Liebert IntelliSlot® Web Cards

Installation Manual — Liebert IntelliSlot Web Card, Liebert IntelliSlot Web Card-LB, Liebert IntelliSlot Web Card-LBDS, Liebert IntelliSlot Web/485 Card-ADPT
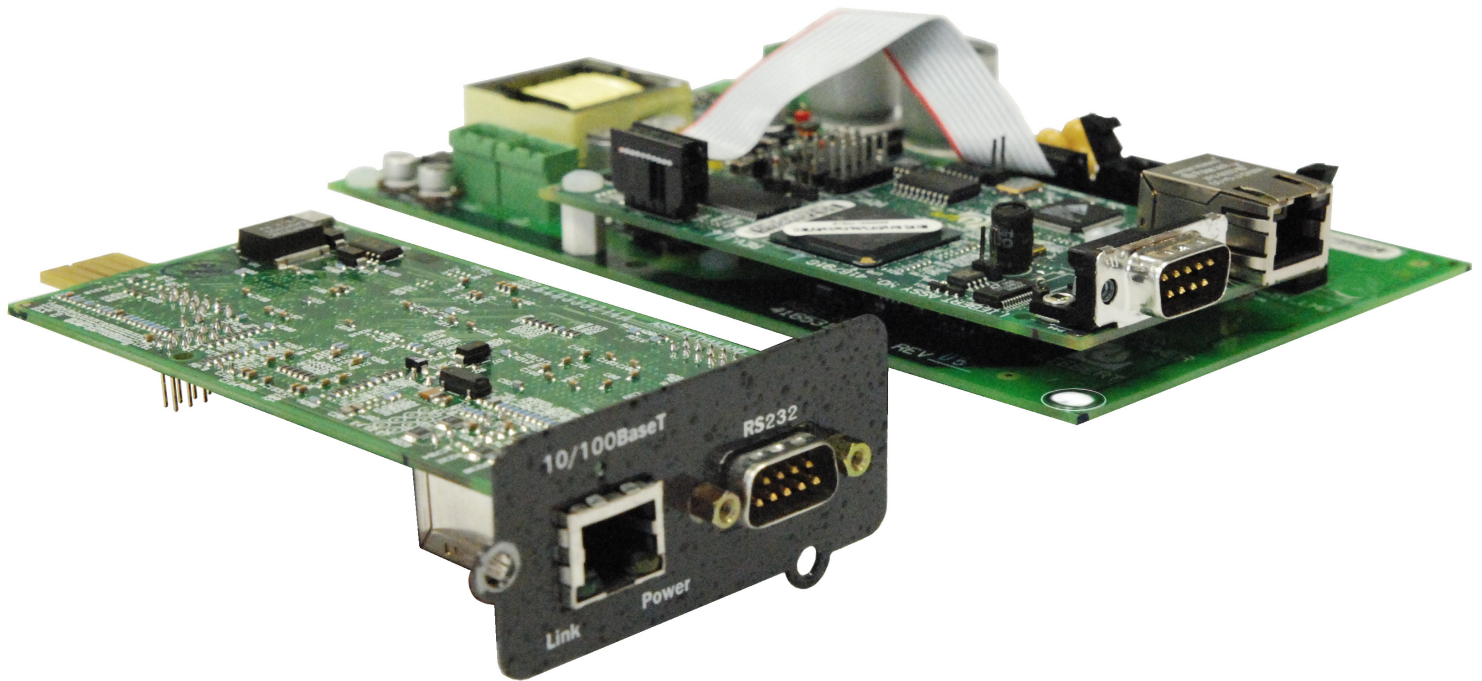

Liebert®

EMERSON™
Network Power

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1.0   INTRODUCTION

The Liebert IntelliSlot™ Web Card family delivers enhanced communications and control to Liebert AC Power and Precision Cooling systems.

