SEHI-22FL
INTELLIGENT STACKABLE HUB
USER'S GUIDE

HubStack 10BASE-FL HUB with LANVIEW® Secure
SEHI-22FL

CABLETRON
SYSTEMS
The Complete Networking Solution™

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CHAPTER 1
INTRODUCTION

Welcome to the Cabletron Systems **SEHI-22FL Intelligent Stackable Hub User's Guide**. This manual provides installation instructions and reference information for the SEHI-22FL.

NOTE

The term SEHI (Stackable Ethernet Hub with Intelligence) is used throughout this manual when describing the features and functions of the SEHI-22FL.

1.1   USING THIS MANUAL

Read through this manual to gain an understanding of the features and capabilities of the SEHI. A general knowledge of Ethernet and IEEE 802.3 type data communications networks and their physical layer components is helpful when installing the SEHI.

Chapter 1, **Introduction**, outlines the contents of this manual, describes document conventions, provides getting help information and concludes with a list of related manuals.

Chapter 2, **SEHI Features and Options**, details the features of the SEHI and provides information about available options including EPIMs (Ethernet Port Interface Modules) and HubSTACK interconnect cables.

Chapter 3, **Installation Requirements and Specifications**, describes installation requirements, network guidelines, and SEHI operating specifications.

Chapter 4, **Installation**, contains instructions for installing the SEHI as a stackable or standalone hub.

Chapter 5, **Connecting to the Network**, explains how to connect the SEHI to the network using the various media types.

Chapter 6, **Troubleshooting**, describes how to use the LANVIEW LEDs to troubleshoot network problems.

Chapter 7, **Local Management**, describes how to use SEHI Local Management screens and the available commands.

Appendix A, **EPIM Information**, provides specifications, cabling information, and switch settings for the Ethernet Port Interface Modules.

Appendix B, **Image File Download Using OIDs**, provides instructions for setting up a TFTP server and downloading image files to the SEHI by setting specific MIB OID strings.

1.2   DOCUMENT CONVENTIONS

The following conventions are used throughout this document:

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

Tip symbol. Conveys helpful hints concerning procedures or actions.

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

Warning symbol. Warns against an action that could result in equipment damage, personal injury or death.

1.3 GETTING HELP

If you need additional support related to this device, or if you have any questions, comments, or suggestions concerning this manual, contact Cabletron Systems Technical Support:

By phone	(603) 332-9400
	Monday – Friday; 8 A.M. – 8 P.M. Eastern Time
By CompuServe	GO CTRON from any ! prompt
By Internet mail	support@ctron.com
By FTP	ctron.com (134.141.197.25)
Login	*anonymous*
Password	*your email address*

Before calling Cabletron Systems Technical Support, 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 serial and revision numbers of all Cabletron Systems products in the network

• The device history (i.e., have you returned the device before, is this a recurring problem, etc.)

• Any previous Return Material Authorization (RMA) numbers

1.4   RELATED MANUALS

Use the Cabletron Systems *SEH-22FL Stackable Hub User's Guide* to supplement the procedures and other technical data provided in this manual. The procedures contained in the *SEH-22FL Stackable Hub User's Guide* are referenced where appropriate, but not repeated in this manual.

CHAPTER 2

SEHI FEATURES AND OPTIONS

This chapter provides an overview of the SEHI-22FL and contains sections detailing features and available options.
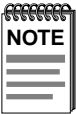
NOTE

The term SEHI (Stackable Ethernet Hub with Intelligence) is used throughout this manual when describing features and functions of the SEHI-22FL.

FRONT VIEW
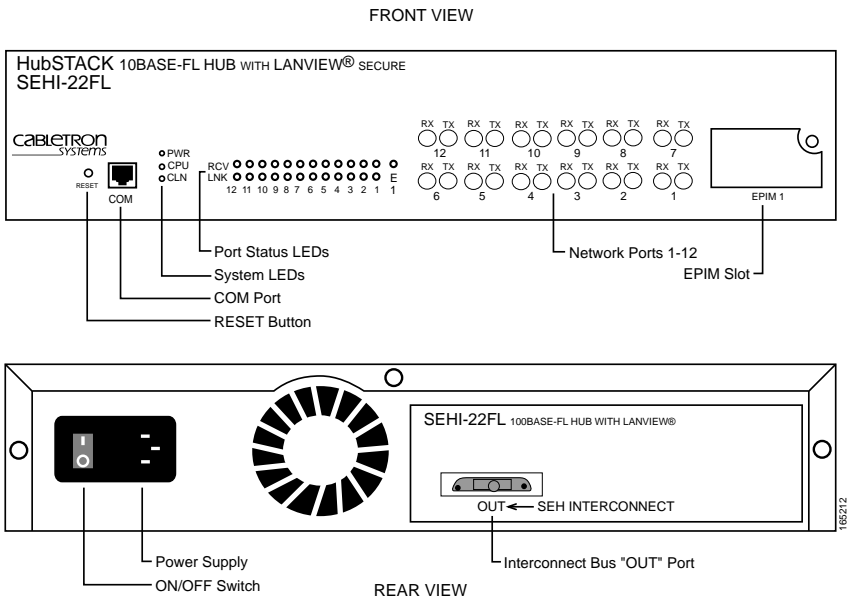
Figure 2-1   Front and Rear Views of the SEHI-22FL

2.1 SEHI OVERVIEW

The SEHI-22FL is an intelligent repeating hub providing front panel ports for network connections and a rear panel HubSTACK Interconnect Bus port for stackable connections. The SEHI is designed to manage the Cabletron Systems SEH series of non-intelligent stackable hubs.

The SEHI-22FL provides twelve 10BASE-FL ST-type fiber optic ports and one EPIM (Ethernet Port Interface Module) port.

2.2 SEHI FEATURES

This section provides detailed information about SEHI features and capabilities.

Repeater Functionality
The SEHI fully conforms to the IEEE 802.3 10BASE-FL specifications, and provides the flexibility to connect networks using IEEE 802.3, Ethernet Version 1 or Version 2 equipment. The SEHI transmits retimed data packets, regenerates the preamble, extends fragments, and arbitrates collisions.

The SEHI automatically partitions problem segments, and reconnects repaired segments to the network. This feature minimizes the impact on network operation resulting from a problem on one segment by isolating the problem segment. Only devices on the problem segment are affected. When the problem is solved, the SEHI automatically reconnects the isolated segment to the network.

FLASH EEPROMs
The SEHI uses FLASH EEPROMs that allow the downloading of new and updated firmware using Cabletron Systems SPECTRUM Element Manager/Windows or any device using BOOTP or TFTP protocols.

LANVIEW LEDs
Cabletron Systems LANVIEW Status Monitoring and Diagnostics System is a troubleshooting tool that helps in diagnosing power failures, collisions, cable faults, and link problems. The LANVIEW LEDs are conveniently located on the SEHI front panel.

RESET Button

Resetting the hub with the front panel RESET button reboots the SEHI and initializes the processor.

Local Management

Manage the SEHI and attached segments through Local Management on the SEHI. Local Management provides full packet and error statistics for the entire stack, individual device, or individual port. Access Local Management by attaching a DEC VT320 terminal or a PC using VT320 emulation software to the SEHI RJ45 COM port.

2.3   STACKABLE CAPABILITIES

The SEHI intelligent hub is designed to manage the Cabletron Systems series of SEH non-intelligent hubs. The SEHI serves as the logical "top" of the stack. It manages all SEH hubs in the stack providing full packet and error statistics for the entire stack, individual device, or individual port.

Stack up to four SEH non-intelligent hubs with one SEHI using Cabletron Systems external HubSTACK Interconnect cables. Stackable configurations make it possible to maintain only one IEEE repeater hop while providing up to 130 10BASE-T Ethernet ports. Add or remove hubs from the stack without powering down.

2.4   REMOTE NETWORK MANAGEMENT CAPABILITIES

Manage the SEHI remotely with any SNMP network management system. Cabletron Systems offers the following remote management packages:

• Cabletron Systems SPECTRUM

• Cabletron Systems SPECTRUM Element Manager/Windows

• Cabletron Systems Remote SPECTRUM Portable Management Applications

• Third Party SNMP compliant Network Management Packages

2.5 OPTIONAL FEATURES

The following features are not included with the SEHI, but are purchased separately from Cabletron Systems.

Ethernet Port Interface Modules (EPIMs)

EPIMs enable the expansion of the network through a variety of media. Cabletron Systems offers the EPIMs shown in Table 2-1.

Table 2-1   EPIMs

EPIM	Media Type	Connector
EPIM-A	AUI	DB15 (Female)
EPIM-C	10BASE2 Thin Coaxial	BNC
EPIM-T	10BASE-T Unshielded Twisted Pair	RJ45
EPIM-X	Standard Transceiver	DB15 (Male)
EPIM-F1	Multimode Fiber	SMA
EPIM-F2	Multimode Fiber	ST
EPIM-F3	Single Mode Fiber	ST

HubSTACK Interconnect Cables

Stack hubs together with Cabletron Systems HubSTACK Interconnect cables. Table 2-2 lists the part number and the application for each cable.

Table 2-2   HubSTACK Interconnect Cables

P/N	Description	Application
9380110	12" HubSTACK Interconnect Cable	SEH to SEH connections.
9380111	18" HubSTACK Interconnect Cable	SEHI to SEH connections.

Rack Mount Hardware

The SEHI can be installed in a 19-inch rack. Cabletron offers an accessory package that includes brackets and mounting screws. The part number for the accessory package is SEHI-ACCY-KIT.

CHAPTER 3
INSTALLATION REQUIREMENTS AND SPECIFICATIONS

This chapter describes cabling requirements, network guidelines, and operating specifications for the SEHI.

⚠ **CAUTION**
The network must meet the requirements and conditions specified in this chapter to obtain satisfactory performance from this equipment. Failure to follow these guidelines can result in poor network performance.

The network must meet the requirements and conditions specified in this chapter to obtain satisfactory performance from this equipment. Failure to follow these guidelines can result in poor network performance.

3.1 CABLE SPECIFICATIONS

The SEHI-22FL network ports support 10BASE-FL Multimode Fiber Optic cabling.

Ethernet Port Interface Modules (EPIMs) expand a network using Unshielded Twisted Pair (UTP), Shielded Twisted Pair (STP), Multimode Fiber Optic, Single Mode Fiber Optic, or Thin Coaxial cabling. For information concerning EPIMs, refer to Appendix A.

The rear panel Interconnect Bus port supports Cabletron Systems HubSTACK Interconnect cables for stackable applications.

Take care in planning and preparing the network cabling and connections. The quality of the connections and the length of cables are critical factors in determining the reliability of the network. The following sections provide the specifications for each media type.

3.1.1 HubSTACK Interconnect Cable Requirements

Attach the SEHI to modules in the stack with the SEHI HubSTACK Interconnect cable available only from Cabletron Systems. Refer to Chapter 1 for cable part numbers. The cable attaches to the SEHI rear panel bus port.

The rear panel of the SEHI has an Interconnect Bus Out port (male connector) to stack SEH non-intelligent hubs together. Stack up to four SEH hubs together with one SEHI.

3.1.2 10BASE-FL Fiber Optic Network Requirements

Table 3-1 shows Multimode Fiber Optic Cable specifications for the SEHI-22FL.

Table 3-1 Multimode Fiber Optic Cable Specifications

Cable Type	Attenuation	Maximum Cable Length
50/125 μm	13.0 dB or less	Maximum fiber optic cable length is 2 km (2187.2 yds). However, IEEE 802.3 specifications allow for a maximum of 1 km (1093.6 yds).
62.5/125 μm	16.0 dB or less	
100/140 μm	19.0 dB or less	

Attenuation

Test the fiber optic cable with a fiber optic attenuation test set adjusted for an 850 nm wavelength. This test verifies that the signal loss in a cable is within an acceptable level. Table 3-1 shows the attenuation for each Multimode cable type.

Fiber Optic Budget and Propagation Delay

Determine the maximum fiber optic cable length by calculating the fiber optic budget delay and total network propagation before the fiber optic cable runs are incorporated into a network design.

Fiber optic budget is the combination of the optical loss due to the fiber optic cable, in-line splices, and fiber optic connectors.

Propagation delay is the amount of time it takes data to travel from the sending device to the receiving device. Total propagation delay allowed for the network is 25.6 μs (51.2 μs roundtrip). If the total propagation delay between any two nodes on the network exceeds 25.6 μs, then use bridges.

3.1.3 10BASE-T UTP and STP Cable Specifications

The devices and 10BASE-T Twisted Pair Segments connected to an SEHI EPIM-T module must meet the IEEE 802.3 10BASE-T specifications shown below:

Length
The IEEE 802.3 10BASE-T standard requires that 10BASE-T devices transmit over a 100 meter (328 foot) link using 22-24 AWG Unshielded Twisted Pair (UTP) wire. However, cable quality largely determines the maximum link length. With high quality, low attenuation cable, link lengths of up to 200 meters are achievable. Cable delay limits the maximum link length to 200 meters, regardless of the cable type.

Insertion Loss
The maximum insertion loss allowed for a 10BASE-T link is 11.5 dB at all frequencies between 5.0 and 10 MHz. This includes the attenuation of the cables, connectors, patch panels, and reflection losses due to impedance mismatches in the link segment.

Impedance
Cabletron Systems 10BASE-T Twisted Pair products work on twisted pair cable with 75 to 165 ohms impedance. UTP cables typically have an impedance of 85 to 110 ohms.

