



DIGITAL MultiSwitch 700

DLE22-MA, DLE32-MA, DLE23-MA, and DLE33-MA Interface Modules User's Guide

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SAFETY INFORMATION

CLASS 1 LASER TRANSCEIVERS

THE DELF3-UI FAST ETHERNET INTERFACE MODULE, DEL05-UI FDDI PORT INTERFACE MODULE, AND DEL29-UI ATM PORT INTERFACE MODULE USE CLASS 1 LASER TRANSCEIVERS. READ THE FOLLOWING SAFETY INFORMATION BEFORE INSTALLING OR OPERATING THESE MODULES.

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 55×10^{-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 $8 \times 10^3 \text{ W m}^{-2} \text{ sr}^{-1}$.

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.

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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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

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PREFACE

Welcome to the *DIGITAL MultiSwitch 700 DLE22-MA, DLE32-MA, DLE23-MA, and DLE33-MA Interface Modules User's Guide*. This guide provides information concerning network requirements, installation, and the use of Local Management. It also provides problem solving, connector and adapter, and pin assignment information.

USING THIS GUIDE

Read through this guide completely to understand the interface module features, capabilities, and Local Management functions. A general working knowledge of Ethernet and IEEE 802.3 type data communications networks and their physical layer components is helpful when using these devices.



Unless noted differently, the information in this guide applies to all four DIGITAL MultiSwitch 700 Interface Modules, which are also referred to as the “DLE2X-MA and DLE3X-MA” or the “module(s)”.

INTENDED AUDIENCE

This manual is intended for use by personnel who will install and initially set up the DIGITAL MultiSwitch 700 Interface Modules (DLE22-MA, DLE32-MA, DLE23-MA and DLE33-MA).

STRUCTURE OF THIS GUIDE

This guide is organized as follows:

Chapter 1, **Introduction**, outlines the contents of this manual, describes the features of the DLE2X-MA and DLE3X-MA, provides instructions on obtaining additional help and concludes with a list of related manuals.

Chapter 2, **Network Requirements**, explains the network requirements to consider before installing the DLE2X-MA and DLE3X-MA into the DLM6C-AA DIGITAL MultiSwitch 700 chassis.

Chapter 3, **Installation**, provides instructions on how to install the modules in the chassis and connect cables to the modules.

Chapter 4, **Troubleshooting**, details the DLE2X-MA and DLE3X-MA LANVIEW LEDs that enable you to quickly diagnose network/operational problems.

Chapter 5, **Local Management**, describes how to access Local Management and use the Local Management screens to manage the DLE2X-MA and DLE3X-MA interface modules and the DLM6C-AA chassis.

Appendix A, **Specifications**, contains information on functionality and operating specifications, connector pinouts, environmental requirements, and physical properties.

Appendix B, **DELTX-UI, DELFX-UI and DELF3-UI Specifications**, contains information about DELTX-UI pinouts and information concerning cable types used with the DELFX-UI and DELF3-UI.

Appendix C, **Mode Switch Bank Settings and Optional Installations**, describes how to install optional Fast Ethernet Interface Modules and how to set the Mode Switches.

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 following manuals may help the user to set up and manage the DLE2X-MA and DLE3X-MA:

- *DIGITAL MultiSwitch 700 Port Based VLAN User's Guide*
- *DIGITAL ATM Modular Interface DELHA-UA User's Guide*
- *DIGITAL FDDI Modular Media Interface DELHF-UA User's Guide*
- *DIGITAL WAN Modular Interface DELHW-UA User's Guide*
- *DIGITAL MultiSwitch 700 DLM6C-AA Overview and Setup Guide*
- *Ethernet Technology Guide*
- *Cabletron Cabling Guide*
- *DIGITAL OPEN DECconnect Structured Wiring System Application Guide*
- *SmartTrunk User's Guide*

The manuals referenced above can be obtained on the World Wide Web (see below) in Adobe Acrobat Portable Document Format (PDF).

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:

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	Enthält Informationen, die beachtet werden müssen um den Benutzer vor Schaden zu bewahren.
	DANGER	Signale les informations destinées à prévenir les accidents corporels.
	AVISO	Contiene información para evitar daños personales.
	CAUTION	Contains information essential to avoid damage to the equipment.
	ACHTUNG	Enthält Informationen, die beachtet werden müssen um die Geräte vor Schaden zu bewahren.
	ATTENTION	Signale les informations destinées à prévenir la détérioration du matériel.
	PRECAUCIÓN	Contiene información 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 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	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	Der DELF3-UI benutzt 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	DELF3-UI utilise les lasers de la Classe 1. N'utilisez pas d'instruments d'optique pour voir la sortie du laser. Leur usage augmente les risques de lésions oculaires. Lorsque vous voyez le port optique de la sortie, vous devez couper l'alimentation de l'adaptateur de réseau.
AVISO	DELF3-UI utiliza láseres Clase 1. No utilice instrumentos ópticos para ver la salida de láser. El uso de instrumentos ópticos para ver una salida de láser incrementa los daños en los ojos. Al ver el puerto óptico de salida, se debe retirar la alimentación del adaptador de red.

	<p>CAUTION</p>	<p>Failure to observe static safety precautions could cause damage to the DLE22-MA and DLE23-MA and DLE32-MA and DLE33-MA. Follow static safety handling rules and properly wear the antistatic wrist strap provided with the DLM6C-AA chassis. Do not cut the non-conductive bag to remove the module. Damage could result from sharp objects contacting the board or components.</p>
	<p>ACHTUNG</p>	<p>Eine Nichtbeachtung der Sicherheitsmaßnahmen hinsichtlich statischer Entladungen könnte Schäden am DLE22-MA und DLE23-MA und DLE32-MA UND DLE33-MA verursachen. Folgen Sie deshalb den Sicherheitsrichtlinien, und tragen Sie das mit dem DLM6C-AA-Gehäuse gelieferte Antistatikarmband. Benutzen Sie zum Öffnen der nicht-leitfähigen Plastikhülle, in dem sich das Modul befindet, keine scharfen Instrumente, da die Karte oder die Komponenten beschädigt werden könnten.</p>
	<p>ATTENTION</p>	<p>Le non respect de consignes de sécurité relative à l'électricité statique peut contribuer à endommager le DLE22-MA et DLE23-MA et le DLE32-MA et DLE33-MA. Respectez ces consignes lors du transport et portez , comme il convient, le bracelet anti-statique fourni avec le chassis DLM6C-AA. Ne coupez pas le sac non-isolant, lorsque vous retirez le module. Vous risquez d'endommager la carte et les composants s'ils sont en contact avec des objets pointus.</p>

PRECAUCIÓN	<p>Si no se observan las precauciones de seguridad estática, se pueden dañar DLE22-MA y DLE23-MA y DLE 32-MA y DLE33-MA. Siga las reglas de transporte de seguridad estática y utilice de manera adecuada la banda antiestática para la muñeca que se proporciona con el chasis DLM6C-AA.</p> <p>No corte la bolsa no conductora para retirar el módulo. La placa o los componentes podrían dañarse si hay un contacto con objetos agudos.</p>
CAUTION	<p>To prevent damaging the backplane connectors in the following step, take care that the module slides in straight and properly engages the backplane connectors.</p>
ACHTUNG	<p>Um die Anschlüsse an der Rückseite bei diesem Schritt nicht zu beschädigen, stellen Sie sicher, daß das Modul gerade eingeschoben und vorsichtig eingesetzt wird.</p>
ATTENTION	<p>Pour éviter d'endommager les connecteurs du « backplane » lors de l'étape suivante, veillez à ce que le module glisse tout droit et s'adapte correctement aux connecteurs du « backplane ».</p>
PRECAUCIÓN	<p>Para evitar dañar los conectores del plano posterior en el paso siguiente, verifique que el módulo se deslice derecho y se adapte correctamente a los conectores del plano posterior.</p>

<p>CAUTION</p>	<p>An odd number of crossovers (preferably one) must be maintained between devices so that the transmit port of one device is connected to the receive port of the other device and vice versa.</p> <p>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 crossing over occurs.</p>
<p>ACHTUNG</p>	<p>Eine ungerade Zahl von Überkreuzungsstellen (vorzugsweise eine) muß zwischen den Geräten beibehalten werden, damit der Übertragungsanschluß eines Gerätes mit dem Empfangsanschluß des anderen Gerätes verbunden werden kann (und umgekehrt).</p> <p>Wenn das verwendete Glasfaserkabel SC-Anschlußstecker hat, die nicht MIC-Anschlußsteckern ähnlich sind, oder wenn es an einem Ende SC-Anschlußstecker hat und am anderen Ende einen anderen Steckertyp (z.B. einen ST-Stecker), vergewissern Sie sich, daß die richtig Überkreuzung stattfindet.</p>
<p>ATTENTION</p>	<p>Un nombre impair de diagonales (de préférence une) doit être conservé entre les périphériques de sorte que le port de transmission d'un périphérique soit connecté au port de réception de l'autre périphérique et inversement.</p> <p>Si le câble de fibre optique utilisé est doté de connecteurs de type SC qui ne ressemblent pas aux connecteurs de type MIC ou a des connecteurs de type SC à une extrémité et un type de connecteur différent à l'autre extrémité (comme par exemple des connecteurs de type ST), assurez-vous que le croisement en diagonale se fait correctement.</p>

PRECAUCIÓN	<p>Un número impar de diagonales (de preferencia uno) se debe mantener entre los dispositivos para que el puerto de transmisión de un dispositivo esté conectado al puerto de recepción del otro dispositivo y viceversa. Si el cable de fibra óptica que se está utilizando tiene conectores de tipo SC que no se parezcan a conectores de estilo MIC, o tenga conectores SC en un extremo y un tipo diferente en el otro, como conectores ST, asegúrese de que se realice el cruce adecuado.</p>
CAUTION	<p>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 with a canned duster. A fiber port cleaning swab saturated with optical-grade isopropyl alcohol may also be used to clean the ends.</p>
ACHTUNG	<p>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.</p>
ATTENTION	<p>Ne touchez pas les extrémités des fibres optiques et évitez qu'elles viennent en contact avec des éléments poussiéreux, sales ou tout autre contaminant. La contamination de ces extrémités cause des problèmes lors de la transmission des données. Si ces extrémités sont contaminées, nettoyez leur surface à l'aide d'un nettoyant adéquat. Vous pouvez également utiliser une éponge imbibée d'isopropanol pour les nettoyer.</p>

<p>PRECAUCIÓN</p>	<p>No toque los extremos de las bandas de fibra óptica y, no permita que los contactos estén en contacto con polvo, suciedad u otros contaminantes. La contaminación de los extremos causa problemas en la transmisión de datos. Si los extremos se contaminan, limpie las superficies con un limpiador adecuado. Para limpiar el puerto, también se puede utilizar una esponja saturada de alcohol isopropílico de grado óptico para limpiar los extremos.</p>
<p>CAUTION</p>	<p>Pressing the RESET button resets the device, and all current switching being performed by the device is halted. A module downtime of up to two minutes will result from this action.</p>
<p>ACHTUNG</p>	<p>Wenn der RESET-Knopf gedrückt wird, wird das Gerät zurückgestellt und alle vom Gerät derzeit ausgeführten Schaltungen werden gestoppt. Das Gerät ist anschließend für bis zu zwei Minuten nicht betriebsbereit.</p>
<p>ATTENTION</p>	<p>L'appui sur le bouton RESET réinitialise l'appareil, provoquant l'arrêt des commutations en cours. L'appareil sera indisponible pendant deux minutes maximum.</p>
<p>PRECAUCIÓN</p>	<p>Al pulsar el botón RESET se reinicia el dispositivo y se detienen todas las conmutaciones que en ese momento esté realizando. El dispositivo no estará disponible durante un máximo de dos minutos mientras dura el proceso de reinicio.</p>
<p>CAUTION</p>	<p>Before altering the COM port settings, ensure that a valid IP address is set for the module or chassis. Read the entire COM port configuration section before changing the settings of the COM port.</p>

<p>ACHTUNG</p>	<p>Bevor Sie die Einstellungen des COM-Ports ändern, stellen Sie sicher, daß für das Modul oder das Gehäuse eine gültige IP-Adresse eingestellt ist. Lesen Sie den gesamten Abschnitt zur COM-Port-Konfiguration, bevor Sie die Einstellungen des COM-Ports ändern.</p>
<p>ATTENTION</p>	<p>Avant de modifier les paramètres du port COM, assurez-vous qu'une adresse IP valable a été attribuée au module ou au châssis. Lisez entièrement la section consacrée à la configuration du port COM avant de modifier ses paramètres.</p>
<p>PRECAUCIÓN</p>	<p>Antes de cambiar los parámetros del puerto COM, asegúrese de haber definido una dirección de IP válida para el módulo y/o el chasis. Lea la sección sobre configuración de puertos COM en su totalidad antes de cambiar ningún parámetro de un puerto de este tipo.</p>
<p>CAUTION</p>	<p>Do NOT disable or alter the settings of the COM port while operating the current Local Management connection through a terminal. Altering the COM port settings disconnects the Local Management terminal from the port, and ends the Local Management session.</p>
<p>ACHTUNG</p>	<p>Sie dürfen die COM-Port-Einstellungen NICHT abschalten oder ändern, während die aktuelle LM-Verbindung (Local Management) über ein Terminal besteht. Das Ändern der COM-Port-Einstellungen trennt das LM-Terminal vom Port und beendet die LM-Sitzung.</p>
<p>ATTENTION</p>	<p>NE PAS désactiver ou modifier les paramètres du port COM pendant la connexion Local Management (LM) via un terminal. La modification des paramètres du port COM entraîne la déconnexion du terminal LM de son port, et termine la session LM.</p>

PRECAUCIÓN	NO desactive ni cambie los parámetros del puerto COM mientras esté operando la conexión actual de gestión local Local Management (LM) a través de un terminal. Si lo hace, se desconectará el terminal LM del puerto, y se terminará la sesión de LM.
CAUTION	If the COM port is reconfigured without a valid IP address set on the module or chassis, the message shown in Figure 5-20 displays. Do not continue unless the outcome of the action is fully understood.
ACHTUNG	Wenn der COM-Port rekonfiguriert wird, ohne daß auf dem Modul oder dem Gehäuse eine gültige IP-Adresse eingestellt ist, wird die in Abbildung 5-20 gezeigte Meldung angezeigt. Arbeiten Sie nicht weiter, bevor Sie die Auswirkungen dieser Aktion vollständig verstanden haben.
ATTENTION	Si le port COM est reconfiguré sans adresse IP valable pour le module ou le châssis, le message de la Figure 5-20 s'affiche. Ne continuez pas sans avoir bien compris les conséquences de votre action.
PRECAUCIÓN	Si se reconfigura el puerto COM sin haber definido una dirección de IP válida en el módulo o el chasis, aparecerá el mensaje mostrado en la Figura 5-20. No continúe a no ser que entienda perfectamente las consecuencias de esta acción.
CAUTION	Exiting without saving causes the message "NOT SAVED -- PRESS SAVE TO KEEP CHANGES" to appear. Exiting without saving causes all edits to be lost.
ACHTUNG	Beenden ohne Speichern verursacht die Meldung "NOT SAVED -- PRESS SAVE TO KEEP CHANGES" (Nicht gespeichert - Drücken Sie Save/Speichern, um die Änderungen zu speichern). Durch Beenden ohne Speichern gehen alle durchgeführten Änderungen verloren.

ATTENTION	Si vous sortez sans enregistrer, le message "NOT SAVED - PRESS SAVE TO KEEP CHANGES" (Non enregistré - Appuyez sur SAVE pour conserver les modifications) s'affiche. Toutes vos modifications seront perdues.
PRECAUCIÓN	Si sale sin guardar, aparecerá el mensaje "NOT SAVED -- PRESS SAVE TO KEEP CHANGES" (NO SE HA GUARDADO - PULSE GUARDAR PARA CONSERVAR LOS CAMBIOS). Si sale sin guardar se perderán todos los cambios.
CAUTION	When the COM port is configured to perform the UPS application, all future Local Management connections must be made by establishing a Telnet connection to the module. Ensure that the module has a valid IP address before saving changes to the COM port application. If the module does not have a valid IP address and the changes are saved, refer to Appendix C for instructions on clearing NVRAM in order to reestablish COM port communications.
ACHTUNG	Wenn der COM-Port für die Ausführung der UPS-Anwendung konfiguriert ist, müssen alle zukünftigen Local-Management-Verbindungen durchgeführt werden, indem eine Telnet-Verbindung zum Modul aufgebaut wird. Stellen Sie sicher, daß das Modul eine gültige IP-Adresse hat, bevor Sie Änderungen in der COM-Port-Anwendung speichern. Wenn das Modul keine gültige IP-Adresse hat und die Änderungen gespeichert wurden, finden Sie im Anhang C Anleitungen zum Löschen des NVRAM, um die COM-Port-Kommunikationen wiederherzustellen.

ATTENTION	Lorsque le port COM est configuré pour une application UPS, toute future connexion Local Management doit se faire en établissant une connexion Telnet au module. Assurez-vous que celui-ci possède une adresse IP valable avant d'enregistrer les modifications apportées au port COM. Si le module n'est pas doté d'une adresse IP valable et que les modifications sont enregistrées, reportez-vous à l'Annexe C pour apprendre comment initialiser la NVRAM avant de rétablir des communications COM.
PRECAUCIÓN	Cuando el puerto COM está configurado para la aplicación UPS, todas las conexiones de gestión local (LM, Local Management) deberán realizarse estableciendo una conexión Telnet con el módulo. Asegúrese de que el módulo tiene una dirección de IP válida antes de guardar los cambios en la aplicación del puerto COM. Si el módulo no tiene una dirección de IP válida y se han guardado los cambios, consulte el Apéndice C para obtener instrucciones sobre el borrado del contenido de la memoria NVRAM para restablecer las comunicaciones del puerto COM.
CAUTION	Clearing NVRAM will result in the loss of all user-entered parameters. Do not proceed unless this procedure is completely understood.
ACHTUNG	Das Löschen des NVRAM führt zum Verlust aller vom Benutzer eingegebenen Parameter. Arbeiten Sie nicht weiter, bevor Sie dieses Verfahren vollständig verstanden haben.
ATTENTION	Si vous réinitialisez la NVRAM, tous les paramètres utilisateur seront perdus. N'exécutez donc cette procédure qu'en parfaite connaissance de cause.
PRECAUCIÓN	El borrado del contenido de la memoria NVRAM provocará la pérdida de todos los parámetros introducidos por el usuario. No continúe a no ser que comprenda totalmente este procedimiento.

CAUTION	If the DLE2X-MA and DLE3X-MA are being bridged to an FDDI ring (for example, via an DELHF-UA installed in the DLE3X-MA) IP Fragmentation should be enabled. If IP Fragmentation is disabled, all FDDI frames that exceed the maximum Ethernet frame size will be discarded.
ACHTUNG	Wenn DLE2X-MA und DLE3X-MA per Bridge an einen FDDI-Ring angeschlossen werden (Beispiel: über einen DELHF-UA, der im DLE3X-MA installiert ist), sollte IP-Fragmentierung aktiviert werden. Wenn IP-Fragmentierung deaktiviert wird, werden alle FDDI-Frames, die die maximale Ethernet-Frame-Größe überschreiten, verworfen.
ATTENTION	Si les appareils DLE2X-MA et DLE3X-MA sont reliés (pontage) sur un anneau FDDI (par exemple, via un DELHF-UA installé sur le DLE3X-MA), la fragmentation IP doit être active. Dans le cas contraire, toutes les frames FDDI dépassant la taille maximum des frames Ethernet seront ignorées.
PRECAUCIÓN	Si los DLE2X-MA y DLE3X-MA se están puentando a un anillo FDDI (por ejemplo a través de un DELHF-UA instalado en el DLE3X-MA), la fragmentación de IP (IP Fragmentation) deberá estar activada. Si está desactivada todos los marcos FDDI que superen el tamaño máximo de marco de Ethernet se desecharán.
CAUTION	The Network Tools connection to the module will be terminated upon execution of this command.
ACHTUNG	Die Network Tools-Verbindung zum Modul wird bei der Ausführung dieses Befehls beendet.
ATTENTION	La connexion Network Tools au module cessera à l'exécution de cette commande.
PRECAUCIÓN	La conexión de Network Tools con el módulo se terminará al ejecutar este comando.

CAUTION	The Fast Ethernet Interface Module 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 damage the Fast Ethernet Interface Module or the host module.
ACHTUNG	Das schnelle Ethernet-Schnittstellenmodul und das Hostsystemmodul sind für statische Entladungen empfindlich. Benutzen Sie deshalb ein Antistatikarmband, und beachten Sie während dieses Verfahrens alle diesbezüglichen Vorsichtsmaßnahmen. Bei Nichtbeachtung könnte das schnelle Ethernet-Schnittstellenmodul oder das Hostsystemmodul beschädigt werden.
ATTENTION	Le module d'interface Fast Ethernet et le module 'hôte' sont sensibles aux décharges statiques. Utilisez un bracelet antistatique et prenez toutes les précautions nécessaires durant la procédure. Dans le cas contraire, vous risquez d'endommager le module d'interface Fast Ethernet ou le module 'hôte'
PRECAUCIÓN	Fast Ethernet Interface Module y el módulo host son sensibles a las descargas estáticas. Utilice una banda antiestática para el puño y observe todas las precauciones de estática durante este procedimiento. Si no lo hace, podría dañar Fast Ethernet Interface Module o el módulo host.
CAUTION	When installing an DELFX-UI or DELF3-UI module into the host module, remove the rubber plug on the SC connector before proceeding.
ACHTUNG	Vor der Installation eines DELFX-UI- oder DELF3-UI-Moduls in das Hostsystemmodul muß der Gummistöpsel vom SC-Anschlußstecker entfernt werden.
ATTENTION	Lorsque vous installez un module DELFX-UI ou un module DELF3-UI, retirez la prise en caoutchouc placée sur le connecteur SC avant de procéder à l'installation.

PRECAUCIÓN	Al instalar un módulo DELFX-UI o DELF3-UI en el módulo de host, retire el enchufe de caucho del conector SC antes de continuar.
CAUTION	When inserting the Fast Ethernet Interface Module into the motherboard connector ensure that the pins do not bend, as this can damage both the Fast Ethernet Interface Module and the motherboard connector.
ACHTUNG	Beachten Sie, daß das schnelle Ethernet-Schnittstellenmodul gerade in die Hauptplatine eingesetzt wird und die Nadeln nicht gebogen werden. Wird es schräg eingesetzt, könnten sowohl das schnelle Ethernet-Schnittstellenmodul als auch die Hauptplatine beschädigt werden.
ATTENTION	Lorsque vous insérez le module d'interface Fast Ethernet dans le connecteur de de la carte mère, assurez-vous que les broches ne sont pas pliées, car vous risquez d'endommager à la fois le module et le connecteur.
PRECAUCIÓN	Al insertar Fast Ethernet Interface Module en el conector de la placa base, asegúrese de que las patillas no se doblen, ya que esto podría dañar tanto Fast Ethernet Interface Module, como el conector de la placa base.

CHAPTER 1

INTRODUCTION

This chapter describes the features of the DLE2X-MA and DLE3X-MA Interface Modules.

1.1 DLE2X-MA AND DLE3X-MA OVERVIEW

The DLE2X-MA and DLE3X-MA, shown in Figure 1-1, are interface modules for the DLM6C-AA chassis.

The DLE2X-MA and DLE3X-MA are high-speed network switch devices that support 802.1D switching (bridging) and 802.1Q switching. Ports 25 and 26 of the DLE2X-MA support optional Fast Ethernet Interface Modules and can provide uplinks to 100BASE-TX or 100BASE-FX Fast Ethernet networks. The DLE3X-MA is capable of being equipped with a High Speed Interface Module (HSIM) that provides for additional connectivity to other high speed networking technologies such as Asynchronous Transfer Mode (ATM), Wide Area Networks (WANs) and Fiber Distributed Data Interface (FDDI).

The DLM6C-AA can be used to connect individual high-bandwidth user devices, such as workstations, and to provide a central switching point for multiple Ethernet segments using devices such as the HubSTACK or other third party stackable devices.



Figure 1-1 displays the DLE22-MA and DLE32-MA. The DLE22-MA and the DLE23-MA are functionally identical, as are the DLE32-MA and the DLE33-MA. The only difference being that the DLE23-MA and DLE33-MA modules support RJ21 front panel connections.

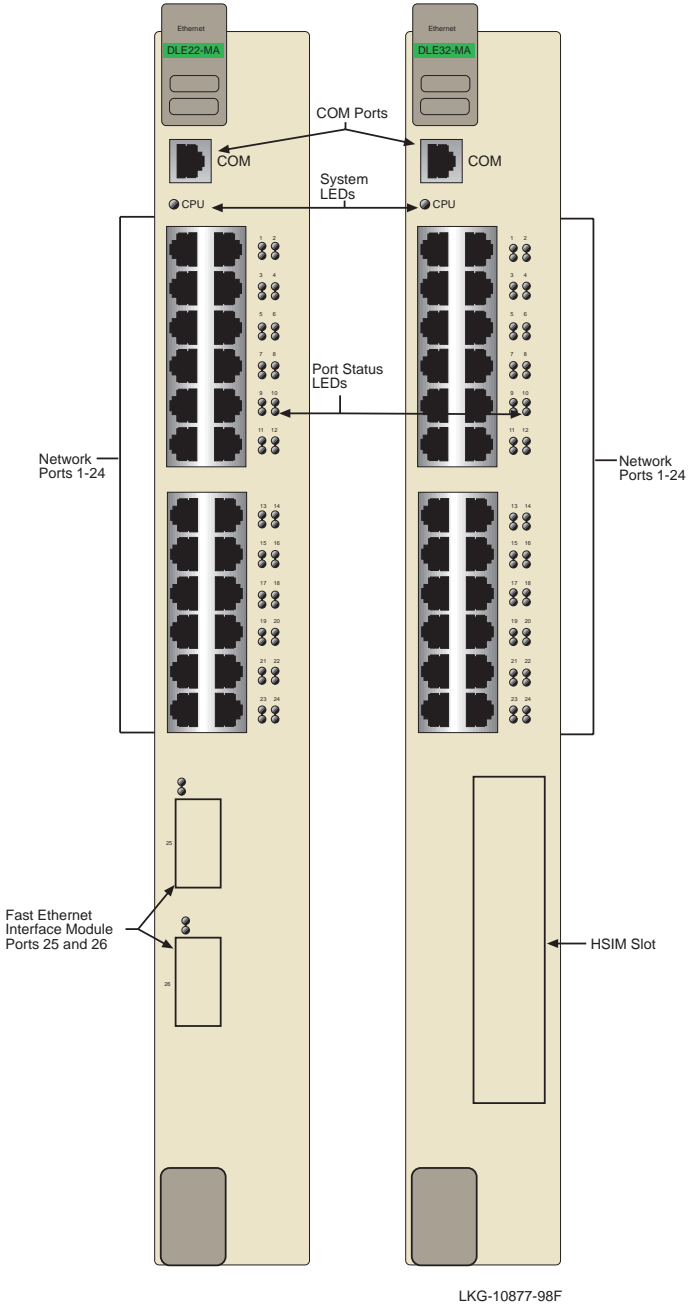


Figure 1-1 The DLE22-MA and DLE32-MA

1.1.1 Connectivity

The DLE22-MA and DLE32-MA connect to Ethernet networks or workstations through 24 RJ45 ports on the front panel. These ports support UTP connections up to 100 meters. The ports are IEEE 802.3 10BASE-T compliant.

The DLE23-MA and DLE33-MA connect to Ethernet networks or workstations through two RJ21 connectors on the front panel. These connectors support 25 pair cable at lengths up to 100 meters. The ports are IEEE 802.3 10BASE-T compliant.

The DLE2X-MA modules have two front panel slots (ports 25 and 26) for optional Fast Ethernet Interface Modules to support an uplink to 100 Mbps Ethernet backbones or a high speed connection to a local server.

The DLE3X-MA modules have one front panel slot for an optional High Speed Interface Module to provide for additional connectivity to other high speed networking technologies such as ATM, WANs and FDDI.

1.1.2 Full Duplex Switched Ethernet

Each switched Ethernet port supports full wire-speed Ethernet communications and can be configured to operate in Full Duplex Switched Ethernet mode, which provides up to 20 Mbps of bandwidth.

The optional Fast Ethernet Interface Modules for the DLE2X-MA can also be configured to operate in Full Duplex Switched Ethernet mode, which provides up to 200 Mbps of bandwidth.

1.1.3 SmartTrunk

The SmartTrunk feature allows the user to set a group of DLE2X-MA and DLE3X-MA interfaces, so they can share the traffic load and effectively increase the bandwidth between connected DLE2X-MA and DLE3X-MAs or other devices supporting the SmartTrunk feature. For example, Ports 25 and 26 of the DLE2X-MA could be grouped to provide a 200-Mbps uplink.

1.1.4 Management

Management of the DLE2X-MA and DLE3X-MA is accomplished using Local Management tools or remote SNMP management stations. Local Management is accessible through the RS232 COM port on the front panel using a local VT100 terminal, or a remote VT100 terminal via a modem connection, and in-band via a Telnet connection. In-band remote management is possible through any SNMP compliant Network Management Software.

1.1.5 Switching Options

The DLE2X-MA and DLE3X-MA provide 802.1D switching and 802.1Q switching between all of the front panel interfaces including Fast Ethernet Interface Modules and High Speed Interface Modules (HSIMs).

The 802.1Q switching option allows for future migration to Virtual Network technologies without requiring the replacement of existing equipment.

