this procedure.

The GPIMs are hot swappable, therefore they can be installed into the DELVM-UA at any time during the installation of the DELVM-UA.

After installing a DELG1-UA or DELG9-UA, refer to Section 2.4 for details on connecting the GPIM to the network.

After installing a DELG4-UA, refer to Section 2.4.3 for details on connecting the GPIM to the network.

Refer to Appendix B for cable specifications for the GPIMs.

The GPIM, DELVM-UA and the host module or device 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 the GPIM, DELVM-UA, or host module or device. Always leave the GPIM in the antistatic bag in which it was shipped or an equivalent antistatic container until ready to install it.

The GPIMs are installed into the DELVM-UA as follows:

1. Attach the antistatic strap (refer to the instructions in the antistatic wrist strap package) before removing the GPIM from the antistatic packaging.
2. Remove the GPIM from the packaging.

3. Hold the GPIM with the network connection port facing away from the DELVM-UA. The 20-pin connector should be facing towards the empty GPIM slot, with the wide part of the connector oriented up in relation to the printing on the DELVM-UA. See Figure 2-3 to orient the GPIM 20-pin connector.

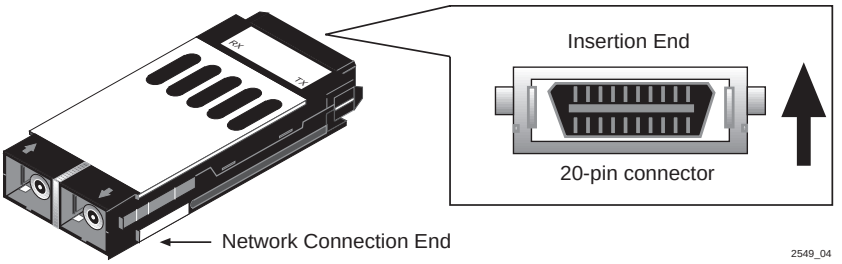

Figure 2-3 GPIM

4. Gently insert the GPIM (20-pin connector side) through the GPIM opening of the DELVM-UA. See Figure 2-4. The door folds up and the slides engage the sides of the GPIM. If the GPIM does not go in easily, do not force the device. Check the orientation against Figure 2-3. Push the GPIM back until the 20-pin port engages the GPIM. The latch mechanism engages when the GPIM connector seats properly in the port.

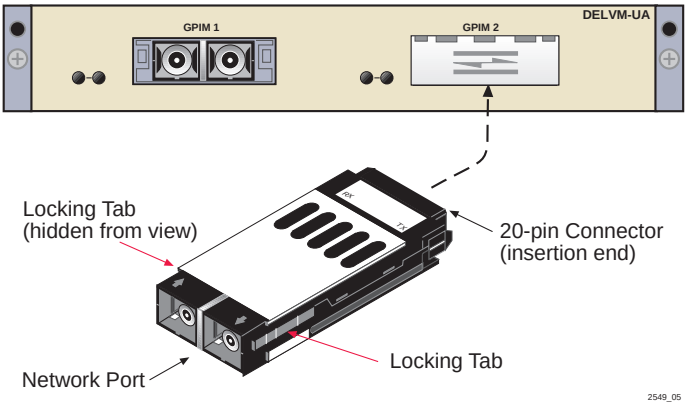

Figure 2-4 Installing a GPIM into the DELVM-UA

To remove a GPIM from the DELVM-UA, squeeze both locking tabs in towards the center of the GPIM, and pull it out of the port.

2.4 DELG1-UA AND DELG9-UA NETWORK CONNECTIONS

The DELG1-UA and the DELG9-UA each have an SC style connector for the network port that is used to connect to the Gigabit Ethernet network. Digital Equipment Corporation offers fiber optic cables that use SC style connectors which are keyed to ensure proper crossover of the transmit and receive fibers.