Shielded Twisted Pair (STP) cables, such as IBM Type 1 cable, are also used. The impedance of IBM Type 1 cable is typically 150 ohms. Higher impedance increases signal reflection, but because the cable is shielded, signal reflection has little effect on the quality of the received signal due to the lack of crosstalk between the shielded cable pairs.

Jitter
Intersymbol interference and reflections cause jitter in the bit cell timing, resulting in data errors. A 10BASE-T link must not generate more than 5.0 ns of jitter. If the cable meets the impedance requirements for a 10BASE-T link, jitter should not be a concern.

Delay
The maximum propagation delay of a 10BASE-T link segment must not exceed 1000 ns. This 1000 ns maximum delay limits the maximum link segment length to no greater than 200 meters.

Crosstalk

Crosstalk is caused by signal coupling between the different cable pairs contained within a multi-pair cable bundle. 10BASE-T transceivers are designed so that the user does not need to be concerned about cable crosstalk, provided the cable meets all other requirements.

Noise

Noise is caused by either crosstalk or externally induced impulses. Impulse noise may cause data errors if the impulses occur at very specific times during data transmission. Generally, the user need not be concerned about noise. If noise-related data errors are suspected, it may be necessary to either reroute the cable or eliminate the source of the impulse noise.

Temperature

Multi-pair PVC 24 AWG cables typically have an attenuation of 8 dB to 10 dB/100 meters at 20°C (68°F). The attenuation of PVC insulated cable varies significantly with temperature. At temperatures greater than 40°C (104°F), Cabletron Systems recommends the use of plenum-rated cables to ensure that cable attenuation remains within specification.

3.2   NETWORK PORT SPECIFICATIONS

The SEHI-22FL provides ST-type ports for 10BASE-FL Multimode Fiber Optic cabling. Figure 3-1 shows the network ports.
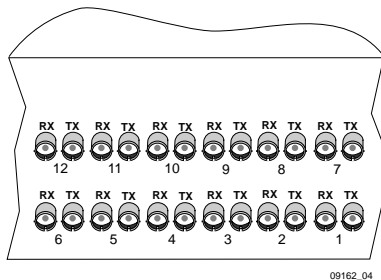
Figure 3-1   SEHI-22FL Network Ports

3.3   COM PORT REQUIREMENTS

The RJ45 COM port supports access to a Local Management Console. The Console port supports a Digital Equipment Corporation, VT320 terminal or PC emulation of the VT320 terminal. Figure 3-2 shows the pinouts for the RJ45 COM port.

1 2 3 4 5 6 7 8

COM

165201

1. Transmit Data
2. Data Carrier Detect
3. Data Set Ready
4. Receive Data

5. Signal Ground
6. Data Terminal Ready
7. Request To Send
8. Clear To Send
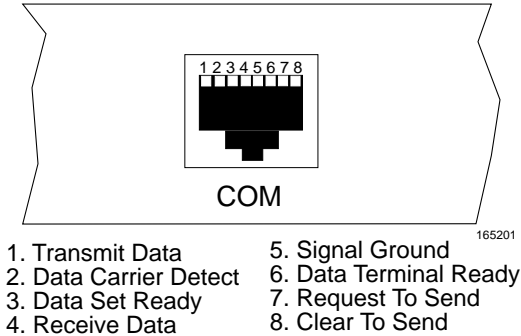
Figure 3-2   COM Port Pinouts

3.4   TRANSCEIVER REQUIREMENTS

When connecting an external network segment through a transceiver to the SEHI with an EPIM-A, the following requirements must be met:

• The transceiver or Ethernet device to which the module is connected must meet IEEE 802.3 standards, and/or Ethernet Version 1.0 or Version 2.0 standards.

• The Signal Quality Error (SQE) test function on the transceiver must be disabled when it is connected to a repeater or to an Ethernet Version 1.0 device. In addition, some Version 2.0 equipment does not support the SQE test. Devices that do not support the SQE test interpret the SQE test pulse as a collision.

3.5   OPERATING SPECIFICATIONS

The operating specifications for the SEHI are described in this section. Cabletron Systems reserves the right to change these specifications at any time without notice.

System Specifications

Operating System Memory:	1.5 MB
Internal Processor:	Intel i960 operating at 16 MHz
Ethernet Controller:	National Semiconductor DP83916
Non-Volatile RAM:	32 KB with battery back-up
EPROM:	64 KB
FLASH MEMORY:	1 MB

Delay Time (Start of Packets) Specifications

Twisted Pair to EPIM-A:	1.10 ms
Twisted Pair to Twisted Pair:	1.00 ms
EPIM-A to Twisted Pair:	1.00 ms

Delay Times (JAM) Specifications

Twisted Pair to EPIM-A:	960 ns

Preamble Specifications

Input:	Minimum of 40 bits required
Output:	64 bits min. (last 2 bits are 1,1)

JAM Output Specifications

Collisions are propagated through the network using the JAM signal of an alternating pattern of 1's and 0's in accordance with 802.3 specifications for a repeater unit.

Fragment Extension Specifications

Fragments are extended to a minimum of 96 bits using the JAM [1,0].

Fault Protection Specifications

Each segment disconnects itself from the other segments if 32 consecutive collisions occur, or if the collision detector of a segment is on for longer than approximately 110 µs. This fault protection resets automatically after one packet is transmitted/received onto the fault protected segment without causing a collision.

3.6 POWER SUPPLY REQUIREMENTS

The SEHI has a universal power supply. The input power requirements are listed in Table 3-2.

Table 3-2   Power Requirements

Model	Voltage Range	Frequency Range
SEHI-22FL	100–125 Vac or 200–250 Vac	50/60 Hz

The power supply has two outputs of +5 Vdc and +12 Vdc. The maximum output power is 40 W and the minimum efficiency is 65% under all conditions of the line at full load. The minimum and maximum load currents from each output are listed in Table 3-3.

Table 3-3   Power Supply Output Specifications

Output	Min. Load	Max. Load	Max Power
+5 Vdc	0.75 A	4 A	20 W
+12 Vdc	0.00 A	2 A	24 W

3.7   ENVIRONMENTAL REQUIREMENTS

The environmental requirements for the SEHI are detailed in this section.

Operating Temperature:	5°C to 40°C (41°F to 104°F)
Storage Temperature:	-30°C to 90°C (-22°F to 194°F)
Operating Humidity:	5% to 95% (non-condensing)

3.8   AGENCY APPROVALS

The Safety, Immunity, and Emission approvals for the SEHI are detailed in this section.

3.8.1   Safety

This unit meets the safety requirements of UL 1950, CSA C22.2 No. 950, IEC 950, and EN 60950.

3.8.2   Immunity

This unit meets the immunity requirements of EN 50082-1 including IEC 801-2 (ESD), IEC 801-3 (Radiated Susceptibility), and IEC 801-4 (EFT/B).

3.8.3   Emission

This unit meets the emission requirements of FCC Part 15 Class A, EN 55022 Class A, and VCCI Class I.

3.9   PHYSICAL SPECIFICATIONS

This section details the physical specifications for the SEHI.

Dimensions (H x W x D):	(7.2 cm x 43.6 cm x 34.6 cm) (2.8 in x 17.0 in x 13.5 in)
Weight (Unit):	3 kg (6.5 lb)

CHAPTER 4

INSTALLATION

This chapter outlines the procedure for attaching the SEHI to the network as a stackable or standalone device. Ensure that the network meets the guidelines and requirements outlined in **Chapter 3, Installation Requirements and Specifications**, before installing the SEHI.

Failure to follow installation instructions may result in an electrical shock hazard.

4.1   UNPACKING THE SEHI

Unpack the SEHI as follows:

1. Remove the shipping material covering the SEHI in the shipping box.

2. Carefully remove the SEHI from the shipping box and set it aside to prevent damage.

3. Visually inspect the SEHI. If there are any signs of damage, contact Cabletron Systems Technical Support immediately.

4. Read the SEHI Release Notes included in the shipping box.

NOTE
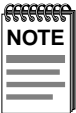
Cabletron Systems includes a 3-1/2" disk with the SEHI that contains a backup copy of the SEHI Flash Firmware Image File. Download the file to the SEHI if the existing image becomes corrupted.

4.2   PRE-INSTALLATION TEST

The SEHI is equipped with an NVRAM reset switch (Figure 4-1) located behind the grillwork on the side of the hub. Ensure that this switch is in the **DOWN** position by looking in through the grillwork on the right side of the hub. If the switch is UP, move it into the DOWN position with a **non-metallic** tool. Do not remove the chassis cover to perform this operation. Leaving the switch in the UP position results in user-installed parameters such as IP address and Community Names being cleared from NVRAM whenever the SEHI loses power and/or is reset. See Chapter 6, Section 6.4, for detailed instructions on setting the NVRAM switch.

Rear of Chassis

NVRAM Switch located behind grating
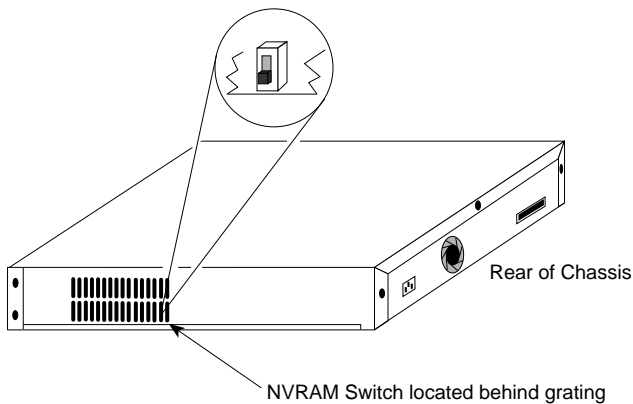
09162_05

Figure 4-1   NVRAM Switch Location

4.3   INSTALLING THE SEHI

The SEHI may be installed on a tabletop or shelf, or in a 19-inch rack, and configured as a standalone or stacked hub.

Refer to Section 4.3.1 for information concerning a tabletop or shelf installation. Section 4.3.2 describes the rackmount installation.

4.3.1   Tabletop or Shelf Installation

This section provides guidelines for installation on a tabletop or shelf. Tabletop and shelf installations must be within reach of the network cabling and meet the requirements listed below:

*   A single phase grounded power receptacle that meets the power supply requirements listed in Chapter 3 under **Power Supply Requirements** must be located within seven feet of the location.
*   In a shelf installation, the shelf must be able to support 30 pounds of static weight for each device in the stack.
*   Maintain a temperature of between 5°C (41°F) and 40°C (104°F) at the site with fluctuations of less than 10°C (18°F) per hour.

For a tabletop or shelf installation, locate the SEHI within seven feet of its power source and with an unrestricted free surface area as shown in Figure 4-2.

In order to allow for proper cooling, there must be a two-inch clearance on either side and the back of the unit.
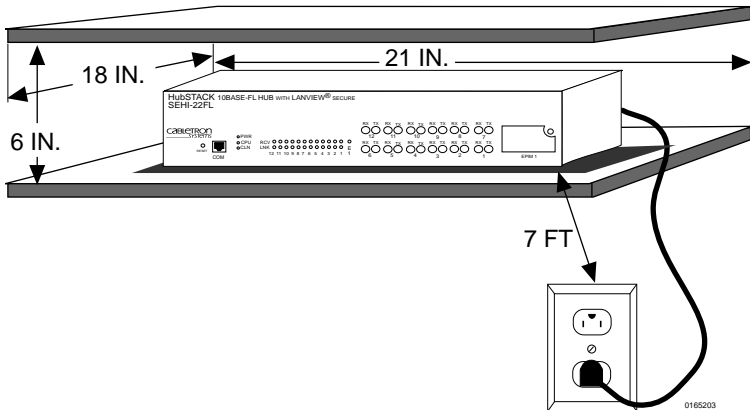
Figure 4-2   Tabletop or Shelf Installation

If the installation requires that the SEHI is to be stacked, proceed to Section 4.3.3. Otherwise, continue by connecting power as described in Section 4.4.

4.3.2 Rackmount Installation

To install the SEHI in a 19-inch rack, Cabletron Systems offers an accessory kit that includes rackmount brackets, mounting screws, and a strain-relief bracket for cable management. The accessory kit is not included with the SEHI, but can be purchased separately from Cabletron Systems using the part number SEHI-ACCY-KIT.

Rack mounting the SEHI involves the following:

- Attaching the strain-relief bracket
- Rack mounting the SEHI
- Stacking the SEHI when applicable

Attaching the Strain-Relief Bracket

Attach the strain-relief bracket to the front of the SEHI as follows:

1. Locate the strain-relief bracket and four 8-32 x 3/8 inch screws from the SEHI-ACCY-KIT package.

> Do **NOT** attempt to attach the strain-relief with screws other than the 8-32 x 3/8-inch screws included with the SEHI accessory kit. Use of longer screws may damage the unit or cause electrical shock.

2. Attach the strain-relief bracket to the bottom of the SEHI (Figure 4-3).
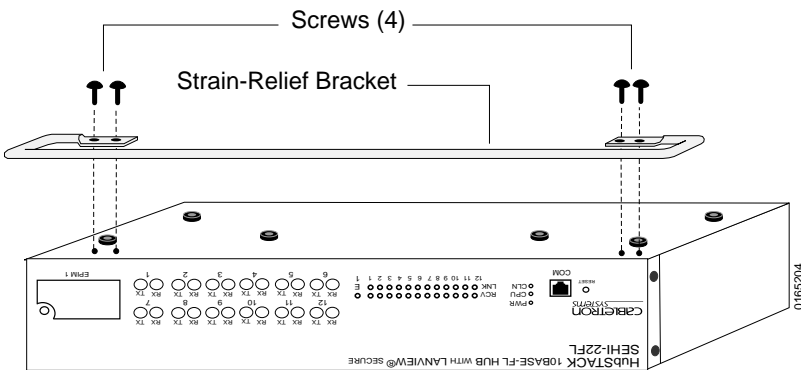
Figure 4-3   Attaching the Strain-Relief Bracket

Rack Mounting the SEHI

Refer to Figure 4-4 and proceed as follows to install the SEHI into a 19-inch rack.