1.1.6 Standards Compatibility

The DLE2X-MA and DLE3X-MA are fully compliant with the IEEE 802.3 standard. The optional Fast Ethernet Interface Modules are fully compliant with the IEEE 802.3u standard. The DLE2X-MA and DLE3X-MA provide IEEE 802.1D Spanning Tree Algorithm (STA) support to enhance the overall reliability of the network and protect against “loop” conditions. The DLE2X-MA and DLE3X-MA support a wide variety of industry standard MIBs including RFC 1213 (MIB II), RFC 1757 (RMON), RFC 1493 (Bridge MIB) and RFC 1354 (FIB MIB). A full suite of the Enterprise MIBs provide a wide array of statistical information to enhance troubleshooting.

1.1.7 LANVIEW Diagnostic LEDs

LANVIEW diagnostic LEDs serve as an important troubleshooting aid by providing an easy way to observe the status of individual ports and overall network operations. Chapter 4 provides details about the DLE2X-MA and DLE3X-MA LANVIEW LEDs.

1.1.8 Year 2000 Compliant

The DLE2X-MA and DLE3X-MA have an internal clock that can maintain the current time and date beyond the year 1999.

1.1.9 Runtime IP Address Discovery

This feature enables the modules to automatically accept an IP address from a BootP server on the network into NVRAM without requiring a user to enter an IP address through Local Management.

When the modules are connected to the network and powered up, Runtime IP Address Discovery (RAD) checks the modules for an IP address. If one has not yet been assigned (module and DLM6C-AA chassis IP address set to 0.0.0.0), RAD checks to see if any of the module interfaces have a link. If so, RAD sends out Reverse Address Resolution Protocol (RARP) and BootP requests to obtain an IP address from a RARP or BootP server on the network.

The RAD requests start out at an interval of one second. The interval then doubles after every transmission until an interval of 300 seconds is reached. At this point, the interval remains at 300 seconds. The RAD requests continue until an IP address is received from a RARP or BootP server, or an IP address is entered using Local Management.

1.1.10 Local Management Features

Local Management provides the tools that allow management of the DLE2X-MA and DLE3X-MA, the Fast Ethernet Interface Modules, the High Speed Interface Module (HSIM) and the DLM6C-AA chassis. It also allows the following tasks to be performed:

- Manage any module installed in the DLM6C-AA via a single terminal connection.
- Assign an IP address and subnet mask to the DLM6C-AA chassis, DLE2X-MA and DLE3X-MA.
- Select a default gateway.
- Control local and remote access.

- Designate workstations to receive SNMP traps from the DLE2X-MA and DLE3X-MA interface modules and the DLM6C-AA chassis.
- Configure module specific SNMP MIB objects including the IETF Bridge MIB objects.

Chapter 5 provides detailed information about Local Management of the DLE2X-MA and DLE3X-MA, the optional Fast Ethernet Interface Modules and the DLM6C-AA chassis. The associated High Speed Interface Module user's guide provides detailed information about Local Management of the applicable HSIM.

1.2 OPTIONAL FEATURES

Options for the DLE2X-MA and DLE3X-MA are Fast Ethernet Interface Modules and High Speed Interface Modules, which add remote uplink capability.

Digital Equipment Corporation provides Fast Ethernet Interface Modules for the DLE2X-MA to support uplinks to 100 Mbps Ethernet backbones or high speed connections to local servers. The Fast Ethernet Interface Modules are listed in Table 1-1.

Table 1-1 Fast Ethernet Interface Modules

P/N	Description	Application
DELTX-UI	Uses RJ45 connector	Supports Shielded Twisted Pair (STP) and Category 5 Unshielded Twisted Pair (UTP) cabling.
DELFX-UI	Uses SC connector	Supports multimode fiber optic cabling.
DELF3-UI	Uses SC connector	Supports single mode fiber optic cabling.

Digital Equipment Corporation provides High Speed Interface Modules for the DLE3X-MA to provide for additional connectivity to other high speed networking technologies such as ATM, WANs and FDDI. The HSIMs available for the DLE3X-MA are listed in the Release Notes.

CHAPTER 2

NETWORK REQUIREMENTS

Before installing the DLE2X-MA and DLE3X-MA or Fast Ethernet Interface Modules (DELTX-UI, DELFX-UI, or DELF3-UI), review the requirements and specifications referred to in this chapter concerning the following:

- SmartTrunk (Section 2.1)
- 10BASE-T Twisted Pair Network (Section 2.2)
- 100BASE-TX Twisted Pair Network (Section 2.3)
- 100BASE-FX Fiber Optic Network (Section 2.4)

The network installation must meet the guidelines to ensure satisfactory performance of this equipment. Failure to follow the guidelines may produce poor network performance.



The Cabletron Systems *Cabling Guide*, referred to in the DIGITAL World Wide Web site: <http://www.networks.digital.com>

2.1 SmartTrunk

To connect the DLE2X-MA and DLE3X-MA to a network so they can take advantage of the SmartTrunk feature, there are certain rules concerning port connections and configurations that must be followed for proper operation. Section 5.20.1, **SmartTrunk Configuration Rules** in describes SmartTrunking and provides the configuration rules.

2.2 10BASE-T NETWORK

When connecting a 10BASE-T segment to any of the DLE2X-MA and DLE3X-MA ports (Interfaces 1 through 24), ensure that the network meets the Ethernet network requirements of the IEEE 802.3 standard for 10BASE-T. Refer to the Cabletron Systems *Cabling Guide* for details.

2.3 100BASE-TX NETWORK

The DLE2X-MA, with an DELTX-UI installed in ports 25 and 26, provides an RJ45 connection that supports UTP cabling. The device at the other end of the twisted pair segment must meet IEEE 802.3u 100BASE-TX Fast Ethernet network requirements for the devices to operate at 100 Mbps. Refer to the Cabletron Systems *Cabling Guide* for details.



The DLE2X-MA with an DELTX-UI installed is capable of operating at either 10 or 100 Mbps. The DELTX-UI can automatically sense the speed of the other device and adjusts its speed accordingly.

2.4 100BASE-FX FIBER OPTIC NETWORK

Ports 25 and 26 of the DLE2X-MA support the DELFX-UI and DELF3-UI fiber optic interface modules. The device at the other end of the fiber optic segment must meet the 100BASE-FX Fast Ethernet network requirements to operate at 100 Mbps. Refer to the Cabletron Systems *Cabling Guide* for details.

Multimode Mode Fiber Optic Cable Length

The maximum multimode fiber optic cable length of a 100BASE-FX segment is covered in the Cabletron Systems *Cabling Guide*.

Single Mode Fiber Cable Lengths

The maximum single mode fiber optic length of a 100BASE-FX segment may be no more than 5 km between Data Terminal Equipment (DTE to DTE) in half duplex mode or 20 km (DTE to DTE) in full duplex mode.

CHAPTER 3

INSTALLATION



Only qualified personnel should install the DLE2X-MA and DLE3X-MA.

This chapter covers the following items:

- Required tools
- Unpacking the DLE2X-MA and DLE3X-MA
- Installing the DLE2X-MA and DLE3X-MA into the DLM6C-AA chassis
- Connecting to the network

3.1 REQUIRED TOOLS

A Phillips screwdriver is required to install the optional Fast Ethernet Interface Modules into the DLE2X-MA.

3.2 UNPACKING THE DLE2X-MA AND DLE3X-MA

1. Open the box and remove the packing material protecting the module.
2. Verify the contents of the carton as listed in Table 3-1.

Table 3-1 Contents of Shipping Carton

Item	Quantity
DLE32-MA, DLE22-MA, DLE33-MA or DLE23-MA	1
Release Notes	1
RJ21 Angle Adapter (DLE23-MA and DLE33-MA only)	2

3.3 DLE2X-MA AND DLE3X-MA OPTIONS



Install any optional equipment before proceeding to Section 3.4.

If the DLE2X-MA is to be installed with an optional Fast Ethernet Interface Module, refer to Appendix C for installation instructions. The installation instructions for the HSIMs available for the DLE3X-MA are located in the associated user's guide.

3.4 INSTALLING THE DLE2X-MA AND DLE3X-MA INTO THE DLM6C-AA CHASSIS



Failure to observe static safety precautions could cause damage to the DLE2X-MA and DLE3X-MA. Follow static safety handling rules and properly wear the antistatic wrist strap provided with the DLM6C-AA chassis.



Do not cut the non-conductive bag to remove the module. Damage could result from sharp objects contacting the board or components.

The DLE2X-MA and DLE3X-MA can be installed in any of the 5 slots that are available. To install a module, proceed as follows:

1. Remove the blank panel covering the slot in which the module will be installed. All other slots must remain covered to ensure proper airflow and cooling. (Save the blank plate in the event you need to remove the module.)
2. Carefully remove the module from the shipping box. (Save the box and packing materials in the event the module must be reshipped.)
3. Locate the antistatic wrist strap shipped with the DLM6C-AA chassis. Attach the strap to your wrist and plug the cable from the antistatic wrist strap into the ESD grounding receptacle at the upper right corner of the DLM6C-AA.

4. Remove the module from the plastic bag. (Save the bag in the event the module must be reshipped.) Observe all precautions to prevent damage from Electrostatic Discharge (ESD).
5. Examine the module for damage. If any damage exists, **DO NOT** install the module. Immediately contact your DIGITAL representative.



To prevent damaging the backplane connectors in the following step, take care that the module slides in straight and properly engages the backplane connectors.



In the following step, ensure that the top plastic locking tab lines up with the desired slot number located on the front panel of the chassis. Refer to Figure 3-1.

6. Locate the slot guides that line up with the number of the slot in which the module will be installed. Install the module in the chassis by aligning the module circuit card between the upper and lower metal rail guides of the desired slot, sliding it into the chassis, and locking down the top and bottom plastic locking tabs, as shown in Figure 3-1. Take care that the module slides in straight and properly engages the backplane connectors.

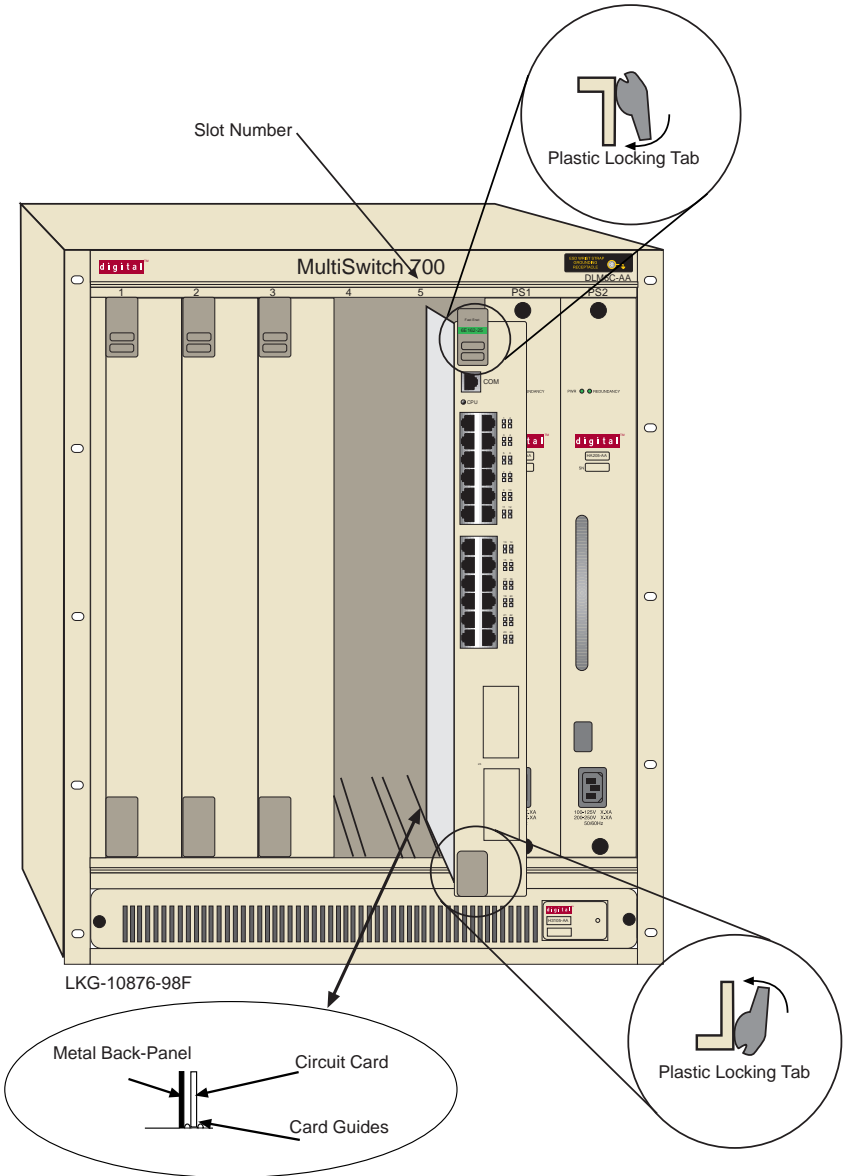


Figure 3-1 Installing an Interface Module

3.5 CONNECTING TO THE NETWORK

This section provides the procedures for connecting segments from the network or other devices to the modules.



If the DLE2X-MA and DLE3X-MA are being installed in a network using SmartTrunking, there are rules concerning the network cable and port configurations that must be followed for SmartTrunking to operate properly. Before connecting the cables refer to Section 5.20.1, SmartTrunk Configuration Rules, for the configuration information.

Ports 1 through 24 on the DLE22-MA and DLE32-MA have RJ45 connectors for twisted pair connections. Ports 1 through 24 on the DLE23-MA and DLE33-MA have RJ21 connectors for twisted pair connections. Ports 25 and 26 of the DLE2X-MA support DELTX-UI, DELFX-UI, or DELF3-UI Fast Ethernet Interface Modules. The DELTX-UI has an RJ45 connector for a Twisted Pair cable connection. The DELFX-UI has an SC style connector for a multimode fiber optic cable connection. The DELF3-UI has an SC style connector for a single mode fiber optic cable connection.

Refer to Section 3.5.1 to make twisted pair connections to ports 1 through 24 of the DLE22-MA and DLE32-MA.

Refer to Section 3.5.2 to make twisted pair connections to ports 1 through 24 of the DLE23-MA and DLE33-MA.

Refer to Section 3.5.3 to make a Twisted Pair connection to an DELTX-UI.

Refer to Section 3.5.4 to make a fiber optic connection to an DELFX-UI or DELF3-UI.

3.5.1 Connecting UTP Cables to Ports 1 Through 24 of the DLE22-MA and DLE32-MA

Ports 1 through 24 of the DLE22-MA and DLE32-MA are 10BASE-T ports with internal crossovers. When connecting a workstation, use a straight-through cable. When connecting networking devices, such as another bridge, repeater, or router, use a crossover cable.

Connect a twisted pair segment to the DLE22-MA and DLE32-MA 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 DLE32-MA or DLE22-MA by inserting the RJ45 connector on the twisted pair segment into the desired RJ45 port (Ports 1 through 24) as shown in Figure 3-2.

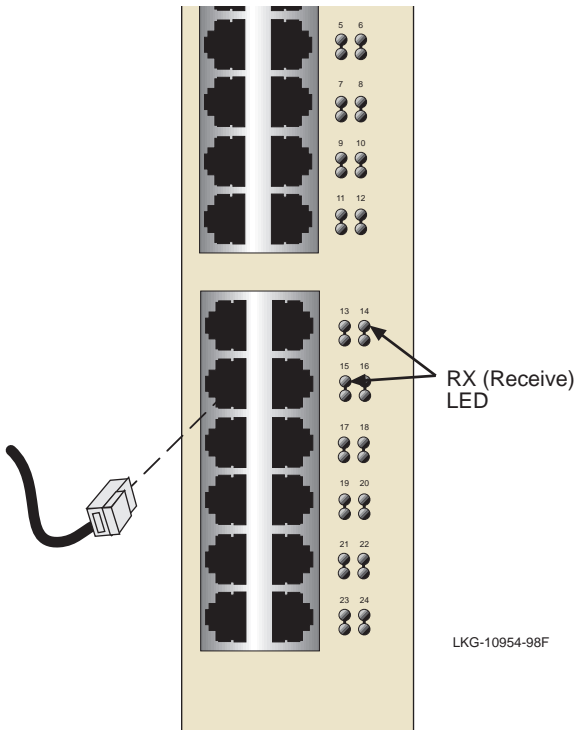


Figure 3-2 DLE22-MA and DLE32-MA Twisted Pair Connection

3. Verify that a link exists by checking that the port **RX** LED is on (flashing amber, blinking green, or solid green). If the **RX** LED is off, perform the following steps until it is on:
 - a. Verify that the 10BASE-T device at the other end of the twisted pair segment is ON and connected to the segment.
 - b. Verify that the RJ45 connectors on the twisted pair segment have the proper pinouts (Figure 3-3) and check the cable for continuity.

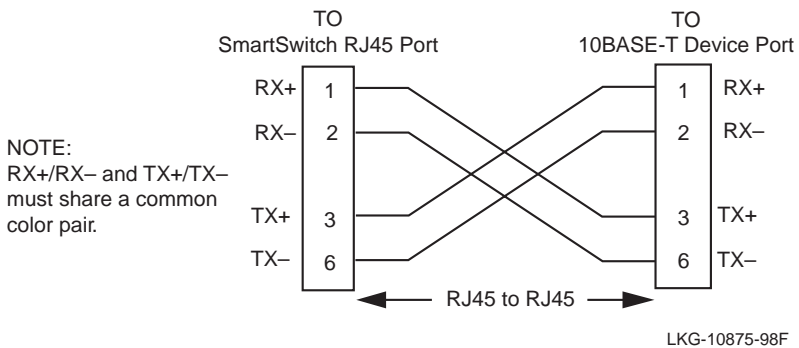


Figure 3-3 Cable Pinouts - (RJ45) Crossover Cable

- c. Check that the twisted pair connection meets the dB loss and cable specifications outlined in Chapter 2.

If a link is not established, contact your DIGITAL representative.

4. Repeat steps 1 through 3, above, until all connections have been made.

3.5.2 Connecting UTP Cables to Ports 1 Through 24 of the DLE33-MA and DLE23-MA

When facing the front panel of the DLE33-MA or DLE23-MA, the upper RJ21 is the connector for 10BASE-T ports 1 through 12. The lower RJ21 is for 10BASE-T ports 13 through 24. All 24 ports have internal crossovers.

Connect a twisted pair segment to the DLE33-MA and DLE23-MA as follows:

1. Ensure that the device connected to the other end of the segment is powered ON.
2. If using an RJ21 straight connector, plug it into the appropriate RJ21 port as shown in Figure 3-4 or, if using the RJ21 angle adapter supplied with the device, insert the RJ21 angle adapter as shown in Figure 3-5. The RJ21 angle adapter allows the cable to be inserted without interfering with the proper attachment of the second connector.

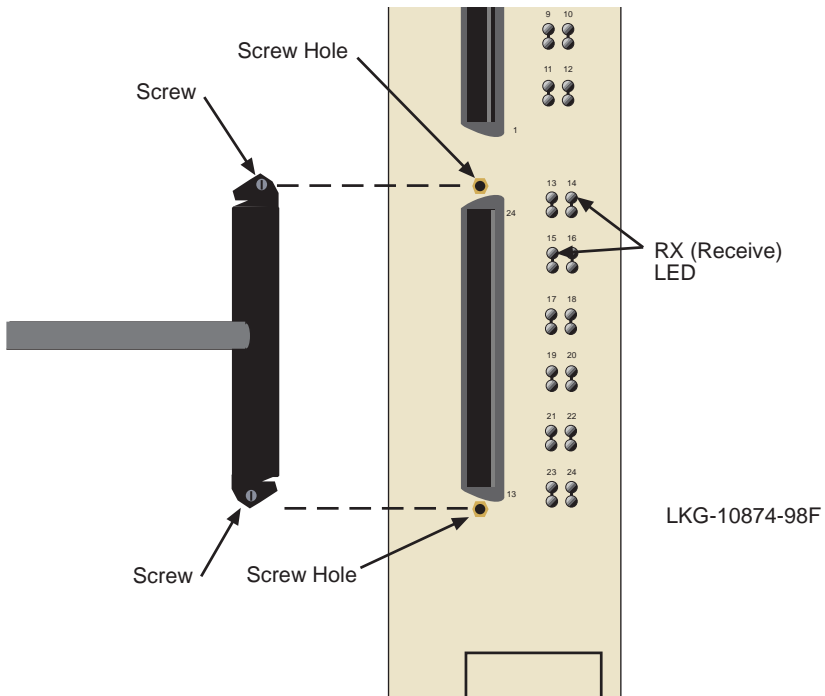


Figure 3-4 DLE33-MA and DLE23-MA Twisted Pair Connection

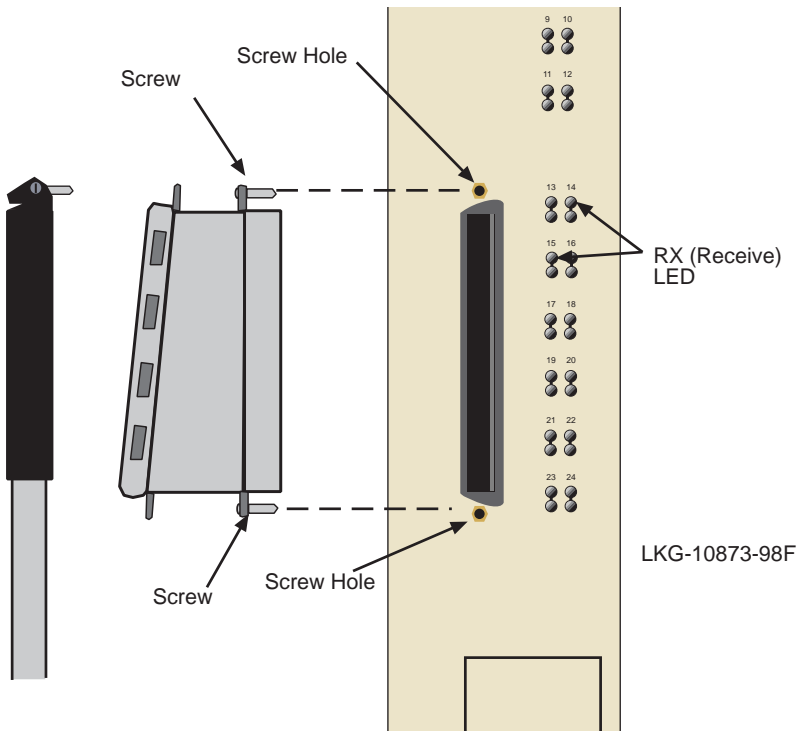


Figure 3-5 Connection Using the RJ21 Angle Adapter

3. Tighten the two screws on the RJ21 connector or RJ21 angle adapter, as applicable, to secure it to the module.



The cable pinouts for a 25 pair cable (RJ21) can be found in the Cabletron Systems *Cabling Guide*. Refer to **Related Documentation**, for details on how to obtain this document.

4. If using the RJ21 angle adapter, plug the 25 pair cable into the adapter as shown in Figure 3-5.
5. Verify that a link exists by checking that the port **RX** LEDs are on (flashing amber, blinking green, or solid green). If the **RX** LEDs are off, perform the following steps until it is on:
 - a. Verify that the 10BASE-T device at the other end of the twisted pair segment is ON and connected to the segment.

- b. Verify that the RJ21 connectors on the twisted pair segment have the proper pinouts and check the cable for continuity.
- c. Check that the twisted pair connection meets the dB loss and cable specifications outlined in Chapter 2.

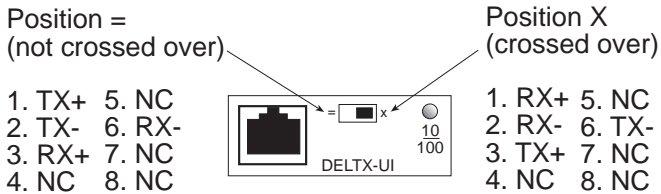
If a link is not established, contact your DIGITAL representative.

- 6. Repeat steps 1 through 4, above, until all connections have been made.

3.5.3 Connecting a Twisted Pair Segment to the DELTX-UI

An DELTX-UI installed in port 25 and/or 26 has an internal crossover switch. When connecting a workstation, use a straight-through cable and set the Fast Ethernet Interface Module crossover switch shown in Figure 3-6 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 Fast Ethernet Interface Module crossover switch shown in Figure 3-6 to the not crossed over position, marked with **=**.

A schematic of a crossover cable is shown in Figure 3-6. If the wires do not cross over, use the switch on the DELTX-UI to internally cross over the RJ45 port. Figure 3-6 shows how to properly set the DELTX-UI crossover switch.



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Figure 3-6 DELTX-UI Crossover Switch

Connect an 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 segment into the RJ45 port on the module shown in Figure 3-6.
3. Verify that a link exists by checking that the port **RX** LED is on (flashing amber, blinking green, or solid green). If the **RX** 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 dB loss and cable specifications outlined in Section 2.3.
 - e. Confirm that the crossover switch is in the correct position.

If a link is not established, contact your DIGITAL representative.

3.5.4 Connecting a Fiber Optic Segment to the DELFX-UI and DELF3-UI

The DELFX-UI and DELF3-UI have an SC style network port (see Figure 3-7). Cabletron Systems supplies fiber optic cable that uses SC style connectors that are keyed to ensure proper crossing over of the transmit and receive fibers.



An odd number of crossovers (preferably one) must be maintained between 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 crossing over occurs.

Fiber Optic Network Connection

1. Remove the protective plastic covers from the fiber optic ports on the applicable port on the module and from the ends of the connectors.

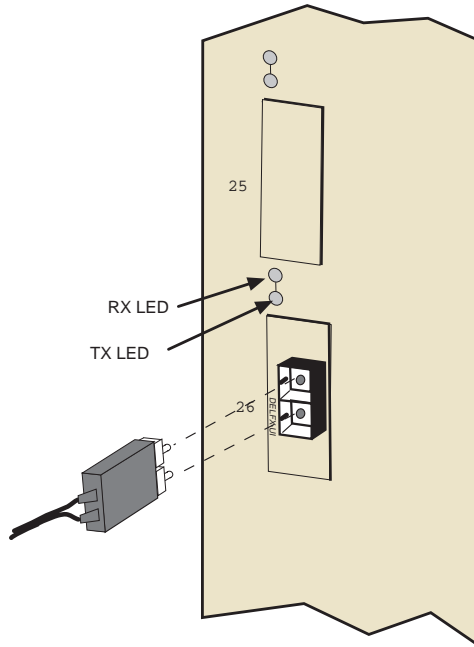


The DELF3-UI uses Class 1 lasers. Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.



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, clean them with alcohol using a soft, clean, lint-free cloth.

2. Insert one end of the SC connector into the DELFX-UI or DELF3-UI installed in the DLE2X-MA. See Figure 3-7.
3. At the other end of the fiber optic cable, attach the SC connector to the other device.



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Figure 3-7 DELFX-UI and DELF3-UI Port

4. Verify that a link exists by checking that the port **RX** LED is on (flashing amber, blinking green, or solid green). If the **RX** LED is off and the **TX** LED is not blinking amber, perform the following steps until it is on:



The port **RX** LED flashes green and amber during bootup.

- a. Check that the power is turned on for the device at the other end of the link.
- b. Verify proper crossing over of fiber strands between the applicable port on the DLE2X-MA 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 Chapter 2.

If a link has not been established, contact your DIGITAL representative.

3.6 COMPLETING THE INSTALLATION

The DLE2X-MA and DLE3X-MA are now ready to be set up through Local Management. Refer to Chapter 5, **Local Management**, to configure the modules and DLM6C-AA chassis.

CHAPTER 4

TROUBLESHOOTING

This chapter provides information concerning the following:

- Using the LANVIEW diagnostic and status monitoring system
- Troubleshooting network and module operational problems
- Using the RESET button



The four interface modules covered in this manual all share the same LANVIEW LEDs.

4.1 USING LANVIEW

The DLE2X-MA and DLE3X-MA use a built-in visual diagnostic and status monitoring system called LANVIEW. The LANVIEW LEDs (Figure 4-1) allow quick observation of the network status to aid in diagnosing network problems. Refer to Table 4-1 for a description of the LEDs.

For a functional description of the LANVIEW LED on the optional Fast Ethernet Interface Module (DELTX-UI), refer to Section 4.2.

All LEDs for the High Speed Interface Module (HSIM) are located on the HSIM and are described in the associated HSIM user's guide.



The terms **flashing**, **blinking**, and **solid** used in the LED definition tables of this chapter indicate the following:

Flashing indicates an irregular LED pulse.

Blinking indicates a steady LED pulse.

Solid indicates a steady LED light. No pulsing.