Liebert IntelliSlot Web cards bring SNMP, Telnet and Web-management capability to many models of Liebert power and cooling equipment. The cards employ an Ethernet network to monitor and manage a wide range of operating parameters, alarms and notifications.
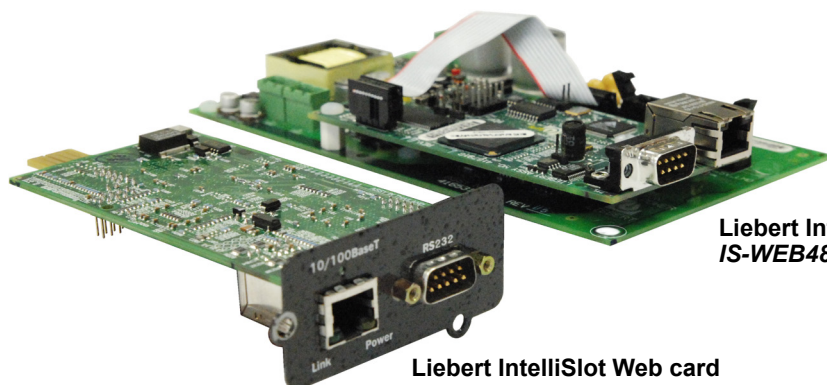
Liebert IntelliSlot Web/485 Card With Adapter
IS-WEB485ADPT

Liebert IntelliSlot Web card
IS-WEBCARD, IS-WEBLB and IS-WEBLBDS

1.1   Compatibility With Liebert Equipment

The Liebert IntelliSlot Web Card family, formerly the OpenComms line, includes:

- **Liebert IntelliSlot Web Card**
  Compatible with these Liebert UPS models: Liebert PowerSure PSI™, Liebert GXT™, Liebert GXT™ 6kVA & Liebert GXT™ 10kVA, Liebert GXT2U™ and Liebert Nfinity®
- **Liebert IntelliSlot Web Card-LB**
  Compatible with the Liebert NX™ and Liebert Hinet™ UPS models
- **Liebert IntelliSlot Web Card-LBDS**
  Compatible with the Liebert DS™ Precision Cooling unit
- **Liebert IntelliSlot Web/485 Card-ADPT**
  Compatible with Liebert AC Power and Precision Cooling systems not equipped with a Liebert IntelliSlot port

Table 1   Liebert IntelliSlot card communication protocols

Liebert IntelliSlot Card	Part Number	Communication Protocol						
		SNMP	**HTTP**	**HTTPS**	**Modbus**	**E-mail**	**SMS**	**Telnet**
Liebert IntelliSlot Web Card	IS-WEBCARD	✔	✔	✔	—	✔	✔	✔
Liebert IntelliSlot Web Card-LB	IS-WEBLB	✔	✔	✔	—	✔	✔	✔
Liebert IntelliSlot Web Card-LBDS	IS-WEBLBDS	✔	✔	—	—	—	—	✔
Liebert IntelliSlot Web/485 Card With Adapter	IS-WEB485ADPT	✔	✔	✔	✔	—	✔	✔

Liebert IntelliSlot Web cards support both 10Mbit and 100Mbit communication speeds and either half or full duplex.

> **NOTE**
> *See online demonstrations of Web cards installed in Liebert equipment at:*
> *http://demos.liebert.com*

1.2   Web Support

The Liebert IntelliSlot Web card delivers Web management and control to Liebert equipment. All authorized users on your network will be able to view status information.

1.3   Password Protection

Control and configuration capabilities are protected by a username and password combination. Optionally, status information can be password-protected. The default username is "Liebert" and the default password is also "Liebert."

You can change the password using the terminal emulation, Telnet or Web interface. See **5.5 - Change Username / Password** for details.

> **NOTE**
> *Change the username and password today to prevent unauthorized access.*

1.4   SNMP Support

The Liebert IntelliSlot Web card enables SNMP management of Liebert equipment. To integrate the card into your SNMP implementation, compile the Liebert Global Products MIB on your network management station (NMS).

The Liebert Global Products MIB is included in this package on CD-ROM and supports both Windows and Unix file formats.

1.5   Liebert Nform™ Support

Utilizing the SNMP and Web technologies built into each of the Liebert IntelliSlot Web cards, Liebert Nform will centrally manage alarm notifications to provide you with an easy interface to access critical system information.

A downloadable edition is available online at:

nform.liebert.com

1.6   Liebert MultiLink™ Support

The Liebert IntelliSlot Web card integrates with Liebert's MultiLink software to provide unattended, graceful operating system shutdown of PCs, servers and workstations. The card can be monitored by MultiLink over the network, eliminating the need for serial cables.