1. Remove four cover screws (two from each side) located along the front edges of each side of the SEHI.

⚠ Do not remove the cover from the SEHI. Do not remove any other screws from the unit.

2. Using the four 6-32 x 3/8-inch replacement flathead cover screws provided in the SEHI-ACCY-KIT, attach the rack mounting brackets to each side of the SEHI.
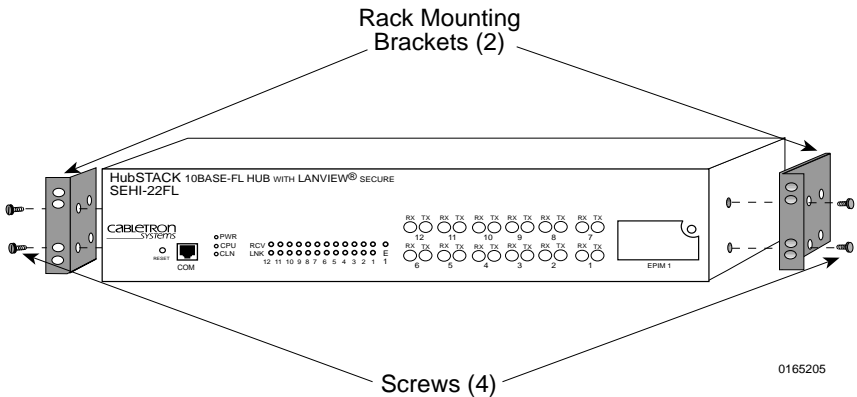
Figure 4-4   Installing the Rack Mounting Brackets

3. Ensure that the rack used will support the unit and that the rack will remain stable with the unit installed in it. Support the SEH securely from underneath and align the brackets of the SEH chassis with the screw holes in the equipment rack as shown in Figure 4-5. Fasten the SEH to the equipment rack securely.

⚠ **CAUTION**

The cooling fans at the rear panel of the SEHI must have adequate clearance (**two inches on either side and in the rear**) for unrestricted air flow. The temperature for the selected location must be maintained between 5°C and 40°C, and fluctuate less than 10°C per hour.
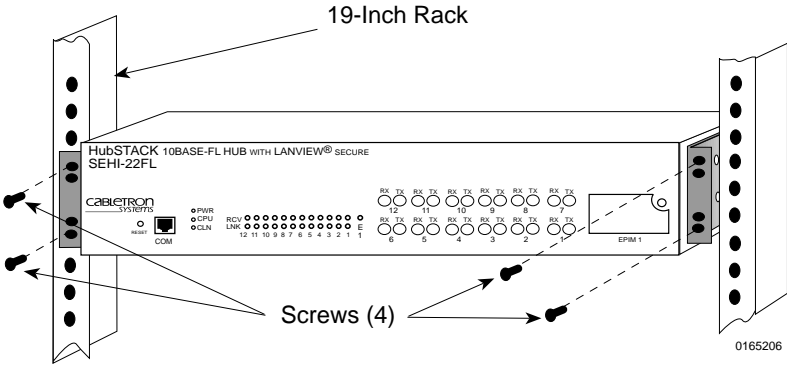
Figure 4-5   Installing the SEHI in the Rack

If the installation requires stacking the SEHI, proceed to Section 4.3.3. Otherwise, continue by connecting power as described in Section 4.4.

4.3.3   Stacking the SEHI

The rear panel of the SEHI has an Interconnect Bus Out Port (male connector). Daisy chain units together using Cabletron Systems HubSTACK Interconnect cables. Table 4-1 describes each cable.

Table 4-1   HubSTACK Interconnect Cables

Part Number	Description	Application
9380110	12" HubSTACK Interconnect Cable	SEH to SEH
9380111	18" HubSTACK Interconnect Cable	SEHI to SEH

To stack the SEHI together with an SEH non-intelligent hub, proceed as follows:

1.   Attach the SEHI HubSTACK Interconnect cable to the "OUT" port on the rear panel of the SEHI as shown in Figure 4-6.

2.   Attach the other end of the SEHI HubSTACK Interconnect cable to the "IN" port on the rear panel of the SEH.

To stack SEH non-intelligent hubs together, proceed as follows:

1.   Attach the SEH HubSTACK Interconnect cable to the "OUT" port on the rear panel of the SEH as shown in Figure 4-6.

2.   Attach the other end of the SEH HubSTACK Interconnect cable to the "IN" port on the rear panel of the SEH next in the stack.
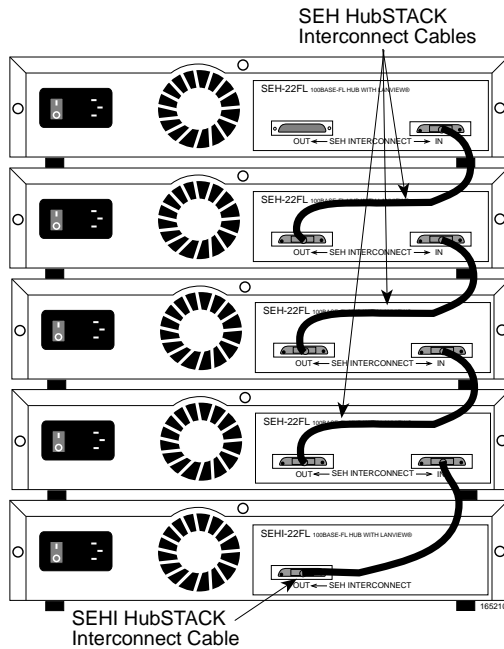
Figure 4-6   Stacking the SEHI

If one end of a HubSTACK Interconnect cable is disconnected without disconnecting the other end attached to the hub, disconnect the cable from the OUT port as shown in Figure 4-7 to ensure that the HubSTACK Interconnect cable is terminated properly.
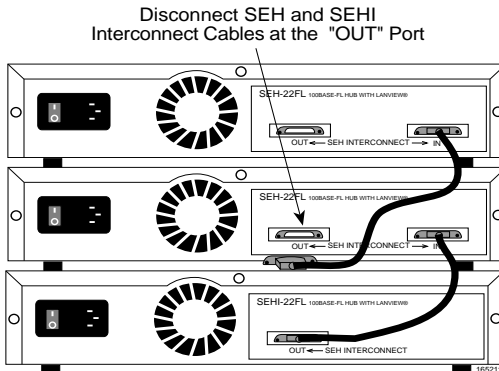
Figure 4-7   Disconnecting the HubSTACK Interconnect Cable

Proceed to Section 4.4 to connect power.

4.4   CONNECTING THE SEHI TO THE POWER SOURCE

NOTE
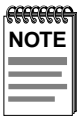
The SEHI uses a universal power supply that operates between 100–125 Vac or 200–250 Vac, 50/60 Hz.

Connect the SEHI to the power source as follows:

1. Plug the power cord into the back panel of the SEHI.

2. Plug the other end of the power cord into a grounded wall outlet.

3. Verify that the **PWR** LED is on, indicating that the SEHI is receiving power. After the SEHI runs a self test, the **CPU** LED blinks green indicating normal operation. If the LED remains red, the processor is faulty, contact Cabletron Systems Technical Support.

4.5   ADDING/REPLACING EPIMS

This section contains procedures on how to add or replace an Ethernet Port Interface Module (EPIM) to upgrade or change the capabilities of your SEHI. After installing a new EPIM, refer to the appropriate EPIM section in Appendix A to verify proper operation.

⚠ **CAUTION**   Observe all static precautions while handling EPIMs.

Perform the following steps to install an EPIM:

NOTE   When removing an EPIM, pull the module out straight to prevent damage to the connector.

1. Remove the coverplate or the EPIM (whichever applies).

2. Slide the new EPIM into place, making sure that the connectors on the rear of the EPIM align correctly and firmly with the connector inside the SEHI. See Figure 4-8.

3. Tighten the mounting screw.
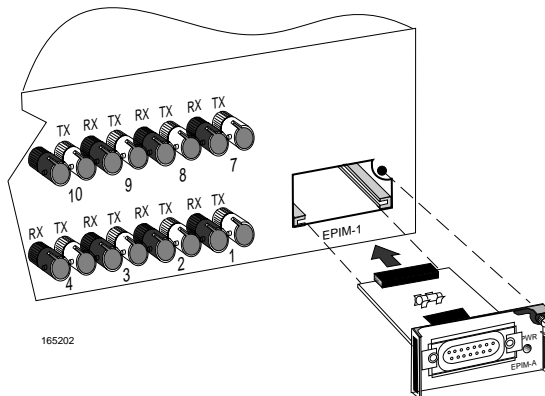
Figure 4-8   Installing an EPIM

CHAPTER 5

CONNECTING TO THE NETWORK

This chapter outlines the procedure for connecting the SEHI to a network. Ensure that the network meets the guidelines and requirements outlined in Chapter 3, **Installation Requirements and Specifications**, before installing the SEHI.

5.1   CONNECTING THE SEHI TO THE NETWORK

The procedure for connecting network segments to the SEHI varies depending on the media and ports being connected. Refer to the following list and perform the procedure described in the subsections that apply to connecting the SEHI to a network:

- Connecting Network Ports   Section 5.1.1

- Connecting a UTP segment to an EPIM-T   Section 5.1.2

- Connecting a fiber segment to an EPIM-F1/F2/F3   Section 5.1.3

- Connecting a Thin Coaxial Segment to an EPIM-C   Section 5.1.4

- Connecting an AUI cable to an EPIM-A   Section 5.1.5

- Connecting an AUI Cable to an EPIM-X   Section 5.1.6

5.1.1   Connecting Network Ports

The SEHI-22FL has ST style network ports. Read the following guidelines before connecting a fiber optic link segment to the SEHI:

- Insert the connector into the port with the alignment key on the connector inserted into the alignment slot on the port. The connector is then turned clockwise to lock it down.

- The physical communication link consists of two strands of fiber optic cabling: the Transmit (TX) and the Receive (RX). Connect the TX strand from the applicable port on the module to the receive port of a fiber optic Ethernet device at the other end of the segment. The RX strand of the applicable port on the module connects to the transmit port of the fiber optic Ethernet device.

• Label the fiber optic cable to indicate which fiber is receive and which is transmit. Cabletron Systems fiber optic cable is labeled so that one fiber is labeled 1, and the other fiber is labeled 2 at both ends of the cable. If the cable was not purchased from Cabletron Systems, label the cable as described above.

!\
CAUTION   Do not touch the ends of the fiber optic strands, and do not let the ends come in contact with dust, dirt, or other contaminants. Contamination of the ends causes problems in data transmissions. If the ends become contaminated, clean them with alcohol using a soft, clean, lint-free cloth.

Use the following steps to connect a fiber optic link segment to the SEHI:

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 on each fiber strand.

2. Attach the fiber labeled 1 to the applicable **RX** port, on the SEHI. See Figure 5-1.

Figure 5-1   SEHI-22FL Network Ports

3. Attach the fiber labeled 2 to the applicable TX port, on the SEHI.

4. At the other end of the fiber optic cable, attach the fiber labeled 1 to the transmit port of the device.

5. Attach the fiber labeled 2 to the receive port.

6. Check that the **LNK** LED for the appropriate port is on. If the LED is off, perform the following steps until it is on:

    a. Check that the power is turned on for the device at the other end of the link.

    b. Verify proper crossover of fiber strands between the applicable port on the SEHI 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 3.

If a link is not established, contact Cabletron Systems Technical Support.

5.1.2   Connecting a UTP Segment to an EPIM-T

Before connecting a segment to the EPIM-T, check each end of the segment to determine if the wires cross over for proper connection. If the wires do not cross over, use the switch on the EPIM-T to internally cross over the RJ45 port. Figure 5-2 shows the pin assignment of the port according to the switch position.

Position X
(crossed over)

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

LNK
EPIM-T

Position =
(not crossed over)

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

1490_14
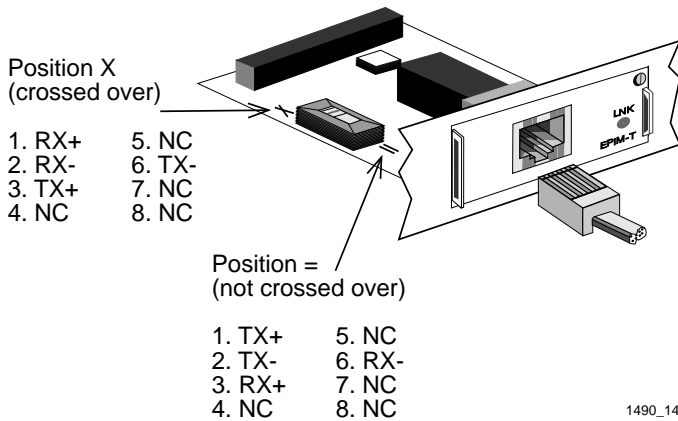
Figure 5-2   EPIM-T Crossover Switch

To connect an EPIM-T to a twisted pair segment:

1. Connect the segment to the module by inserting the RJ45 connector on the segment into the RJ45 port on the module. See Figure 5-2.

2. Check that the EPIM **LNK** LED is on. If the LED is off, perform each of the following steps until it is on:

    a. Check that the device at the end of the 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. Check that the twisted pair connection meets dB loss and cable specifications outlined in Chapter 3, Section 3.1.3.

    e. Check that the crossover switch is in the correct position.