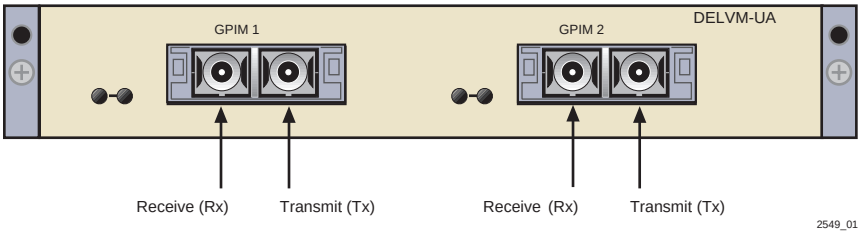

Figure 2-5 DELVM-UA Fiber Port Designations

Since the DELG1-UA and DELG9-UA both have the same type of SC fiber connector, the directions for connectivity are the same, except for when the DELG9-UA is connected to multimode fiber. Refer to Section 2.4.1 before connecting the DELG9-UA to multimode fiber.

Different size and wavelength fiber cable is used for different applications. The DELG9-UA typically has a blue connector to indicate the long wave length transceiver. The DELG1-UA connector is typically black or beige, for multimode fiber cable. Check the fiber specifications in Appendix B for each GPIM carefully before connecting a GPIM to the network.

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 cable cross-over occurs.

2.4.1 DELG9-UA Connection Using Multimode Cable

When using multimode fiber cable for the DELG9-UA (long wave length transceiver), connect Launch Mode Conditioning cable as detailed in the following procedure (Section 2.4.1). The following procedure is not needed when connecting single mode fiber cable to the DELG9-UA. Launch Mode Conditioning cables are available from Cabletron Systems.

To connect the DELG9-UA to the network using multimode fiber, perform the following steps:

1. Connect Launch Mode Conditioning cable to the multimode fiber on both ends of the multimode cable, before connecting the DELVM-UA with a DELG9-UA to the multimode fiber cabling. See Figure 2-6.

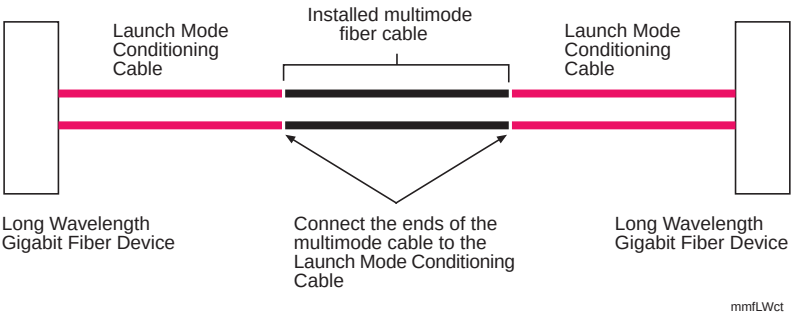

Figure 2-6 DELG9-UA Launch Mode Conditioning Cable Connection

2. Once the Launch Mode Conditioning cable is connected to the ends of the multimode fiber cable, proceed to Section 2.4.2 to complete the installation to the DELG9-UA device.

2.4.2 DELVM-UA Network Connection

To connect the DELVM-UA using fiber cable to the network, perform the following steps:

If connecting the DELVM-UA with a DELG9-UA to the network using multimode fiber cable, refer to Section 2.4.1 before following this procedure.

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

The DELG1-UA and DELG9-UA 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 transmission. 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.

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

2. Insert one end of the SC connector, key side down, into the DELG1-UA or DELG9-UA in the DELVM-UA. See Figure 2-7. Ensure that the appropriate cable is used for the application of the GPIM. Refer to Appendix B for the appropriate GPIM for the fiber cable used for the installation.