For more information on MultiLink and a downloadable version of MultiLink software, visit the MultiLink page at:

multilink.liebert.com

1.7   Liebert SiteScan® Web With Modbus Support - IS-WEB485ADPT only

The Liebert IntelliSlot Web/485 Card With Adapter integrates with Liebert's SiteScan Web software using Modbus to monitor trends for analysis and maintenance to ensure high-availability operation of critical facilities.

For more information on SiteScan Web and Modbus integration, visit the SiteScan Web page at:

sitescan.liebert.com

2.0   INSTALLATION

⚠ **WARNING**

Only a qualified service professional should install these products. Liebert recommends having a Liebert Global Services representative perform the installation in large UPSs. Contact Liebert Global Services at 1-800-LIEBERT (1-800-543-2378).

2.1   Install a Liebert IntelliSlot Web Card—Non-Adapter Version

Follow these steps to install a Liebert IntelliSlot Web card (non-adapter version—P/N IS-WEBCARD, IS-WEBLB and IS-WEBLBDS).

1. Locate the Liebert IntelliSlot option bay on your Liebert equipment—You might need to remove a plastic cover.
2. Insert the Liebert IntelliSlot Web Card into the Liebert IntelliSlot bay.
3. Secure the card with the supplied screws.
4. Connect an Ethernet cable.
   DHCP: The card ships with DHCP service enabled. The MAC address is on a sticker on the top of the card.
   > OR

   Static IP: To assign a static IP address, use terminal emulation software to configure the card, as described in **Sections 2.1.1** and **2.1.2**.

2.1.1   Connect the Cable

1. Locate the blue serial configuration cable (null modem) that shipped with the card.
2. Connect the configuration cable to the DB-9 port on the card and to a COM port on your PC.

2.1.2   Prepare the Card for Configuration

- Use terminal emulation software, such as Microsoft® HyperTerminal, to open a connection to the card with the settings in **Table 2**.

Table 2   Communication settings

Baud Rate:	9600
Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	None

- Press the Enter key for the Main Menu, above right.
- Select **IP Network Settings**, then **Boot/IP Settings** and follow the instructions to enter an IP ADDRESS, NETMASK and GATEWAY.
- Press Esc to return to the Main Menu.
- Choose **Exit and Save** to save your changes and reboot the card.

🔍 **NOTE**

When installing the card in a Liebert NX™, configure the communication port of NX to 2400 baud. See the NX user manual for details.
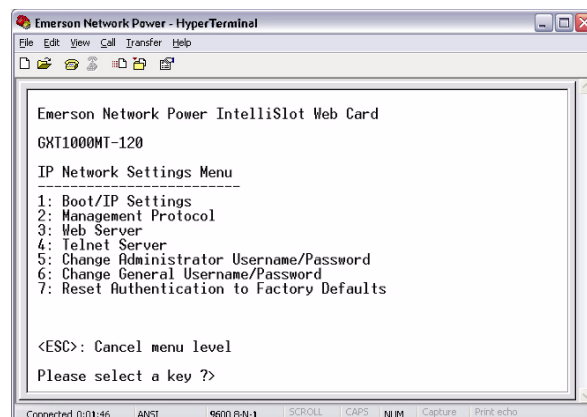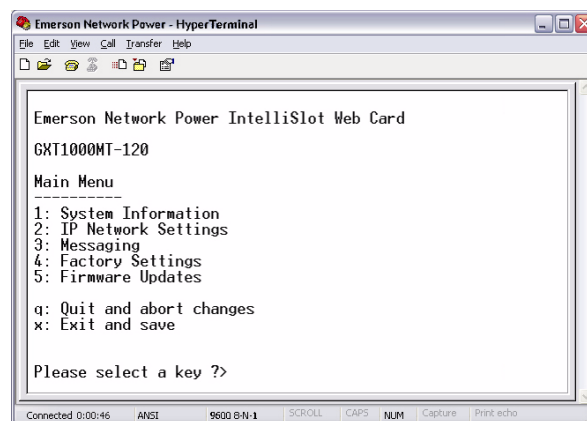
2.2   Install a Liebert IntelliSlot Web/485 Card With Adapter

Follow these steps to install a Liebert IntelliSlot Web/485 Card With Adapter (P/N IS-WEB485ADPT).