If a link is not established, contact Cabletron Systems Technical Support.

5.1.3   Connecting a Fiber Segment to an EPIM-F1/F2/F3

When connecting a fiber optic link segment to an EPIM-F1, F2, or F3 keep the following in mind:

*   When connecting a fiber optic link segment with SMA 906 connectors to an EPIM-F1 with SMA ports, ensure that the half alignment sleeves (shown in Figure 5-3) are in place on each connector. A full alignment sleeve will damage the receive port. SMA 905 connectors do not need alignment sleeves.

*   Connect a segment with ST connectors to an EPIM-F2 or EPIM-F3 by inserting the connector into the port with the alignment key on the connector inserted into the alignment slot on the port. Turn the connector clockwise to lock it down.

*   The physical communication link consists of two strands of fiber optic cabling: the Transmit (TX) and the Receive (RX). The TX strand from the applicable port on the module connects to the receive port of a fiber optic Ethernet device at the other end of the segment. The RX strand of the applicable port on the module connects to the transmit port of the fiber optic Ethernet device.

*   Label the fiber optic cable to indicate which fiber is receive and which is transmit. Fiber optic cable purchased from Cabletron Systems is labeled so that one fiber is labeled 1, and the other fiber is labeled 2 at both ends of the cable. For cable not purchased from Cabletron Systems, label the cable as described above.

> ⚠ **CAUTION** Do not touch the ends of the fiber optic strands, and do not let the ends come in contact with dust, dirt, or other contaminants. Contamination of the ends causes problems in data transmissions. If the ends become contaminated, clean them with alcohol using a soft, clean, lint free cloth.

Connect a fiber optic link segment to an EPIM-F1, EPIM-F2, or an EPIM-F3 as follows:

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 on each fiber strand.

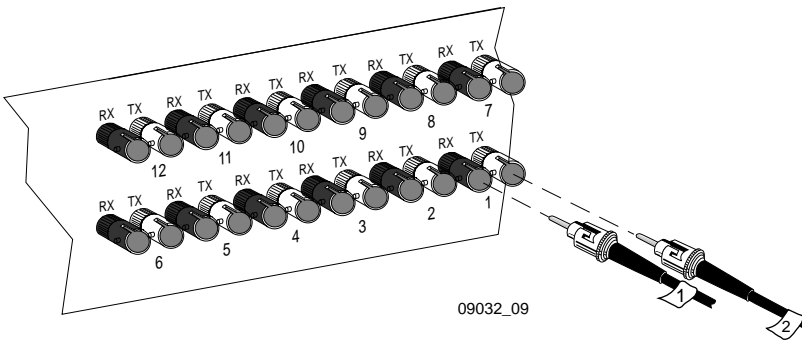2. Attach the fiber labeled 1 to the applicable RX port on the module. See Figure 5-3.

3. Attach the fiber labeled 2 to the applicable TX port on the module.

4. At the other end of the fiber optic cable, attach the fiber labeled 1 to the transmit port of the device.

5. Attach the fiber labeled 2 to the receive port.

6. Check that the EPIM **LNK** LED is on. If the LED is off, perform the following steps until it is on:

    a. Check that the power is on for the device at the end of the link.

    b. Verify that the fiber strands are properly crossed over between the applicable port on the module 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 fiber optic network requirements.

If a link is not established, contact Cabletron Systems Technical Support.

F1/F2

ST Connectors

F1/F2

SMA 906 Connectors w/
Half Alignment Sleeves

SMA 905 Connectors

F3

ST Connectors
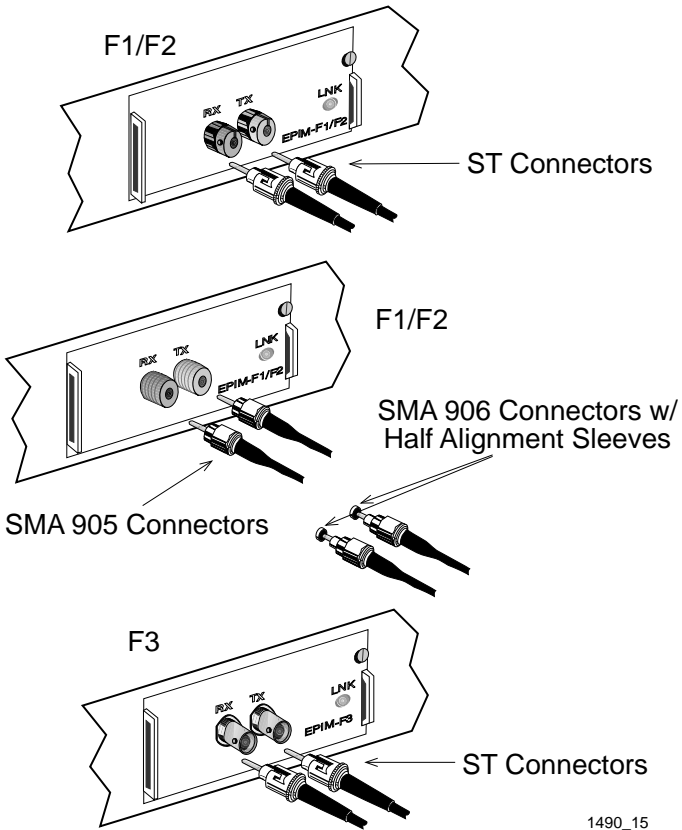
1490_15

Figure 5-3   The EPIM-F1, EPIM-F2, and EPIM-F3

5.1.4   Connecting a Thin Coaxial Segment to an EPIM-C

To connect a thin coaxial segment to an EPIM-C:

1.   Set the Internal Termination Switch, located to the right of the port and labeled **TERM** to one of the following:

     •   The On position (●) if the thin coaxial segment connected directly to the port is internally terminated at the port

     •   The Off position (o) if the thin coaxial segment is not internally terminated at the port or externally terminated

2.   If the Internal Termination switch is in the On position, connect the thin coaxial segment directly to the BNC port as shown in Figure 5-4.

3.   If the Internal Termination switch is in the Off position, proceed with the following steps:

     a.   Attach a BNC T-connector to the BNC port on the module.

     b.   Attach the thin coaxial segment to one of the female connectors on the T-connector.

NOTE	Terminate each segment attached to the T-connector. If a segment is not attached to one of the female connections on the T-connector, place a terminator on that connection.

     c.   Attach another thin coax segment or a terminator to the other female connector on the T-connector.

⚠	For safety, ground only one end of a thin coaxial segment. Do NOT connect EPIM BNC ports to earth ground. Connecting a thin coaxial segment to earth ground at more than one point could produce dangerous ground currents.

When internal termination switch is set to Off (○) follow these procedures:

Connect BNC T-connector to port.

Attach a terminator or terminated thin coaxial segment to one female connector of T-connector.

Connect a terminated thin coaxial segment to other female connector of T-connector.
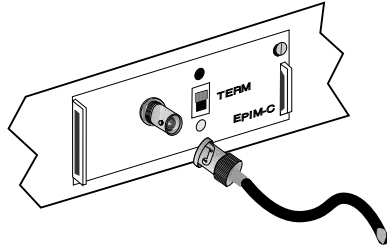
Attach thin coaxial segment directly to BNC connector when internal termination switch is set to On (●).
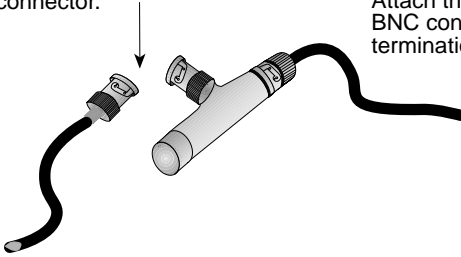
1490_16

Figure 5-4   The EPIM-C

5.1.5   Connecting an AUI Cable to an EPIM-A

⚠️ **CAUTION**

Ensure that the Signal Quality Error (SQE or "heartbeat") test function is disabled on the external transceiver connected to the SEHI. The SEHI will not operate and the network will be unusable if the transceiver has the SQE test function enabled. Refer to the applicable transceiver manual.

Connect an EPIM-A to an external network segment as follows:

1. Attach an external transceiver to the network segment to be connected to the AUI port. Refer to the applicable transceiver manual.

2. Attach an AUI cable no longer than 50 meters in length to the transceiver connected to the network in step 1.

3. Connect the AUI cable to the EPIM-A. (See Figure 5-5.)

4. Lock the AUI connector into place using the connector slide latch.
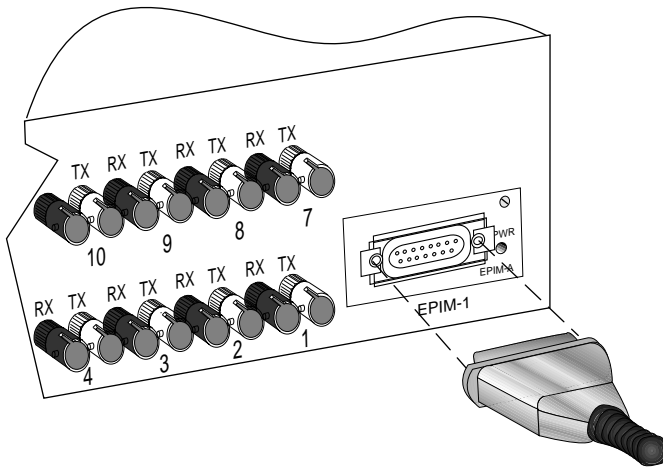
165213

Figure 5-5   The EPIM-A

5. Check that the **PWR** LED on the EPIM-A is on. If the LED is not on, contact Cabletron Systems Technical Support.

6. If the **PWR** LED is on with the AUI cable disconnected, continue with the following checks:

   a. Check the AUI connections for proper pinouts. The pinouts for the transceiver connection are listed in Chapter 3.

   b. Check the cable for continuity.

   c. Reconnect the AUI cable to the SEHI and the device.

If the LED is still not on after reconnecting the segment, contact Cabletron Systems Technical Support.

5.1.6   Connecting an AUI Cable to an EPIM-X

⚠ **CAUTION**

The Signal Quality Error (SQE) switch remains in the OFF position for most network connections. However, some Data Terminal Equipment (DTE) requires SQE. Refer to a DTE manual for SQE requirement information.

Perform the following steps to connect an EPIM-X to a device not requiring SQE:

1.   Check that the **SQE** LED on the EPIM-X is off. If the **SQE** LED is on, check the position of the SQE switch.

NOTE
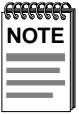
If the SQE light remains on, even though the SQE switch is in the OFF position, contact Cabletron Systems Technical Support.

2.   Attach one end of an AUI cable of up to 50 meters in length to the port located on the EPIM-X (Figure 5-6) and connect the other end to the intended node.

ON Position
(Toward Back
of EPIM)

OFF Position
(Toward Front
of EPIM)
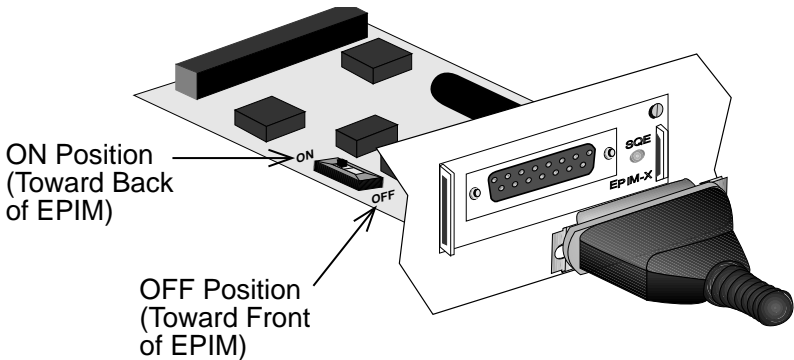
1490_18

Figure 5-6   The EPIM-X

5.2   FINISHING THE INSTALLATION

The SEHI is now ready for operation. Before placing the network into service, test the installation thoroughly, making sure that all stations can be addressed and that the SEHI and all stations are indicating normal operation. Ensure that the networking software is configured properly to match the installed network. If there are any errors or abnormal operation, proceed to **Chapter 6, Troubleshooting**.

CHAPTER 6

TROUBLESHOOTING

This chapter contains instructions for using LANVIEW LEDs to troubleshoot physical layer network problems. It also describes how to reset the SEHI and how to reset the NVRAM switch.

6.1 INSTALLATION CHECKOUT

After connecting the SEHI to the network, verify that the packets pass between all Ethernet devices connected to the SEHI and any other devices connected to the network. If there is a problem with any of the attached devices, check the link as follows:

1. Check that the **LNK** LED, if applicable, for the port is on. If the LED is off, proceed with the following steps:

    a. Check that the 10BASE-FL device at the other end of the fiber optic segment is powered up and that the TX and RX fibers are properly connected.

    b. For twisted pair EPIMs such as the EPIM-T, verify that the connector on the twisted pair segment has the proper pinouts. Refer to Chapter 3 for the pin assignments for twisted pair connectors.

    For the SEHI 10BASE-FL ports and the EPIM-F1, EPIM-F2, or EPIM-F3 check that the TX and RX fibers are properly connected.

    c. Check the cable for continuity. Several tools are available for this test, depending on the media used.

    d. Check that the twisted pair segments meet cable specifications for dB loss as described in Chapter 3.

2. If the remote station is ready and the **LNK** LED is on, but no data passes through the port, one of the following two conditions may exist:

    •   Network management disabled the port.