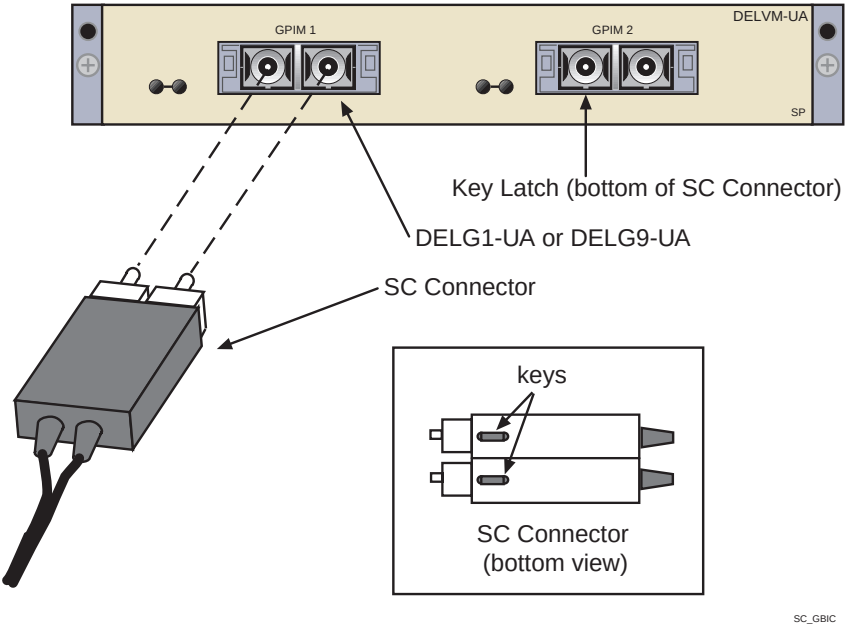

Figure 2-7 Fiber GPIM Connections

3. At the other end of the fiber optic cable, attach the SC connector to the other device. Verify that a link exists by checking that the port **Receive** LED is ON (flashing amber, blinking green, or solid green). Refer to Chapter 3 for details on the LEDs. 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 device at the other end of the link has power turned on and is Gigabit Ethernet compatible.

b. Verify proper crossover of fiber strands between the port on the DELVM-UA and the fiber optic device at the other end of the fiber optic link segment.

c. Verify that the fiber connection meets the specifications outlined in Appendix B for the installed GPIM.

To remove the SC connector from the GPIM, carefully pull the connector out of the port. It may need to be wiggled gently to release the latching keys.

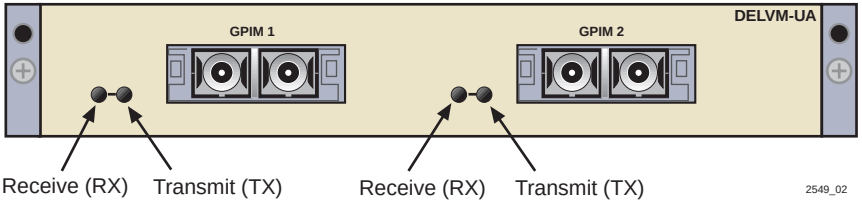

Figure 2-8 DELVM-UA with Two Fiber Ports

Refer to Chapter 4 for information on Local Management for the DELVM-UA. If a link has not been established, refer to Chapter 3 to use the LEDs for troubleshooting before contacting a DIGITAL Representative.

2.4.3 DELG4-UA Network Connection

The DELG4-UA has a style-2 twisted pair (TP) connector. Twisted pair cables with style-2 connectors for use with the DELG4-UA are offered by Cabletron Systems. Refer to Appendix B for the 150 Ohm shielded twisted cable specifications.

To connect the DELG4-UA, proceed as follows:

1. Orient the connector so the locking tab is on the top.
2. Insert the connector into the GPIM until it latches.

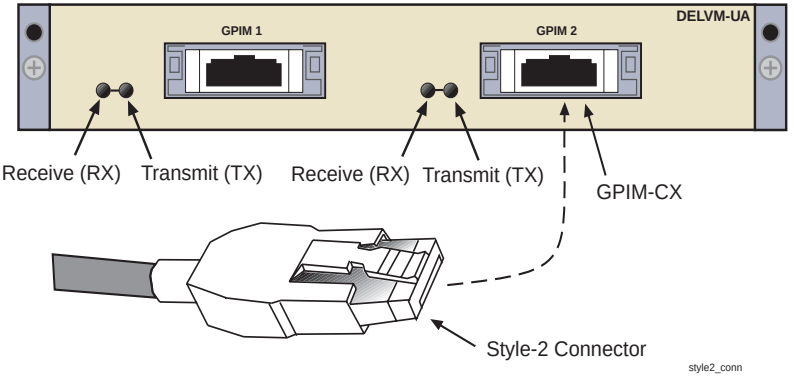

Figure 2-9 Style-2 Twisted Pair Connection

3. At the other end of the twisted pair cable, attach the style-2 connector to the other device.Verify that a link exists by checking that the port **Receive** LED is ON (flashing amber, blinking green, or solid green). See Chapter 3 for details on the LEDs. 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 device at the other end of the link has power turned on and is Gigabit Ethernet compatible.

   b. Verify proper pinouts (refer to Appendix B) for the style-2 shielded twisted pair between the port on the DELVM-UA and the device at the other end of the segment.

   c. Verify that the twisted pair connection meets the specifications outlined in Appendix B.