- Locate the adapter mounting location in your Liebert equipment.
- Secure the Liebert IntelliSlot Web/485 Card With Adapter with the supplied screws.
- Connect the equipment's communication cable to the TB1 terminal block or P1 on the card (see the user manual for the Liebert power or cooling unit for details).
- Connect a Modbus (RS-485) cable to the TB2 terminal block.
- Connect an input power supply cable to Pins 1 & 2 on the TB3 terminal block; Pin 1 is at the far left, and Pin 2 is the middle pin.

2.2.1   Connect the Cable
1. Locate the blue serial configuration cable (null modem) that shipped with the card.
2. Connect the configuration cable to the DB-9 port on the card and to a COM port on your PC.

2.2.2   Prepare the Card for Configuration
1. Use terminal emulation software, such as HyperTerminal, to open a direct connection to the card with the settings in **Table 3**.
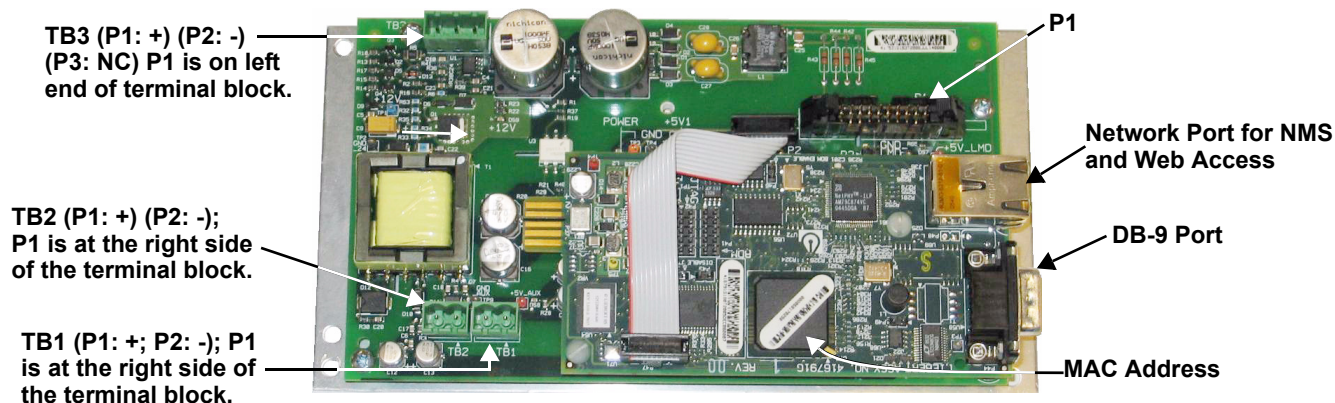
Table 3   Communication settings

Baud Rate:	9600
Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	None

2. Press the Enter key for the Main Menu.
3. Select **485 Network Settings** to access the communications settings.
4. Select **Enabled Application**.
5. Select **Modbus Server** to enable the Modbus application.
6. At the next screen, select **Server ID** (the default Server ID is 1, but may be any number up to 255).
7. Press Esc to return to the Main Menu.
8. Select **IP Network Settings**, then **Boot/IP Settings** and follow the instructions to enter an IP ADDRESS, NETMASK and GATEWAY.
9. Press **Esc** to return to the Main Menu.
10. Choose **Exit and Save** to save your changes and reboot the card.

> **NOTE**
> *When installing the card in a Liebert NX™, configure the communication port of NX to 2400 baud. See the NX user manual for details.*

3.0 CONFIGURATION OVERVIEW

You may use any of the following interfaces to configure the Web card:

Table 4   Configuration interfaces

Interface	Icon	Description	Available Functions	Connection Methods
Terminal Emulation (Serial or TCP/IP)		Use terminal emulation software —for example, HyperTerminal.	Configuration	Serial Cable or TCP/IP
Telnet		Use a command prompt—enter "telnet " and the IP address.	Configuration	TCP/IP
Web		Use a Web browser—for example, Microsoft® Windows® Internet Explorer®.	Configuration, Monitoring, Control	TCP/IP

Each configuration section provides instructions using the **Terminal Emulation (Serial or TCP/IP Connection) / Telnet Interface**, along with a brief description of how to access the same function through the **Web Interface**.