    •   The port is segmented either because the collision detector was on for more than 110 μs or the SEHI detected more than 32 consecutive collisions on the attached segment. The affected port remains segmented until a good packet is transmitted/received without collisions.

If the **LNK** LED is still off, contact Cabletron Systems Technical Support.

6.2   USING LANVIEW

The SEHI incorporates the Cabletron Systems LANVIEW status monitoring and diagnostics system. LANVIEW LEDs help diagnose problems such as power failure or cable fault. The SEHI uses the following LANVIEW LEDs:

•   **PWR**, for power status

•   **CPU**, for board status

•   **RCV** (Receive), **LNK** (Link), and **CLN** (Collision) for Ethernet status.

Figure 6-1 provides a quick reference chart of LED locations and definitions. This chapter also includes a detailed description of each LED.

HubSTACK 10BASE-T HUB WITH LANVIEW® SECURE
SEHI-22FL

CABLETRON
SYSTEMS

RESET   COM

PWR
CPU
CLN

RCV
LNK
12 11 10 9 8 7 6 5 4 3 2 1

E
1
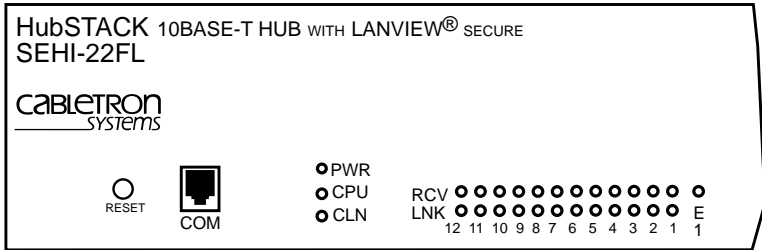
LED NAME	LED COLOR	DEFINITION
PWR (Power)	Off Green (Solid)	No power Power
CPU (Central Processing Unit)	Off Green (Flashing) Green (Blinking) Red (Solid)	CPU in BOOT process CPU initializing CPU functioning CPU not functioning
CLN (Collision)	Red	Collision
RCV (Receive)	Yellow (Flashing) Off	SEHI is receiving data No activity
LNK (Link)	Green Off	Link established No link

165214

Figure 6-1   LANVIEW LEDs

NOTE

Flashing indicates an irregular LED pulse.
Blinking indicates a steady LED pulse.

PWR
When this green LED is on, it indicates that the SEHI is receiving power. If this LED is off, it indicates a loss of input power. Check the input power source (circuit breaker, fuse, etc.). If the proper source power is present, the problem could be with the SEHI.

CPU
This LED alternates from red to green during power up. After the boot is complete, the LED blinks green. A blinking green LED indicates normal operation. A red LED indicates a faulty processor.

CLN
This red LED indicates that a collision has occurred on one of the ports.

RCV
When a yellow RCV LED flashes, it indicates that the SEHI is receiving data packets from the associated port segment. Each SEHI port has a corresponding RCV LED. The network RCV port LEDs are labeled **1-12** and the EPIM-1 RCV port LED is labeled **E-1**.

LNK
When a green LNK LED is on, it indicates an established link between the associated port and the device at the other end of the segment. The LNK LED remains on as long as a link is maintained. Each SEHI Network Port (ports 1–12) has a corresponding LNK LED.

6.3   USING THE RESET BUTTON

The SEHI incorporates a recessed RESET button. See Figure 6-1. The RESET button initializes the SEHI processor. This button does NOT initialize Non-Volatile Random Access Memory (NVRAM), the nonvolatile random access memory where the SEHI stores network management parameters.

To use the RESET button, use a pen or pencil to press the button. When this is done, the SEHI initializes itself.

6.4 SETTING THE NVRAM SWITCH

To prevent the possibility of electrical shock, **do not** remove the chassis cover to access the NVRAM switch, and use only a **non-metallic** tool when moving the NVRAM switch.

The SEHI uses NVRAM (Non-Volatile Random Access Memory) to store user-entered parameters such as IP address and Community Names. To reset these parameters to the factory defaults, refer to Figure 6-2 and perform the following steps:

1. With the power ON and using a **non-metallic** tool, move the NVRAM switch to the UP position.

2. Press the RESET switch located on the front panel.

3. Wait until the unit boots (approximately 12 seconds).

4. Return the NVRAM switch to the DOWN position.

Failure to return the NVRAM switch to the DOWN position results in loss of user-entered parameters upon power shutdown and restart. The SEHI clears NVRAM if the unit is restarted with the switch in the UP position.

Rear of Chassis

NVRAM Switch located behind grating
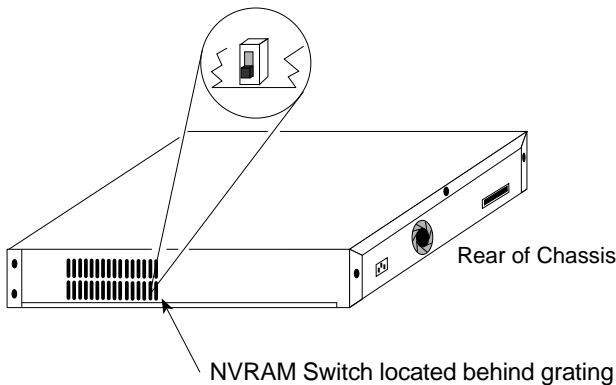
165215

Figure 6-2   NVRAM Switch Location

CHAPTER 7

LOCAL MANAGEMENT

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

Use Local Management to accomplish the following tasks:

• Assign an IP address and subnet mask.

• Select a default gateway.

• Control access to the SEHI through the community names established in the Community Name Table.

• Designate which Network Management Workstations receive trap messages from the device.

• Navigate through the Management Information Base (MIB) and manage the objects within it from a remote location. Given the appropriate security level, the MIB is accessible from the SEHI through SNMP Tools.

Local Management also allows the user to manage each non-intelligent stackable hub attached to the SEHI, and provides a Statistics screen to view error, collision, and traffic statistics for the entire stack, individual module, or individual port.

7.1 LOCAL MANAGEMENT KEYBOARD CONVENTIONS

All key names appear in this manual as capital letters. For example, the enter (return) key appears as ENTER and the space bar appears as SPACE bar. Table 7-1 explains the keyboard conventions used in this manual as well as the key functions.

Table 7-1   Keyboard Conventions

Key	Function
RETURN Key and ENTER Key	These are selection keys that perform the same Local Management function. For example, "Press ENTER" means press either ENTER or RETURN, unless this manual specifically instructs you otherwise.
SPACE bar and 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.

7.2 MANAGEMENT TERMINAL SETUP

Use one of the following systems to access Local Management:

- A Digital Equipment Corporation VT series terminal

- A VT type terminal running emulation programs for the Digital Equipment Corporation VT series

- An IBM or compatible PC running a VT series emulation software package

Use a console cable to attach the management terminal to the SEHI. The console cable is not included with the SEHI, but can be purchased separately from Cabletron Systems as part number SEHI-ACCY-KIT.

The SEHI-ACCY-KIT package provides an RJ45 Cable Kit that includes the following:

- UTP console cable with RJ45 connectors on each end

- Adapters for DB9 or DB25 connections

- Instruction Sheet

The following sections explain how to attach the console cable and set up the management terminal. Refer to the RJ45 Cable Kit Instruction Sheet for adapter pinouts and additional information.

Console Cable Configuration
Use the RJ45 Cable Kit provided with the SEHI-ACCY-KIT package to attach the management terminal to the SEHI COM port as shown in Figure 7-1.

Connect the console cable to the SEHI as follows:

1. Attach the male RJ45 connector to the COM port of the SEHI.

2. Attach the female end (25-pin or 9-pin, as applicable) to the COM port on the terminal.
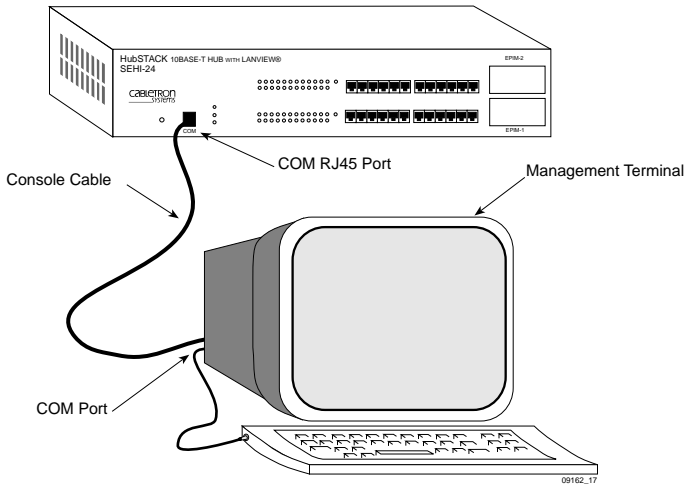
Figure 7-1   Management Terminal Connection

Management Terminal Setup Parameters

Table 7-2 lists the setup parameters for the local management terminal. If the terminal is a Digital Equipment Corporation VT320 terminal, press **F3** to access the Setup Directory. If the Local Management terminal uses terminal emulation of the VT320, refer to the equipment user manual for setup procedures.

Table 7-2   Terminal Setup Parameters

Menu	Function	Selection
Display Setup:	Columns	80 Columns
	Controls	Interpret Controls
	Auto Wrap	No Auto Wrap
	Test Cursor	Cursor
General Setup:	Mode	7 Bit Control
	Cursor Keys	Normal Cursor Keys
Communications Setup:	Transmit	Transmit = 9600
	Receive	Receive = Transmit
	XOFF	Any Option
	Bits, Parity	8 Bits, No Parity
	Stop Bit	1 Stop Bit
	Local Echo	No Local Echo
	Port	DEC-423, Data Leads Only
	Transmit	Any Option
	Auto Answerback	No Auto Answerback
Keyboard Setup:	Auto Repeat	Any Option
	Keyclick	Any Option
	Margin Bell	Margin Bell
	Warning Bell	Warning Bell
	Auto Answerback	No Auto Answerback

7.3   ACCESSING LOCAL MANAGEMENT

After configuring the local management terminal and properly attaching
the cables to the SEHI, access the Local Management interface.

1. Power up the terminal. The password screen (Figure 7-2) appears.

```
                    SEHI  LOCAL MANAGEMENT
                 Cabletron SEHI Revision X.XX.XX



                    Cabletron Systems Incorporated
                    35 Industrial Way, P.O. Box 5005
                    Rochester, NH  03867-0505  U.S.A.
                          (603) 332-9400


            (c)  Copyright Cabletron Systems, Inc.   1993


                    SEHI F/W Version: X.XX.XX
                    Boot Prom Version: X.XX.XX
                    SEHI Board Version: X.X


  EnterUser Password:        ████████████████████████
```

1490_21
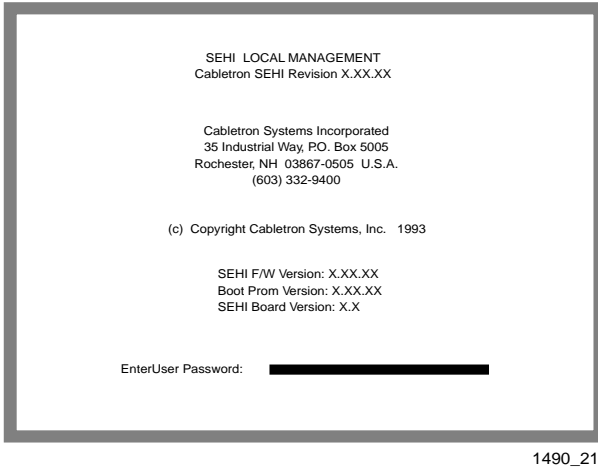
Figure 7-2   Password Screen

2. Enter the **Password**. The factory default password for Super-User
    access is "public" or press **ENTER**.
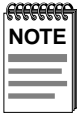
> **NOTE**
>
> The password is one of the community names specified in the
> Community Name Table. Access to certain Local Management
> capabilities depends on the degree of access accorded that
> community name. Refer to Section 7.5 for more details about
> community names.

3. Press **ENTER**.

    •   If the password entry is invalid, the cursor returns to the beginning
        of the password entry field.

    •   If the password is valid, the associated access privilege appears
        briefly, then the SEHI Local Management Feature Selection
        screen shown in Figure 7-3 appears.
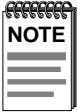
| NOTE | If the terminal keyboard is not used for 15 minutes, the Local Management session ends and the screen defaults to the Password screen. |

```
                    SEHI  LOCAL MANAGEMENT
                   Cabletron Systems Incorporated

             P.O. Box 5005 Rochester, NH  03867-0505  U.S.A.

                          (603) 332-9400

                        FEATURE SELECTION

          ┌──────────────────────────────────────────┐
          │   F6   COMMUNITY NAME TABLE                │
          │                                            │
          │   F7   IP ADDRESS ASSIGNMENT               │
          │                                            │
          │   F8   COMPONENT TRAP TABLE                │
          │                                            │
          │   F9   SNMP TOOL SUPPORT                   │
          │                                            │
          │        DEVICE STATISTICS                   │
          │                                            │
          │        EXIT LIM SERVICE                    │
          └──────────────────────────────────────────┘
```
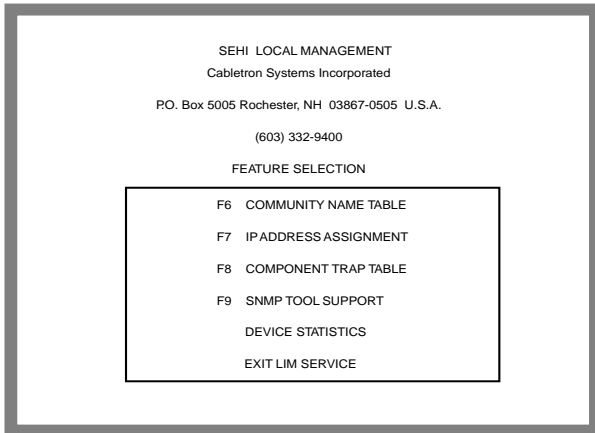
1490_22

Figure 7-3   Feature Selection Screen

7.4   THE FEATURE SELECTION SCREEN

The Feature Selection screen is the main menu screen for SEHI Local Management. There are five screen options in the Feature Selection screen: Community Name Table, IP Address Assignment, Component Trap Table, SNMP Tool Support, and Device Statistics. Use the arrow keys to highlight an option, then press **ENTER** (or press the corresponding **Function Key**). The selected screen appears.