To remove the style-2 connector from the GPIM, squeeze the locking tab and pull the connector out of the port.

Refer to Chapter 4 for information on Local Management for the DELVM-UA. If a link has not been established, refer to Chapter 3 for LED troubleshooting details.Contact a DIGITAL representative if a problem persists.

CHAPTER 3
LANVIEW LEDs

This chapter describes how to use the LANVIEW LEDs to monitor the DELVM-UA status and diagnose DELVM-UA problems. Figure 3-1 shows the location of the DELVM-UA LEDs. Refer to Table 3-1 for a description of the LEDs. Section 3.2 describes redundancy. This information applies to all types of installed GPIMs.

3.1 LED DESCRIPTIONS

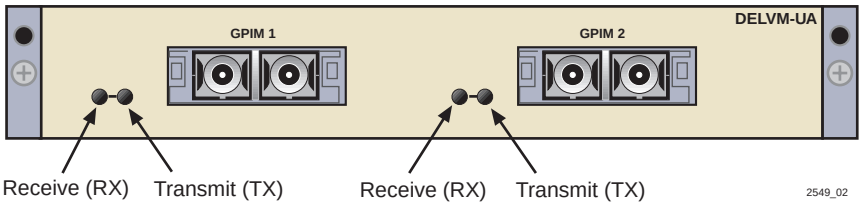

Figure 3-1 LANVIEW LEDs on the DELVM-UA

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 DELVM-UA LED Functionality

LED	Color	Definition
Transmit	Green (Flashing)	Activity, port enabled.
	Amber (Blinking)	Port in standby.
	Off	No activity, port enabled.
	Red (Flashing)	Transmit fault.
	Red	Diagnostic failure.
Receive	Green (Solid)	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	Diagnostic failure.

3.2 REDUNDANCY

The DELVM-UA supports redundancy. Only one of the two ports on the DELVM-UA is active at one time. The port with link status showing (either a green LED, solid or blinking, or an amber LED) is the active port. If both ports show a link, GPIM 1 is the active port. The default port for the primary port link is GPIM 1.

CHAPTER 4
LOCAL MANAGEMENT

This chapter provides information about using Local Management with the DELVM-UA. Local Management of the DELVM-UA is done through the host platform. Since the DELVM-UA is a Gigabit Ethernet device, the Local Management screens used for configuration and statistics are the regular Ethernet screens, seen on the host platform Local Management.

The host platform is the interface module in which the DELVM-UA is installed.

4.1 REQUIREMENTS

Make sure that the following requirements have been met before accessing the DELVM-UA through Local Management:

- The DELVM-UA is installed in the host platform.
- The device is powered up and running with no error LED conditions on the host platform.
- A Local Management terminal is properly configured and connected to the host platform. Refer to the host platform user's guide to establish a Local Management connection.

Important

The Local Management screens are the ones used by the host platform for both configuration and statistics. These screens will not be repeated in this manual. Refer to the host platform user's guide for detailed explanations of the information that is accessed in the Local Management screens. See **Related Documentation** in the Preface for information on how to access the host platform manual for the Local Management information.

Figure 4-1 is only an example of how DELVM-UA screens may be accessed. Different versions of the host platform firmware may display a different hierarchy. Refer to the host platform manual if the hierarchy displayed does not match the one in Figure 4-1.

4.2 NAVIGATING LOCAL MANAGEMENT SCREENS

In order to view the DELVM-UA Local Management screens, you must navigate through a series of Local Management screens on the host platform. Figure 4-1 shows a typical hierarchy of screens to navigate through in order to reach the DELVM-UA statistics screens. The lines shown in **bold** indicate a typical path to access the DELVM-UA configuration and statistics screens.