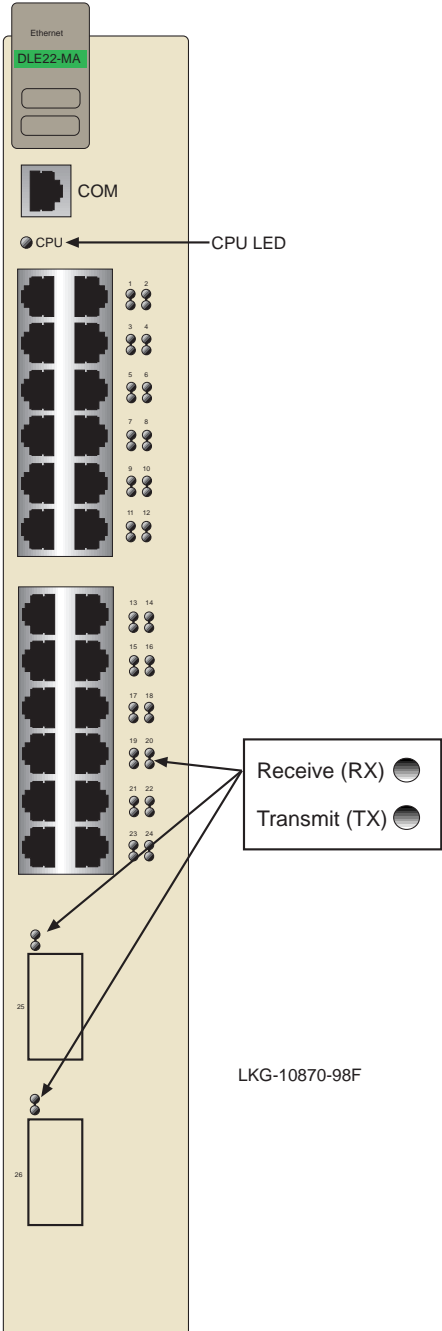


Figure 4-1 LANVIEW LEDs

Table 4-1 LANVIEW LEDs

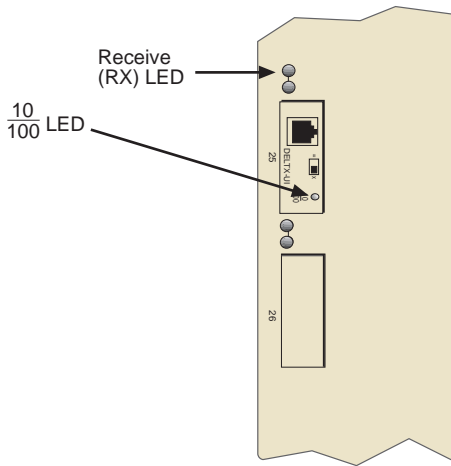
LED	Color	State	Recommended Action
CPU	Off	Power off.	Power up chassis.
	Red	Blinking. Hardware failure has occurred.	Contact your DIGITAL representative.
		Solid. Resetting, normal power up reset.	No action. If LED remains Red for several minutes, contact your DIGITAL representative.
	Amber	Blinking. Crippled.	Contact your DIGITAL representative.
		Solid. Testing.	No action. If LED remains Amber for several minutes, contact your DIGITAL representative.
	Green	Solid. Functional.	No action.
	Amber and Green	Booting. Blinks amber and green while booting.	No action.
RX	Off	No link. No activity. Port enabled or disabled.	No error.
	Green	Solid. Port enabled, link, no activity.	No error.
		Blinking. Port disabled, link.	No error.
	Amber	Flashing. Port enabled, link, activity.	No error.
Red	Diagnostic failure.	Contact your DIGITAL representative for assistance.	

Table 4-1 LANVIEW LEDs (Continued)

LED	Color	State	Recommended Action
TX	Off	Port enabled, and no activity.	Should flash green every 2 seconds indicating BPDUs being sent if STA is enabled and there is a valid link. If STA is enabled, and the LED does not flash green, contact your DIGITAL representative.
	Green	Flashing. Indicates activity. Rate indicates data rate.	No action.
	Amber	Blinking. Port in standby, link.	Port may be disabled due to Spanning Tree.
	Red	Flashing. Indicates collision rate.	No action.
		Solid. Diagnostic Failure.	Contact your DIGITAL representative for assistance.

4.2 DELTX-UI LED

The optional DELTX-UI has one LED labeled 10/100. The 10/100 LED together with the receive LED allows the user to determine the link status and the operating speed of the Fast Ethernet Interface Module. The 10/100 LED and the Receive (RX) LED are shown in Figure 4-2. Table 4-2 and Table 4-3 provide a functional description of the DELTX-UI LED when the RX LED is on or off, respectively.



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Figure 4-2 DELTX-UI LED



A link exists if the associated port (port 25 or 26) Receive (RX) LED is on.

Table 4-2 DELTX-UI LED Indications When the RX LED Is On

LED	Color	Description
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 (port 25 or 26) Receive (RX) LED is off.

Table 4-3 DELTX-UI LED Indications When the RX LED Is Off

LED	Color	Description
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.

4.3 TROUBLESHOOTING CHECKLIST

If the DLE2X-MA or DLE3X-MA is not working properly, refer to Table 4-4 for a checklist of possible problems, causes, and recommended actions to resolve the problem.

Table 4-4 Troubleshooting Checklist

Problem	Possible Cause	Recommended Action
All LEDs are OFF.	Loss of power to the DLM6C-AA chassis.	Check the proper connection of the power cable and its access to a live outlet.
	DLE3X-MA or DLE2X-MA not properly installed.	Check the installation.
No Local Management Password screen.	Autobaud enabled. But baud rate has not yet been sensed.	Press ENTER (RETURN) (may take up to four times).
	Terminal setup is not correct.	Refer to Chapter 5 for proper setup procedures.
	Improper console cable pinouts.	Refer to Appendix A for proper console port pinouts.
Cannot contact the DLE32-MA or DLE22-MA from in-band management.	Improper Community Names Table.	Refer to Chapter 5 for Community Names Table setup.
	DLE2X-MA or DLE3X-MA does not have an IP address.	Refer to Chapter 5 for IP address assignment procedure.
	Port is disabled.	Enable port.
	No link to device.	Check link to device.
Port(s) goes into standby for no apparent reason.	DLE2X-MA or DLE3X-MA detects a looped condition.	Review network design and delete unnecessary loops.
User parameters (IP address, Device and Module name, etc.) are lost when the DLE2X-MA or DLE3X-MA is powered down or the front panel RESET button is pressed.	Mode switch (7), NVRAM Reset, was changed sometime before either cycling power or pressing the RESET button, causing the user-entered parameters to reset to factory default settings.	Reenter the lost parameters as necessary. Call your DIGITAL representative if problem continues.

4.4 USING THE RESET BUTTON

The RESET button located near the upper plastic locking tab of the module (refer to Figure 4-3) resets the DLE2X-MA and DLE3X-MA processor without affecting the NVRAM.



Pressing the RESET button resets the device, and all current switching being performed by the device is halted. A module downtime of up to two minutes will result from this action.

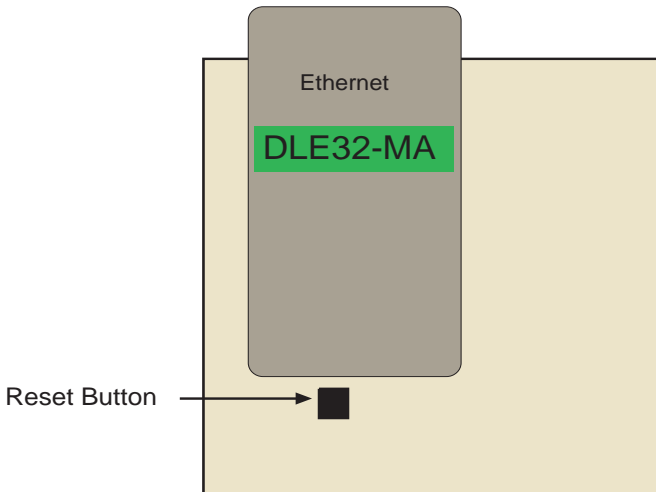


Figure 4-3 RESET Button

To reset the DLE2X-MA and DLE3X-MA processor, press and release the RESET button. The module processor goes through a reset process of approximately 20 seconds. Additional module downtime may be added as the module reenters the network.

CHAPTER 5

LOCAL MANAGEMENT

This chapter explains how to set up a management terminal to access DLE2X-MA and DLE3X-MA Local Management. It also explains how to use the Local Management screens and commands.



The Local Management screens shown in this chapter are for the DLE22-MA. The DLE32-MA, DLE33-MA and DLE23-MA share most of the following Local Management screens. All Local Management functions specific to any of the interface modules are preceded by a Note to alert the reader.

5.1 OVERVIEW

Local Management for the DLE2X-MA and DLE3X-MA consists of a series of management screens that allow the management of the module, the attached segments and the DLM6C-AA chassis. The management screens allow the user to perform the following tasks:

- Manage any interface module in the chassis via a connection to a single interface module.
- Assign IP addresses and subnet masks to the DLE2X-MA, DLE3X-MA and the DLM6C-AA chassis.
- Control access to the DLE2X-MA, DLE3X-MA and the DLM6C-AA chassis by establishing community names.
- Download a new image of operating software.
- Designate which Network Management Workstations receive SNMP traps from the DLE2X-MA, DLE3X-MA and the DLM6C-AA chassis.
- Monitor the environmental status of the DLM6C-AA chassis.
- View switch, interface, and RMON statistics.
- Assign ports to operate in standard or full duplex mode.
- Enable trunking of ports to perform load sharing.

- Configure the Fast Ethernet Interface Modules of the DLE2X-MA and the HSIM of the DLE3X-MA.

There are three ways to access Local Management:

- Locally using a VT type terminal connected to the COM port of the DLE3X-MA or DLE2X-MA.
- Remotely using a VT type terminal connected through a modem.
- In-band through a Telnet connection.

5.2 LOCAL MANAGEMENT KEYBOARD CONVENTIONS

All key names appear as capital letters in this manual. Table 5-1 explains the keyboard conventions and the key functions that are used.

Table 5-1 Keyboard Conventions

Key	Function
ENTER Key RETURN Key	These are selection keys that perform the same Local Management function. For example, "Press ENTER" means that you can press either ENTER or RETURN, unless this manual specifically instructs you otherwise.
ESCAPE (ESC) Key	This key allows an escape from a Local Management screen without saving changes. For example, "Press ESC twice" means the ESC key must be pressed quickly two times.
SPACE bar BACKSPACE Key	These keys cycle through selections in some Local Management fields. Use the SPACE bar to cycle forward through selections and use BACKSPACE to cycle backward through selections.
Arrow Keys	These are navigation keys. Use the UP-ARROW, DOWN-ARROW, LEFT-ARROW, and RIGHT-ARROW keys to move the screen cursor. For example, "Use the arrow keys" means to press whichever arrow key moves the cursor to the desired field on the Local Management screen.

Table 5-1 Keyboard Conventions

[-] Key	This key decreases values from a Local Management increment field. For example, "Press [-]" means to press the minus sign key.
DEL Key	The DEL (Delete) key removes characters from a Local Management field. For example, "Press DEL" means to press the Delete key.

5.3 MANAGEMENT TERMINAL SETUP

Use one of the following systems to access Local Management:

- An IBM or compatible PC running a VT series emulation software package
- A Digital Equipment Corporation VT100 type terminal
- A VT type terminal running emulation programs for the Digital Equipment Corporation VT100 series
- A remote VT100 type terminal via a modem connection
- In-band via a Telnet connection

5.3.1 Console Cable Connection

Use the Console Cable Kit provided with the DLM6C-AA chassis to attach the management terminal to the COM port as shown in Figure 5-1.

Connect an IBM PC or compatible device, running the VT terminal emulation, to the DLE2X-MA and DLE3X-MA as follows:

1. Connect the RJ45 connector at one end of the cable (supplied in the kit) to the COM port on the DLE2X-MA and DLE3X-MA.
2. Plug the RJ45 connector at the other end of the cable into the RJ45-to-DB9 adapter (supplied in the kit).
3. Connect the RJ45-to-DB9 adapter to the PC communications port.

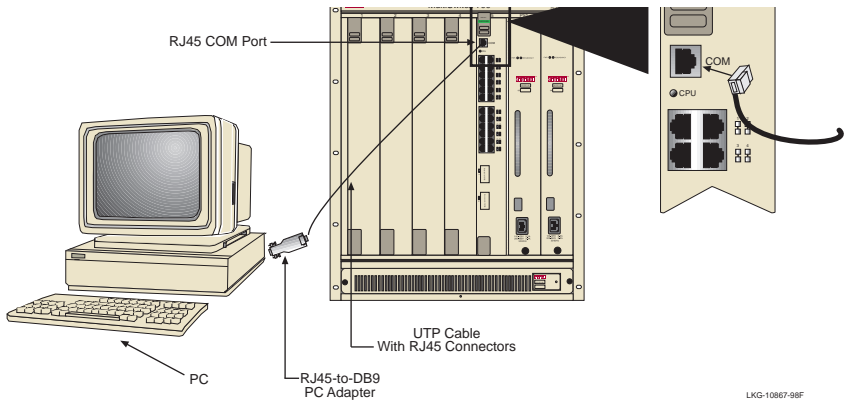


Figure 5-1 Management Terminal Connection

5.3.2 Connecting an Uninterruptible Power Supply (UPS)

If the DLM6C-AA chassis is connected to an American Power Conversion (APC) UPS for protection from a loss of power, a connection from the COM port of a module to the UPS can be made to monitor the status of the UPS. To use the COM port for this purpose, it must be reconfigured to support the UPS application. This procedure is performed from the General Configuration screen of the interface module. Section 5.15.11, **Configuring the COM Port**, provides detailed instructions on configuring the COM port for UPS applications. Refer to the UPS documentation for details on how to access the status information.

Use the Console Cable Kit provided with the DLM6C-AA chassis to attach the UPS to the module COM port as shown in Figure 5-2.

Connect the UPS device to the COM port of the DLE2X-MA and DLE3X-MA as follows:

1. Connect the RJ45 connector at one end of the cable to the COM port on the DLE2X-MA and DLE3X-MA.

2. Plug the RJ45 connector at the other end of the cable into the RJ45-to-DB9 male (UPS) adapter, Cabletron Systems Part No. 9372066.
3. Connect the RJ45-to-DB9 male (UPS) adapter to the female DB9 port on the rear of the UPS device (refer to the particular UPS device's user instructions for more specific information about the monitoring connection).

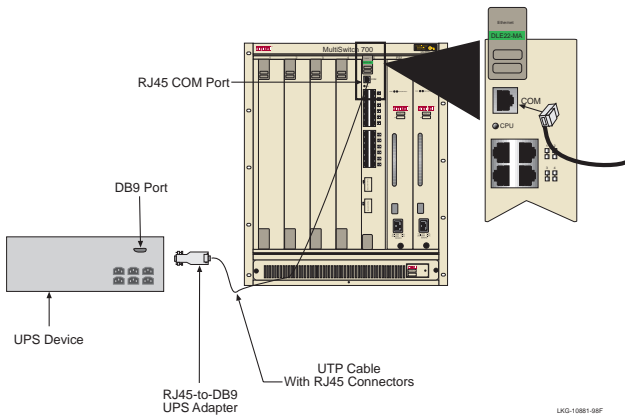


Figure 5-2 Uninterruptible Power Supply (UPS)

5.3.3 Management Terminal Setup Parameters

Table 5-2 lists the setup parameters for the local management terminal.

Table 5-2 VT Terminal Setup

Display Setup Menu	
Columns ->	80 Columns
Controls ->	Interpret Controls
Auto Wrap ->	No Auto Wrap
Scroll ->	Jump Scroll
Text Cursor ->	Cursor
Cursor Style ->	Underline Cursor Style
General Setup Menu	
Mode ->	VT100, 7 Bit Controls
ID number ->	VT100ID
Cursor Keys ->	Normal Cursor Keys
Power Supply ->	UPSS DEC Supplemental
Communications Setup Menu	
Transmit ->	2400, 4800, 9600, 19200
Receive ->	Receive=Transmit
XOFF ->	XOFF at 64
Bits ->	8 bits
Parity ->	No Parity
Stop Bit ->	1 Stop Bit
Local Echo ->	No Local Echo
Port ->	DEC-423, Data Leads Only
Transmit ->	Limited Transmit
Auto Answerback ->	No Auto Answerback
Keyboard Setup Menu	
Keys ->	Typewriter Keys
Auto Repeat ->	any option
Keyclick ->	any option
Margin Bell ->	Margin Bell
Warning Bell ->	Warning Bell

5.3.4 Telnet Connections

Once the module or chassis has a valid IP address, the user can establish a Telnet session with Local Management from any TCP/IP based node on the network. Telnet connections to the DLE2X-MA and DLE3X-MA require the community name passwords assigned at the SNMP Community Names screen of either the DLM6C-AA chassis, or the module. For additional information about community names, refer to Section 5.8, **SNMP Community Names Screen**. Refer to the instructions included with the Telnet application for information about establishing a Telnet session.

5.4 ACCESSING LOCAL MANAGEMENT

Access to Local Management is controlled through the Password screen, Figure 5-3. Whenever a connection is made to the DLE2X-MA and DLE3X-MA the Password screen displays. Before continuing, the user must enter a password which is compared to the previously stored passwords. The level of access allowed the user depends on the password. To set or change passwords refer to Section 5.8. The following steps describe the procedure to access Local Management.

1. Turn on the terminal. Press ENTER (this may take up to four times, because the COM port of the DLE2X-MA and DLE3X-MA auto-senses the baud rate of the terminal) until the DLM6C-AA Local Management Password screen, Figure 5-3, displays.

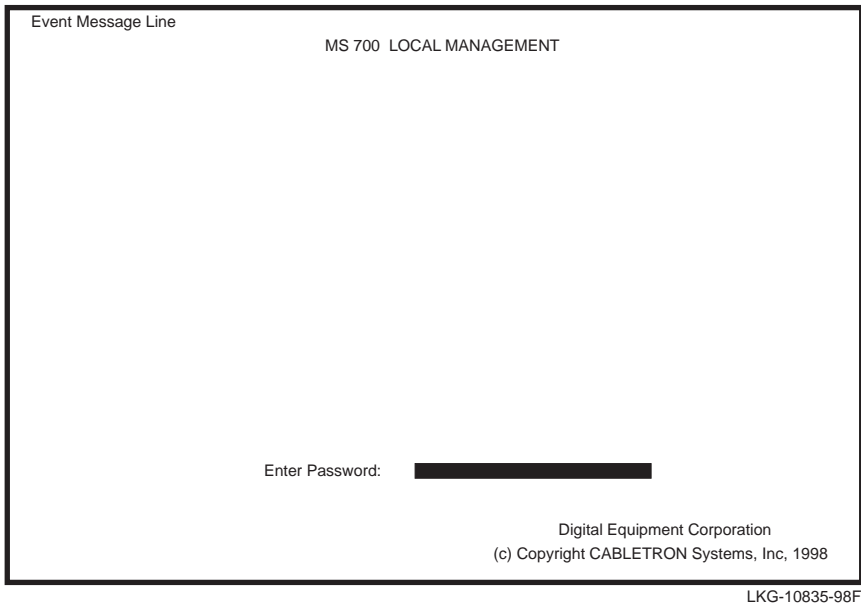


Figure 5-3 Local Management Password Screen

2. Enter the Password and press ENTER. The default Super-User access password is “*public*” or press ENTER.



The User's password is one of the community names specified in the SNMP Community Names screen. Access to certain Local Management capabilities depends on the degree of access accorded that community name. Refer to Section 5.8.

- If an invalid password is entered, the terminal beeps and the cursor returns to the beginning of the password entry field.
- Entering a valid password causes the associated access level to display at the bottom of the screen and the Main Menu screen to appear.
- If no activity occurs for several minutes, the Password screen reappears and the session ends.

5.4.1 Navigating Local Management Screens

The DLE2X-MA and DLE3X-MA Local Management application consists of a series of menu screens. Navigate through Local Management by selecting items from the menu screens.

The DLE2X-MA and DLE3X-MA support two modes of switch operation. The switching modes are as follows:

- 802.1D SWITCHING, (traditional switching)
- 802.1Q SWITCHING, (802.1Q port based VLANs)



Refer to the Release Notes shipped with the product to verify which screens are supported in each of the two available switching modes.

The switch operational mode may be set in either the Chassis Configuration screen (Section 5.7), or the General Configuration screen of the module (Section 5.15). Depending on the Operational Mode set for the module, the hierarchy of Local Management screens differs as shown in Figure 5-4, Figure 5-6, and Figure 5-7. Refer to the appropriate figure that relates to the Operational Mode that will be set for the module to see the applicable Local Management screen hierarchy.

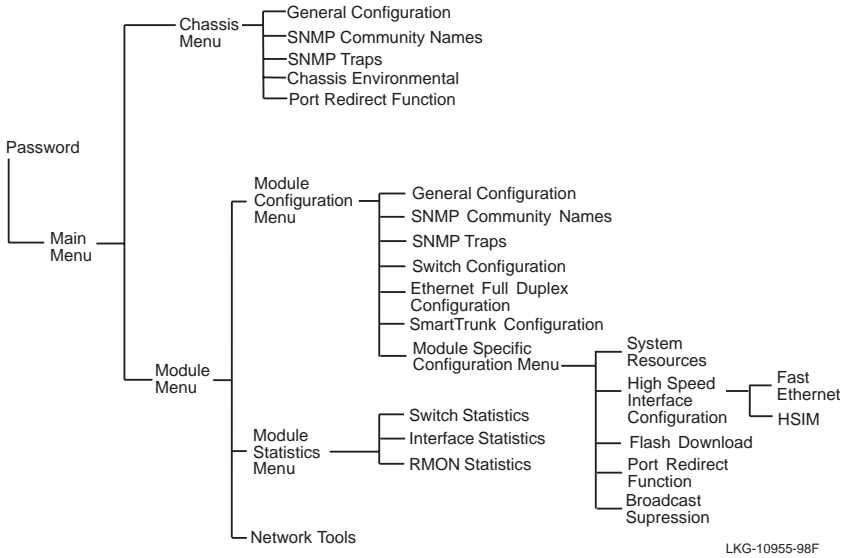


Figure 5-4 802.1D Switching Mode, LM Screen Hierarchy

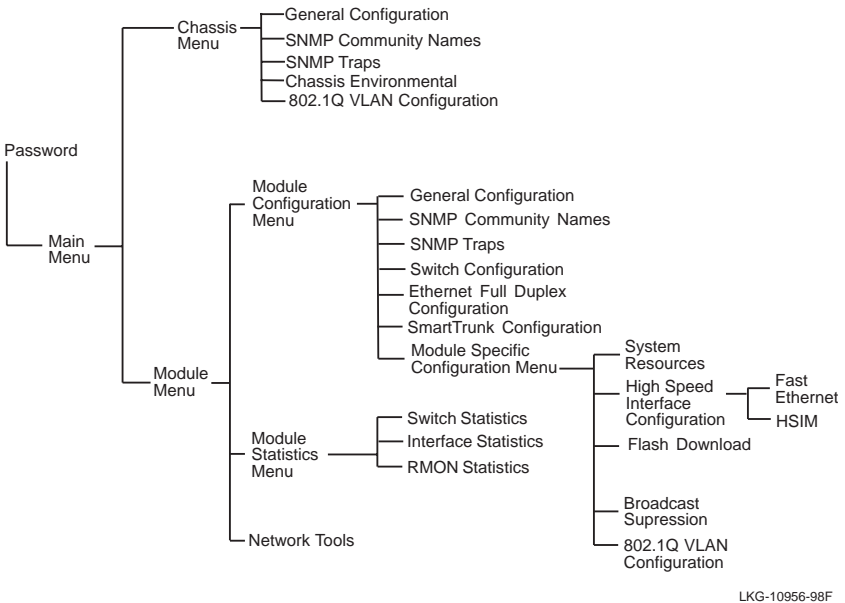


Figure 5-5 802.1Q Switching Mode, LM Screen Hierarchy

5.4.2 Selecting Local Management Menu Screen Items

Select items on a menu screen by performing the following steps:

1. Use the arrow keys to highlight a menu item.
2. Press ENTER. The selected menu item displays on the screen.

5.4.3 Exiting Local Management Screens

There are two ways to exit Local Management (LM).

Using the EXIT Command

To exit an LM screen using the **EXIT** command, proceed as follows:

1. Use the arrow keys to highlight the **EXIT** command at the bottom of the Local Management screen.
2. Press ENTER. The Password screen displays and the session ends.

Using the RETURN Command

1. Use the arrow keys to highlight the **RETURN** command at the bottom of the Local Management screen.
2. Press ENTER. The previous screen in the Local Management hierarchy displays.



The user can also exit Local Management screens by pressing ESC twice. This exit method does not warn about unsaved changes and all unsaved changes will be lost.

3. Exit from DLE2X-MA and DLE3X-MA Local Management by repeating steps 1 and 2 until the Main Menu screen displays.
4. Use the arrow keys to highlight the **RETURN** command at the bottom of the Main Menu screen.
5. Press ENTER. The Password screen displays and the session ends.

5.5 THE MAIN MENU SCREEN

The Main Menu screen is the access point for all Local Management screens for the module and the DLM6C-AA chassis. Figure 5-6 shows the Main Menu screen.

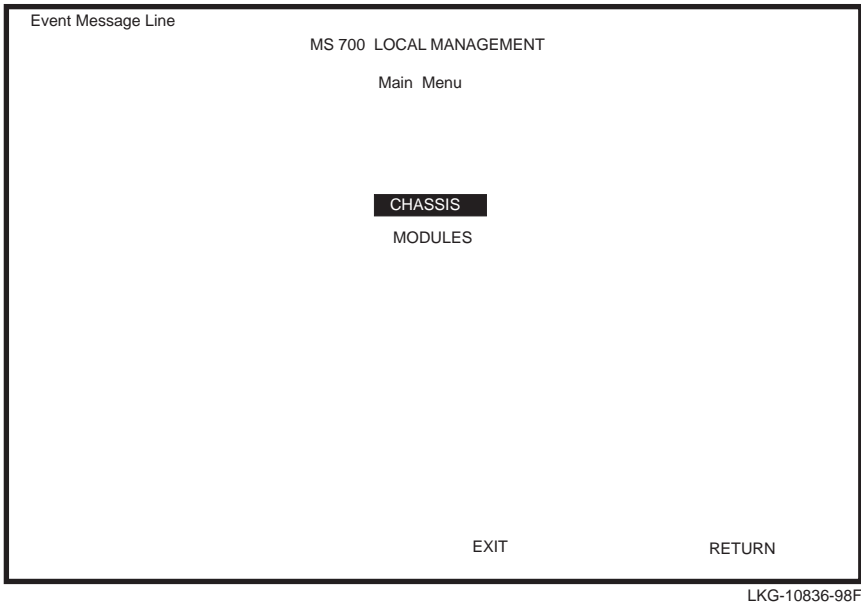


Figure 5-6 Main Menu Screen

The following explains each Main Menu screen item as shown in Figure 5-6:

CHASSIS

The **CHASSIS** menu item provides access to the Chassis Menu screen, shown in Figure 5-7, that is used to configure the DLM6C-AA chassis, access current chassis power supply and environmental status, and to configure IEEE 802.1Q VLANs.

Access the Chassis Configuration screen by using the arrow keys to highlight the **CHASSIS** menu item and pressing ENTER. The Chassis Configuration screen displays. Proceed to Section 5.6.

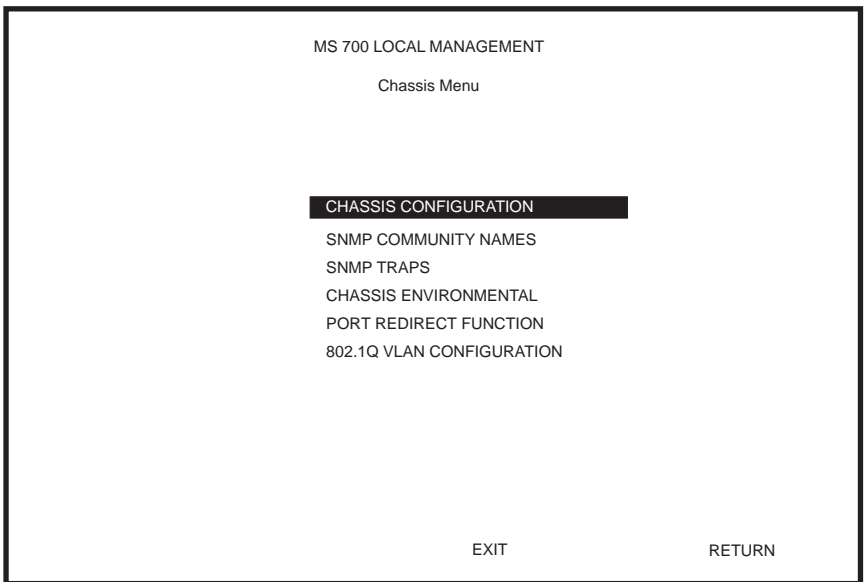
MODULES

The **MODULES** menu item provides access to the Module Selection screen that is used to select individual modules in the chassis for management purposes.

Access the Module Selection screen by using the arrow keys to highlight the **MODULES** menu item and pressing ENTER. The Module Selection screen displays. Proceed to Section 5.12.

5.6 CHASSIS MENU SCREEN

The Chassis Menu screen, Figure 5-7, provides access to Local Management screens that allow you to configure and monitor operating parameters, modify SNMP community names, set SNMP traps, monitor the DLM6C-AA environmental status, perform port redirect functions, and to configure the DLM6C-AA for IEEE 802.1Q operation.



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Figure 5-7 Chassis Menu Screen

The following briefly explains each screen accessible from the Chassis Menu screen.

CHASSIS CONFIGURATION

The Chassis Configuration screen allows the user to configure operating parameters for the DLM6C-AA chassis. For details, refer to Section 5.7.

SNMP COMMUNITY NAMES

The SNMP Community Names screen allows the user to enter new, change, or review the community names used as access passwords for device management operation. Access is limited based on the password level of the user. For details, refer to Section 5.8.

SNMP TRAPS

The SNMP Traps screen provides display and configuration access to the table of IP addresses used for trap destinations and associated community names. For details, refer to Section 5.9.

CHASSIS ENVIRONMENTAL

The Chassis Environmental screen provides access to chassis power supply status, power supply redundancy status and chassis fan tray status. For details, refer to Section 5.10.

PORT REDIRECT FUNCTION

The Port Redirect Function screen allows the user to redirect traffic from one or multiple modules and ports in the chassis to a specific destination module or port. For details, refer to Section 5.11.

802.1Q VLAN CONFIGURATION

This menu item will only display if one or more modules installed the chassis have been configured to operate as IEEE 802.1Q switches. When selected, this menu item opens the VLAN Main Menu screen. For details, refer to the *Port Based VLAN User's Guide*. Section 5.7.7, **Setting the Operational Mode**, describes how to configure the modules to function as 802.1Q switches.

5.7 CHASSIS CONFIGURATION SCREEN

The Chassis Configuration screen, Figure 5-8, allows the user to set the chassis date and time, IP address and Subnet Mask, the operational mode of all modules installed in the chassis, and to view the chassis uptime.