To exit your Local Management session, use the arrow keys to highlight the **EXIT LIM SERVICE** command, then press **ENTER**.

7.5   THE COMMUNITY NAME TABLE SCREEN

To access the Community Name Table screen from the Feature Selection screen, use the arrow keys to highlight the **Community Name Table** option, then press **ENTER** or **F6**. The Community Name Table screen shown in Figure 7-4 appears.

1490_23

Figure 7-4   Community Name Table Screen

Community names are set through the Community Name Table option. Community names are passwords to Local Management and are agents of security control to the SEHI. SEHI access is controlled by establishing up to four different levels of security authorization: Basic-Read, Read-Only, Read-Write, and Super-User.

With Super-User access, the user changes the existing passwords by changing the community names. Only the community name assigned Super-User access has full management privileges.

The following sections explain each field on the Community Name Table screen and provides instructions on how to change them.

COMMUNITY NAME

Displays the user-defined name through which a user can access Local Management for the SEHI. Any community name assigned here acts as a password to Local Management.

ACCESS

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

BASIC-READ   This allows Read-Only access to Local Management, but excludes read privileges to the Component Trap screen.

READ-ONLY   This allows Read-Only access to Local Management, but excludes access to security protected fields of the upper levels of authorization (Read-Write or Super-User).

READ-WRITE   This allows the user to read and write to Local Management fields, excluding IP Address, Subnet Mask, and Community Names.

SUPER-USER   This access privilege gives the user read and write access to Local Management. Super-User allows read and write access to all modifiable parameters including: Community Names, IP Addresses, Traps, and SNMP Objects.

Editing the Community Name Field

The password used to access Local Management at the Password screen must have Super-User privileges for the edits to take effect. If a password is entered with Basic-Read, Read-Only, or Read-Write privileges, Local Management displays the message "AUTHORIZATION PROHIBITS ACCESS", and does not include editing capabilities.

To edit the Community Name field:

1. Use the arrow keys to highlight the **Community Name** field adjacent to the desired access level.

2. Enter the community name (maximum of 32 characters) into the field.

3. Press **ENTER**.

4. Repeat steps 1–3 for editing any of the other community names.

5. Use the arrow keys to highlight the SAVE command at the bottom of the screen, then press **ENTER** or **F6**. The "SAVED OK" message appears indicating that the edits have been saved to memory.
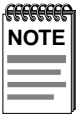
> **NOTE**
>
> The first time a user attempts to exit the screen without saving the changes, a "NOT SAVED?" message is displayed. The edits are lost if the user exits without saving the changes.

6. To exit the screen, press the appropriate Function key or use the arrow keys to highlight the **RETURN** command.

7. Press **ENTER**. The Feature Selection screen appears.

7.6   THE CONFIGURATION SCREEN

To access the Configuration screen from the Feature Selection screen, use the arrow keys to highlight the **IP Address Assignment** option, then press **ENTER** or **F7**. The screen shown in Figure 7-5 appears.

```
                    SEHI  LOCAL MANAGEMENT
                  Cabletron  SEHI Revision X.XX.XX

                        CONFIGURATION


    I/F       IP Address        SubNET Mask        MAC Address

     1      000.000.000.000   000.000.000.000    00-00-1d-05-dc-

    36
                       Default Gateway: 0.0.0.0

                Serial Port 1 Application: CONSOLE    Baud Rate: 9600  --ACTIVE-
                -

                Port Enable Override:  OVERRIDE DISABLED


    SAVE    COMMUNITY NAMES   TRAP TABLE    SNMP TOOLS      RETURN

    F6            F7                F8            F9
```
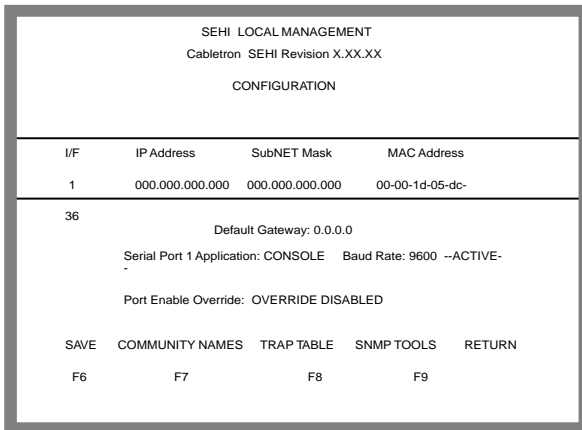
1490_24

Figure 7-5   Configuration Screen

Assign the IP Address, Subnet Mask, and Default Gateway through this screen. Use the Port Enable Override option to enable all device ports in the stack and override the Port Disable setting in the Statistics screen.

The following sections explain each field on the Configuration screen.

I/F
The number of the interface corresponding to the channels over which packets with that IP Address pass. On the SEHI, this value is "1."

IP Address
Displays the IP address of the SEHI.

SubNET Mask
Displays the subnet mask for the SEHI. A subnet mask is a 32-bit quantity which "masks out" the network bits of the IP address. Do this 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.

MAC Address
Displays the physical address associated with the interface.

Default Gateway
Displays the default gateway for the SEHI. This field is not defined until an appropriate value is entered. The default gateway identifies the default gateway device that forwards packets to other IP subnetworks.

Serial Port Application
Displays the port application setting as CONSOLE.

Baud Rate
Displays the Baud Rate setting of the device attached to the SEHI through the serial port. The setting for the serial port is 9600.

Port Enable Override
This command lets the user override the Disable Port settings in the Device Statistics screen to enable all ports in the stack.

Setting the IP Address

Use the following steps to set the IP Address:

1. Use the arrow keys to highlight the **IP Address** field.

2. Enter the IP address into this field. The format for this entry is XXX.XXX.XXX.XXX, with values for XXX being from 0 to 255. The screen beeps if non-numerics or adjacent dots are entered. If the entry does not have three dots, it is rejected.

3. Press **ENTER**. The IP address appears and the natural subnet mask for the user is generated and also appears.

4. Use the arrow keys to highlight the **SAVE** option, then press **ENTER** or **F6**. The "SAVED OK" message appears indicating that the changes have been saved to memory.

NOTE	The first time an attempt is made to exit the screen without saving the changes, a "NOT SAVED?" message is displayed. The edits are lost if the user proceeds to exit without saving the changes.

Setting the Subnet Mask

NOTE	Consult the Network Administrator prior to setting the Subnet Mask.

The subnet mask defines how the SEHI treats SNMP Trap IP destination addresses in its Trap Table.

- Set the subnet mask when workstations in the Trap Table reside on a different subnet (i.e., across a gateway or router), and these workstations are to receive SNMP traps.

- Use the subnet mask factory default setting of 0.0.0.0 when all trap designated workstations are on the SEHI subnet.

Use the following steps to set the subnet mask:

1. Use the arrow keys to highlight the **SubNET Mask** field.

2. Enter the subnet mask into this field. The format for this entry is XXX.XXX.XXX.XXX with values for XXX being from 0 to 255.

3. Press **ENTER**.

4. Use the arrow keys to highlight the **SAVE** option, then press **ENTER** or **F6**. The "SAVED OK" message appears indicating that the changes have been saved to memory.

NOTE

The first time an attempt is made to exit the screen without saving the changes, a "NOT SAVED?" message is displayed. The edits are lost if the user proceeds to exit without saving the changes.

Setting the Default Gateway

The Default Gateway field allows the user to identify the router through which the SEHI will be forwarding IP packets.

Use the following steps to set the Default Gateway:

1. Use the arrow keys to highlight the **Default Gateway** field.

2. Enter the gateway default mask in this field. The format for this entry is XXX.XXX.XXX.XXX with values for XXX being from 0 to 255.

3. Press **ENTER**. If the entry is accepted as a valid default gateway, "OK" appears to the right of the field.

4. Use the arrow keys to highlight the **SAVE** option, then press **ENTER** or **F6**. The "SAVED OK" message appears indicating that the changes have been saved to memory.

Using the Port Enable Override

Use the following steps to override the Disable Port settings and enable all ports in the stack:

1. Use the arrow keys to highlight the **Port Enable Override** field.

2. Press **ENTER** to toggle from the default setting of "OVERRIDE DISABLED" to "OVERRIDE ENABLED."

3. The adjacent field displays "Y/N." Enter **Y** to continue enabling all ports, or **N** to discontinue the port enable override. The message "PORT ENABLED" appears after **Y** is entered.

Exiting the Configuration Screen

Use the following steps to exit the Configuration screen and return to the Feature Selection screen:

1. Press the appropriate Function key. To return to the Feature Selection screen, use the arrow keys to highlight the **RETURN** command.

2. Press **ENTER**. The Feature Selection screen appears.

7.7   THE TRAP TABLE SCREEN

Access the Trap Table screen from the Features Selection screen using the arrow keys to highlight the **Component Trap Table** option, then press **ENTER** or **F8**. The screen shown in Figure 7-6 appears.

```
                    SEHI LOCAL MANAGEMENT
                  Cabletron  SEHI Revision X.XX.XX
                          TRAP TABLE


    SNMP Community Name                 Traps        IP Address

       <CR>                              N           0.0.0.0
       <CR>                              N           0.0.0.0
       <CR>                              N           0.0.0.0
       <CR>                              N           0.0.0.0
       <CR>                              N           0.0.0.0
       <CR>                              N           0.0.0.0
       <CR>                              N           0.0.0.0
       <CR>                              N           0.0.0.0


      SAVE     COMMUNITY NAMES   IP TABLE   SNMP TOOLS   RETURN
       F6            F7             F8          F9
```

1490_25

Figure 7-6   Trap Table Screen

The Trap Table defines the management stations that will receive SNMP Traps for alarm/event notification. The following sections explain each field on the Trap Table screen and instructions on how to change them.

SNMP Community Name

Displays the community name included in the trap message sent to the network management station with the associated IP address.

Traps

Enables transmission of the traps to the network management station with the associated IP address.

IP Address

Indicates the IP address of the workstation receiving trap alarms from the SEHI.

Configuring the Trap Table

Use the following steps to configure the Trap table:

1. Use the arrow keys to highlight the **SNMP Community Name** field, then enter the community name.

2. Press **ENTER**.

3. Use the arrow keys to highlight the **Traps** field and enter **Y** (or **y**) to send alarms from the SEHI to the workstation, or **N** (or **n**) to prevent alarms from being sent.

4. Press **ENTER**.

5. Use the arrow keys to highlight the appropriate **IP Address** field.

6. Enter the IP address of the workstation to send traps to in this field. The format for this entry is XXX.XXX.XXX.XXX, with the value of XXX ranging from 0 to 255, and three dots, or else it returns to the beginning of the field.

7. Use the arrow keys to highlight the **SAVE** option, then press **ENTER** or **F6**. The "SAVED OK" message appears indicating that the changes have been saved to memory.

Exiting the Trap Table Screen

Use the following steps to exit the Trap Table screen and return to the Feature Selection screen:

1. Press the appropriate Function key. To exit to the Feature Selection screen, use the arrow keys to highlight the **RETURN** command.

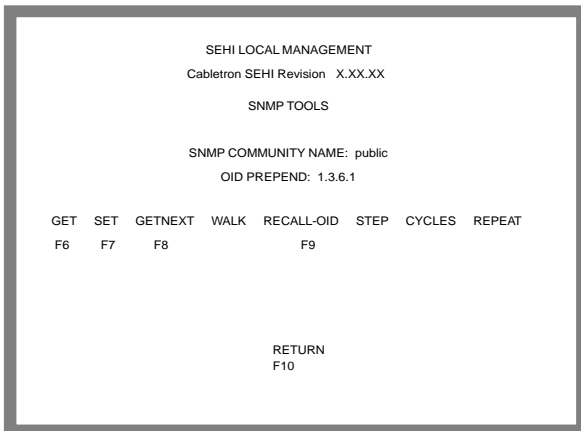2. Press **ENTER**. The Feature Selection screen appears.

7.8 THE SNMP TOOLS SCREEN

This section describes how to use the SNMP Tools screen to access Management Information Bases (MIBs). Access to screen options depends on the access status accorded to the user's community name. This section describes Super-User management capabilities.

SNMP Tools allows access to valuable MIB information. The user gets information about specific object identifiers (OIDs), edits the values of configurable OIDs, and requests the OID numerically sequential to the originally requested OID.

Other ways to view OIDs from the SNMP Tools screen include Walking, Stepping, and Cycling. Walk and Cycle let the user review several OIDs at a time.