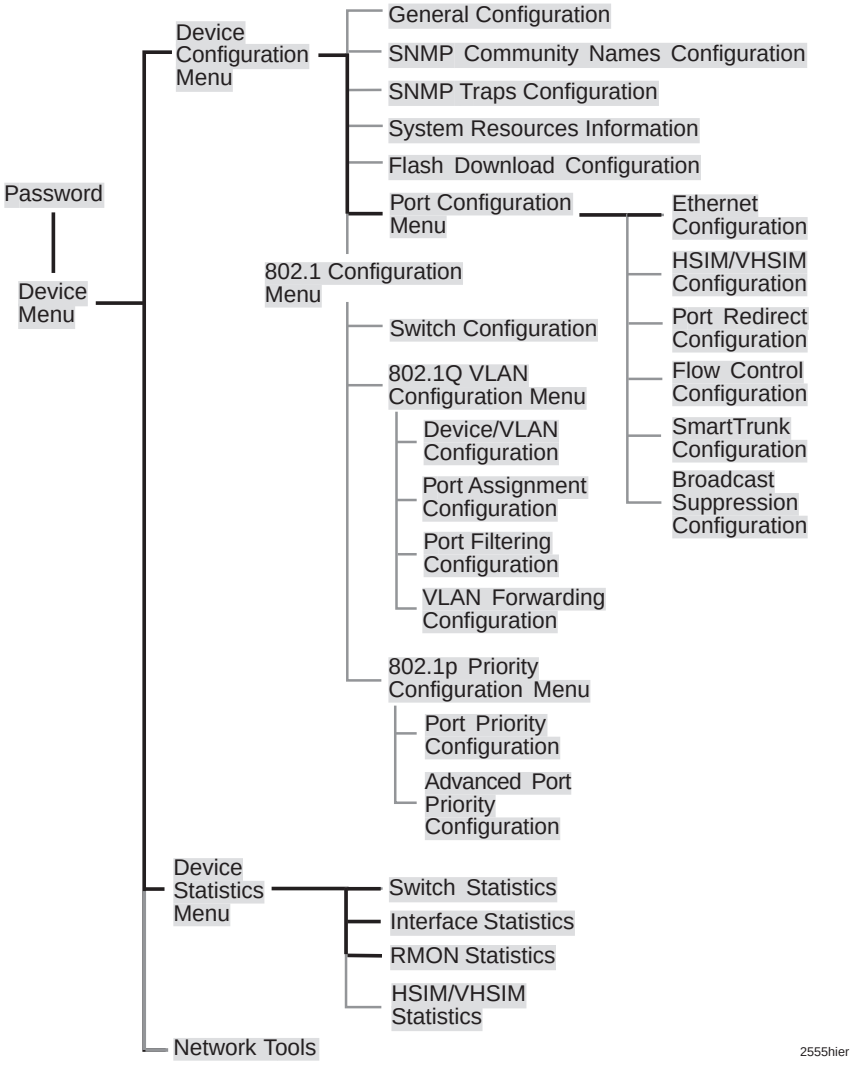

Figure 4-1 Typical Hierarchy of Local Management Screens

APPENDIX A
DELVM-UA SPECIFICATIONS

This chapter lists the specifications and regulatory requirements for the DELVM-UA. Cabletron Systems reserves the right to change these specifications at any time without notice. Refer to Appendix B for specifications for the optional GPIMs.

A.1 PHYSICAL AND ENVIRONMENTAL SPECIFICATIONS

Table A-1 Physical Properties of the DELVM-UA

Dimensions	3.18 H x 16.51 W x 29.21 D (cm) 1.25 H x 6.5 W x 11.5 D (in)
Weight	.35 kg (0.78 lb)
MTBF (Predicted)	200,000 hours

Table A-2 Environmental Requirements of the DELVM-UA

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 Humidity	5% to 90% (non-condensing)

A.2 REGULATORY COMPLIANCE

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

Table A-3 Regulatory Compliance of the DELVM-UA

Safety	UL 1950, CSA C22.2 No.950, EN60950, IEC950, and 72/73/.EEC
Electromagnetic Compatibility (EMC)	FCC Part 15, CSA C108.8, EN 55022, VCCI V-3, EN 50082-1, 89/336/EEC, and AS/NZS 3548

APPENDIX B
GPIM SPECIFICATIONS

This appendix lists the specifications and regulatory requirements for the GPIMs and the media they use. Cabletron Systems reserves the right to change these specifications at any time without notice. The available GPIM options include the DELG1-UA, DELG4-UA, and DELG9-UA. The DELG1-UA and DELG9-UA are both fiber devices with an SC connector. The DELG1-UA uses multimode (MMF) fiber cable, and the DELG9-UA uses both multimode and single mode (SMF) fiber cable, as indicated in Table B-1 below. The DELG4-UA uses copper twisted pair cable, with a style-2 connector.