> **NOTE**
> *The Terminal Emulation and Telnet interfaces present the same menus and choices.*

3.1 Guide to Configuration

Refer to the following guide for details on configuration functions. **Sections 3.4** to **3.5** describe how to get started with each interface.

Table 5   Guide to configuration details

Topic	Section	Page:
Connecting to an interface	**3.2 - Open the Terminal Emulation Interface - Serial Connection**	6
	3.3 - Open the Terminal Emulation Interface - TCP/IP Connection	7
	3.4 - Open the Telnet Interface	8
	3.5 - Open the Web Interface	9
Saving configuration changes	**3.6 - Saving Changes and Reinitializing the Web Card**	10
Performing configuration functions	**4.0 - System Information**	11
	5.0 - IP Network Settings	12
	6.0 - Messaging	25
	7.0 - Factory Settings	29
	Appendix A - - Firmware Updates	A1

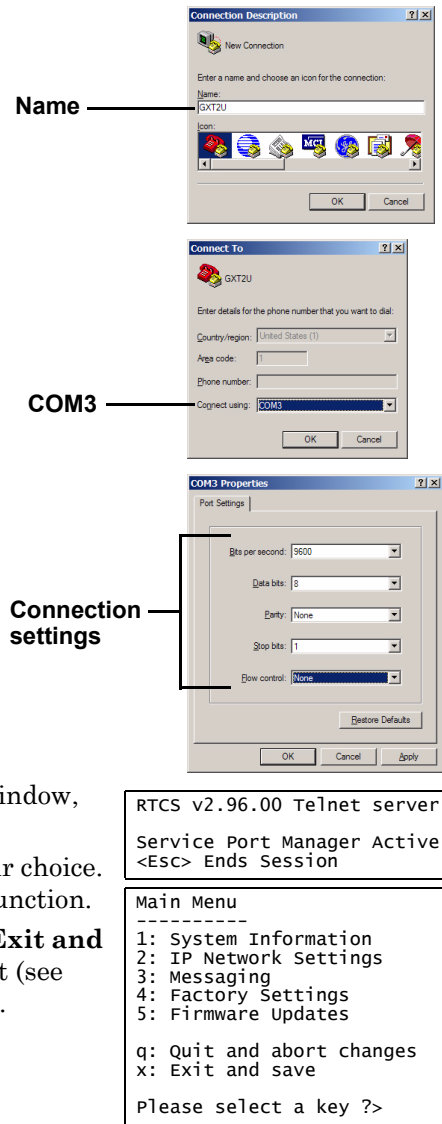## 3.2 🖳 Open the Terminal Emulation Interface - Serial Connection

To access configuration using terminal emulation software with
a serial connection to the Web card:

1. Open a terminal emulation application, such as
   HyperTerminal.

   To do this:

   - Click the **Start** button, then **Programs**, **Accessories**,
     Communications and finally **HyperTerminal**.

2. In the Connection Description window, enter a name for the
   connection—for example, **GXT2U**—then click **OK**.

3. In the Connect To window:

   - Choose **COM3** from the Connect Using drop-down list.
   - Click **OK**.

4. In the COM3 Properties window, enter the communication
   settings shown in **Table 6**.

Table 6   Communication settings

Baud Rate:	9600
Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	None

5. When the message at right appears in the HyperTerminal window,
   press the Enter key.

6. In the Main Menu, enter the number that corresponds to your choice.
   Refer to **3.1 - Guide to Configuration** for details on each function.

7. After making changes, return to the Main Menu and choose **Exit and
   Save** to reboot the Web card and put your changes into effect (see
   3.6 - Saving Changes and Reinitializing the Web Card).

Name

COM3

**Connection
settings**

```
RTCS v2.96.00 Telnet server

Service Port Manager Active
<Esc> Ends Session
```

```
Main Menu
----------
1: System Information
2: IP Network Settings
3: Messaging
4: Factory Settings
5: Firmware Updates

q: Quit and abort changes
x: Exit and save

Please select a key ?>
```

3.3 🖥 Open the Terminal Emulation Interface - TCP/IP Connection

To access configuration using terminal emulation software with an Ethernet connection to the Web card:

1. Open a terminal emulation application, such as HyperTerminal.

   To do this:
   - Click the **Start** button, then **Programs**, **Accessories**, **Communications** and finally **HyperTerminal**.