To access the SNMP Tools screen from the Features Selection screen, use the arrow keys to highlight the **SNMP Tools Support** option, then press **ENTER** or **F9**. The SNMP Tools screen shown in Figure 7-7 appears.

```
                  SEHI LOCAL MANAGEMENT
              Cabletron SEHI Revision   X.XX.XX

                       SNMP TOOLS

                SNMP COMMUNITY NAME:  public
                   OID PREPEND:  1.3.6.1

  GET    SET   GETNEXT   WALK   RECALL-OID   STEP   CYCLES   REPEAT
  F6     F7     F8                    F9



                       RETURN
                        F10
```

1490_26

Figure 7-7   SNMP Tools Screen

The following sections describe SNMP Tools screen fields.

SNMP COMMUNITY NAME
Identifies the community name used as a password to determine access level to the MIB component.

OID PREPEND
Specifies the number prefix common to all Object Identifiers (OIDs) found in the MIBs – 1.3.6.1 is the default prefix OID. This is a modifiable field.

GET
Allows the user to retrieve MIB objects using SNMP protocol.

SET
Allows users with Read-Write and Super-User access to change modifiable MIB objects, using SNMP protocol.

GETNEXT
Displays the OID following the current OID.

WALK
Allows the user to scroll through a section of the MIB leaf by leaf, from a user-specified object identifier. Leaves are the sections of the OID separated by periods. When a walk is initialized, the following categories for each walk entry, or step are displayed.

- Specified OID - gives the number tag for that OID.

- Size - identifies the number of bytes required to store that object.

- Type - specifies the variable type of the object (e.g., int = integer).

- Data - displays what the object identifier represents.

RECALL-OID
Recalls, from memory, the last OID used.

STEP
Displays the MIB walk, step by step, giving the user time to view specific leaves in detail.

CYCLES
Allows the user to specify the number of GETNEXT requests to cycle through and how much time will elapse between each request.

REPEAT
Repeats the last Get command, allowing the user to monitor changes to a specific OID.

Getting Individual OIDs

Use the following steps to "Get" individual OIDs:

1. Highlight **GET**, using the arrow keys, then press **ENTER** or **F6**. "<GET> OID (=|F9)" appears.

2. Use one of the following options to enter the OID:

   • Using the keyboard to enter the OID minus the prepend (e.g., if the prepend is 1.3.6.1, and 4.1.3 is entered, then the OID=1.3.6.1.4.1.3).

   • Entering an "**=**" and the OID suffix (e.g., if =4.1.3 is entered, then the OID=4.1.3). This allows the user to digress and not use the prepend.

   • Pressing **F9** to recall an OID already entered. The user can then use the keyboard to modify the recalled OID as necessary.

3. Press **ENTER**. If there is no instance of that OID, the return code will specify "MIB_NO_INSTANCE", otherwise, information about that OID data type, length, and value appear.

Getting the Next OID

Use the following steps to "Get" the next OID:

1. Highlight **GETNEXT** with the arrow keys, then press **ENTER** or **F8**. "<GETNEXT> OID (=|F9)" appears.

2. Enter the desired **OID**, or OID extension. (Press F9 to recall the last OID request. The recalled OID may then be modified as necessary.)

3. Press **ENTER**. If there is no instance of that OID, the return code will specify "MIB_NO_INSTANCE", otherwise, information about that OID data type, length, and value appear.

Setting an OID

Use the following steps to "Set" the next OID:

1. Highlight **SET** by using the arrow keys, then press **ENTER** or **F7**. "<SET> OID (=|F9)" appears.

2. Enter the OID, minus the OID prepend. If the OID was previously entered, pressing **F9** recalls that entry. The arrow keys may be used to modify the recalled OID if necessary.

3. Press **ENTER**. If there is no instance of that OID, the return code will specify "MIB_NO_INSTANCE", otherwise "DATA TYPE:" appears.

4. Enter the data type for that OID. Possible choices are integer, string, null, OID, IP address, counter, gauge, timeticks, and opaque.

5. Press **ENTER**. "DATA" appears.

6. Enter the value to correspond to the OID. If accepted, "<SET> OPERATION CODE: XXXX <OK>" appears, otherwise an error message appears.

Viewing Multiple OIDs
View several OIDs at one time to scan a MIB for specific information. "WALK" scrolls through OIDs numerically sequential to the initial OID request. "STEP" scrolls the MIB Walk, one OID at a time. Cycling allows the user to specify how many GETNEXT commands to cycle through.

Walking Through OIDs
Use the following steps to "Walk" through OIDs:

1. Highlight **WALK**, using the arrow keys, then press **ENTER**. "<INITIAL> OID (=|F9)" appears.

2. Enter the OID (minus the prepend) and press **ENTER**. The screen begins walking through the sublayers of the MIB available from the specified OID. Each OID listed displays the specified OID, its size, its type, and the data it contains.

3. Press the **SPACE** bar to stop the walk, or wait for "***MIB WALK COMPLETED***" to appear on the screen.

Stepping Through OIDs
Use the following steps to "Step" through OIDs (the user can step through only after a GETNEXT):

1. Highlight **STEP**, using the arrow keys, then press **ENTER**. "Specify OID" appears.

2. Enter the OID (only the suffix is necessary) and press **ENTER**. The Tools screen begins to scroll one OID at a time, through all of the sublayers of the MIB available for that OID.

Cycling Through OIDs

Use the following steps to "Cycle" through OIDs:

1. Use the arrow keys to Highlight **CYCLES**, then press **ENTER**.

2. Enter the number of cycles desired to occur after "ENTER CYCLE COUNT:", then press **ENTER**.

3. Enter how many seconds delay desired between get next requests after "ENTER CYCLE DELAY (secs):", then press **ENTER**.
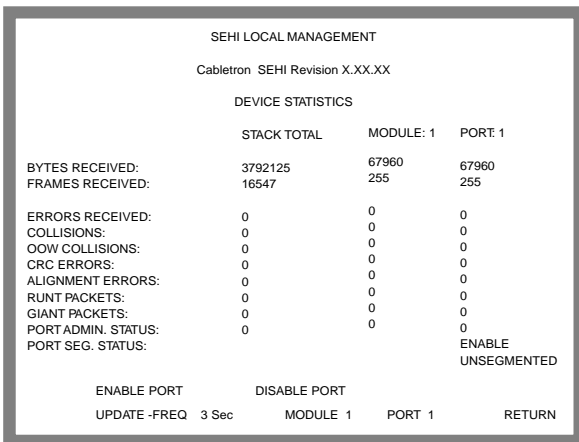
Exiting the SNMP Tools Screen

Use the following steps to exit the SNMP Tools screen:

1. Use the arrow keys to highlight the **RETURN** command.

2. Press **ENTER**. The Feature Selection screen appears.

7.9   THE DEVICE STATISTICS SCREEN

This section describes the features of the Device Statistics screen. The user can view error, collision, and traffic statistics for the stack, a selected module, or a selected port. The user can also enable and disable ports.

To access the Statistics screen from the Features Selection screen, use the arrow keys to highlight the **Device Statistics** option, then press **ENTER**. The Device Statistics screen shown in Figure 7-8 appears.

```
                    SEHI LOCAL MANAGEMENT

                Cabletron  SEHI Revision X.XX.XX

                     DEVICE STATISTICS

                    STACK TOTAL      MODULE: 1     PORT: 1

BYTES RECEIVED:        3792125       67960         67960
FRAMES RECEIVED:       16547         255           255

ERRORS RECEIVED:       0             0             0
COLLISIONS:            0             0             0
OOW COLLISIONS:        0             0             0
CRC ERRORS:            0             0             0
ALIGNMENT ERRORS:      0             0             0
RUNT PACKETS:          0             0             0
GIANT PACKETS:         0             0             0
PORT ADMIN. STATUS:    0             0             0
PORT SEG. STATUS:                                  ENABLE
                                                   UNSEGMENTED

        ENABLE PORT          DISABLE PORT

        UPDATE -FREQ  3 Sec        MODULE  1      PORT  1          RETURN
```

1490_27

Figure 7-8   Device Statistics Screen

The following sections describe Device Statistics screen fields:

BYTES RECEIVED
Displays the number of bytes received.

FRAMES RECEIVED
Displays the number of frames received.

ERRORS RECEIVED
Displays the number of errors received.

COLLISIONS
Displays the number of collisions received.

OOW COLLISIONS
Displays the number of Out Of Window collisions. OOW collisions are usually caused by the network being too long where the round trip propagation delay is greater than 51.2 μs (the collision domain is too large), a station somewhere on the network is violating Carrier Sense and transmitting at will, or a cable somewhere on the network failed during the transmission of the packet.

CRC ERRORS
Displays the number of packets with bad Cyclic Redundancy Checks (CRC) that have been received from the network. The CRC is a 4-byte field in the data packet that ensures that the transmitted data that is received is the same as the data that was originally sent.

ALIGNMENT ERRORS
Displays the number of errors due to misaligned packets.

RUNT PACKETS
Displays the number of runt packets received from the network. A runt packet is less than the minimum Ethernet frame size of 64 bytes, not including preamble.

GIANT PACKETS
Displays the number of packets received whose size exceeded 1518 data bytes, not including preamble.

PORT ADMIN. STATUS
Displays the administrative status of the port selected. The two possible status messages are Enable or Disable.

PORT SEG. STATUS
Displays the segmentation status of the port selected. The two possible status messages are Segmented or Unsegmented. The SEHI and SEH automatically partition problem segments, and reconnect non-problem segments to the network.

ENABLE PORT
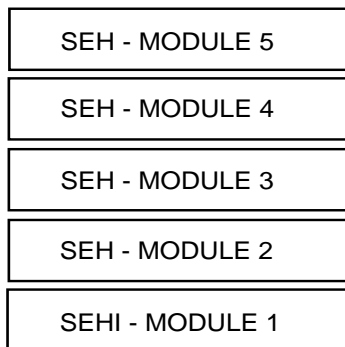This command lets the user enable the selected port.

DISABLE PORT
This command lets the user disable the selected port.

UPDATE-FREQ
This command lets the user select the time interval between Stack/Module/Port counter updates. Choose update intervals up to 99 seconds in increments of 3 seconds.

MODULE
This command lets the user view statistics for a selected module in the stack. The SEHI is Module 1 and each SEH in the stack follows in sequential order. Figure 7-9 shows each module number in the stack.

```
┌──────────────────────────────┐
│      SEH - MODULE 5          │
├──────────────────────────────┤
│      SEH - MODULE 4          │
├──────────────────────────────┤
│      SEH - MODULE 3          │
├──────────────────────────────┤
│      SEH - MODULE 2          │
├──────────────────────────────┤
│      SEHI - MODULE 1         │
└──────────────────────────────┘
```

1490_28

Figure 7-9   Module Number Sequence

PORT

This command lets the user view port statistics for ports 1-26 of the selected module.

Selecting the Appropriate Module/Port

When the Device Statistics screen first appears, statistics are displayed for Module 1 and Port 1. To view statistics for another module and port, use the **Module x** or **Port x** commands at the bottom of the screen.

To select a module or port:

1. Use the arrow keys to highlight the Module or Port command.

2. Press the **SHIFT** and **+** keys, or the **SHIFT** and **-** keys until the desired module or port number appears.

3. Press **ENTER**. Statistics associated with the selected Module and Port appear.

Using the ENABLE PORT Command

The ENABLE PORT command lets the user enable the selected port. The user must first use the **PORT** command to select the desired port.

Use the following steps to set the ENABLE PORT command:

1. Use the arrow keys to highlight the **ENABLE PORT** command at the bottom of the screen.

2. Press **ENTER**. The corresponding port is enabled and the Port Admin Status field is updated.

Using the DISABLE PORT Command
The DISABLE PORT command lets the user disable the port selected in the **PORT** command. The user must first use the Port command to select the desired port.

To set the DISABLE PORT command:

1. Use the arrow keys to highlight the **DISABLE PORT** command at the bottom of the screen.

2. Press **ENTER**. The corresponding port is enabled and the Port Admin Status field is updated.

Exiting the Device Statistics Screen
Use the following steps to exit the Device Statistics screen and return to the Feature Selection screen:

1. Use the arrow keys to highlight the **RETURN** command at the bottom of the screen.

2. Press **ENTER**. The Feature Selection screen appears.

APPENDIX A
EPIM INFORMATION

A.1   EPIM SPECIFICATIONS

EPIMs enable the connection of the SEHI to the main network using different media types. Cabletron Systems offers a variety of EPIMs. The following sections explain specifications for each EPIM.

A.1.1   EPIM-T

The EPIM-T is an RJ45 connector supporting UTP cabling. It has an internal Cabletron Systems TPT-T 10BASE-T Twisted Pair Transceiver.

The slide switch on the EPIM-T 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 A-1 shows the pinouts for the EPIM-T in both positions.