Access the Chassis Configuration screen from the Chassis Menu screen by using the arrow keys to highlight the **CHASSIS CONFIGURATION**

menu item and pressing ENTER. The Chassis Configuration screen, Figure 5-8, displays.

```
Event Message Line

MS 700 LOCAL MANAGEMENT

Chassis Configuration

MAC Address:      00-00-ID-00-00-00
IP Address:       000.000.000.000
Subnet Mask:     000.000.000.000

Chassis Date:    10/11/97
Chassis Time:    14:23:00
Screen Refresh Time: 30 sec.
Screen Lockout Time: 15 min.
Chassis Uptime  XX D XX H XX M

Operational Mode: [802.1D SWITCHING]

SAVE                EXIT                RETURN
```

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Figure 5-8 Chassis Configuration Screen

The following briefly explains each Chassis Configuration screen field:

MAC Address (Read-Only)

Displays the base physical address of the chassis.

IP Address (Modifiable)

This field allows the IP address to be set for the DLM6C-AA chassis. If an IP address is assigned to the DLM6C-AA chassis all the interface modules installed in the chassis can be managed via this IP address, eliminating the need to assign an IP address to each interface module. To set the IP address, refer to Section 5.7.1.

Subnet Mask (Modifiable)



When a valid IP address is assigned, the Subnet Mask field automatically enters the default mask that corresponds with class of IP entered in the IP Address field. Some firmware revisions do support changing the chassis subnet mask from the default value. Refer to your Release Notes to ensure that the Subnet Mask is a modifiable field.

Displays the subnet mask for the chassis. A subnet mask “masks out” the network bits of the IP address by setting the bits in the mask to 1 when the network treats the corresponding bits in the IP address as part of the network or subnetwork address, or to 0 if the corresponding bit identifies the host. The DLM6C-AA chassis automatically uses the default subnet mask that corresponds to the IP class that was entered in the IP address field. Section 5.7.2, Setting the Subnet Mask describes how to change the subnet mask from the default value.

Chassis Date (Modifiable)

Contains a value that the chassis recognizes as the current date. When the chassis date is modified and saved all interface modules installed in the chassis are set to this date. To set a new chassis date, refer to Section 5.7.3.

Chassis Time (Modifiable)

Contains a value that the chassis recognizes as the current time. When the chassis time is modified and saved, all interface modules installed in the chassis are set to this time. To enter a new time, refer to Section 5.7.4.

Screen Refresh Time (Modifiable)

Contains the rate at which the screens are updated. This setting determines how frequently (in seconds) information is updated on the screen. To enter a new update time, refer to Section 5.7.5.

Screen Lockout Time (Modifiable)

Contains the maximum number of minutes that the Local Management application displays a module’s screen while awaiting input or action from a user. For example, if the number 5 is entered in this field, the user has up to five minutes to respond to each of the specified module’s Local Management screens. In this example, after five minutes of “idleness” (no input or action), the terminal “beeps” five times, the Local Management

application terminates the session, and the display returns to the Password screen. To enter a new lockout time, refer to Section 5.7.6.

Chassis Uptime (Read-Only)

Displays the total time the chassis has been operating. The chassis uptime is based on which interface module installed in the chassis has been operating for the longest period of time.

Operational Mode (Toggle)

This field allows the user to set all the modules in the chassis to operate as traditional switches (802.1D SWITCHING option), or as IEEE 802.1Q switches (802.1Q SWITCHING option).

In 802.1D SWITCHING mode, the 24 ports located on the front panel, and each Fast Ethernet Interface Module, and HSIM port(s) are bridged to each other.

When the operational mode is set to 802.1Q SWITCHING, the DLE2X-MA and DLE3X-MA act as IEEE 802.1Q switches. The modules are able to increase their switching functionality by creating and maintaining port based Virtual LANs (VLANs).

For details on how to select the Operational Mode, refer to Section 5.7.7.

5.7.1 Setting the IP Address

To set the IP address, perform the following steps:

1. Use the arrow keys to highlight the **IP Address** field.
2. Enter the IP address into this field using Decimal Dotted Notation (DDN) format.

For example: 134.141.79.120

3. Press ENTER. If the IP address is a valid format, the cursor returns to the beginning of the IP address field. If the entry is not valid, the Event Message Line displays “INVALID IP ADDRESS OR FORMAT ENTERED”. Local Management does not alter the current value and refreshes the IP address field with the previous value.
4. Use the arrow keys to highlight the **SAVE** command, then press ENTER. The “SAVED OK” message displays indicating that the changes have been saved to memory.

5.7.2 Setting the Subnet Mask

If the management workstation that is to receive SNMP traps from the DLM6C-AA is located on a separate subnet, the subnet mask for the DLM6C-AA must be changed from its default.



When a valid IP address is assigned, the Subnet Mask field automatically enters the default mask that corresponds with class of IP entered in the IP Address field. Some firmware revisions do support changing the chassis subnet mask from the default value. Refer to your Release Notes to ensure that the Subnet Mask is a modifiable field.

To change the subnet mask from its default, perform the following steps:

1. Use the arrow keys to highlight the **Subnet Mask** field.
2. Enter the subnet mask into this field using Decimal Dotted Notation (DDN) format.

For example: 255.255.255.0

3. Press ENTER. If the subnet mask is valid, the cursor returns to the beginning of the Subnet Mask field. If the entry is not valid, the Event Message Line displays “INVALID SUBNET MASK OR FORMAT ENTERED”. Local Management does not alter the current value, but it does refresh the Subnet Mask field with the previous value.
4. Use the arrow keys to highlight the **SAVE** command, then press ENTER. The changes are saved to memory.

5.7.3 Setting the Chassis Date

The DLM6C-AA is year 2000 compliant, so the Chassis Date may be set beyond the year 1999. To set the chassis date, perform the following steps:

1. Use the arrow keys to highlight the **Chassis Date** field.
2. Enter the date in an MM/DD/YYYY format.



It is not necessary to add separators between month, day, and year numbers. For example, to set the date to 03/17/1997, type "03171997" in the Chassis Date field.

3. Press ENTER to set the system calendar to the date in the input field.
4. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen and press ENTER.

If the date entered is a valid format, the Event Message Line at the top of the screen displays "SAVED OK". If the entry is not valid, Local Management does not alter the current value, but it does refresh the Chassis Date field with the previous value.



Upon saving the new chassis date, all interface modules installed in the chassis recognize the new value as the current date.

5.7.4 Setting the Chassis Time

To set the chassis clock, perform the following steps:

1. Use the arrow keys to highlight the **Chassis Time** field.
2. Enter the time in a 24-hour format, HH:MM:SS.



When entering the time in the system time field, separators between hours, minutes, and seconds do not need to be added as long as each entry uses two numeric characters. For example, to set the time to 6:45 A.M., type "064500" in the Chassis Time field.

3. Press ENTER to set the system clock to the time in the input field.
4. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen and press ENTER.

If the time entered is a valid format, the Event Message Line at the top of the screen displays "SAVED OK". If the entry is not valid, Local Management does not alter the current value and refreshes the Chassis Time field with the previous value.



Upon saving the new chassis time, all interface modules installed in the chassis recognize the new value as the current time.

5.7.5 Entering a New Screen Refresh Time

The screen refresh time is set from 3 to 99 seconds with a default of 3 seconds. To set a new screen refresh time, perform the following steps:

1. Use the arrow keys to highlight the **Screen Refresh Time** field.
2. Enter a number from 3 to 99.
3. Press ENTER to set the refresh time to the time entered in the input field.
4. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen and press ENTER.

If the time entered is within the 3 to 99 seconds range, the Event Message Line at the top of the screen displays “SAVED OK”. If the entry is not valid, Local Management does not alter the current setting, but it does refresh the Screen Refresh Time field with the previous value.

5.7.6 Setting the Screen Lockout Time

The screen lockout time can be set from 1 to 30 minutes with a default of 15 minutes. To set a new lockout time, perform the following steps:

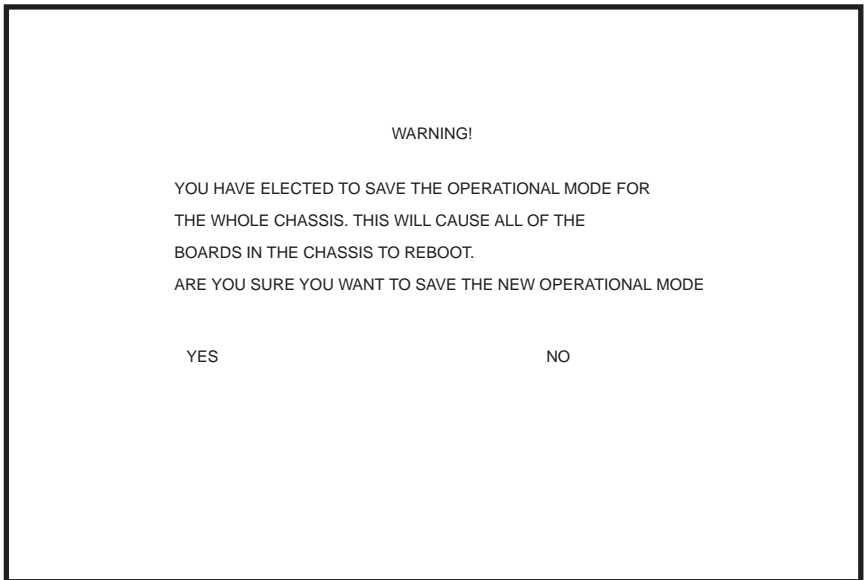
1. Use the arrow keys to highlight the **Screen Lockout** field.
2. Enter a number from 1 to 30.
3. Press ENTER to set the lockout time in the input field.
4. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen and press ENTER.

If the time entered is within the 1 to 30 minutes range, the Event Message Line at the top of the screen displays “SAVED OK”. If the entry is not valid, Local Management does not alter the current setting, but it does refresh the Screen Lockout Time field with the previous value.

5.7.7 Setting the Operational Mode

To set the Operational Mode, proceed as follows:

1. Use arrow keys to highlight the **Operational Mode** field.
2. Press the SPACE bar to step to the appropriate operation mode, (**802.1D SWITCHING** or **802.1Q SWITCHING**).
3. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen and press ENTER. The following warning screen displays:



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Figure 5-9 Operational Mode Warning Screen

4. Use the arrow keys to highlight the **YES** command and press ENTER. The changes are saved, and all the modules installed in the chassis reboot.



If the DLE2X-MA and DLE3X-MA have been set to **802.1Q SWITCHING**, refer to your *Port Based VLAN User's Guide* to configure the devices for this type of operation.

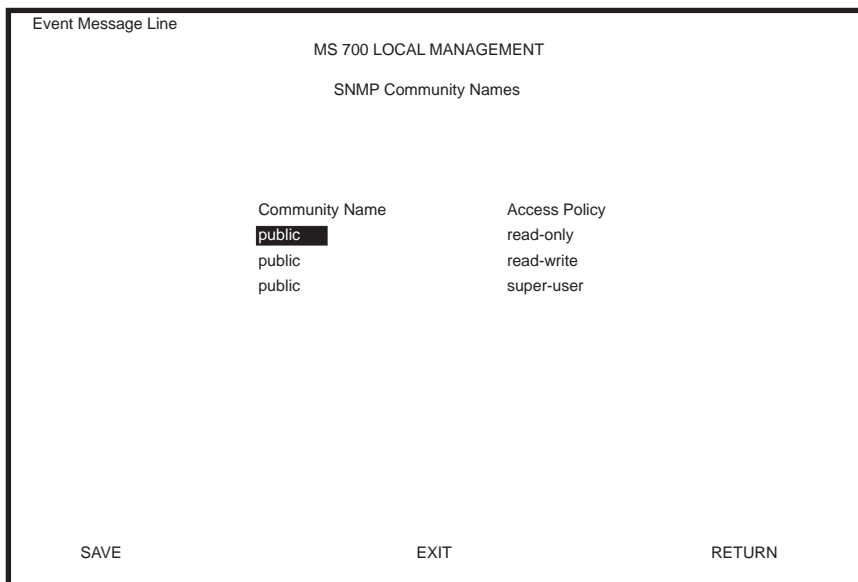
5.8 SNMP COMMUNITY NAMES SCREEN

The SNMP Community Names menu item allows the user to set Local Management community names. Community names act as passwords to Local/Remote Management and provide security access to the DLM6C-AA. Access to the DLM6C-AA is controlled by enacting any of three different levels of security authorization (read-only, read-write, and super-user).



Super-User access gives the user full management privileges, allows existing passwords to be changed, and all modifiable MIB objects for the Cabletron Container MIB and Internet MIB-II to be edited.

Access the SNMP Community Names screen from the Chassis Menu screen by using the arrow keys to highlight the **SNMP COMMUNITY NAMES** menu item and pressing ENTER. The SNMP Community Names screen, Figure 5-10, displays.



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Figure 5-10 SNMP Community Names Screen

The following explains each SNMP Community Names screen field:

Community Name (Modifiable)

Displays the user-defined name through which a user accesses DLM6C-AA management. Any community name assigned here acts as a password to Local/Remote Management.

Access Policy (Read-Only)

Indicates the access accorded each community name. Possible selections are as follows:

- | | |
|------------|--|
| read-only | This community name allows read-only access to the DLM6C-AA MIB objects, and excludes access to security-protected fields of read-write or super-user authorization. |
| read-write | This community name allows read and write access to the DLM6C-AA MIB objects, excluding security protected fields for super-user access only. |

super-user

This community name permits read-write access to the DLM6C-AA MIB objects and allows the user to change all modifiable parameters including community names, IP addresses, traps, and SNMP objects.

5.8.1 Establishing Community Names

The password used to access Local Management at the Password screen must have Super-User access in order to view and edit the SNMP Community Names screen. Using a password with read-only or read-write access does not allow the user to view or edit the SNMP Community Names screen.



Any community name assigned in the SNMP Community Names screen is a password to its corresponding level of access to Local Management. The community name assigned Super-User access is the only one that gives the user complete access to Local Management.



All passwords assigned in the DLM6C-AA SNMP Community Names screen allow access to both DLM6C-AA Local Management screens, and the Local Management screens of the interface modules that are installed in the chassis. To configure the interface module to not allow access to DLM6C-AA Local Management screens refer to Section 5.16.

To establish community names, proceed as follows:

1. Use the arrow keys to highlight the **Community Name** field adjacent to the selected access level.
2. Enter the password in the field (maximum 31 characters).
3. Press ENTER.
4. Repeat steps 1 through 3 to modify the other community names.
5. Use the arrow keys to highlight **SAVE** at the bottom of the screen and press ENTER. The message “SAVED OK” displays. The community names are saved to memory and their access modes implemented.

Enable Traps (Toggle)

Enables transmission of the traps to the network management station with the associated IP address. This field toggles between [YES] and [NO].

5.9.1 Configuring the Trap Table

To configure the Trap table, proceed as follows:

1. Using the arrow keys, highlight the appropriate **Trap Destination** field.
2. Enter the IP Address of the workstation that is to receive traps. IP address entries must follow the DDN format.

For example: 134.141.79.121
3. Press ENTER. If an invalid entry is entered “INVALID IP ENTERED” is displayed in the Event Message Line.
4. Using the arrow keys, highlight the **Trap Community Name** field. Enter the community name.
5. Press ENTER.
6. Using the arrow keys, highlight the **Enable Traps** field. Press the SPACE bar to choose either [YES] (send alarms from the chassis to the workstation), or [NO] (prevent alarms from being sent).
7. Using the arrow keys, highlight the **SAVE** command and press ENTER. The message “SAVED OK” displays on the screen.



Exiting without saving causes a “NOT SAVED?” message to appear above the **SAVE** command. Edits will be lost if they are not saved before exiting.

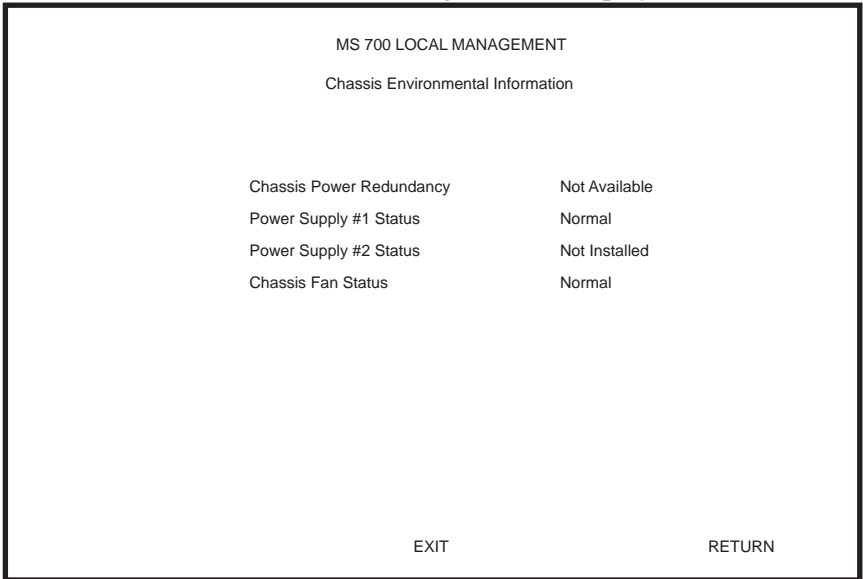
The designated workstations now receive traps from the DLM6C-AA.

5.10 CHASSIS ENVIRONMENTAL SCREEN

The Chassis Environmental menu item allows the user to view chassis environmental information.

Access the Chassis Environmental Information screen from the Chassis Menu screen by using the arrow keys to highlight the **CHASSIS**

ENVIRONMENTAL menu item and pressing ENTER. The Chassis Environmental Information screen, Figure 5-12, displays.



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Figure 5-12 Chassis Environmental Information Screen

The following describes each of the Chassis Environmental Information screen fields.

Chassis Power Redundancy (Read-Only)

Displays the current redundancy status of the DLM6C-AA power supplies. This field will read either “Available” or “Not Available”.

Power Supply #X Status (Read-Only)

Displays the current status of power supplies 1 and 2 for the DLM6C-AA. This field will read either “Normal”, “Fault”, or “Not Installed”.

Chassis Fan Status (Read-Only)

Displays the current status of the DLM6C-AA fan tray. This field will read either “Normal”, “Fault”, or “Not Installed”.

5.11 PORT REDIRECT FUNCTION SCREEN



The Port Redirect Function screen may not be available depending on the operational mode that has been set for the chassis. Refer to your Release Notes to see what operational modes support the Port Redirect Function. Refer to Section 5.7.7, **Setting the Operational Mode**, for instructions on configuring the operational mode of all the modules installed in the chassis.

The Port Redirect Function screen, Figure 5-13, allows the user to set each one of the modules in the chassis (1 through 5), and the ports of the corresponding module installed, as a source or destination port. A port can be set to have one or more destination ports and chassis module slot numbers. For example, port 1 in module (slot) 1 can be set as a source port with three destinations, ports 2, 3, and 4 in module (slot) 3. Traffic from port 1 in module 1 is then automatically redirected to ports 2, 3, and 4 in module 3. Port 1 in module 1 can also serve as a destination port for other ports and modules. The port redirect function is extremely useful for troubleshooting purposes, as it allows traffic to be sent to a particular port(s) where, with the use of an analyzer or RMON probe, all current traffic from the source port(s) can be examined.



The module number corresponds to the slot number in which the module resides in the DLM6C-AA chassis (1 through 5).

Although traffic from the source port (including, if desired, errored frames) is sent to the destination port, normal switching is still performed for all frames on the source port.

Access the Port Redirect Function screen from the Chassis Menu screen by using the arrow keys to highlight the **PORT REDIRECT FUNCTION** menu item and pressing ENTER. The Port Redirect Function screen, Figure 5-13, displays.

Event Message Line					
MS 700 LOCAL MANAGEMENT					
Port Redirect Function					
Source		Destination		Remap Errors	
Module	Port	Module	Port		
1	1	3	2	ON	
1	1	3	3	ON	
1	1	3	4	ON	
2	2	1	1	OFF	
2	2	3	3	ON	
3	3	4	4	ON	
3	3	5	5	ON	
3	3	5	8	OFF	
Source Port [1]		Destination Port [1]		Status [ADD]	
Source Module [1]		Destination Module [1]		Errors [ON]	
SAVE	EXIT	NEXT	PREVIOUS	RETURN	

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Figure 5-13 Port Redirect Function Screen

The following definitions briefly explain each field of the Port Redirect Function screen.

Source Module (Read-Only)

Displays which modules are currently set as source modules.

Source Port (Read-Only)

Displays which ports are currently set as source ports.

Destination Module (Read-Only)

Displays which modules are currently set as destination modules.

Destination Port (Read-Only)

Displays which ports are currently set as destination ports.

Remap Errors (Read-only)

Displays whether the corresponding source modules and ports are configured to send errored frames to the destination modules and ports, or to drop all errored frames before forwarding traffic.

Source Module [n] (Selectable)

Allows a selected module [n] to be configured as a source module.

Source Port [n] (Selectable)

Allows a selected port [n] to be configured as a source port.

Destination Module [n] (Selectable)

Allows a selected module [n] to be configured as a destination module.

Destination Port [n] (Selectable)

Allows a selected port [n] to be configured as a destination port.

Errors (Toggle)

Allows the user to configure the source modules and ports to either send errored frames to selected destination modules and ports ([ON] option), or to drop errored frames, and send only valid traffic to the destination modules and ports ([OFF] option). The default setting of this field is [ON].

Status (Toggle)

Allows the user to add or delete the source/destination modules and ports selected in the Source/Destination Modules and ports fields.

5.11.1 Displaying the Source and Destination Entries

There can be more than one Port Redirect Function screen depending on the number of port redirect entries. Each screen displays up to ten port redirect entries. If there is more than one screen of redirect entries, the **NEXT** and/or **PREVIOUS** command is displayed at the bottom of the screen, allowing the user to navigate to the next or previous screen.

To display the next screen, use the arrow keys to highlight **NEXT**. Press **ENTER** and the next screen of entries is displayed.

To display the previous screen, use the arrow keys to highlight **PREVIOUS**. Press **ENTER** to view the entries in the previous screen.

5.11.2 Changing Source and Destination Ports

Add or delete source/destination module and port entries as follows:

1. Use the arrow keys to highlight the **Source Module** field.
2. Press the **SPACE** bar or **BACKSPACE** one or more times to increment or decrement the module number displayed in the brackets [n] until the appropriate module number is displayed.

3. Use the arrow keys to highlight the **Source Port** field.
4. Press the SPACE bar or BACKSPACE one or more times to increment or decrement the port number displayed in the brackets [n] until the appropriate port number is displayed.
5. Use the arrow keys to highlight the **Destination Module** field.
6. Use the SPACE bar or BACKSPACE to step to the appropriate module number for the destination module.
7. Use the arrow keys to highlight the **Destination Port** field.
8. Use the SPACE bar or BACKSPACE to step to the appropriate port number for the destination port.
9. Use the arrow keys to highlight the **Status** field.
10. Use the SPACE bar to select either the [ADD] or [DEL] (delete) option. Press ENTER. This adds or deletes the selections made in steps 2 and 4 and also updates the screen Source Module, Source Port, Destination Module and Destination Port lists.
11. Use the arrow keys to highlight the **Errors** field.
12. Use the SPACE bar to select either the [ON] or [OFF] option and press ENTER. [ON] forces the source module and port to forward errored frames to the destination module(s) and port(s). [OFF] forces the errored frames to be dropped before forwarding traffic.



If more than one module and port is to be redirected, repeat steps 1 through 12 for each additional setting, then go to step 13 to save all the new settings at once.

13. Use the arrow keys to highlight **SAVE** at the bottom of the screen. Press ENTER. The message “SAVED OK” is displayed.

5.12 MODULE SELECTION SCREEN

The Module Selection screen is the access point to Local Management for all modules installed in the DIGITAL MultiSwitch 700 chassis. By selecting a module, the Module Menu for the selected device displays. Figure 5-14 shows the Module Selection screen.

```
MS 700 LOCAL MANAGEMENT
Module Selection

Module #      Module Type      Serial #      Hardware Revision
<1>           DLE22-MA        123456789    XXX
2             DLE32-MA        123456789    XXX
3             DLE23-MA        123456789    XXX
4             DLE22-MA        123456789    XXX
5

EXIT                                RETURN
```

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Figure 5-14 Module Selection Screen

The following explains each Module Selection screen field as shown in Figure 5-14.

Module #

The Module # field displays the slot in which the module is installed. The module number enclosed in < > characters indicates the module to which the management terminal or Telnet session is connected.

Module Type

The Module Type field displays the type of interface module that is installed in each slot.

Serial #

Indicates the serial number of the module. The serial number of the device is necessary when calling your DIGITAL representative.

Hardware Revision

Reflects the hardware version of the module.

5.12.1 Selecting a Module

To select an individual module to perform Local Management functions, proceed as follows:

1. Use the arrow keys to highlight the desired module number in the Module # field.
2. Press ENTER, the applicable Module Menu screen displays. Proceed to Section 5.13.

5.13 MODULE MENU SCREEN



The Local Management screens shown in this chapter are for the DLE22-MA. The DLE32-MA, DLE33-MA and DLE23-MA share most of the following Local Management screens. All Local Management functions specific to any interface module are preceded by a note to alert the reader.

The DLE2X-MA and DLE3X-MA Module Menu screens are the access point for all Local Management screens for the DLE2X-MA and DLE3X-MA. Figure 5-15 shows the DLE22-MA Module Menu screen.

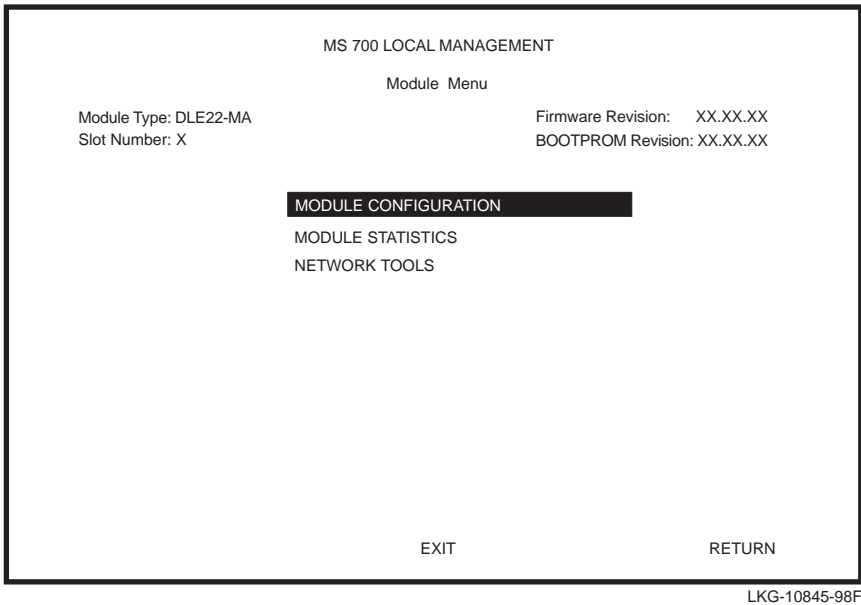


Figure 5-15 Module Menu Screen

The following explains each Module Menu screen field as shown in Figure 5-15:

MODULE CONFIGURATION

The Module Configuration screen provides access to the Local Management screens that are used to configure the DLE2X-MA and DLE3X-MA. The Module Specific Configuration Menu screen provides access to the screens that allow the user to check DLE2X-MA and DLE3X-MA resources and set operating parameters specific to each port. For details about the Module Configuration Menu screen, refer to Section 5.14. For details about the Module Specific Configuration Menu screen, refer to Section 5.21.

MODULE STATISTICS

The Module Statistics screen provides statistics and performance information for the DLE2X-MA and DLE3X-MA. For details about this screen, refer to Section 5.27.

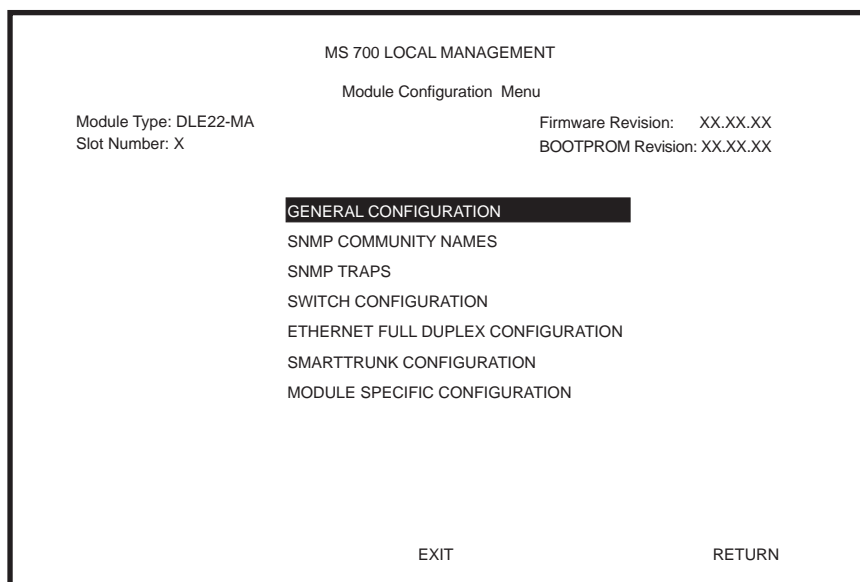
NETWORK TOOLS

The Network Tools function resides on the DLE2X-MA and DLE3X-MA and consists of a series of commands that allow the user to access and manage network devices. Section 5.31 explains how to use the Network Tools utility.

5.14 MODULE CONFIGURATION MENU SCREEN

The Module Configuration Menu screen, Figure 5-16, provides access to Local Management screens that allow you to configure and monitor operating parameters, modify SNMP community names, set SNMP traps, configure switch parameters and configure DLE2X-MA and DLE3X-MA ports.