2. In the Connection Description window, enter a name for the connection—for example, **GXT2U**—then click **OK**.

3. In the Connect To window:
   - Choose **TCP/IP (Winsock)** from the Connect Using drop-down list.
   - Enter the IP address of the Web card—for example, **192.168.0.125**—in the Host Address box, then click **OK**.

4. When the message at right appears in the HyperTerminal window, press the Enter key.

5. Enter the Administrator username and password (both are case-sensitive):
   a. **Login** (username—default is *Liebert*)
   b. **Password** (default is *Liebert*)

🔍 **NOTE**
*For security, change the default username and password (see **5.5 - Change Username / Password**).*

6. In the Main Menu, enter the number that corresponds to your choice. Refer to **3.1 - Guide to Configuration** for details on each function.

7. After making changes, return to the Main Menu and choose **Exit and Save** to reboot the Web card and put your changes into effect (see **3.6 - Saving Changes and Reinitializing the Web Card**).
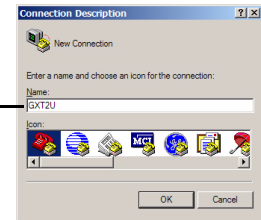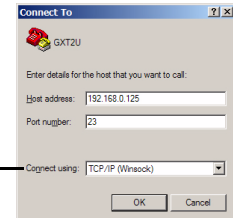
Name

TCP/IP (Winsock)

```
RTCS v2.96.00 Telnet server

Service Port Manager Active
<Esc> Ends Session
```

```
Login: Liebert
Password: ********
```

```
Main Menu
----------
1: System Information
2: IP Network Settings
3: Messaging
4: Factory Settings
5: Firmware Updates

q: Quit and abort changes
x: Exit and save

Please select a key ?>
```
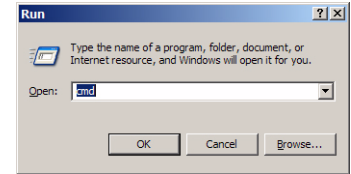
3.4 🔲 Open the Telnet Interface

To access configuration using Telnet:

1. Open a Telnet connection on a computer with an Ethernet connection to the Liebert unit.
   To do this:
   - Open a command prompt window—click the **Start** button, then **Run**.
   - Enter **cmd** and click **OK**.
   - In the command prompt window that opens, enter **telnet** followed by a space and the IP address of the Web card—for example:

     telnet 192.168.0.125

```
C:>telnet 192.168.0.125
```

2. When the message at right appears in the command prompt window, press the Enter key.

```
RTCS v2.96.00 Telnet server

Service Port Manager Active
<Esc> Ends Session
```

3. Enter the Administrator username and password (both are case-sensitive):
   a. **Login** (username—default is *Liebert*)
   b. **Password** (default is *Liebert*)

```
Login: Liebert
Password: ********
```

NOTE
*For security, change the default username and password (see **5.5 - Change Username / Password**).*

4. In the Main Menu, enter the number that corresponds to your choice. Refer to **3.1 - Guide to Configuration** for details on each function.

5. After making changes, return to the Main Menu and choose **Exit and Save** to reboot the Web card and put your changes into effect (see **3.6 - Saving Changes and Reinitializing the Web Card**).

```
Main Menu
----------
1: System Information
2: IP Network Settings
3: Messaging
4: Factory Settings
5: Firmware Updates

q: Quit and abort changes
x: Exit and save

Please select a key ?>
```

3.5 🌐 Open the Web Interface

To access configuration using the Web interface:

1. Open a Web browser such as Internet Explorer, then enter the IP address of the Web card in the address bar—e.g., **http://192.168.0.125**.

2. Click on the **Configure** tab, shown at right. Configuration Categories appear in the left panel, organized with folder icons.

3. Click on any configuration category, and the Connect To box opens.

4. Enter the Administrator username and password (both case-sensitive):

   a. **User Name** (default is *Liebert*)

   b. **Password** (default is *Liebert*)

   🔍 **NOTE**

   For security, change the default username and password (see 5.5 - Change Username / Password).