Position X
(crossed over)

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

Position =
(not crossed over)

1. TX+	5. NC
2. TX-	6. RX
3. RX+	7. NC
4. NC	8. NC
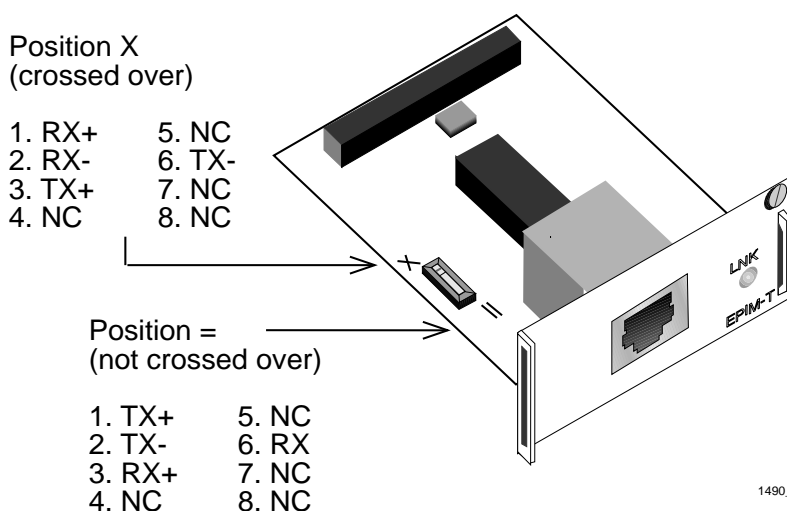
1490_29

Figure A-1   EPIM-T Pinouts

A.1.2   EPIM-F1 and EPIM-F2

The EPIM-F1 and EPIM-F2 shown in Figure A-2 support Multimode Fiber Optic cabling. Each EPIM has an internal Cabletron Systems FOT-F Fiber Optic Transceiver. The EPIM-F1 is equipped with SMA Connectors and the EPIM-F2 is equipped with ST Connectors. Specifications for the EPIMs are listed below.
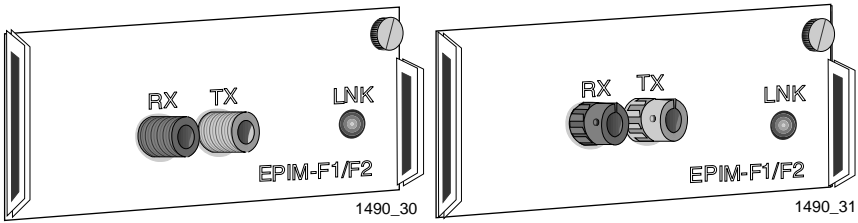
Figure A-2   EPIM-F1 and EPIM-F2

Parameter	Typical Value	Worst Case	Worst Case Budget	Typical Budget
Receive Sensitivity	-30.5 dBm	-28.0 dBm	—	—
Peak Input Power	-7.6 dBm	-8.2 dBm	—	—
Transmitter Power				
50/125 µm fiber	-13.0 dBm	-15.0 dBm	13.0 dB	17.5 dB
62.5/125 µm fiber	-10.0 dBm	-12.0 dBm	16.0 dB	20.5 dB
100/140 µm fiber	-7.0 dBm	-9.0 dBm	19.0 dB	23.5 dB
Error Rate	Better than 10^{-10}			

The transmitter power levels and receive sensitivity levels listed are Peak Power Levels after optical overshoot. Use a Peak Power Meter to 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 dBm to the measurement to compare the measured values to the values listed (i.e. -33.5 dBm average + 3 dBm =-30.5 dBm peak).

A.1.3   EPIM-F3

The EPIM-F3 (Figure A-3) supports Single Mode Fiber Optic cabling. It has an internal Cabletron Systems FOT-F Fiber Optic Transceiver and is equipped with ST Connectors. EPIM-F3 specifications are listed below.
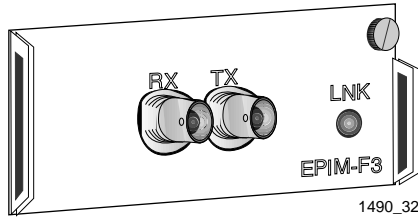
Figure A-3   EPIM-F3

Transmitter Power decreases as temperatures rise and increases as temperatures fall. Use the Output Power Coefficient to calculate increased or decreased power output for the operating environment. For example, the typical power output at 25°C is -16.4 dBm. For a 4°C temperature increase, multiply the typical coefficient (-0.15 dBm) by four and add the result to typical output power (4 x -0.15 dBm + -16.4 = -17.0).

Parameter	Typical	Minimum	Maximum
Transmitter Peak Wave Length	1300 nm	1270 nm	1330 nm
Spectral Width	60 nm	-	100 nm
Rise Time	3.0 ns	2.7 ns	5.0 ns
Fall Time	2.5 ns	2.2 ns	5.0 ns
Duty Cycle	50.1%	49.6%	50.7%
Bit Error Rate	Better than 10^{-10}		

The transmitter power levels given above are Peak Power Levels after optical overshoot. Use a Peak Power Meter to compare the values given above to those measured on any particular port. If you are using an Average Power Meter, add 3 dBm to the measurement to compare the average power values to the values listed above
(i.e., -33.5 dBm average + 3 dBm = -30.5 dBm peak).

A.1.4 EPIM-C

The EPIM-C supports thin coaxial cabling and is equipped with an
internal Cabletron Systems TMS-3 Transceiver. Use the TERM switch on
the front of the EPIM-C to set the internal 50-ohm terminator. This
eliminates the need to connect the port to a T-connector and terminator.
Figure A-4 shows the setting for the terminator switch.

Internal Termination Switch
● = On (internally terminated)
○ = Off (need external termination)
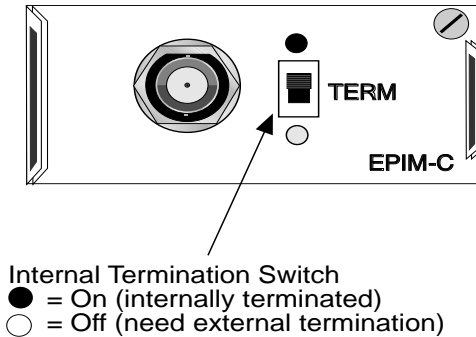
1490_34

Figure A-4   EPIM-C

Connector Type
BNC receptacle, with gold center contact, for use with BNC type
T-connectors and RG58 thin coaxial cable.

Grounding
The BNC port of the Coaxial Interface Module is not connected to earth
ground.

For safety, ground only one end of a thin coaxial segment. Do
NOT connect EPIM BNC ports to earth ground. Connecting a
thin coaxial segment to earth ground at more than one point
can produce dangerous ground currents.

A.1.5   EPIM-A and EPIM-X (AUI Port)

The EPIM-A is a DB15 female connector used to attach segments to an external transceiver. The EPIM-X is equipped with dual internal transceivers. It has a DB15 male connector used to attach segments to an AUI cable. Figure A-5 shows both modules.
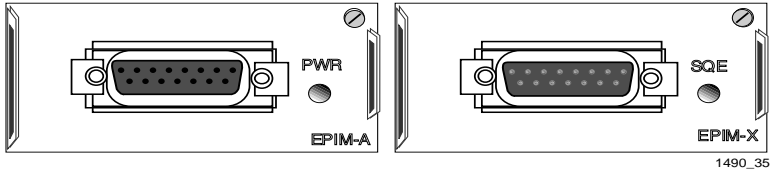
Figure A-5   The EPIM-A and EPIM-X

Pin	1	Logic Ref.	9	Collision -
	2	Collision +	10	Transmit -
	3	Transmit	11	Logic Ref.
	4	Logic Ref.	12	Receive -
	5	Receive +	13	Power (+12Vdc)
	6	Power Return	14	Logic Ref.
	7	No Connection	15	No Connection
	8	Logic Ref.		

Connector Shell: Protective Ground

APPENDIX B

IMAGE FILE DOWNLOAD USING OIDs

This appendix provides instructions for setting up a TFTP server and to download an image file to the SEHI by setting specific MIB OID strings. Set the OID strings with the SNMP Tools screen described in Chapter 7, Section 7.8.
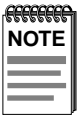
> **NOTE**
>
> Download an image file to the SEHI with a remote management package such as SPECTRUM, SPECTRUM Element Manager, or the appropriate SPECTRUM Portable Management Application. Refer to the specific package documentation for image file download procedures.

The SEHI supports the Standard TFTP Download application. In this application the SEHI automatically goes offline during the image download. After the download, the SEHI programs FLASH, then reboots with the new image.

Before downloading the image to the SEHI, you must complete the following steps:

1. Decompress the image file on a DOS PC using the PKUNZIP utility included with the image.
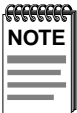
> **NOTE**
>
> The PKUNZIP utility requires a DOS PC. You must decompress the image file on the DOS PC before you load the image file onto the TFTP server.

2. Load the decompressed image file onto the TFTP server.

> **NOTE**
>
> For information on how to set up a workstation as a TFTP server, refer to your specific workstation documentation. These instructions include limited information and guidelines for setting up a UNIX workstation to work as a TFTP server.

B.1 SETTING UP A UNIX WORKSTATION AS A TFTP SERVER

Due to variations between UNIX systems and individual configurations, this section provides only GUIDELINES for configuring a UNIX workstation to perform an image file download. The instructions include command examples, where appropriate. Bold lettering in examples indicates operator entry.

> ⚠️ **CAUTION**
>
> If unsure about how to properly configure a UNIX workstation using these guidelines, contact the Systems Administrator.

To set up a UNIX workstation, proceed as follows:

1. Edit the /etc/ethers file by adding the SEHI MAC address, followed by a unique name (e.g., 00:00:1d:32:0c:1b sehi).

2. Edit the /etc/hosts file by adding the SEHI MAC address and follow it with the same unique name used in step 1 (e.g., 00:00:1d:32:0c:1b sehi).

3. If the workstation already has a /tftpboot directory, confirm the TFTP setup of the workstation as follows:

    Request a process status and grep for TFTP (e.g., unix% **ps-aux | grep tftp**).

    The following information represents a typical output:

user	161	7.7	1.2	32	184	p3	S	12:00	grep tftp
root	87	0.0	0.9	48	136	?	S	11:05	tftp -s

The term tftp -s , located at the end of the root string, indicates TFTP is active. If TFTP is NOT running, only the grep process appears.

4. If the workstation does NOT have a /tftpboot directory, than create one (e.g., unix% **mkdir tftpboot**).

5. Ensure that the /tftpboot directory is not owned (e.g., unix% **chown nobody tftpboot**).

NOTE
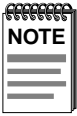
The next step requires decompression of the zipped image file. If you do not have a UNIX unzip utility, access to a PC with PKUNZIP, or a way to FTP the decompressed image to your UNIX workstation, contact Cabletron Systems Technical Support.

6. Store the hex image file in the /tftpboot directory as sehi.hex.

7. Edit the /etc/inetd.conf file by removing anything prior to the tftpboot daemon (e.g., the # sign) that comments-out the line.

8. Kill the inetd process (e.g., unix% **kill -HUP 'process ID number'**), and then restart the process (e.g., unix% **inetd**), to enable the revised inetd.conf file.

NOTE
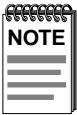
The user must request a process status and grep for inetd to obtain the process ID number (refer to step 3).

B.2   STANDARD TFTP DOWNLOAD

Table B-1 provides a step-by-step procedure for downloading the firmware image file. This section provides specific MIB OIDs, MIB names, and the required setting for proper image file download. Refer to the specific MIB walking tool documentation for instructions on how to set MIB OID strings.

The Download OIDs for CabletronSystems products reside in Cabletron Systems enterprise MIBs (group 52). The specific OIDs necessary to perform an image file download reside in the common download group under
ctDL (Cabletron Download). The full OID string to reach this group is 1.3.6.1.4.1.52.4.1.5.8.1.

When performing the steps in Table B-1, keep the following in mind:

•   Follow the steps in order.

•   Enter the IP address of the TFTP server in standard dotted decimal notation (e.g., 132.177.118.24).

• Enter the FULL path to the image file in the ctDLTFTPRequest OID, including the name of the image file (e.g., c:/tftpboot/sehi.hex).

Table B-1   Standard TFTP Download Procedure

Step	OID Name	OID Number	Data Type	SNMP OID Data
1.	ctDLForceOnBoot	1.3.6.1.4.1.52.4.1.5.8.1.**1.0**	integer	1
2.	ctDLCommitRAMToFlash	1.3.6.1.4.1.52.4.1.5.8.1.**2.0**	integer	1
3.	ctDLTFTPRequestHost	1.3.6.1.4.1.52.4.1.5.8.1.**4.0**	IP address	Enter the IP address of the TFTP server.
4.	ctDLTFTPRequest	1.3.6.1.4.1.52.4.1.5.8.1.**5.0**	string (ASCII)	Enter the path to the image file.
5.	ctDLInitiateColdBoot	1.3.6.1.4.1.52.4.1.5.8.1.**3.0**	integer	1

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POWER SUPPLY CORD

The mains cord used with this equipment must be a 2 conductor plus ground type with minimum 0.75 mm square conductors and must incorporate a standard IEC appliance coupler on one end and a mains plug on the other end which is suitable for the use and application of the product and that is approved for use in the country of application.

GERMAN:

Die Netzleitung, die mit diesem Geraet benuetzt wird, soll einen zwei Leiter mit Erdleiter haben, wobei die Leiter mindestens 0.75 mm sind, mit einer normalen IEC Geraetesteckdose an einem Ende und einem Geraetestecker am anderen Ende versehen sind, der fuer den Gebrauch und die Anwendung des Geraetes geeignet und der zum Benuetzen im Lande der Anwendung anerkannt ist.

SPANISH:

El cable principal de la red eléctrica utilizado con este equipo debe tener 2 conductores y 1 toma de tierra con un mínimo de 0.75 mm2 cada uno y necesita tener un aparato de acoplamiento standard IEC en un extremo y un enchufe para el cable principal de la red eléctrica en el otro extremo, lo cual sea adecuado para el uso y applicación del producto y lo cual sea aprobado para uso en el pais de applicación.

FRENCH:

Le cordon d' alimentation reliant cet appareil au secteur doit obligatoirement avoir deux fils conducteurs de 0.75 mm2 minimum et un fil de terre. It doit également être équipé du côté appareil d'une fiche agrée IEC et du côte secteur, d'une prise adaptée à l'usage du produit et aux normes du pays où l'appareil est utilisé.

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