Access the Module Configuration Menu screen from the Module Menu screen by using the arrow keys to highlight the **MODULE CONFIGURATION** menu item and pressing ENTER. The Module Configuration screen displays.



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Figure 5-16 Module Configuration Menu Screen

The following briefly explains each screen accessible from the Module Configuration Menu screen:

GENERAL CONFIGURATION

The General Configuration screen allows the user to monitor and configure operating parameters for the DLE2X-MA and DLE3X-MA. For details, refer to Section 5.15.

SNMP COMMUNITY NAMES

The SNMP Community Names screen allows the user to enter new, change, or review the community names used as access passwords for Local/Remote management operation. Access is limited based on the password level of the user. For details, refer to Section 5.16.

SNMP TRAPS

The SNMP Traps screen provides display and configuration access to the table of IP addresses used for trap destinations and associated community names. For details, refer to Section 5.17.

SWITCH CONFIGURATION

The Switch Configuration screen provides basic setup options for modifying the switching functions of the modules. For details, refer to Section 5.18.

ETHERNET FULL DUPLEX CONFIGURATION

The Ethernet Full Duplex Configuration screen allows each 10 Mbps port (1 to 24) to be set for either Standard Ethernet or Full Duplex operation. The screen also indicates whether or not each port is linked to another Ethernet device and if that port is enabled. For details, refer to Section 5.19.

SMARTTRUNK CONFIGURATION

The SmartTrunk Configuration screen allows the user to logically group interfaces together to create wider bandwidth up links. For details, refer to Section 5.20.

MODULE SPECIFIC CONFIGURATION

The Module Specific Configuration Menu screen allows the user to configure ports or check system resources specific to the DLE2X-MA and DLE3X-MA. For details, refer to Section 5.21.

5.15 GENERAL CONFIGURATION SCREEN

The General Configuration screen, Figure 5-17, allows the user to set the system date and time, IP address and subnet mask, the default gateway, the TFTP Gateway IP address, the Operational Mode, the Management Mode, and the COM port configuration. The General Configuration screen also allows the user to Clear NVRAM, and enable or disable IP Fragmentation.

Access the General Configuration screen from the Module Configuration Menu screen by using the arrow keys to highlight the **GENERAL CONFIGURATION** menu item and pressing ENTER. The General Configuration screen, Figure 5-17, displays.

Event Message Line		MS 700 LOCAL MANAGEMENT	
General Configuration			
Module Type: DLE22-MA		Firmware Revision: XX.XX.XX	
Slot Number: X		BOOTPROM Revision: XX.XX.XX	
MAC Address:	00-00-ID-00-00-00	Module Date:	10/11/97
IP Address:	0.0.0.0	Module Time:	14:23:00
Subnet Mask:	255.255.0.0	Screen Refresh Time:	30 sec.
Default Gateway:	NONE DEFINED	Screen Lockout Time:	15 min.
TFTP Gateway IP Addr:	0.0.0.0	Module Uptime XX D XX H XX M	
Operational Mode: [802.1D SWITCHING]		Management Mode: [DISTRIBUTED]	
Com: [ENABLED]	Application: [LM]		
Clear NVRAM [NO]	IP Fragmentation [ENABLED]		
SAVE	EXIT	RETURN	

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Figure 5-17 General Configuration Screen

The following briefly explains each General Configuration screen field:

MAC Address (Read-Only)

Displays the base physical address of the module.

IP Address (Modifiable)

This display allows the IP address to be set for the DLE2X-MA and DLE3X-MA. To set the IP address, refer to Section 5.15.1.

Subnet Mask (Modifiable)

Displays the subnet mask for the module. A subnet mask “masks out” the network bits of the IP address by setting the bits in the mask to 1 when the network treats the corresponding bits in the IP address as part of the network or subnetwork address, or to 0 if the corresponding bit identifies the host. When an IP address is entered in the IP Address field, the subnet mask field automatically enters the default subnet mask for the IP address. For details about how to change the subnet mask from its default value, refer to Section 5.15.2.

Default Gateway (Modifiable)

Displays the default gateway for the DLE2X-MA and DLE3X-MA. This field is not defined until an appropriate value is entered. For details about why and how to set the Default Gateway, refer to Section 5.15.3.

TFTP Gateway IP Addr (Modifiable)

Displays and allows the user to set the TFTP Gateway IP address for the DLE2X-MA and DLE3X-MA. To set the TFTP Gateway IP address, refer to Section 5.15.4.

Module Date (Modifiable)

Contains a value that the module recognizes as the current date. To set a new module date, refer to Section 5.15.5.

Module Time (Modifiable)

Contains a value that the module recognizes as the current time. To enter a new time, refer to Section 5.15.6.

Screen Refresh Time (Modifiable)

Contains the rate at which the screens are updated. This setting determines how frequently (in seconds) information is updated on the screen. To enter a new update time, refer to Section 5.15.7.

Screen Lockout Time (Modifiable)

Contains the maximum number of minutes that the Local Management application displays a module's screen while awaiting input or action from a user. For example, if the number 5 is entered in this field, the user has up to five minutes to respond to each of the specified module's Local Management screens. In this example, after five minutes of "idleness" (no input or action), the terminal "beeps" five times, the Local Management application terminates the session, and the display returns to the Password screen. To enter a new lockout time, refer to Section 5.15.8.

Module Uptime (Read-Only)

Displays the total time that the module has been operating.

Operational Mode (Modifiable)

This field allows the user to set the DLE2X-MA and DLE3X-MA to operate as a traditional switch (802.1D SWITCHING option), or an IEEE 802.1Q switch (802.1Q SWITCHING option).

In 802.1D SWITCHING mode, the 24 ports located on the front panel, and each Fast Ethernet Interface Module, and HSIM port(s) are bridged to each other.

In 802.1Q SWITCHING mode, the DLE2X-MA and DLE3X-MA are able to increase their switching functionality by creating and maintaining IEEE port based VLANs.

For details on how to select the Operational Mode, refer to Section 5.15.9.

Management Mode (Toggle)

This field toggles between DISTRIBUTED and STAND ALONE.

In DISTRIBUTED mode, Local Management is entered via the DLM6C-AA password screen, and all chassis configuration screens are available to the user. All other modules installed in the chassis that are set for distributed management may also be accessed via a connection to a single COM port on one of the modules.

In STAND ALONE mode, the module is isolated from the chassis configuration screens, and the module may not be accessed from a module that is in DISTRIBUTED mode. This provides additional security for any

module to which the user may wish to restrict access. **Section 5.15.10** describes how to set the Management Mode.

Com (Toggle)

This field allows the user to enable or disable the COM port. The selection toggles between ENABLED and DISABLED. The default is ENABLED. For details about setting up the COM port, refer to Section 5.15.11.

Application (Modifiable)

Displays the application set for the COM port. This field allows you to set the application that the COM port will support, which includes:

- Local Management (LM) via a terminal or modem connection
- Uninterruptible Power Supply (UPS)

The UPS setting allows you to use the COM port to monitor an American Power Conversion Uninterruptible Power Supply (UPS). For UPS, the baud rate is automatically set to 2400.

The baud rate setting for LM is automatically sensed.

For details about how to configure the COM port for various applications, refer to Section 5.15.11.

Clear NVRAM (Toggle)

This allows the user to reset NVRAM to the factory default settings. All user-entered parameters, such as IP address and Community Names are then replaced with DLE2X-MA and DLE3X-MA default configuration settings. For details, refer to Section 5.15.13.

IP Fragmentation (Toggle)

This field allows the user to enable or disable IP fragmentation. The default setting for this field is ENABLED. If the DLE2X-MA or DLE3X-MA will be bridged to an FDDI ring, IP Fragmentation should be enabled. If IP Fragmentation is disabled, all FDDI frames that exceed the maximum Ethernet frame size will be discarded. For details on enabling or disabling IP Fragmentation refer to Section 5.15.14.

5.15.1 Setting the IP Address

To set the IP address, perform the following steps:

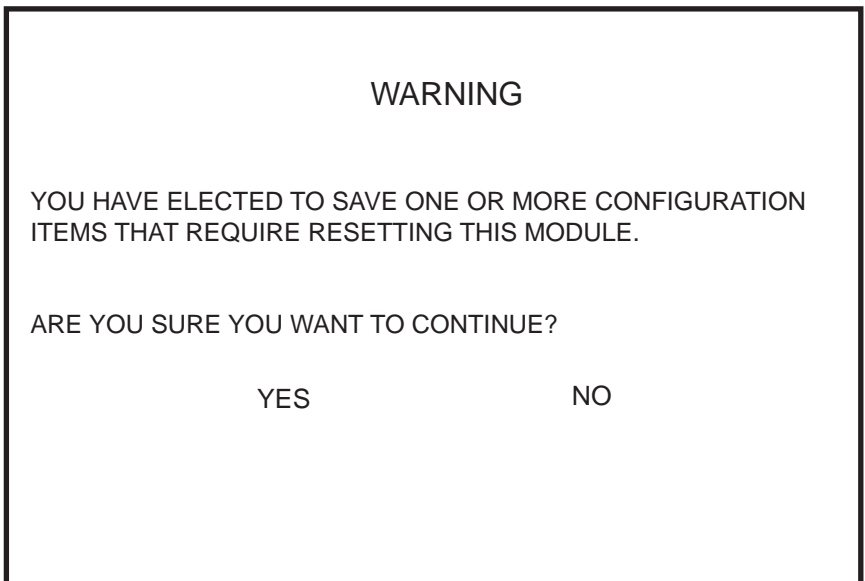


If the DLM6C-AA chassis has been assigned an IP address, it is not necessary to assign an IP address to the DLE2X-MA and DLE3X-MA. All installed modules have the same IP address as the chassis. If a separate IP address for the module is desired, proceed as follows.

1. Use the arrow keys to highlight the **IP Address** field.
2. Enter the IP address into this field using Decimal Dotted Notation (DDN) format.

For example: 134.141.79.120

3. Press ENTER. If the IP address is a valid format, the cursor returns to the beginning of the IP address field. If the entry is not valid, the Event Message Line displays “INVALID IP ADDRESS OR FORMAT ENTERED”. Local Management does not alter the current value and refreshes the IP address field with the previous value.
4. Use the arrow keys to highlight the **SAVE** command, then press ENTER. The warning screen shown in Figure 5-18 displays.



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Figure 5-18 Configuration Warning Screen

5. Use the arrow keys to highlight the **YES** command and Press ENTER. The changes are saved and the module reboots.

5.15.2 Setting the Subnet Mask

If the management workstation that is to receive SNMP traps from the DLE2X-MA and DLE3X-MA is located on a separate subnet, the subnet mask for the DLE2X-MA and DLE3X-MA must be changed from its default.

To change the subnet mask from its default, perform the following steps:

1. Use the arrow keys to highlight the **Subnet Mask** field.
2. Enter the subnet mask into this field using Decimal Dotted Notation (DDN) format.

For example: 255.255.255.0

3. Press ENTER. If the subnet mask is valid, the cursor returns to the beginning of the Subnet Mask field. If the entry is not valid, the Event Message Line displays “INVALID SUBNET MASK OR FORMAT ENTERED”. Local Management does not alter the current value, but it does refresh the Subnet Mask field with the previous value.
4. Use the arrow keys to highlight the **SAVE** command, then press ENTER. The warning screen shown in Figure 5-18 displays.
5. Use the arrow keys to highlight the **YES** command and press ENTER. The changes are saved and the module reboots.

5.15.3 Setting the Default Gateway

If the SNMP management station is located on a different IP subnet than the DLE2X-MA and DLE3X-MA, a default gateway must be specified. When an SNMP Trap is generated, the DLE2X-MA and DLE3X-MA sends the Trap to the default gateway. To set the default gateway, perform the following steps:

1. Use the arrow keys to highlight the **Default Gateway** field.
2. Enter the IP address of the default gateway using the DDN format.

For example: 134.141.79.121

3. Press ENTER. If the default gateway entered is a valid format, the cursor returns to the beginning of the Default Gateway field. If the entry is not valid, the Event Message Line displays “INVALID DEFAULT GATEWAY OR FORMAT ENTERED”. Local Management does not alter the current value, but it does refresh the Default Gateway field with the previous value.
4. Use the arrow keys to highlight the **SAVE** command.
5. Press ENTER. The Event Message Line at the top of the screen displays “SAVED OK”.

5.15.4 Setting the TFTP Gateway IP Address

If the network TFTP server is located on a different IP subnet than the DLE2X-MA and DLE3X-MA, a Gateway IP address should be specified. To set the TFTP Gateway IP address, perform the following steps:

1. Use the arrow keys to highlight the **TFTP Gateway IP Address** field.
2. Enter the IP address of the TFTP gateway using the DDN format.

For example: 134.141.80.122

3. Press ENTER. If the TFTP gateway IP address entered is a valid format, the cursor returns to the beginning of the TFTP Gateway IP Address field. If the entry is not valid, the Event Message Line displays “INVALID TFTP GATEWAY IP ADDRESS OR FORMAT ENTERED”. Local Management does not alter the current value, but it does refresh the TFTP Gateway IP Address field with the previous value.
4. Use the arrow keys to highlight the **SAVE** command.
5. Press ENTER. The Event Message Line at the top of the screen displays “SAVED OK”.

5.15.5 Setting the Module Date

The modules are year 2000 compliant, so the module date may be set beyond the year 1999. To set the module date, perform the following steps:



If the DLM6C-AA chassis has been assigned a chassis date, it is not necessary to assign a module date to the DLE2X-MA and DLE3X-MA. All installed modules recognize the chassis date of the DLM6C-AA.

1. Use the arrow keys to highlight the **Module Date** field.
2. Enter the date in an MM/DD/YYYY format.



It is not necessary to add separators between month, day, and year numbers. For example, to set the date to 03/17/1997, type "03171997" in the Module Date field.

3. Press ENTER to set the system calendar to the date in the input field.
4. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen and press ENTER.

If the date entered is a valid format, the Event Message Line at the top of the screen displays "SAVED OK". If the entry is not valid, Local Management does not alter the current value, but it does refresh the Module Date field with the previous value.

5.15.6 Setting the Module Time

To set the module clock, perform the following steps:



If the DLM6C-AA chassis has been assigned a chassis time, it is not necessary to assign a module time to the DLE2X-MA and DLE3X-MA. All installed modules recognize the chassis time of the DLM6C-AA.

1. Use the arrow keys to highlight the **Module Time** field.
2. Enter the time in an 24-hour format, HH:MM:SS.



When entering the time in the system time field, separators between hours, minutes, and seconds do not need to be added as long as each entry uses two numeric characters. For example, to set the time to 6:45 A.M., type "064500" in the Module Time field.

3. Press ENTER to set the system clock to the time in the input field.
4. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen and press ENTER.

If the time entered is a valid format, the Event Message Line at the top of the screen displays “SAVED OK”. If the entry is not valid, Local Management does not alter the current value and refreshes the Module Time field with the previous value.

5.15.7 Entering a New Screen Refresh Time

The screen refresh time is set from 3 to 99 seconds with a default of 3 seconds. To set a new screen refresh time, perform the following steps:

1. Use the arrow keys to highlight the **Screen Refresh Time** field.
2. Enter a number from 3 to 99.
3. Press ENTER to set the refresh time to the time entered in the input field.
4. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen and press ENTER.

If the time entered is within the 3 to 99 seconds range, the Event Message Line at the top of the screen displays “SAVED OK”. If the entry is not valid, Local Management does not alter the current setting, but it does refresh the Screen Refresh Time field with the previous value.

5.15.8 Setting the Screen Lockout Time

The screen lockout time can be set from 1 to 30 minutes with a default of 15 minutes. To set a new lockout time, perform the following steps:

1. Use the arrow keys to highlight the **Screen Lockout Time** field.
2. Enter a number from 1 to 30.
3. Press ENTER to set the lockout time in the input field.
4. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen and press ENTER.

If the time entered is within the 1 to 30 minutes range, the Event Message Line at the top of the screen displays “SAVED OK”. If the entry is not valid, Local Management does not alter the current setting, but it does refresh the Screen Lockout Time field with the previous value.

5.15.9 Setting the Operational Mode

To set the Operational Mode, proceed as follows:

1. Use arrow keys to highlight the **Operational Mode** field.
2. Press the SPACE bar to step to the appropriate operation mode, (**802.1D SWITCHING**, **802.1Q SWITCHING**).
3. Use the arrow keys to highlight the **SAVE** command, then press ENTER. The warning screen shown in Figure 5-18 displays.
4. Use the arrow keys to highlight the **YES** command and press ENTER. The changes are saved and the module reboots.



Upon saving the new operational mode, the module will reboot.

If the DLE2X-MA and DLE3X-MA have been set to **802.1Q SWITCHING**, refer to your *Port Based VLAN User's Guide* to configure the devices for this type of operation.

5.15.10 Setting the Management Mode

To set the management mode, perform the following steps:



Upon saving the new Management Mode, the module will reboot.

If the module will be set to **STANDALONE**, ensure the following procedures have been completed:

The module has been assigned a unique IP address.

The module has been assigned SNMP community names from the module SNMP Community Names screen (Section 5.16). In **STAND ALONE** management mode, the module does not use the community names of the DLM6C-AA chassis.

1. Use the arrow keys to highlight the Management Mode field:

2. Use the SPACE bar to toggle the options (**DISTRIBUTED** or **STAND ALONE**) until the desired mode displays.
3. Use the arrow keys to highlight the **SAVE** command, then press ENTER. The warning screen shown in Figure 5-18 displays.
4. Use the arrow keys to highlight the **YES** command and press ENTER. The changes are saved and the module reboots.

5.15.11 Configuring the COM Port



Before altering the COM port settings, ensure that a valid IP address is set for the module or chassis. (Refer to Section 5.15.1, **Setting the IP Address**.) Read this entire COM port configuration section before changing the settings of the COM port.

The DLE2X-MA and DLE3X-MA COM ports support the following applications:



Refer to the Release Notes included with the DLE2X-MA and DLE3X-MA to verify which COM Port applications are currently supported.

- Local Management connections
- American Power Conversion Uninterruptible Power Supply (UPS) connections

To configure the COM port, proceed as follows:

1. Use the arrow keys to highlight the **Com** field.



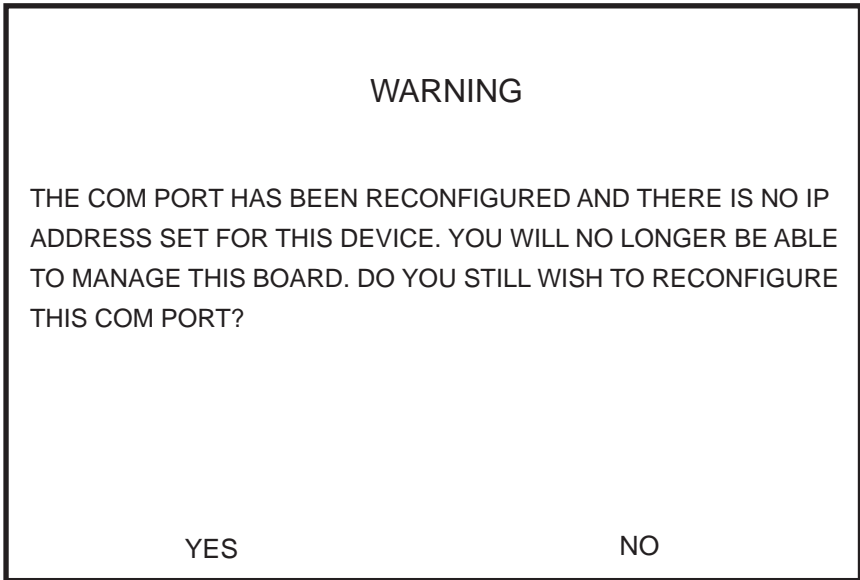
Do **NOT** disable or alter the settings of the COM port while operating the current Local Management connection through a terminal. Altering the COM port settings disconnects the Local Management terminal from the port, and ends the Local Management session.

2. Press the SPACE bar to choose either **ENABLED** or **DISABLED**. The COM port must be **ENABLED** if it will be used for Local

Management or UPS applications. Select **DISABLED** if you wish to disable the COM port for additional module security.



If the COM port is reconfigured without a valid IP address set on the module or chassis, the message shown in Figure 5-19 displays. Do not continue unless the outcome of the action is fully understood.



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Figure 5-19 COM Port Warning Screen



If the DLM6C-AA chassis has been configured with a valid IP address this screen will not appear. When the chassis is assigned a valid IP address all the interface modules installed share this same address.

3. Use the arrow keys to highlight **YES**. Press ENTER.
4. If you **ENABLED** the port, proceed to Section 5.15.12. If you **DISABLED** the port, use the arrow keys to highlight **SAVE** at the bottom of the screen, then press ENTER. When the message “SAVED OK” displays, the edits are saved.



Exiting without saving causes the message “NOT SAVED -- PRESS SAVE TO KEEP CHANGES” to appear. Exiting without saving causes all edits to be lost.

5.15.12 Changing the Com Port Application

After enabling the COM port as described in Section 5.15.11, you can select one of the applications supported by the COM port: LM, and UPS. The default application is LM.

To change the COM port application:

1. Use the arrows keys to highlight the **Application** field.
2. Use the SPACE bar or BACKSPACE to step through the available settings until the operation you require appears. Table 5-3 lists the available settings and their corresponding applications.

Table 5-3. COM Port Application Settings

Setting	Application
LM	Local Management Session
UPS	APC Power Supply SNMP Proxy

3. Press ENTER to accept the application.
4. Use the arrow keys to highlight **SAVE** at the bottom of the screen, then press the ENTER key.
5. When the message “SAVED OK” appears, the edits you made are saved.



When the COM port is configured to perform the UPS application, all future Local Management connections must be made by establishing a Telnet connection to the module. Ensure that the module has a valid IP address before saving changes to the COM port application. If the module does not have a valid IP address and the changes are saved, refer to Appendix C for instructions on clearing NVRAM in order to reestablish COM port communications.

5.15.13 Clearing NVRAM

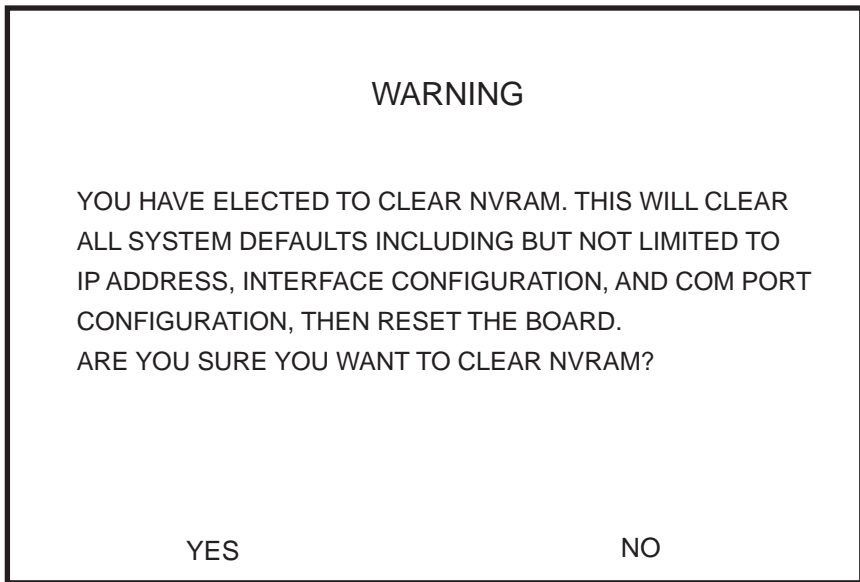


Clearing NVRAM will result in the loss of all user-entered parameters. Do not proceed unless this procedure is completely understood.

Clearing NVRAM allows the user to clear all user-entered parameters, such as IP address and Community Names from NVRAM.

Clear NVRAM as follows:

1. Use the arrow keys to highlight the **Clear NVRAM** field.
2. Use the SPACE bar to toggle the field to **YES**.
3. Use the arrow keys to highlight **SAVE** at the bottom of the screen.
4. Press ENTER. The warning shown in Figure 5-20 is displayed.



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Figure 5-20 Clear NVRAM Warning Screen

5. Use the arrow keys to highlight **YES** and press ENTER. The message “CLEARING NVRAM. REBOOT IN PROGRESS...” displays.

The DLE2X-MA and DLE3X-MA clear NVRAM and reboot. All user-entered parameters default to factory settings.

5.15.14 Enabling/Disabling IP Fragmentation

To enable or disable IP fragmentation, proceed as follows:

1. Use the arrow keys to highlight the **IP Fragmentation** field.
2. Press the SPACE bar to choose either **ENABLED** or **DISABLED**.
3. Use the arrow keys to highlight the **SAVE** command.
4. Press ENTER. The Event Message Line at the top of the screen displays “SAVED OK”.



If the DLE2X-MA and DLE3X-MA are being bridged to an FDDI ring (for example, via an DELHF-UA installed in the DLE3X-MA) IP Fragmentation should be enabled. If IP Fragmentation is disabled, all FDDI frames that exceed the maximum Ethernet frame size will be discarded.

5.16 SNMP COMMUNITY NAMES SCREEN

The SNMP Community Names menu item allows the user to set Local/Remote Management community names. Community names act as passwords to Local/Remote Management and are agents of security access to the DLE2X-MA and DLE3X-MA. Access to the DLE2X-MA and DLE3X-MA is controlled by enacting any of three different levels of security authorization (read-only, read-write, and super-user).



If the DLM6C-AA has been assigned community names, it is not necessary to assign community names to the individual modules installed in the chassis unless the user wishes to limit access to DLM6C-AA chassis screens by assigning different community names to the module. When this is done access is limited to the screens specific to the module to which the terminal is attached and the Local Management session begins at the Module Menu screen.

Super-User access gives the user full management privileges, allows existing passwords to be changed, and all modifiable MIB objects for the Cabletron Container MIB and Internet MIB-II to be accessed.

read-write	This community name allows read and write access to the DLE2X-MA and DLE3X-MA MIB objects, excluding security protected fields for super-user access only.
super-user	This community name permits read-write access to the DLE2X-MA and DLE3X-MA MIB objects and allows the user to change all modifiable parameters including community names, IP addresses, traps, and SNMP objects.

5.16.1 Establishing Community Names

The password used to access Local Management at the Password Screen must have Super-User access in order to view and edit the SNMP Community Names screen. Using a password with read-only or read-write access does not allow the user to view or edit the SNMP Community Names screen.



Any community name assigned in the SNMP Community Names screen is a password to its corresponding level of access to Local/Remote Management. The community name assigned Super-User access is the only one that gives the user complete access to Local/Remote Management.

To establish community names, proceed as follows:

1. Use the arrow keys to highlight the **Community Name** field adjacent to the selected access level.
2. Enter the password in the field (maximum 31 characters).
3. Press ENTER.
4. Repeat steps 1 through 3 to modify the other community names.
5. Use the arrow keys to highlight **SAVE** at the bottom of the screen and press ENTER. The message “SAVED OK” displays. The community names are saved to memory and their access modes implemented.

5.17 SNMP TRAPS SCREEN

Since the DLE2X-MA and DLE3X-MA are SNMP compliant devices, they can send messages to multiple Network Management Stations to alert users of status changes. The SNMP Traps screen is shown in Figure 5-22.



It is only necessary to assign SNMP traps if the user desires the traps to be sent to different addresses than those assigned in Section 5.9, which details how to set SNMP Traps for the DLM6C-AA chassis.

Access the SNMP Traps screen from the Module Configuration Menu screen by using the arrow keys to highlight the **SNMP TRAPS** field and pressing ENTER. The SNMP Traps screen displays.

```
Event Message Line
MS 700 LOCAL MANAGEMENT
SNMP Traps
Module Type: DLE22-MA      Firmware Revision:  XX.XX.XX
Slot Number: X             BOOTPROM Revision: XX.XX.XX

Trap Destination           Trap Community Name      Enable Traps
0.0.0.0                    public                    [NO]
0.0.0.0                    public                    [NO]
0.0.0.0                    public                    [NO]
0.0.0.0                    public                    [NO]
0.0.0.0                    public                    [NO]
0.0.0.0                    public                    [NO]
0.0.0.0                    public                    [NO]
0.0.0.0                    public                    [NO]
0.0.0.0                    public                    [NO]

SAVE                        EXIT                        RETURN
```

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Figure 5-22 SNMP Traps Screen

The following explains each field of the SNMP Traps screen.

Trap Destination (Modifiable)

Indicates the IP address of the workstation to receive trap alarms. Up to eight different destinations can be defined.

Trap Community Name (Modifiable)

Displays the Community Name included in the trap message sent to the Network Management Station with the associated IP address.

Enable Traps (Toggle)

Enables transmission of the traps to the network management station with the associated IP address. This field toggles between YES and NO.

5.17.1 Configuring the Trap Table

To configure the Trap Table, proceed as follows:

1. Using the arrow keys, highlight the appropriate **Trap Destination** field.
2. Enter the IP Address of the workstation that is to receive traps. IP address entries must follow the DDN format.

For example: 134.141.79.121
3. Press ENTER. If an invalid entry is entered “INVALID IP ENTERED” is displayed in the Event Message Line.
4. Using the arrow keys, highlight the **Trap Community Name** field. Enter the community name.
5. Press ENTER.
6. Using the arrow keys, highlight the **Enable Traps** field. Press the SPACE bar to choose either **YES** (send alarms from the module to the workstation), or **NO** (prevent alarms from being sent).
7. Using the arrow keys, highlight the **SAVE** option and press ENTER. The message “SAVED OK” displays on the screen.

The designated workstations now receive traps from the DLE2X-MA and DLE3X-MA.

5.18 SWITCH CONFIGURATION SCREEN

The Switch Configuration screen, Figure 5-23, provides the basic setup options to make a switch operational in your network.