5. Click **OK**.

6. Refer to **3.1 - Guide to Configuration** for details on each function.

7. After making changes, click the **Save** button, then click on **Reinitialize** to reboot the Web card and put your changes into effect (see **3.6 - Saving Changes and Reinitializing the Web Card**).

Configure tab

Configuration Categories

Connect To

Reinitialize (to save any changes)
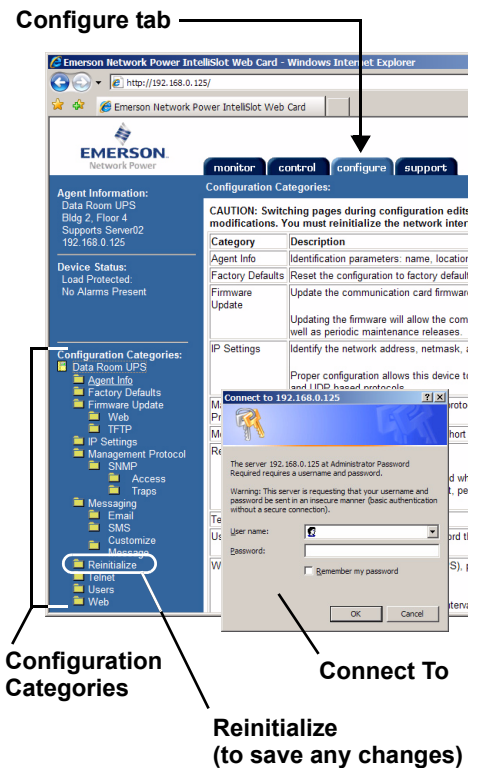
3.6   Saving Changes and Reinitializing the Web Card

Follow the applicable steps for your interface to save configuration changes and reinitialize the Web card. Changes will not take effect until these steps are completed.

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

- After each change is made, a reminder appears (shown at right).
- Return to the Main Menu, then choose **Exit and Save**. A message appears and remains until the card is reinitialized, followed by a message that the process was successful.

```
New Settings will take effect
   when saved
GO TO MAIN MENU AND DO 'EXIT AND
   SAVE' TO SAVE YOUR CHANGES!
```

```
Exiting and saving...

Configuration saved successfully
```
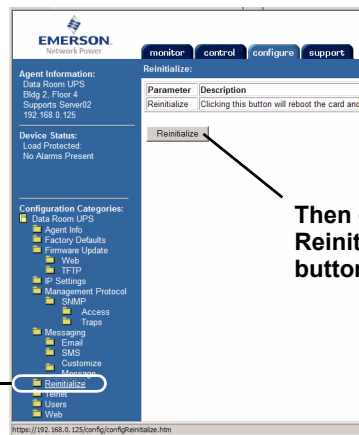
Web Interface

- After making each change, click the **Save** button. A reminder appears each time you make a change (shown at right).
- Without leaving the Configure tab window (below left), click **Reinitialize** in the left panel, then click the **Reinitialize** button at right to reboot the Web card and put your changes into effect.
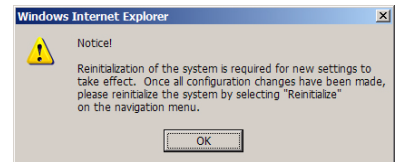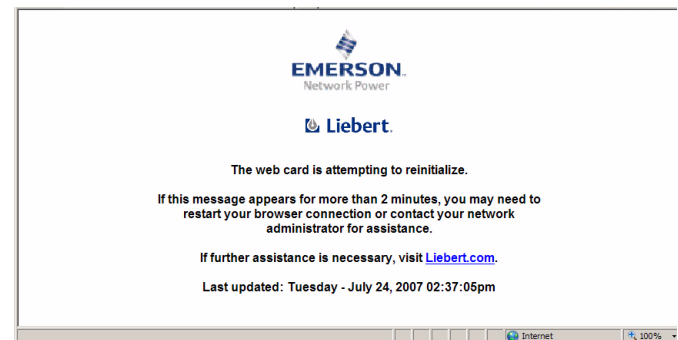
First click Reinitialize at left

Then click Reinitialize button

Progress message window

- A message window appears, shown above right, and remains until the card is reinitialized.