B.1 GIGABIT ETHERNET SPECIFICATIONS

Table B-1 lists the specifications for the Gigabit Ethernet GPIMs, developed from Draft 5.0 of the IEEE Working Group 802.3z.

Table B-1 Minimum Gigabit Ethernet (802.3z) Distance Specifications

Cable type	**62.5 micron MMF**			**50 micron MMF**		**10 micron SMF**	**150 Ohm STP**
Modal Bandwidth Rating Measured @ 850 nm (SX) or 1300 nm (LX) in MHz/km	**160**	**200**	**500**	**400**	**500**	**N/A**	**N/A**
1000 Base-SX (DELG1-UA) in meters	220	275	275	500	550	N/A	N/A
1000 Base-LX (DELG9-UA) in meters	N/A	N/A	550[1]	550[1]	550[1]	5000	N/A
1000 Base-CX (DELG4-UA) in meters	N/A	N/A	N/A	N/A	N/A	N/A	25

1. In order to obtain the distance of 550 m for the DELG9-UA using multimode fiber, Launch Mode Conditioning cable must be used. Refer to Section 2.4.1 for details.

B.2 TWISTED PAIR CHARACTERISTICS

The jumper cable is a continuous (has no breaks or additions), shielded, balanced, equalized, copper twisted pair cable, with a link impedance of 150 ± 10 Ohms, with characteristics as specified in the IEEE Standard Draft 5.0 of the IEEE Working Group 802.3z.

B.2.1 DELG4-UA Pinouts

The style-2 connector for the DELG4-UA has the pinouts in Figure B-1.

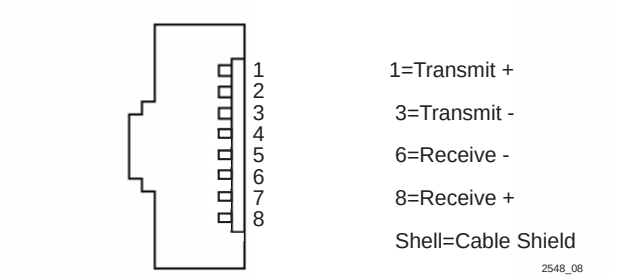

Figure B-1 Twisted Pair Style-2 Connector Pinouts

The jumper cable assembly is wired using a crossover pinout, as shown in Figure B-2.

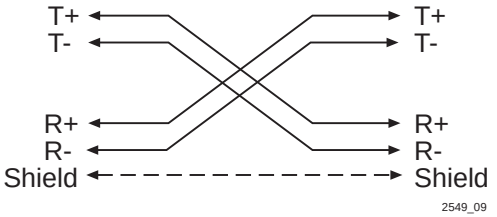

Figure B-2 Crossover Wiring (Balanced Cable Wiring)

B.3 GPIM PHYSICAL AND ENVIRONMENTAL SPECIFICATIONS

Table B-2 GPIM Physical Properties

Dimensions	1.2 H x 3.4 W x 6.5 D (cm) 0.47 H x 1.34 W x 2.56 D (in)
Weight	25 g (0.88 oz)

Table B-3 GPIM Environmental Requirements

Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-30°C to 90°C (-22°F to 194°F)
Operating Humidity	5% to 90% (non-condensing)

B.4 REGULATORY COMPLIANCE

The GPIMs meet the following safety and electromagnetic compatibility (EMC) requirements:

Table B-4 Regulatory Compliance

Eye Safety (fiber GPIMs only)	FDA CDRH 21-CFR 1040 Class 1 IEC 825 Issue 1 1993:11 Class 1 CENELEC EN 60825 Class 1 Fault condition testing pending completion of product development.

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