Access the Switch Configuration screen from the Module Configuration Menu screen by using the arrow keys to highlight the **SWITCH CONFIGURATION** field and pressing ENTER. The Switch Configuration screen, Figure 5-23, displays ports 1 through 8. To view or edit the fields for ports 9 to 16, highlight **[9-16]** at the bottom of the screen and press the ENTER key. Perform the function again to view or edit ports 17 to 24, and once again to view or edit ports 25 to 30.



Ports 25 and 26 on the Switch Configuration screen represent the optional Fast Ethernet Interface Modules available for the DLE2X-MA.

Port 25 on the Switch Configuration screen represents the optional HSIM available for the DLE3X-MA.

Ports 27 through 30 (DLE2X-MA) or 26 through 29 (DLE3X-MA) on the Switch Configuration screen represent the backplane connections that the module has with the DLM6C-AA chassis. The module has a direct connection to every other slot in the chassis.


```

Event Message Line

                                MS 700 LOCAL MANAGEMENT

                                Switch Configuration

Module Type: DLE22-MA                Firmware Revision:  XX.XX.XX
Slot Number: X                       BOOTPROM Revision: XX.XX.XX

Switch Address: 00-00-1D-00-00-00    Type of STA:  [DEC]
Number of Ports: 30                 Age Time:      300

PORT #      MAC Address              State          Status
-----
1           00-00-1D-00-00-00                learning      [ENABLED]
2           00-00-1D-00-00-01                listening     [DISABLED]
3           00-00-1D-00-00-02                standby       [ENABLED]
4           00-00-1D-00-00-03                learning      [DISABLED]
5           00-00-1D-00-00-04                listening     [ENABLED]
6           00-00-1D-00-00-05                standby       [DISABLED]
7           00-00-1D-00-00-06                listening     [ENABLED]
8           00-00-1D-00-00-07                listening     [DISABLED]

SAVE                EXIT                [9-16]                RETURN
    
```

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Figure 5-23 Switch Configuration Screen

The following describe each field of the Switch Configuration screen:

Switch Address (Read-Only)

Displays the base MAC address of the switch.

Number of Ports (Read-Only)

Displays the total number of switched ports on the module.

Type of STA (Toggle)

Allows the user to set the method that switches use to decide which switch is the controlling (Root) switch when two or more switches exist in parallel (Spanning Tree Algorithm). Valid entries include **IEEE**, **DEC**, and **NONE**. To set the STA, refer to Section 5.18.1.

Age Time (Modifiable)

Allows the user to set the amount of time (in seconds) the DLE2X-MA and DLE3X-MA will keep an address in its switch table before discarding it. The modules will discard an address from their switch table if they do not receive a valid packet from the applicable address in the amount of

time specified in the Age Time field. To change the Age Time field from the default value of 300 seconds, refer to Section 5.18.2.

Port # (Read-Only)

Lists each switch port on the module. If the number of ports is greater than eight, then the additional ports are listed on subsequent screens.

MAC Address (Read-Only)

Displays the hardware address assigned to each listed port.

State (Read-Only)

Disabled: Management disabled this interface. No traffic is received or forwarded while the interface is disabled.

Listening: The switch is not adding information to the Transparent Database. The switch is monitoring BPDU traffic while preparing to move from the learning to the forwarding state.

Learning: The switch is learning the network address of this interface. The switch enters the learning state when the Transparent Database is created (during start-up or after being deleted), or when the Spanning Tree Algorithm detects a network topology change.

Forwarding: The switch is on line and this interface is forwarding traffic.

Standby: This interface will not forward any traffic through the switch because a loop condition has been detected by the STA.

Status (Toggle)

Allows the user to disable or enable a port by setting the status of the listed interface to either **ENABLED** or **DISABLED**. To set the port status, refer to Section 5.18.3.

5.18.1 Setting the STA

The Spanning Tree Algorithm (STA) setting allows the user to set the method that the switches use to decide which is the controller (Root) switch when two or more switches are in parallel. The available selections are **IEEE**, **DEC**, and **NONE**.

To set the STA, proceed as follows:

1. Use the arrow keys to highlight the **Type of STA** field.

2. Use the SPACE bar to step to the appropriate setting (**IEEE**, **DEC**, or **NONE**).
3. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen.
4. Press ENTER. The message “SAVED OK” is displayed.

5.18.2 Setting the Age Time

To set the Age Time, proceed as follows:

1. Use the arrow keys to highlight the **Age Time** field.
2. Enter the desired Age Time in increments of 10. The available Age Time range is 10 seconds to 1,000,000 seconds with the default value being 300 seconds.
3. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen.
4. Press ENTER. The message “SAVED OK” is displayed.

5.18.3 Setting (Enabling or Disabling) the Port Status

To set the status of an interface (port), proceed as follows:



Disabling the port status of a backplane connection will block the module from passing user traffic to the applicable module slot in the DLM6C-AA chassis. SNMP and other management traffic (e.g., ping and Telnet traffic), however, will still pass via the backplane to the applicable module slot.

1. Use the arrow keys to highlight the **Status** field of the port.
2. Use the SPACE bar to toggle to either **ENABLED** or **DISABLED**.
3. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen.
4. Press ENTER. The message “SAVED OK” is displayed.

The following section explains each field of the Ethernet Full Duplex Configuration screen.

PORT # (Read-only)

Identifies the number of the port.

OPERATION MODE (Toggle)

Allows the user to set the specified port to transmit and receive data separately or simultaneously. Set this field to one of the following values:

- **STANDARD ENET** – The port is running at 10 Mbps (default) and either transmits data or receives data, but not both at the same time. To set Ethernet ports for Full Duplex operation, refer to Section 5.19.1.
- **FULL DUPLEX** – The port transmits and receives data at the same time (full duplex) and operates at 20 Mbps. To set Ethernet ports for Full Duplex operation, refer to Section 5.19.1.

LINK STATUS (Read-only)

Indicates whether there is a physical connection from this port to another Ethernet device. One of the following values displays:

- **Link** – There is a valid link signal present; there is a valid physical connection from this port to another device.
- **No Link** – There is no valid link signal present; there is no valid physical connection from this port to another device.

PORT STATUS (Read-only)

Indicates whether the port was turned on or off administratively. One of the following values is displayed:

- **ENABLED** – The port is turned on administratively.
- **DISABLED** – The port is turned off administratively.



Enabling or disabling ports from the Switch Configuration screen is described in Section 5.18.3.

SET ALL PORTS (Toggle)

Ports 1 through 24 can be set all at once to either STANDARD or FULL from this field. To set all ports, refer to Section 5.19.1.

[1-12], or **[13-24]** (Navigation Key)

When the Full Duplex Configuration screen displays, the current operation mode and status information are displayed for the first 12 ports. This field allows the user to step to a second screen for the same type of information for ports 13 through 24. While on the second screen, the user can navigate back to the first screen by selecting the **[1-12]** option. The user can change the Operation Mode fields while in either the first or second screen.

5.19.1 Setting the Operation Mode

The Operation Mode may be set to Standard Ethernet or Full Duplex either one port at a time or all at once. The following steps describe setting the port Operation Mode for individual ports followed by steps to set the Operation Mode for all ports.

Set the Operation Mode for individual ports as follows:

1. Use the arrow keys to highlight the **OPERATION MODE** field adjacent to the number of the port that you plan to change.



The Operation Mode for the first 12 ports can be changed on the first screen. To display the Operation Mode for Ports 13 through 24, use the arrow keys to highlight the Ports **[13-24]** field and press ENTER. To again display the Operation Mode for Ports 1 through 12, use the arrow keys to highlight the Ports **[1-12]** field and press ENTER.

2. Press the SPACE bar until the appropriate mode (**FULL DUPLEX** or **STANDARD ENET**) is displayed.
3. Use the arrow keys to highlight the **SAVE** command on the bottom line of the screen.
4. Press ENTER. The message “SAVED OK” is displayed.

To set all 24 Ethernet ports for Full Duplex or Standard Ethernet, proceed as follows:

1. Use the arrow keys to highlight the **SET ALL PORTS** field.

2. Press the SPACE bar until you see **FULL** or **STANDARD**.
3. Use the arrow keys to highlight the **SAVE** command on the bottom line of the screen.
4. Press ENTER. The message “SAVED OK” is displayed.

5.20 SmartTrunk AND THE CONFIGURATION SCREEN

Before discussing the SmartTrunk Configuration screen and how to use it, it is necessary to understand what SmartTrunk is and the port connection and configuration rules that must be followed. Failure to follow these rules will produce poor network performance. Refer to Appendix D, About SmartTrunk, for basic information on SmartTrunking. For SmartTrunk configuration rules, proceed to Section 5.20.1.

5.20.1 SmartTrunk Configuration Rules

The following rules must be followed when installing the DLE2X-MA and DLE3X-MA to operate in a network configuration using SmartTrunking. These rules also apply to other devices that support Cabletron Systems’ SmartTrunk application.

1. Only ports designated as **NETWORK** ports, through Local or Remote Management screens, will be considered for SmartTrunking.
2. All non-SmartTrunking interfaces **MUST** be designated as **USER** ports.
3. A maximum of 12 ports may be used per instance, and there may only be 8 instances per device.
4. If three or more devices are connected together for SmartTrunking, then the ports that connect any of the two devices together **MUST** be designated as **USER** ports to prevent a network loop condition. The port with the least amount of bandwidth available would be the port(s) that should be designated a “**USER**” port.
5. You cannot loop front panel ports back to the same standalone device. If the devices are modules residing in a chassis, then you cannot loop back to the same module in the same chassis or to different modules within that chassis. This includes all backplane interfaces that may display on the SmartTrunk Configuration screen.

6. You must enable Spanning Tree before enabling SmartTrunk. Spanning Tree will 'block' any ports not used by SmartTrunk that are looped. This can include **NETWORK** and **USER** ports. The reason for the blocking of a **NETWORK** port is that the port at the other end of the link may be configured as a **USER** port.

Other Considerations

- If a network loop exists and SmartTrunk becomes disabled, and Spanning Tree is operational, then the Spanning Tree Algorithm will respond and block the necessary ports.
- If SmartTrunk becomes disabled, and a network loop exists, and Spanning Tree is not-operational (disabled), then an infinite packet loop would occur, taking down the network.
- If a port is disabled and as a result SmartTrunk is no longer active, then all traffic is redirected over the remaining port(s).
- If three or more interface modules, such as the DLE2X-MA and DLE3X-MA, or standalone devices are connected together in a loop condition and all the ports that connect the loop are set to "**NETWORK**," the results are unpredictable. In this case all ports are assigned as "**NETWORK**" ports and none are configured as "**USER**" ports. This is deemed an illegal configuration.
- If a network loop exists when a port is disabled, then SmartTrunk will reconfigure the remaining ports and continue to distribute traffic.

5.20.2 SmartTrunk Configuration Screen



The SmartTrunk Configuration screen may not be available if the operational mode of the module has been set to 802.1Q SWITCHING. Refer to your Release Notes to see if the SmartTrunking feature is supported.

Section 5.15.9 describes how to set the operational mode.

The SmartTrunk Configuration screen, Figure 5-25, allows the user to logically group interfaces together between devices to achieve greater bandwidth between the devices.

Access the SmartTrunk Configuration screen from the Module Specific Configuration Menu screen by using the arrow keys to highlight the

SMARTTRUNK CONFIGURATION menu item and pressing ENTER. The SmartTrunk Configuration screen displays.



Interfaces with the Port Name “Backplane” may display on this screen. These ports may not be used for SmartTrunking. Poor network performance will result if backplane ports are used as SmartTrunk interfaces. Section 5.20.1 details all SmartTrunk configuration rules.

The DLE2X-MA and DLE3X-MA ports must be connected to a product that supports SmartTrunking for load sharing to function.

Event Message Line					
MS 700 LOCAL MANAGEMENT					
Smart Trunk Configuration					
Module Type: DLE22-MA			Firmware Revision: XX.XX.XX		
Slot Number: X			BOOTPROM Revision: XX.XX.XX		
Port #	Port Name	Connection	Smart Trunk State	Instance	# STPorts
1	Enet	[USER]	NONE	0	0
2	Enet	[NETWORK]	SMARTTRUNKING	1	2
3	Enet	[NETWORK]	SMARTTRUNKING	1	2
4	Enet	[NETWORK]	SMARTTRUNKING	2	3
5	Enet	[NETWORK]	SMARTTRUNKING	2	3
6	Enet	[NETWORK]	SMARTTRUNKING	2	3
7	Enet	[USER]	NONE	0	0
8	Enet	[USER]	NONE	0	0
9	Enet	[USER]	NONE	0	0
10	Enet	[USER]	NONE	0	0
11	Enet	[USER]	NONE	0	0
12	Enet	[USER]	NONE	0	0

ENABLE NEXT EXIT RETURN

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Figure 5-25 SmartTrunk Configuration Screen

The following explains each field of the SmartTrunk Configuration screen:

Port #

Identifies the number of the port.

Port Name

These are the names assigned for all bridging interfaces.

Connection (Toggle)

Enables the connection type for the interface. This field toggles between **USER** and **NETWORK**. **USER** is not used for load sharing; **NETWORK** is used for load sharing. At least two ports must be designated as **NETWORK** to perform load sharing.

Smart Trunk State

Displays the current operating state of the port — **NONE**, **BLOCKING**, or **SMARTTRUNKING**. **NONE** means that the port is operating as a normal switch port. **BLOCKING** means that the port is load sharing, but in the blocked mode. **SMARTTRUNKING** means that the port is load sharing.

Instance

Identifies the ports that are grouped together to share traffic load (load sharing). In Figure 5-25, ports 2 and 3 make up a group identified as Instance **1** that together share traffic. And ports 4, 5, and 6 are identified as Instance **2** and also share traffic, but not with Instance **1**.

STPorts

Identifies which ports are grouped (an instance). For example, in Figure 5-25 Instance **1** consists of 2 ST ports (ports 2 and 3) and there are 3 ST ports (ports 4, 5, and 6) associated with Instance **2**.

5.20.3 Enabling the Connection

To enable the Connection type, proceed as follows:

1. Use the arrow keys to highlight the **Connection** field for the selected port(s).
2. Press the SPACE bar to select **USER** or **NETWORK**.
3. Use the arrows keys to highlight the **ENABLE** command at the bottom of the screen.
4. Press ENTER. The message “SAVED OK” is displayed.

5.20.4 Displaying the SmartTrunk Ports

There are three SmartTrunk screens. Each screen displays 12 ports. The **NEXT** and/or **PREVIOUS** command is displayed at the bottom of the screen, allowing the user to navigate to either the next or previous screen.

To display the next screen, use the arrow keys to highlight **NEXT**. Press **ENTER** and the next screen of entries is displayed.

To display the previous screen, use the arrow keys to highlight **PREVIOUS**. Press **ENTER** to view the entries in the previous screen.

5.21 MODULE SPECIFIC CONFIGURATION MENU SCREEN

The Module Specific Configuration Menu screen, Figure 5-26, allows the user to select one of five screens to configure ports or check system resources specific to the DLE2X-MA and DLE3X-MA.



The following menu items on the Module Specific Configuration Menu screen may not display if the operational mode of the module has been set to 802.1Q SWITCHING:

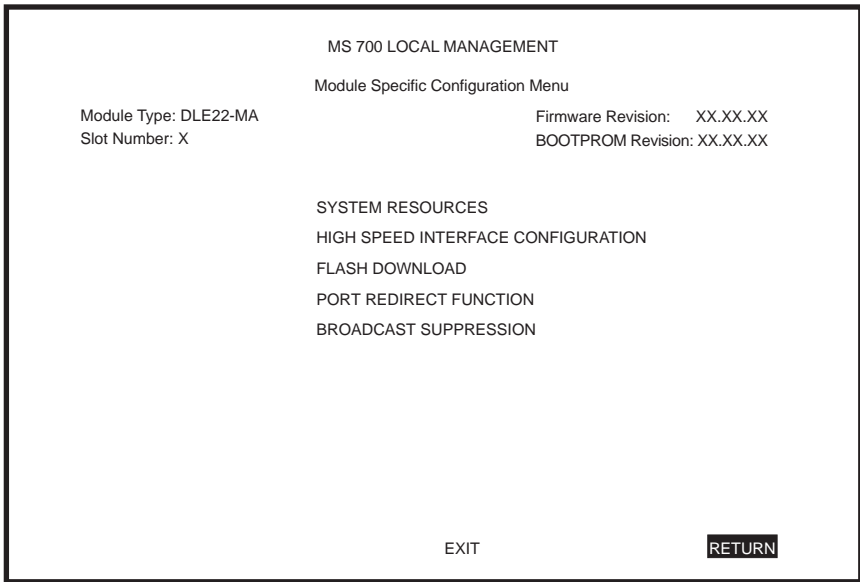
PORT REDIRECT FUNCTION

BROADCAST SUPPRESSION

Refer to your Release Notes to see if the functionality provided by the above screens is supported.

Section 5.15.9 provides instructions on setting the operational mode.

Access the Module Specific Configuration Menu screen from the Module Configuration Menu screen by using the arrow keys to highlight the **MODULE SPECIFIC CONFIGURATION MENU** menu item and pressing **ENTER**. The Module Specific Configuration Menu screen displays.



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Figure 5-26 Module Specific Configuration Menu Screen

The following explains each field of the Module Specific Configuration Menu screen:

SYSTEM RESOURCES

The System Resources screen displays the amount of FLASH memory, DRAM, and NVRAM installed, details how much memory is available and provides information on DLE2X-MA and DLE3X-MA operation. For details, refer to Section 5.22.

HIGH SPEED INTERFACE CONFIGURATION

The High Speed Interface Configuration screen indicates which Fast Ethernet Interface Modules are installed in ports 25 and 26 of the DLE2X-MA, their current operating mode, and if the ports are linked. It also permits the Auto-Negotiation and Advertised Ability features to be enabled or disabled. For details, refer to Section 5.23.

The High Speed Configuration screen for the DLE3X-MA allows management of the installed HSIM. For details, refer to the applicable *HSIM User's Guide*.

FLASH DOWNLOAD

The FLASH Download screen allows the user to force the DLE2X-MA and DLE3X-MA to download a new image file to FLASH memory from a TFTP server. For details, refer to Section 5.24.

PORT REDIRECT FUNCTION

The Port Redirect Function screen allows the user to redirect traffic from one or more ports on the module to a specific destination port on the module. For details, refer to Section 5.25.

Section 5.15.9, **Setting the Operational Mode**, describes how to configure the modules to function as 802.1D switches.

BROADCAST SUPPRESSION

The Broadcast Suppression screen allows the user to set a desired limit of receive broadcast frames per port per second. For details, refer to Section 5.26.

802.1Q VLAN Configuration

This menu item will only display if the module has been configured to operate as an IEEE 802.1Q switch and the Management Mode has been set to STAND ALONE. When selected, this menu item opens the VLAN Main Menu screen. For details, refer to the *Port Based VLAN User's Guide*. Section 5.15.9, **Setting the Operational Mode**, describes how to configure the modules to function as 802.1Q switches. Section 5.15.10, **Setting the Management Mode**, describes how to set the module to STAND ALONE management mode.

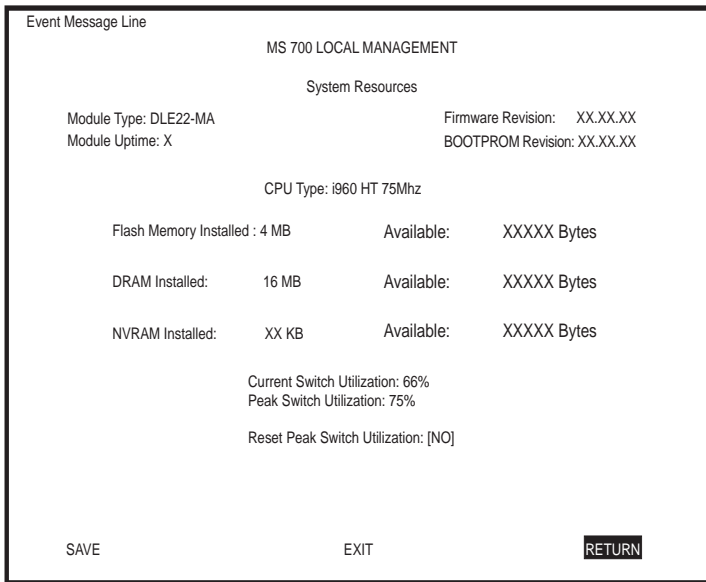


The module does not have to be in STAND ALONE mode to operate as an 802.1Q switch. In DISTRIBUTED management mode, 802.1Q VLANs are created and maintained via the 802.1Q VLAN CONFIGURATION menu item on the Chassis Menu screen. Refer to Section 5.6 for details.

5.22 SYSTEM RESOURCES SCREEN

The System Resources screen, Figure 5-27, provides information concerning the processor, the amount of FLASH memory, DRAM, and NVRAM that is installed and how much of that memory is available.

Access the System Resources screen from the Module Specific Configuration Menu screen by using the arrow keys to highlight the **SYSTEM RESOURCES** menu item and pressing ENTER. The System Resources screen displays.



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Figure 5-27 System Resources Screen

The following briefly explains each field of the System Resources screen.

Module Uptime (Read-only)

The time in days/hours/minutes that the module has been continuously running.

CPU Type (Read-only)

Indicates the microprocessor used in the DLE2X-MA and DLE3X-MA.

Flash Memory Installed (Read-only)

Indicates the amount of FLASH memory installed in the DLE2X-MA and DLE3X-MA and how much is currently available.

DRAM Installed (Read-only)

Indicates the amount of DRAM installed in the DLE2X-MA and DLE3X-MA and how much of it is currently available.

NVRAM Installed (Read-only)

Indicates the amount of NVRAM installed in the DLE2X-MA and DLE3X-MA and how much of it is currently available.

Current Switch Utilization (Read-only)

Shows how much (percentage of capacity) the DLE2X-MA and DLE3X-MA is currently being used.

Peak Switch Utilization (Read-only)

Shows the peak percentage of maximum switching capacity, since last reset.

Reset Peak Switch Utilization (Toggle)

Allows the user to reset the Peak Switch Utilization field. The switch may be set to either YES or NO as described in Section 5.22.1. YES resets the Peak Switch Utilization field to the current system traffic.

5.22.1 Setting the Reset Peak Utilization

To set the Reset Peak Utilization field to **YES** or **NO**, proceed as follows:

1. Use the arrow keys to highlight the **Peak Switch Utilization** field.
2. Press the SPACE bar to select **YES** or **NO**.
3. Use the arrows keys to highlight the **SAVE** command at the bottom of the screen.
4. Press ENTER. The message “SAVED OK” is displayed.

5.23 HIGH SPEED INTERFACE CONFIGURATION MENU SCREEN (DLE2X-MA ONLY)



When the **HIGH SPEED CONFIGURATION MENU** is selected for the DLE3X-MA the applicable HSI Setup screen displays. Refer to the HSI User's Guide to set operating parameters for the HSI installed in the DLE3X-MA.

Access the High Speed Interface Configuration Menu screen from the Module Specific Configuration Menu screen by using the arrow keys to highlight the **HIGH SPEED INTERFACE CONFIGURATION MENU** menu item and pressing ENTER. The High Speed Interface Configuration screen displays.



The High Speed Interface Configuration screen, Figure 5-28, applies only to ports 25 and 26 of the DLE2X-MA. This screen supports the DELTX-UI, DELFX-UI and DELF3-UI Fast Ethernet Interface Modules that operate at 100 Mbps. If you are configuring a DLE3X-MA, refer to the applicable HSI User's Guide, or proceed to Section 5.24.

The High Speed Interface Configuration screen displays the types of interfaces installed in ports 25 and 26, their current operating mode, and indicates if the ports are linked. This screen also allows the user to enable or disable Auto-Negotiation and set the Advertised Ability.

Event Message Line		
MS 700 LOCAL MANAGEMENT		
High Speed Interface Configuration		
Module Type: DLE22-MA	Firmware Revision: XX.XX.XX	
Slot Number: X	BOOTPROM Revision: XX.XX.XX	
	Port 25	Port 26
Port Type	DELTX-UI	Unknown
Link Status	Link	No Link
Current Oper. Mode	100Base-TXFD	[N/A]
Desired Oper. Mode	[Auto-Negotiation]	[N/A]
Advertised Ability	[100Base-TXFD] [Disabled]	[N/A]
SAVE	EXIT	RETURN

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Figure 5-28 High Speed Interface Configuration Screen for the DLE2X-MA

The following briefly explains each field of the High Speed Interface Configuration screen.

Port Type (Read-Only)

Displays the name of the interface (DELFX-UI, DELTX-UI or DELF3-UI) installed in ports 25 and 26. Figure 5-28 shows that there is an DELTX-UI interface installed in port 25 and no interface, indicated by Unknown, in Port 26.

Link Status (Read-Only)

Indicates whether or not there is a physical connection from this port to another 10BASE-F or 100BASE-TX/FX device. One of the following values is displayed:

- **Link** – There is a link signal present and a valid physical connection to another 10BASE-F or 100BASE-TX/FX device.
- **No Link** – There is no link signal present and there is no valid physical connection to another device.

Current Oper. Mode (Read-only)

This field displays the current operating mode of ports 25 and 26. Depending on the interface installed (100BASE-FX or 100BASE-TX) this field displays the following:

- With a 100BASE-FX interface: **100Base-FX** or **100Base-FXFD** (full duplex).
- With a 100BASE-TX interface: **Unknown**, **10Base-T**, **10Base-TFD** (full duplex), **100Base-TX**, or **100Base-TXFD** (full duplex).

Desired Oper. Mode (Selectable)

This field allows the user to select the desired operational mode for an interface in port 25 or 26. The field toggles between 100BASE-FX and 100BASE-FXFD (full duplex) when an DELFX-UI or DELF3-UI is installed. Section 5.23.1 describes how to configure a port with an DELFX-UI or DELF3-UI.



In normal operation, the port with an DELTX-UI installed automatically establishes a link with the device at the other end of the segment without requiring user setup. However, Local Management provides the user with the option of manually configuring that port.

If an DELTX-UI is installed, the field steps to Auto-Negotiation, 10BASE-T, 10BASE-TFD (full duplex), 100BASE-TX, and 100BASE-TXFD (full duplex). In normal operation, the port with an DELTX-UI installed is capable of auto-negotiating the operational mode and no further user setup is required. Section 5.23.3 describes how to configure an DELTX-UI.

Advertised Ability (Selectable)

During auto-negotiation, the DELTX-UI “tells” the device at the other end of the segment what its capabilities are. The capabilities of a port (25 or 26) with an DELTX-UI installed are 10BASE-T, 10BASE-TFD (full duplex mode), 100BASE-TX and 100BASE-TXFD (full duplex mode). In normal operation, with all capabilities enabled, the DELTX-UI “advertises” that it has the ability to operate in any mode. The Network Manager may choose to set up the port so that only a portion of the available capabilities are advertised and the others are disabled. For example, only 100BASE-TX and 100BASE-TXFD might be enabled so

that only devices that operate at 100 Mbps can communicate with that port. Section 5.23.5 describes how to enable or disable advertised modes.

5.23.1 Configuring an DELFX-UI or DELF3-UI in Port 25 or 26

When an DELFX-UI or DELF3-UI is installed in port 25 or 26, it must be manually set to operate in the same technology as the device at the other end of the connected segment. Section 5.23.2 provides instructions for manually configuring the port with an DELFX-UI or DELF3-UI interface.

5.23.2 Setting the DELFX-UI and DELF3-UI Operational Mode

Use this field to set the active technology. This field toggles between 100BASE-FX and 100BASE-FXFD (full duplex). To set the active technology through Local Management, proceed as follows:

1. Use the arrow keys to highlight the **Desired Oper. Mode** field.
2. Use the SPACE bar to select **100Base-FX** or **100Base-FXFD** (full duplex).
3. Press ENTER. The port now operates in the chosen mode.
4. Use the arrow keys to highlight the **SAVE** command. Press ENTER. The message "SAVED OK" displays and Local Management saves the changes to memory.

5.23.3 Configuring an DELTX-UI in Port 25 or 26

In normal operation, a port (25 or 26) with an DELTX-UI interface automatically establishes a link with the device at the other end of the segment and no user setup is required. Section 5.23.4 and Section 5.23.5 provide instructions for manually configuring the port with an DELTX-UI installed.

5.23.4 Setting the DELTX-UI Operational Mode

Use this field to set the active technology. This field steps between Auto-Negotiation, 10BASE-T, 10BASE-TFD (full duplex), 100BASE-TX, and 100BASE-TXFD (full duplex). If Auto-Negotiation is

selected, the DELTX-UI automatically sets the active technology. To manually set the active technology through Local Management, proceed as follows:

1. Use the arrow keys to highlight the **Desired Oper. Mode** field.
2. Use the SPACE bar to select the desired mode. Press ENTER. If any mode other than Auto-Negotiation is selected, the port only operates in the chosen mode and auto-negotiation is disabled.
3. Use the arrow keys to highlight the **SAVE** command. Press ENTER. The message “SAVED OK” displays and Local Management saves the changes to memory. The selected mode is displayed in both the Desired Operational Mode field and the Current Operational Mode field.

5.23.5 Setting the DELTX-UI Advertised Ability

In normal operation, a port (25 or 26) with an DELTX-UI auto-negotiates to the highest speed possible. Under some circumstances, the Network Administrator may want the port to advertise only some of the available modes and not operate in other modes. This field steps between 10BASE-T, 10BASE-TFD (full duplex), 100BASE-TX, and 100BASE-TXFD (full duplex). To set the advertised ability, proceed as follows:

1. Use the arrow keys to highlight the **Desired Oper. Mode** field.
2. Use the SPACE bar to select the desired mode.
3. Use the LEFT-ARROW key to move back to the **Advertised Ability** selection and use the SPACE bar to select the next mode to enable or disable.
4. Use the RIGHT-ARROW key to move across to the **Enabled/Disabled** field to the right of the selection.
5. Use the SPACE bar to select **Enabled** or **Disabled**. Press ENTER. Continue this process until you have completed enabling or disabling the advertised modes.
6. Use the arrow keys to highlight the **SAVE** command. Press ENTER. The message “SAVED OK” displays and Local Management saves the changes to memory.

5.24 FLASH DOWNLOAD SCREEN

The Flash Download screen, shown in Figure 5-29, allows the user to clear the information stored in the DLE2X-MA and DLE3X-MA FLASH memory and download a new image file from a TFTP server.



The user may also force a download by changing the position of Switch 6 located inside the module. Refer to Section C.2, **Setting the Mode Switch**, for details.

Before downloading a new image to the module, load the image onto the network TFTP server.



For information on how to set up a workstation as a TFTP server, refer to the specific workstation documentation.

Access the Flash Download screen from the Module Specific Configuration screen by using the arrow keys to highlight the **FLASH DOWNLOAD** menu item and pressing ENTER. The Flash Download screen displays.

```
TFTP DOWNLOAD. WILL COMMIT TO FLASH. REBOOT IN PROGRESS...
MS 700 LOCAL MANAGEMENT

Flash Download

Module Type: DLE22-MA          Firmware Revision:  XX.XX.XX
Slot Number: X                BOOTPROM Revision: XX.XX.XX

Download Method:  [TFTP]
Reboot After Download: [YES]
TFTP Gateway IP Addr: 134.141.79.123
Last Image Server IP: 134.141.79.121  RETURN
Last Image File Name: /tftpboot/100000.hex
Download Server IP: 134.141.79.121
Download File Name: /tftpboot/100000.hex

EXECUTE                      EXIT                      RETURN
```

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Figure 5-29 Flash Download Screen



Download Server IP and Download Server Filename are displayed only when **TFTP** or **RUNTIME** are selected in Download Method.

The following briefly explains each field of the Flash Download screen:

Download Method (Selectable)

This field toggles between **TFTP**, **RUNTIME** and **BOOTP**. If set for **BOOTP**, the module sends out a BootP request to determine the IP address of the TFTP server and the filename of the image to be downloaded. If set for **TFTP** or **RUNTIME**, the DLE2X-MA and DLE3X-MA attempts a TFTP download based on the IP address and filename entered in the fields at the bottom of the Flash Download screen. Section 5.24.1 describes how to download using TFTP. Section 5.24.2 describes how to download using **RUNTIME**. Section 5.24.3 describes how to download using **BootP**.

Reboot After Download (Modifiable when **RUNTIME** is chosen only)

This field notifies the user that the DLE2X-MA and DLE3X-MA will reboot after the download is complete. If a **RUNTIME** Download is performed, this field toggles between **YES** and **NO**. If **YES** is selected, the module reboots after the download is completed. If **NO** is selected the module continues using the existing the firmware image. The module stores the new firmware image in **FLASH** memory. When the module or **DLM6C-AA** chassis is reset, the module will boot from **FLASH** memory using the new image.

TFTP Gateway IP Addr (Selectable)

This field shows the IP address of the TFTP gateway server defined in the General Configuration screen in Section 5.15.4, Setting the TFTP Gateway IP Address.

Last Image Server IP (Read-only)

This field shows the IP address of the server used for the previous **FLASH** Download.

Last Image File Name (Read-only)

This field shows the complete path and file name of the last image downloaded to **FLASH**.

If **TFTP** or **RUNTIME** is selected as the download method (Figure 5-29), the following two additional fields appear:

Download Server IP (Selectable)

The IP address of the TFTP server to be used for the **FLASH** download is entered in this field.

Download File Name (Selectable)

The complete TFTP Server path and file name of the new image is entered in this field.

5.24.1 Image File Download Using TFTP

Set the DLE2X-MA and DLE3X-MA to download to FLASH using TFTP as follows:

1. Use the arrow keys to highlight the **Download Method** field.
2. Use the SPACE bar to select **TFTP**.
3. Use the arrow keys to highlight the **TFTP Gateway IP Addr** field.
4. Set the IP address of the TFTP gateway server (this defaults to the same IP address as that set in the TFTP Gateway IP Addr field on the General Configuration screen).
5. Use the arrow keys to highlight the **Download Server IP** field.
6. Enter the IP address of the TFTP server using the DDN format.
For example: 134.141.79.121
7. Use the arrow keys to highlight the **Download File Name** field.
8. Enter the complete pathway and file name of the image stored on the download server.
For example: /tftpboot/100000.hex
9. Use the arrow keys to highlight **EXECUTE** at the bottom of the screen and press ENTER. The message “TFTP DOWNLOAD. WILL COMMIT TO FLASH. REBOOT IN PROGRESS...” displays in the event message line at the top of the screen and the new image is downloaded into FLASH memory.

5.24.2 Image File Download Using RUNTIME

Set the DLE2X-MA and DLE3X-MA to download to FLASH using RUNTIME as follows:

1. Use the arrow keys to highlight the **Download Method** field.
2. Use the SPACE bar to select **RUNTIME**.
3. Use the arrow keys to highlight the **Reboot After Download** field.
4. Use the SPACE bar to select either **YES** or **NO**. Select **YES** if you want the module to reboot after the download is completed. Select **NO** if you want the module to store the new image in FLASH memory until the module is manually reset.
5. Use the arrow keys to highlight the **TFTP Gateway IP Addr** field.
6. Set the IP address of the TFTP gateway server (this defaults to the same IP address as that set in the TFTP Gateway IP Addr field on the General Configuration screen).
7. Use the arrow keys to highlight the **Download Server IP** field.
8. Enter the IP address of the TFTP server using the DDN format.
For example: 134.141.79.121
9. Use the arrow keys to highlight the **Download File Name** field.
10. Enter the complete pathway and file name of the image stored on the download server.
For example: /tftpboot/100000.fl5
11. Use the arrow keys to highlight **EXECUTE** at the bottom of the screen and press ENTER. The message “RUNTIME DOWNLOAD. WILL COMMIT TO FLASH.” displays in the event message line at the top of the screen and the new image is downloaded into FLASH memory.

5.24.3 Image File Download Using BootP

Set the DLE2X-MA and DLE3X-MA to download to FLASH using BootP as follows:

1. Use the arrow keys to highlight the **Download Method** field.
2. Use the SPACE bar to select **BOOTP**.
3. Use the arrow keys to highlight the **TFTP Gateway IP Addr** field. Set the IP address of the TFTP gateway server (this defaults to the same IP address set in the TFTP Gateway IP Addr field in the General Configuration screen).
4. Use the arrow keys to highlight **EXECUTE** at the bottom of the screen and press ENTER. The message “BOOTP DOWNLOAD. WILL COMMIT TO FLASH. REBOOT IN PROGRESS...” displays in the event message line at the top of the screen and the new image is downloaded into FLASH memory.

5.25 PORT REDIRECT FUNCTION SCREEN



The Port Redirect Function screen may not be available depending on the operational mode that has been set for the module. Refer to your Release Notes to see what operational modes support the Port Redirect Function. Refer to Section 5.15.9, **Setting the Operational Mode**, for instructions on configuring the operational mode of the module.

The Port Redirect Function screen, Figure 5-30, allows the user to set each one of the ports on the DLE2X-MA and DLE3X-MA as a source or destination port. A port can be set to have one or more destination ports. For example, port 1 can be set as a source port with three destinations, ports 2, 3, and 4. Traffic from port 1 is then automatically redirected to ports 2, 3, and 4. Port 1 can also serve as a destination port for other ports. The port redirect function is extremely useful for troubleshooting purposes, as it allows traffic to be sent to a particular port(s) where, with the use of an analyzer or RMON probe, all current traffic from the source port(s) can be examined.



Although all traffic from the source port (including, if desired, errored frames) is sent to the destination port, normal switching is still performed for all frames on the source port.

Access the Port Redirect Function screen from the Module Specific Configuration Menu screen by using the arrow keys to highlight the **PORT REDIRECT FUNCTION** menu item and pressing ENTER. The Port Redirect Function screen displays.

Event Message Line

MS 700 LOCAL MANAGEMENT

Port Redirect Function

Module Type: DLE22-MA	Firmware Revision: XX.XX.XX	
Slot Number: X	BOOTPROM Revision: XX.XX.XX	

Source Port:	Destination Port:	Remap Errors:
1	2	ON
1	3	ON
1	4	ON
2	1	OFF
2	3	OFF
3	4	ON
3	5	ON
3	6	ON

Source Port [1]	Destination Port [1]	Errors [ON]	Status [ADD]
-----------------	----------------------	-------------	--------------

SAVE	NEXT	PREVIOUS	EXIT	RETURN
------	------	----------	------	---------------

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Figure 5-30 Port Redirect Function Screen

The following definitions briefly explain each field of the Port Redirect Function screen:

Source Port (Read-only)

Shows which ports are currently set as source ports.

Destination Port (Read-only)

Shows which ports are currently set as destination ports.

Remap Errors (Read-only)

Displays whether the corresponding source ports are configured to send errored frames to the destination ports, or to drop all errored frames before forwarding traffic.

Source Port [n] (Selectable)

Allows a selected port [n] to be changed to a source port.

Destination Port [n] (Selectable)

Allows a selected port [n] to be changed to a destination port.

Errors (Toggle)

Allows the user to configure the source ports to either send errored frames to selected destination ports, or to drop errored frames, and send only valid traffic to the destination ports. The default setting of this field is [ON].

Status (Selectable)

Allows you to add or delete the source and destination ports selected in the Source Port [n] and Destination Port [n] fields.

5.25.1 Displaying the Source and Destination Entries

There can be more than one Port Redirect Function screen depending on the number of port redirect entries. Each screen displays up to 10 port redirect entries. If there is more than one screen of redirect entries, the **NEXT** and/or **PREVIOUS** command is displayed at the bottom of the screen, allowing the user to navigate to either the next or previous screen.

To display the next screen, use the arrow keys to highlight **NEXT**. Press **ENTER** and the next screen of entries is displayed.

To display the previous screen, use the arrow keys to highlight **PREVIOUS**. Press **ENTER** to view the entries in the previous screen.

5.25.2 Changing Source and Destination Ports

Add or delete source port and destination port entries as follows:

1. Use the arrow keys to highlight the **Source Port** field.

2. Press the SPACE bar or BACKSPACE one or more times to increment or decrement the port number displayed in the brackets [n] until the appropriate port number is displayed.
3. Use the arrow keys to highlight the **Destination Port** field.
4. Use the SPACE bar or BACKSPACE to step to the appropriate port number for the destination port.
5. Use the arrow keys to highlight the **Status** field.
6. Use the SPACE bar to select either the **ADD** or **DEL** (delete) option. Press ENTER. This adds or deletes the port selections made in steps 2 and 4 and also updates the screen Source Port and Destination Port list.
7. Use the arrow keys to highlight the **Errors** field.
8. Use the SPACE bar to select either the **ON** or **OFF** option and press ENTER. **ON** forces the source module and port to forward errored frames to the destination module(s) and port(s). **OFF** forces the errored frames to be dropped before forwarding traffic.



If more than one port is to be redirected, repeat steps 1 through 8 for each additional setting, then go to step 9 to save all the new settings at once.

9. Use the arrow keys to highlight **SAVE** at the bottom of the screen. Press ENTER. The message “SAVED OK” is displayed. This saves the new settings and updates the Source Interface and Destination Interface read-only fields.

5.26 BROADCAST SUPPRESSION SCREEN

The Broadcast Suppression screen, Figure 5-31, allows the user to set a desired limit of receive broadcast frames per port per second.



The Broadcast Suppression screen may not be available if the operational mode of the module has been set to 802.1Q SWITCHING. Refer to your Release Notes to see what operational modes support Broadcast Suppression. Refer to Section 5.15.9, Setting the Operational Mode, for instructions on configuring the operational mode of the module.

Any broadcast frames received above the desired threshold will be dropped.

Access the Broadcast Suppression screen from the Module Specific Configuration screen by using the arrow keys to highlight the **BROADCAST SUPPRESSION** menu item and pressing ENTER. The Broadcast Suppression screen displays.

Event Message Line					
MS 700 LOCAL MANAGEMENT					
Broadcast Suppression					
Module Type: DLE22-MA			Firmware Revision: XX.XX.XX		
Slot Number: X			BOOTPROM Revision: XX.XX.XX		
PORT #	Total RX	Peak Rate	Time Since Peak	Threshold	Reset Peak
1	12345678910	150000	999:23:59	150000	[NO]
2	12345678910	150000	999:23:59	150000	[NO]
3	12345678910	150000	999:23:59	150000	[NO]
4	12345678910	150000	999:23:59	150000	[NO]
5	12345678910	150000	999:23:59	150000	[NO]
6	12345678910	150000	999:23:59	150000	[NO]
7	12345678910	150000	999:23:59	150000	[NO]
8	12345678910	150000	999:23:59	150000	[NO]
9	12345678910	150000	999:23:59	150000	[NO]
10	12345678910	150000	999:23:59	150000	[NO]
11	12345678910	150000	999:23:59	150000	[NO]
12	12345678910	150000	999:23:59	150000	[NO]
SAVE		EXIT		[13-24]	RETURN

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Figure 5-31 Broadcast Suppression Screen

The following explains each field of the Broadcast Statistics screen:

PORT # (Read-only)

Identifies the number of the port.

Total RX (Read-Only)

Displays the total number of broadcast frames received.

Peak Rate (Read-Only)

Displays the number of broadcast frames received per second.

Time Since Peak (Read-Only)

Displays the time since peak broadcast frames received.

Threshold (Modifiable)

Allows the user to set the desired limit of receive broadcast frames that will be forwarded per port per second.

Reset Peak (Modifiable)

Allows the user to reset the peak rate. Resetting the Peak Rate also resets the Time Since Peak field. The Reset Peak field toggles between YES and NO.

[1-12], or **[13-24]** (Navigation Key)

When the Broadcast Statistics screen displays, the current statistics are displayed for the first 12 ports. This field allows the user to step to a second screen for the same type of information for ports 13 through 24. While on the second screen, the user can navigate back to the first screen by selecting the **[1-12]** option. The user can change the Threshold or Reset Peak Rate fields while in the first or second screen.

5.26.1 Setting the Threshold

To set the Threshold, proceed as follows:

1. Use the arrow keys to highlight the **Threshold** field for the selected port.
2. Type in the numbers for the desired limit in increments of 10.
3. Use the arrow keys to highlight the **SAVE** command at the bottom of the screen.

4. Press ENTER. The message “SAVED OK” is displayed.

5.26.2 Setting the Reset Peak Switch

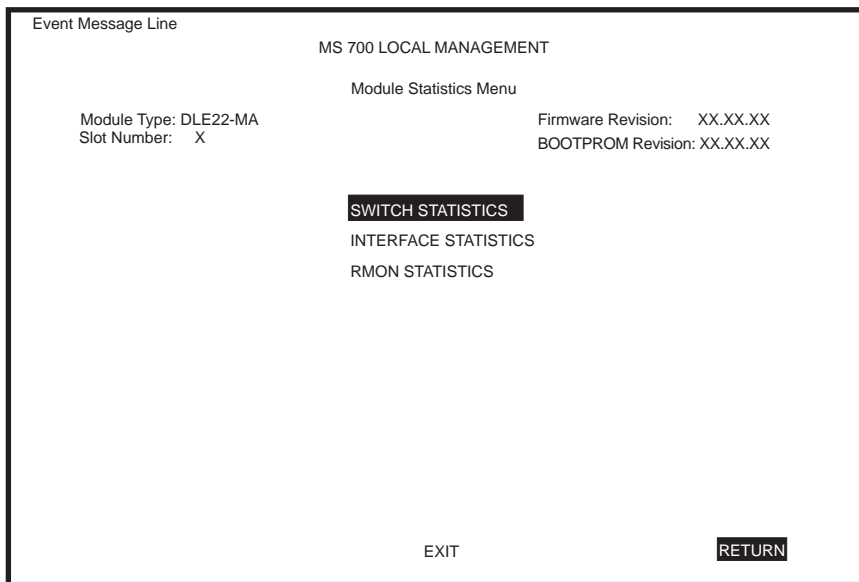
To set the Reset Peak Switch field to **YES** or **NO**, proceed as follows:

1. Use the arrow keys to highlight the **Reset Peak** field for the selected port.
2. Press the SPACE bar to select **YES** or **NO**.
3. Use the arrows keys to highlight the **SAVE** command at the bottom of the screen.
4. Press ENTER. The message “SAVED OK” is displayed.

5.27 MODULE STATISTICS MENU SCREEN

The Module Statistics Menu screen, Figure 5-32, provides access to screens that allow the user to obtain switch statistics about frame traffic through each interface, to view MIB-II statistics from each interface, and to view RMON Statistics gathered by the RMON agent embedded in the DLE2X-MA and DLE3X-MA.

Access the Module Statistics Menu from the Module Menu screen by using the arrow keys to highlight the **MODULE STATISTICS** menu item and pressing ENTER. The Module Statistics Menu screen displays.



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Figure 5-32 Module Statistics Menu Screen

The Module Statistics Menu screen displays the following menu items:

SWITCH STATISTICS

The Switch Statistics screen lists the number of frames received, transmitted, filtered, and forwarded by each interface.

INTERFACE STATISTICS

The Interface Statistics screen provides the MIB-II statistics for each switched interface, on an interface-by-interface basis.

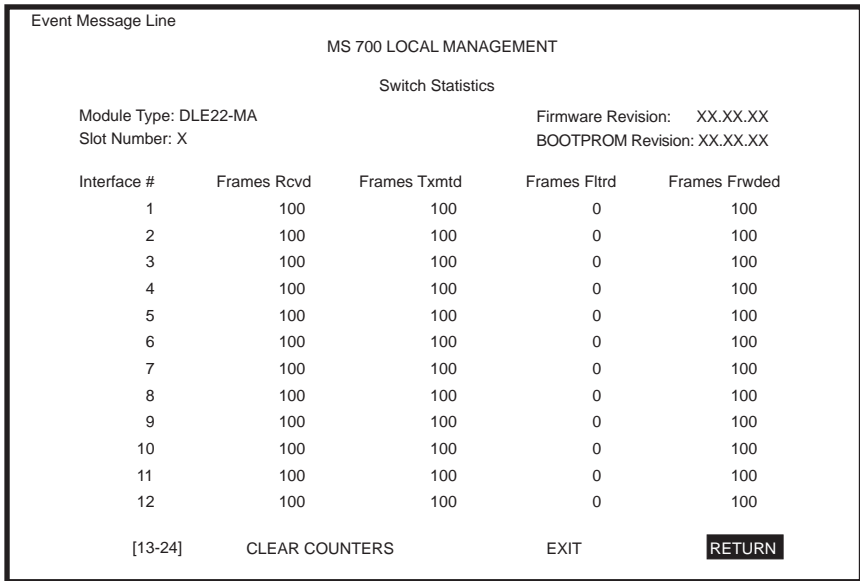
RMON STATISTICS

The RMON Statistics screen displays all the statistics gathered by the embedded RMON agent built-in to the DLE2X-MA and DLE3X-MA.

5.28 SWITCH STATISTICS SCREEN

The Switch Statistics screen, Figure 5-33, lists the number of frames received, transmitted, filtered, and forwarded by each interface, including backplane interfaces.

Access the Switch Statistics screen from the Module Statistics Menu screen by using the arrow keys to highlight the **SWITCH STATISTICS** menu item and pressing ENTER. The Switch Statistics screen displays.



The screenshot shows the 'Switch Statistics' screen. At the top, it says 'Event Message Line' and 'MS 700 LOCAL MANAGEMENT'. Below that, it displays 'Switch Statistics' and 'Module Type: DLE22-MA' with 'Slot Number: X'. To the right, it shows 'Firmware Revision: XX.XX.XX' and 'BOOTPROM Revision: XX.XX.XX'. The main part of the screen is a table with 5 columns: 'Interface #', 'Frames Rcvd', 'Frames Txmtd', 'Frames Fltrd', and 'Frames Frwded'. The table lists 12 interfaces, each with 100 frames received, 100 frames transmitted, 0 frames filtered, and 100 frames forwarded. At the bottom, there are four options: '[13-24]', 'CLEAR COUNTERS', 'EXIT', and a highlighted 'RETURN' button.

Interface #	Frames Rcvd	Frames Txmtd	Frames Fltrd	Frames Frwded
1	100	100	0	100
2	100	100	0	100
3	100	100	0	100
4	100	100	0	100
5	100	100	0	100
6	100	100	0	100
7	100	100	0	100
8	100	100	0	100
9	100	100	0	100
10	100	100	0	100
11	100	100	0	100
12	100	100	0	100

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Figure 5-33 Switch Statistics Screen

The Switch Statistics screen displays the following menu items:

Interface # (Read-Only)

Identifies the interface or port number.

Frames Rcvd (Read-Only)

Displays the number of frames received by the interface.

Frames Txmtd (Read-Only)

Displays the number of frames transmitted by the interface.

Frames Fltrd (Read-Only)

Displays the number of frames filtered by the interface.

Frames Fwrded (Read-Only)

Displays the number of frames forwarded by the interface.

[1-12], **[13-24]**, or **[25-26]** (DLE2X-MA), **[25]** (DLE3X-MA) (Selectable)

When the Switch Statistics is displayed, the statistics are displayed for the first 12 ports. These fields allow the user to step to a second or third screen for the same type of information for ports 13 through 24 or ports 25 and 26 of the DLE2X-MA and port 25 (HSIM) of the DLE3X-MA. While on the second or third screen, the user can navigate back to earlier screens by highlighting the **[1-12]** and/or **[13-24]** fields and pressing ENTER.

CLEAR COUNTERS (Command)

This command is used to reset all statistic counters to zero. For details on how to use this field, refer to Section 5.28.1.

5.28.1 Using the Clear Counters Command

To reset all the statistics counters to zero, perform the following steps:

1. Use the arrow keys to highlight the **CLEAR COUNTERS** field.
2. Press ENTER, the counters for the selected port are reset to zero.

5.29 THE INTERFACE STATISTICS SCREEN

The Interface Statistics screen is used to gather MIB-II statistics for all of the DLE2X-MA and DLE3X-MA interfaces (ports 1 through 24 and Fast Ethernet Interface Modules and all backplane interfaces) with the exception of an HSIM installed in the DLE3X-MA.



The MultiSwitch HSIMs gather their own statistics, and may be viewed via the Local Management screens of the applicable HSIM. Refer to your HSIM documentation for information on how to access these screens.

Access the Interface Statistics screen by using the arrow keys to highlight the **INTERFACE STATISTICS** menu item on the Module Statistics Menu screen and pressing ENTER. The Interface Statistics screen, Figure 5-34, displays.

```
Event Message Line

                                MS 700 LOCAL MANAGEMENT

                                Interface Statistics

Module Type: DLE22-MA           Firmware Revision: XX.XX.XX
Slot Number: X                 BOOTPROM Revision: XX.XX.XX

Interface:1                    Name: Ethernet Frontpanel

InOctets:                      7500456      Address:          00-00-00-00-00-00
InUnicast:                     6789       Last Change:     xx days 00:00:00
InNonUnicast:                  0        Admin Status:    Up
InDiscards:                    0        Oper Status:     Down
InErrors:                      0
InUnknownProtos:              0        MTU:             1514
OutOctets:                     0        Speed:           100000000
OutUnicast:                    0
OutNonUnicast:                 0
OutDiscards:                   0        Link Status:     No Link
OutErrors:                     0        Duplex Mode:     Standard
OutQLen:                       0

Interface: [XX]                CLEAR COUNTERS      EXIT      RETURN
```

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Figure 5-34 Interface Statistics Screen

The following definitions explain each field of the Interface Statistics screen:

Interface (Read-only)

This field displays the Interface number for which statistics are currently being displayed. Figure 5-34 shows the Interface field displaying 1. This represents port 1 of the module. To view other interface statistics, refer to Section 5.29.1.

Name (Read-only)

The Name field displays the type of interface for which statistics are being displayed.

InOctets (Read-only)

This field displays the total number of octets (bytes) that have been received on the interface. This includes all octets from bad frames, and framing characters.

InUnicast (Read-only)

The InUnicast field displays the total number of frames that have been received that were sent to a single address.

InNonUnicast (Read-only)

This field displays the total number of frames that have been received that were delivered to a broadcast or multicast address.

InDiscards (Read-only)

The InDiscards field displays the total number of inbound frames that were discarded, even though the frames contained no errors. This field may increment because the switch needed to free up buffer space, or the switch was being overutilized.

InErrors (Read-only)

This field displays the total number of inbound frames that have been discarded because they contained errors. This field represents the total number of errored frames, regardless of the cause of the error.

InUnknownProtos (Read-only)

The InUnknownProtos field displays the total number of frames that were discarded because the frames were in an unknown, or unsupported, format.

OutOctets (Read-only)

This field displays the total number of octets (bytes) that have been transmitted from the interface.

OutUnicast (Read-only)

The OutUnicast field displays the total number of packets transmitted that were sent to a single address.

OutNonUnicast (Read-only)

This field displays the total number of frames transmitted to a broadcast or multicast address.

OutDiscards (Read-only)

The OutDiscards field displays the total number of outbound frames that were discarded, even though the frames contained no errors. This field may increment, because the switch needed to free up buffer space, or the switch was being overutilized.

OutErrors (Read-only)

This field displays the total number of outbound frames discarded because they contained errors. This field represents the total number of errored frames, regardless of the cause of the error.

OutQLen (Read-only)

The OutQLen field displays the length of the packet queue. The field represents the total number of packets that can be contained in the queue.

Address (Read-only)

This field displays the MAC Address of the interface that is currently being displayed.

Last Change (Read-only)

This field displays the last time that the interface was reset.

Admin Status (Read-only)

This field displays the current status of the interface. If this field displays “Testing”, no frames may be passed on this interface.

Oper Status (Read-only)

This field displays the current status of the interface. If this field displays “Testing”, no frames may be passed on this interface.

MTU (Read-only)

The MTU field displays the maximum frame size (in octets) that a frame may contain to be received or transmitted from this interface.

Speed (Read-only)

The Speed field displays the theoretical maximum amount of bandwidth that the interface can support in bits per second.

Link Status (Read-only)

This field displays the current link status of the interface. This field will read either “Link” or “No Link”.

Duplex Mode (Read-only)

This field indicates whether the interface is operating in normal or full duplex mode. This field will read either “Standard” or “Full Duplex”.

Interface [XX] (Command)

This command is used to enter an interface number for viewing statistics. For instructions on how to use this command, refer to Section 5.29.1.

CLEAR COUNTERS (Command)

This command is used to reset all statistic counters to zero. For details on how to use this field, refer to Section 5.29.2.

5.29.1 Displaying Interface Statistics

To display the statistics for any interface, proceed as follows:

1. Use the arrow keys to highlight the **Interface [XX]** field at the bottom of the screen.
2. Press the SPACE bar to increment (or press the DEL (delete) key to decrement) the interface number.
3. Press ENTER (neither the **Interface #** fields nor the statistics will change until ENTER is pressed).

5.29.2 Using the Clear Counters Command

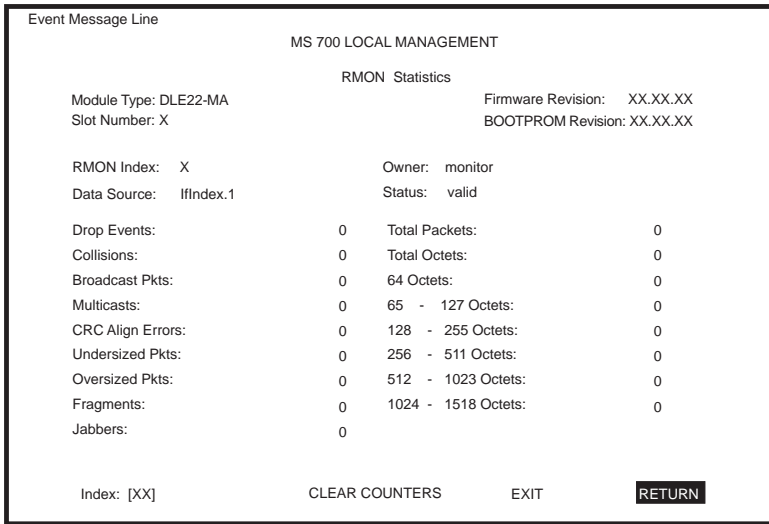
To reset all the statistics counters of the selected interface to zero, perform the following steps:

1. Use the arrow keys to highlight the **CLEAR COUNTERS** command.
2. Press ENTER, the counters for the selected interface are reset to zero.

5.30 RMON STATISTICS SCREEN

RMON statistics for each interface, on a interface-by-interface basis, are viewed through the RMON Statistics screen shown in Figure 5-35.

Access the RMON Statistics screen by using the arrow keys to highlight the **RMON STATISTICS** menu item on the Module Statistics Menu screen and pressing ENTER. The RMON Statistics screen displays.



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Figure 5-35 RMON Statistics Screen



The RMON Statistics screen provides statistics for all front panel Ethernet interfaces, and any Fast Ethernet Interface Modules installed in the DLE2X-MA. RMON Statistics are not gathered for an HSIM installed in the DLE3X-MA.

The following definitions explain each field of the RMON Statistics screen:

RMON Index (Read-only)

This field displays the current Ethernet interface for which statistics are being shown. The DLE2X-MA and DLE3X-MA have an embedded RMON agent that gathers statistics for each interface on the module.

Data Source (Read-only)

This field displays the source of the statistics data that is currently being displayed on the screen. Figure 5-35 shows that the data source for this RMON index is Interface 1 (port 1) by displaying the name IfIndex.1. If the screen was displaying RMON statistics for Interface 22 (port 22), the name displayed would be IfIndex.22.

Owner (Read-only)

This field displays the name of the entity that configured this entry.

Status (Read-only)

The Status field displays the current operating status of the displayed interface. This field will display “Valid” or “Invalid”.

Drop Events (Read-only)

This field displays the total number of times that the RMON agent was forced to discard frames due to the lack of available switch resources.



The Drop Events field does not display the number of frames dropped, it only displays the number of times that the RMON agent was forced to discard frames.

Collisions (Read-only)

This field displays the total number of collisions that have occurred on this interface.

Broadcast Pkts (Read-only)

The Broadcast Pkts field displays the total number of good frames that were directed to the broadcast address. The value of this field does not include multicast frames.

Multicasts (Read-only)

The Multicasts field displays the total number of good frames received that were directed to a multicast address. The value of this field does not include frames directed to the broadcast address.

CRC Align Errors (Read-only)

This field displays the number of frames with bad Cyclic Redundancy Checks (CRC) received from the network. The CRC is a 4-byte field in the data frames that ensures that the data received is the same as the data that was originally sent.

Undersized Pkts (Read-only)

The Undersized Pkts field displays the number of frames received whose size was less than the minimum Ethernet frame size of 64 bytes, not including preamble, but have a valid CRC.

Oversized Pkts (Read-only)

The Oversized Pkts field displays the number of frames received whose size exceeded 1518 data bytes, not including preamble, but have a valid CRC.

Fragments (Read-only)

This field displays the number of received frames that are not the minimum number of bytes in length or received frames that had a bad Frame Check Sequence (FCS), were less than 64 bytes in length (excluding framing bits, but including FCS bytes), and have an invalid CRC.



It is normal for the Fragments field to increment. This is because the RMON agent increments the field when runts are detected (which are normal occurrences due to collisions) and when noise hits occur.

Jabbers (Read-only)

This field displays the total number of frames that were greater than 1518 bytes and had either a bad FCS or a bad CRC.

Total Packets (Read-only)

This field displays the total number of frames (including bad frames, broadcast frames, and multicast frames) received on this interface.

Total Octets (Read-only)

This field displays the total number of octets (bytes) of data, including those in bad frames, received on this interface.

64 Octets (Read-only)

Displays the total number of frames including bad frames, received that were 64 bytes in length (excluding framing bits, but including FCS bytes).

65 - 127 Octets (Read-only)

Displays the total number of frames, including bad frames, received that were between 65 and 127 bytes in length (excluding framing bits, but including FCS bytes).

128 - 255 Octets (Read-only)

Displays the total number of frames, including bad frames, received that were between 128 and 255 bytes in length (excluding framing bits, but including FCS bytes).

256 - 511 Octets (Read-only)

Displays the total number of frames, including bad frames, received that were between 256 and 511 bytes in length (excluding framing bits, but including FCS bytes).

512 - 1023 Octets (Read-only)

Displays the total number of frames, including bad frames, received that were between 512 and 1023 bytes in length (excluding framing bits, but including FCS bytes).

1024 - 1518 Octets (Read-only)

Displays the total number of frames, including bad frames, received that were between 1024 and 1518 bytes in length (excluding framing bits, but including FCS bytes).

Index [XX] (Command)

This command is used to enter an index number for viewing statistics. For instructions on how to use this command, refer to Section 5.30.1.

CLEAR COUNTERS (Command)

This command is used to reset all statistic counters to zero. For details on how to use this field, refer to Section 5.30.2.

5.30.1 Displaying RMON Statistics

To display the statistics for any index, proceed as follows:

1. Use the arrow keys to highlight the **Index [XX]** field at the bottom of the screen.
2. Press the SPACE bar to increment (or press the DEL [delete] key to decrement) the index number.
3. Press ENTER (neither the **RMON Index** field nor the statistics will change until ENTER is pressed).

5.30.2 Using the Clear Counters Command

To reset all the statistics counters of the selected interface to zero, perform the following steps:

1. Use the arrow keys to highlight the **CLEAR COUNTERS** field.
2. Press ENTER, the counters for the selected index are reset to zero.

5.31 NETWORK TOOLS

The Network Tools function resides on both the DLE2X-MA and DLE3X-MA and allows the user to access and manage network devices.

Access the Network Tools screen by using the arrow keys to highlight the **NETWORK TOOLS** menu item in the Module or Chassis Menu screen and pressing ENTER. The Network Tools screen displays.

Figure 5-36 Network Tools Help Screen

```

Welcome to Network Tools

-> help

Commands Available to User

Built in Commands:

arp          bridge      defroute
netstat      ping        reset
show         traceroute

soft_reset   telnet      link_trap

atm_stp_state

SPECIAL:
done, quit, or exit - Exit from the Network Tools.
For help with a specific command, type 'help <command>'.

->

```

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The Network Tools functions are performed using a series of commands. Entering commands in Network Tools involves typing the command to be executed at the Network Tools prompt, adding any desired or required extensions, and pressing ENTER.

There are two categories of commands in the command set.

- Built-in Commands – Allow the user to access and manage network devices. The commands are **arp**, **bridge**, **defroute**, **netstat**, **ping**, **reset**, **show**, **traceroute**, **soft_reset**, **telnet**, **link_trap**, and **atm_stp_state**.

- Special Commands – Allow the user to exit from Network Tools. The commands are **done**, **exit**, and **quit**.



The conventions used in describing the commands in Network Tools are as follows:

Arguments enclosed by [] are required.

Arguments enclosed by < > are optional.

In the following command examples, the information entered by the user is shown in **bold** Helvetica font.

To abort the output or interrupt a process, press the CONTROL key and c key simultaneously, designated as ^C here.

The commands are presented in the following format:

command:

Syntax:	Shows the required command format. It indicates where arguments, if any, must be specified.
Description:	Briefly describes the command and its uses.
Options:	Lists any additional fields in the appropriate format that may be added to the command.
Example:	Shows an example of the command.

5.31.1 Built-in Commands

The built-in commands listed in this section activate functions on the managed device or devices being accessed through Network Tools.

arp:

Syntax:	arp <options>
Description:	The arp command provides access to the ARP (Address Resolution Protocol) cache, enabling you to view cache data, delete entries, or add a

static route. Super-User access is required to delete an entry or add a static route.

Each ARP cache entry lists the network *interface* that the device is connected to, the device's *network address* or IP address, the device's *physical address* or MAC address, and the *media type* of connection to the device. Media types are displayed as numbers, which stand for the following states:

- 1 - Other
- 2 - Invalid entry (cannot ping device, timed out, etc.)
- 3 - Dynamic route entry
- 4 - Static route entry (not subject to change)

You can specify the arp command without options, or with one of the following options:

Options:

- a Views cache data
- d Deletes an IP address entry. Requires additional arguments: <Interface Number> <IP address>
- s Adds a static entry. Requires additional arguments: <Interface Number> <IP address> <MAC address>
- f Flushes the ARP cache

Example:

```
-> arp -a
# Interface      Network Address  Physical Address  Media Type
# (SonicInt)    122.144.40.111  00.00.0e.12.3c.04 3(dynamic)
# (SonicInt)    122.144.48.109  00.00.0e.f3.3d.14 3(dynamic)
# (SonicInt)    122.144.52.68   00.00.0e.12.3c.04 3(dynamic)
# (SonicInt)    122.144.21.43   00.00.0e.03.1d.3c 3(dynamic)

-> arp -d 1 122.144.52.68

-> arp -s 1 22.44.2.3 00:00:0e:03:1d:3c

-> arp -f
```

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bridge:

Syntax: bridge [ENABLE/DISABLE] [IFNUM/ALL]

Description: The bridge command allows each bridge port to be enabled or disabled at the user's request, either one at a time or all at once. Specifying a single interface number will affect the bridging status of that interface, while specifying ALL will affect every interface.

Options: Not Applicable

Example:

```
-> bridge disable all  
  
-> bridge enable 1  
  
-> bridge disable 1
```

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defroute:

Syntax: defroute [interface number] [IP address]

Description: The defroute command allows the user to view, set or delete the default IP route to a managed device through the specified interface.

Options: Not Applicable

Example:

```
-> defroute 2 147.152.42.32
    # Default route is 147.152.42.32 on interface 2
-> defroute
    # Default route is 147.152.42.32 on interface 2
-> defroute delete
    # Default route is not currently set.
->
```

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netstat:

Syntax: netstat [option]

Description: The netstat command provides a display of general network statistics for the managed device. The netstat command must be used with one of the two display options.

Options:

- i Displays status and capability information for each interface
- r Displays routing information for each interface

Example:

```

-> netstat -i
Interface + Description      MTU      Speed      Admin  Oper  MAC Addr
# 1 (ethernet - csmacd)    1514     10000000  up     up    0x00 0x00 0x1d 0x07 0x50 0x0e
# 2 (ethernet - csmacd)    1514     10000000  up     up    0x00 0x00 0x1d 0x07 0x50 0x0f
# 3 (ethernet - csmacd)    1514     10000000  up     up    0x00 0x00 0x1d 0x07 0x50 0x10
# 4 (ethernet - csmacd)    1514     10000000  up     up    0x00 0x00 0x1d 0x07 0x50 0x11

-> netstat -r
Destination                Next-hop                Interface
# Default Route            DirectConnection        1
# 134.141.0.0              DirectConnection        2
# 134.141.0.0              DirectConnection        3

```

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ping:

Syntax: ping [IP address]

Description: The ping command generates an outbound ping request to check the status (alive/not alive) of a device at a specified IP address.

Options: Not Applicable

Example:

```
-> ping 122.144.40.10
122.144.40.10 is alive
```

051471

reset:

Syntax: reset

Description: The reset command allows a soft reset of the device. The user will be queried to confirm the reset command to insure against unwanted resets.



The Network Tools connection to the module will be terminated upon execution of this command.

Options: Not Applicable

Example:

```
-> reset
```

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show:

Syntax: show [PROTOCOL] [TABLE]

Description: The show command displays information concerning various components of the device. Protocols currently supported are IP, IPX, DECnet, and AppleTalk. Components of those protocols that are currently supported are ARP caches, route tables, FIB tables, server tables, and interface tables. The number of valid entries in the table will be displayed at the end of the table display.

Options: Not Applicable

Example:

```
-> show Appletalk interfaces
```

# Interface	AdminStatus	OperStatus	MTU	Forwarding	Framing
# 1	enabled	enabled	1500	enabled	ethernet
# 2	disabled	disabled	1500	disabled	ethernet

```
-> show IP ARP
```

# Interface	MediaType	PhysicalAddress	NetworkAddress
# 3	3 (dynamic)	00:00:1d:04:40:5d	123.456.40.1
# 4	3 (dynamic)	08:00:20:0e:d8:31	123.456.40.30

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traceroute:

Syntax: traceroute [IP address]

Description: The traceroute command generates a TRACEROUTE request to a specified IP address and provides a display of all next-hop routers in the path to the device. If the device is not reached, the command displays all next-hop routers to the point of failure.

Options: Not Applicable

Example:

```
-> traceroute 122.144.11.52

# next-hop[0] : 122.144.60.45
# next-hop[1] : 122.144.8.113
# next-hop[2] : 122.144.61.45
# 122.144.11.52 is alive : 3 hops away.
```

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soft_reset:

Syntax: soft_reset

Description: This command restarts the software image, which restores the user configuration settings from NVRAM. The user will be queried to confirm the reset command to ensure against unwanted resets.



The Network Tools connection to the module will be terminated upon execution of this command.

Options: Not Applicable

Example:

```
-> soft-reset
```

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telnet:

Syntax: telnet [IP address] [Port #]

Description: The telnet command allows the user to communicate with another host (that supports Telnet connections) using the Telnet protocol. The user must specify the remote host using its IP address. The [IP address] field is mandatory. If no Port number is specified, telnet will attempt to contact the host at the default port.

Options: [Port #]

Example:

```
-> telnet 134.141.12.345
Trying 134.141.12.345
Connected to 134.141.12.345

SunOS UNIX (server)

login:
```

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link_trap:

Syntax: link_trap [enable/disable/status] [PORT/all]

Description: The link_trap command allows link traps to be enabled or disabled when specifying a single port, or simultaneously when specifying “all” or no ports. When one or all ports are specified to enable, disable, or find their status, their current condition is displayed.

Options: Not Applicable

Example:

```
-> link_trap status
LINK TRAP STATUS:

Port 1 is ENABLED      Port 2 is DISABLED
Port 3 is ENABLED      Port 4 is ENABLED

-> link_trap disable 2
link traps have been DISABLED on port 2

-> link_trap disable all
link traps have been DISABLED on all ports (1-24)

-> link_trap status 3
link traps are ENABLED on port 3
```

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atm_stp_state:



The **atm_stp_state** command is only available if an DLEHA-UA is installed in the module (e.g., DLE3X-MA). This command allows the user to enable, disable, or check the current status of the Spanning Tree Algorithm on all ATM interfaces.

Syntax: atm_stp_state [STATE]

Description: The atm_stp_state command allows the user to enable, disable, or check the status of the Spanning Tree Algorithm on all ATM interfaces. The user must specify the STATE option as enable, disable, or status. The STATE field is mandatory.

Options: enable, disable, status

Example:

```
-> atm_stp_state status
Atm Stp is Enabled

-> atm_stp_state disabled

-> atm_stp_state enabled
```

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5.31.2 Special Commands

done, quit, exit:

Syntax: done

Description: The done command enables the user to exit from Network Tools and return to the Main Menu screen.

Options: Not Applicable

Example:

```
-> done  
Connection closed
```

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APPENDIX A

SPECIFICATIONS

This appendix provides operating specifications for the DLE32-MA, DLE22-MA, DLE33-MA and DLE23-MA Interface Modules. Cabletron Systems reserves the right to change these specifications at any time without notice.

A.1 DEVICE SPECIFICATIONS

Processor:	Intel i960 RISC processor control
Dynamic Random Access Memory (DRAM):	16 MB
FLASH Memory:	4 MB

A.2 PHYSICAL PROPERTIES

Dimensions:	43.87 H x 5.71 W x 27.88 D (cm) 18.28 H x 2.38 W x 11.62 D (in)
Weight (Unit):	2.72 kg (6 lb)
MTBF (Predicted):	200,000 hours

A.3 ENVIRONMENTAL REQUIREMENTS

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

A.4 INPUT/OUTPUT PORTS

DLE22-MA

Ports 1 through 24	Ethernet (10BASE-T compliant) with RJ45 type connectors.
Slots for optional Fast Ethernet Interface Modules (ports 25 and 26)	Slots accept three types of optional Fast Ethernet Interface Modules: the DELTX-UI, DELFX-UI and the DELF3-UI.

DLE32-MA

Ports 1 through 24	Ethernet (10BASE-T compliant) with RJ45 type connectors.
Slot for optional HSIM	Slot accepts optional High Speed Interface Module (HSIM).

DLE23-MA

Ports 1 through 24	Ethernet (10BASE-T compliant) with RJ21 type connectors.
Slots for optional Fast Ethernet Interface Modules (ports 25 and 26)	Slots accept three types of optional Fast Ethernet Interface Modules: the DELTX-UI, DELFX-UI and the DELF3-UI.

DLE33-MA

Ports 1 through 24	Ethernet (10BASE-T compliant) with RJ21 type connectors.
Slot for optional HSIM	Slot accepts optional High Speed Interface Module (HSIM).

A.5 COM PORT PINOUT ASSIGNMENTS

The COM port is a serial communications port that supports Local Management or connection to a UPS.

The COM port has the following pin assignments:

Table A-1 COM Port Pin Assignments

Pin	Signal Name	Input/Output
1	Transmit Data (XMT)	Output
2	Data Carrier Detect (DCD)	Output
3	Data Set Ready (DSR)	Input
4	Receive Data (RCV)	Input
5	Signal Ground (GND)	NA
6	Data Terminal Ready (DTR)	Output
7	Request to Send (RTS)	Input
8	Clear to Send (CTS)	NA

A.6 REGULATORY COMPLIANCE

Safety

The DLE2X-MA and DLE3X-MA meet the safety requirements of UL 1950, CSA C22.2 No. 950, EN 60950, IEC 950 and 73/23/EEC.

Electromagnetic Compatibility (EMC)

The DLE2X-MA and DLE3X-MA meet the requirements of FCC Part 15, EN 50082-1, EN 55022, VCCI V-3, CSA C108.8, and 89/336/EEC, BCIQ.

APPENDIX B

DELTX-UI, DELFX-UI AND DELF3-UI SPECIFICATIONS

The DLE2X-MA supports three Fast Ethernet Interface Modules:

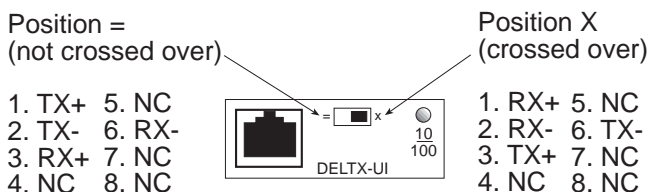
- DELTX-UI
- DELFX-UI
- DELF3-UI

This appendix provides the specifications for these modules.

B.1 DELTX-UI

The DELTX-UI uses an RJ45 connector supporting Unshielded Twisted Pair (UTP) 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 in both positions.



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Figure B-1 DELTX-UI Pinouts

B.2 DELFX-UI

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

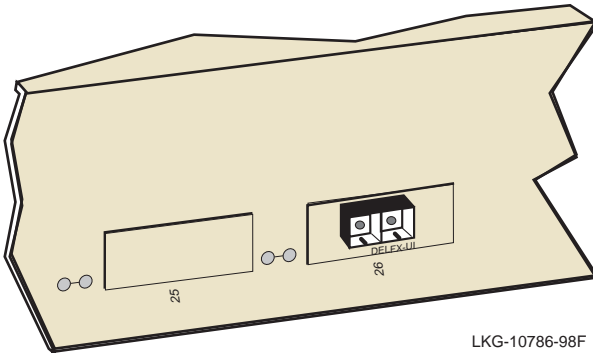


Figure B-2 DELFX-UI

Table B-1 Transmitter Power

Cable Type	Worst Case Budget	Typical Budget
50/125 μm fiber	6.0 dB	9.0 dB
62.5/125 μm fiber	9.0 dB	12.0 dB
100/140 μm fiber	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 DELF3-UI

The DELF3-UI shown in uses an SC style connector that supports single mode fiber optic cabling. Specifications for the DELF3-UI are listed in Table B-2 below.

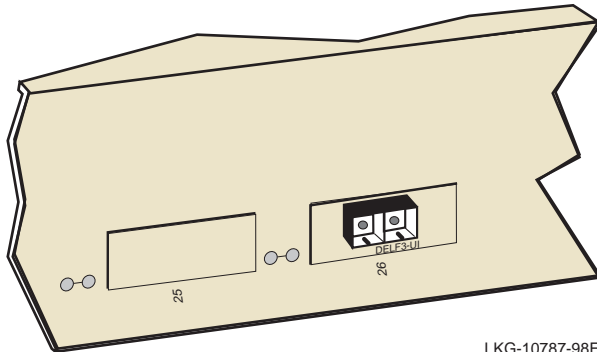


Figure B-3 DELF3-UI

Table B-2 Transmitter Power

Cable Type	Worst Case Budget	Typical Budget
8/125 μm fiber	>10.0 dB	<10.0 dB
12/125 μm fiber	>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.

APPENDIX C

MODE SWITCH BANK SETTINGS AND OPTIONAL INSTALLATIONS

This appendix covers the following items:

- Required tools (Section C.1)
- Locations, functions, and settings for the mode switches (Section C.2)
- Installing Optional Fast Ethernet Interface Modules (Section C.3)

C.1 REQUIRED TOOLS

You need the following tools to perform the procedures provided in this appendix:

- Antistatic wrist strap (provided with DLM6C-AA chassis)
- Phillips screwdriver

C.2 SETTING THE MODE SWITCH



The following procedures may also be performed through Local Management. The mode switches should only be used if it is not possible to make a Local Management connection. Refer to Chapter 5, **Local Management**, for instructions on how to perform these tasks.

These mode switches are set at the factory and do not need to be changed unless you intend to perform the following:

- Force download a new image file from a BootP server.
- Clear NVRAM and restore all user-entered parameters such as the IP address and subnet masks to the DLE2X-MA and DLE3X-MA “Default” configuration settings.
- Clear user-entered passwords stored in NVRAM and restore the default passwords.

Figure C-1 shows the location of the mode switches and the switch settings for normal operation.

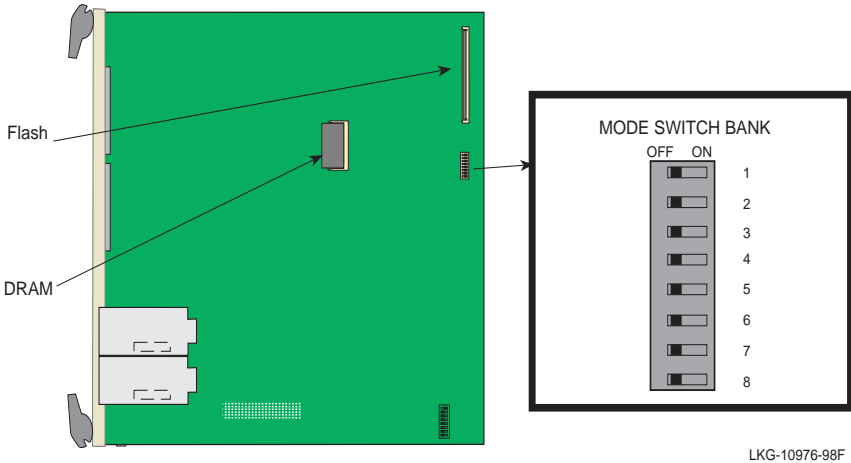


Figure C-1 DLE2X-MA and DLE3X-MA Mode Switch Location/Component Layout

Switch definitions and positions are as follows:

- Switches 1 through 4 – For Digital Equipment Corporation use only.
- Switch 5 – COM Port Autobaud. The default (OFF) position enables Autobaud sensing on the COM port for Local Management sessions. Changing the switch to the ON position disables Autobaud sensing and sets the COM port to 9600 baud for Local Management sessions.
- Switch 6 – Forced BootP. Changing the position of this switch (i.e., moving the switch from one position to the other) clears download information from NVRAM and forces the DLE2X-MA and DLE3X-MA to download a new image file from a BootP server after power to the chassis is restored, or the RESET button is pressed.



After changing the position of switch 6, DO NOT reapply power to the chassis or reset the module until there is a station acting as a BootP server, which contains the image file.

- Switch 6 – After changing the position of switch 6 and restarting the module, the DLE2X-MA and DLE3X-MA request a new image download until they either receive a new image or the RESET button on the front panel is pressed. When the RESET button is pressed, the DLE2X-MA and DLE3X-MA continue trying to contact a BootP server, but will time out in approximately one minute. If the module times out, the image is downloaded from its FLASH memory.
- Switch 7 – Clear NVRAM. Changing the position of this switch resets NVRAM on either the next power up or the next operation of the front panel RESET switch. ALL user-entered parameters, such as IP addresses, subnet masks, SNMP traps, and bridging functions are restored to their factory default settings.
- Switch 8 – Reset Password/Community Strings. Changing the position of this switch clears only the user-entered passwords stored in NVRAM, and restores the default passwords. Once the DLE2X-MA and DLE3X-MA are reset, the passwords can either be reentered or the default passwords (Public and ENTER) may be used.



Do not change the position of switch 8 unless it is necessary to reset the module super-user configured passwords to their factory default settings.

C.3 INSTALLING OPTIONAL FAST ETHERNET INTERFACE MODULES

Figure C-2 shows the location of the Fast Ethernet Interface Module connectors on the DLE2X-MA board for port slots 25 and 26.



For instructions on installing a High Speed Interface Module (HSIM) in the DLE3X-MA, refer to the applicable HSIM documentation.

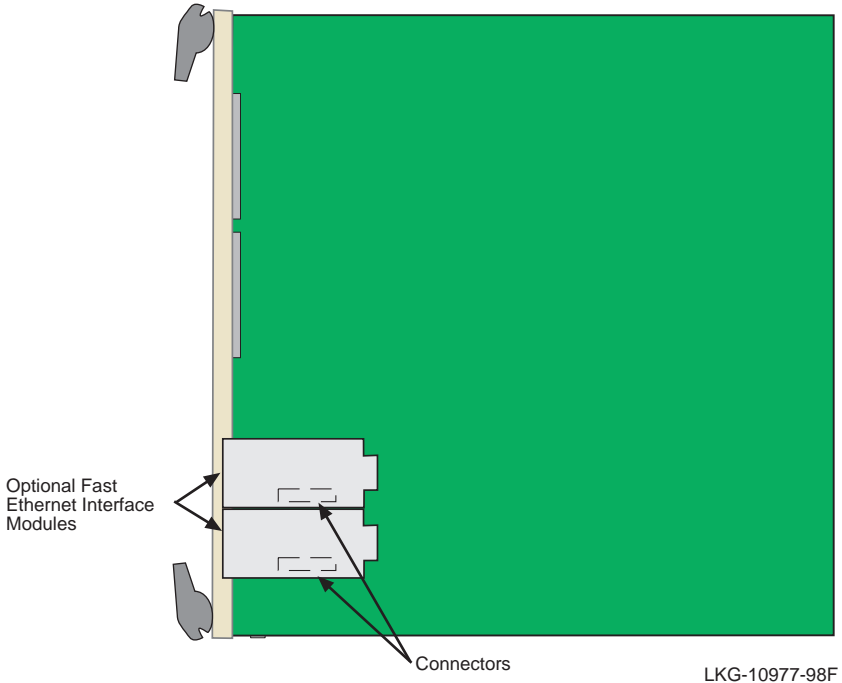


Figure C-2 Fast Ethernet Interface Module Connector Location

To install a Fast Ethernet Interface Module in port slot 25 or 26 of the DLE2X-MA, proceed as follows:



The Fast Ethernet Interface Module 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 damage the Fast Ethernet Interface Module or the host module.



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.

1. Remove the coverplate from the port slot where the Fast Ethernet Interface Module will be installed.



When installing Fast Ethernet Interface Modules in both port slots 25 and 26, remove the coverplates from both slot openings. In the following instructions, the optional module is shown being installed in port slot 26.

To remove a coverplate, refer to Figure C-3 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.

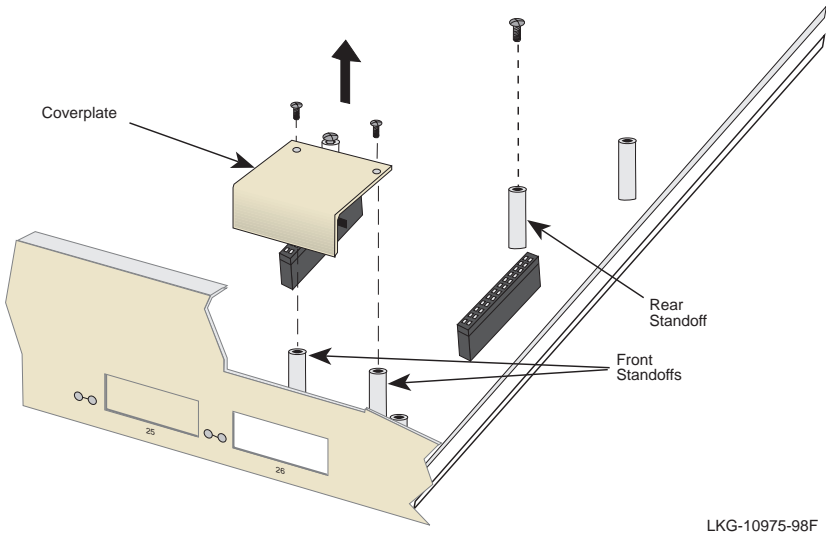


Figure C-3 Coverplate Removal

2. Remove the screw from the rear standoff. Save the screw.

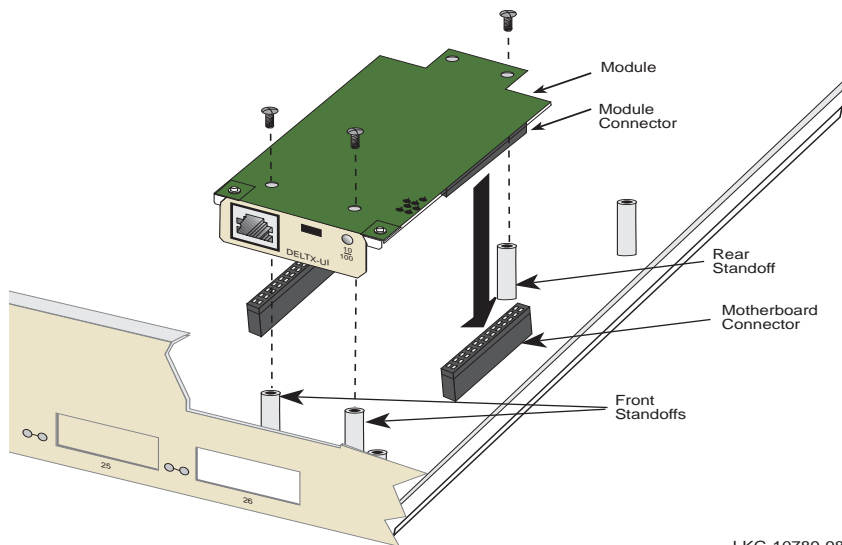


When installing an DELFX-UI or DELF3-UI module into the host module, remove the rubber plug on the SC connector before proceeding.

3. Refer to Figure C-4. Gently pull the faceplate of the host module forward to allow room for the Fast Ethernet Interface Modules to be aligned over the connector.
4. Carefully lower the Fast Ethernet Interface Module onto the standoffs while inserting the module connector into the associated motherboard connector.



When inserting the Fast Ethernet Interface Module into the motherboard connector ensure that the pins do not bend, as this can damage both the Fast Ethernet Interface Module and the motherboard connector.



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Figure C-4 Installing the Fast Ethernet Interface Module

5. Press down firmly on the Fast Ethernet Interface Module until the pins slide all the way into the motherboard connector. Ensure that the Fast Ethernet Interface Module seats flush on the standoffs.
6. Secure the Fast Ethernet Interface Module with the screws saved in steps 1 and 2.
7. Installation is complete.

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