4.0   SYSTEM INFORMATION

System Information is optional and identifies the Liebert unit, its location, a contact person and other information about the unit. The default value of each field is "Uninitialized."

```
System Information Menu
------------------------
1: Name            Uninitialized
2: Contact         Uninitialized
3: Location        Uninitialized
4: Description      Uninitialized

<ESC>: Cancel menu level

Please select a key ?>
```

NOTE
This information also configures the SNMP parameters sysName, sysContact, sysDescr, and sysLocation available using RFC-1213 MIB II.

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To edit any field in this category:

1. From the Main Menu, choose **System Information**.
2. Enter the number that corresponds to your choice, then enter the identifying information, using the following as a guide.

Table 7   System information identifiers

Item	Description	Maximum Length
Name	A name for the Liebert unit	255 characters*
Contact	A contact person or department responsible for maintenance and operation of the Liebert unit	64 characters*
Location	The location of the Liebert unit	64 characters*
Description	Other useful information about the unit for quick reference	64 characters*

* Valid characters include spaces and other printable characters except double quotes (").

Web Interface

To access System Information through the Web interface:

*   Click on the **Configure** tab, then **Agent Info** in the left panel and finally **Edit** in the right panel. After making changes, click **Save**.

5.0   IP NETWORK SETTINGS

The IP Network Settings Menu is used to enable network communications with the Web card.

Refer to the following sections for detailed step-by-step instructions on each item from this menu:

Table 8   Network settings menu guide

Menu item	Refer to:
5.1 - Boot/IP Settings	page 13
5.2 - Management Protocol	page 14
5.3 - Web Server	page 17
5.4 - Telnet Server	page 22
5.5 - Change Username / Password	page 23
5.6 - Reset Authentication to Factory Defaults	page 24

```
IP Network Settings Menu
------------------------
1: Boot/IP Settings
2: Management Protocol
3: Web Server
4: Telnet Server
5: Change Administrator Username/Password
6: Change General Username/Password
7: Reset Authentication to Factory
   Defaults

<ESC>: Cancel menu level
Please select a key ?>
```

5.1   Boot/IP Settings

The Boot/IP Settings Menu is used to set parameters for network access to the Web card. Consult your network administrator for these settings.

```
Boot/IP Settings Menu
----------------------
1: Speed/Duplex    Auto
2: Boot mode       Static
3: IP Address      192.168.0.125
4: Netmask         255.255.255.0
5: Default Gateway 192.168.0.1
6: DNS Server      0.0.0.0

<ESC>: Cancel menu level
Please select a key ?>
```

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To change any parameter:

1. Choose **IP Network Settings** from the Main Menu, then **Boot/IP Settings**.
2. Select an option to change—for example, **Speed/Duplex**, then enter settings according to the following guide.

Table 9   Boot/IP settings range

Parameter	Description & Valid Settings*
Speed/ Duplex	Speed and duplex configuration of the Ethernet port. • Auto *(default—use this setting if unknown)* • 10Mbs/Half Duplex • 100Mbs/Half Duplex • 10Mbs/Full Duplex • 100Mbs/Full Duplex
Boot Mode	Startup mode enabling the Web card to be a network-ready device. • **Static** - Fixed network addresses and other parameters • **DHCP** - Central management using dynamic network addresses • **BootP** - Older mechanism for central management of network addresses
IP Address	Network address for the Liebert unit. Four numbers (0-255) separated by periods (.)—for example, 10.0.0.5
Subnet Mask	Network mask that divides your network into manageable segments. Four numbers (0-255) separated by periods (.)—e.g., 255.255.255.0
Default Gateway	IP address of the gateway for network traffic to other networks or subnets. Four numbers (0-255) separated by periods (.)—e.g., 10.0.0.1
DNS Server	IP address of the Domain Name Server for the network. Four numbers (0-255) separated by periods (.)—e.g., 10.0.0.1

* Consult your network administrator for proper settings.

Web Interface

To access Boot/IP Settings through the Web interface:

・ Click on the **Configure** tab, then **IP Settings** in the left panel and finally **Edit** in the right panel. After making changes, click **Save**.

5.2   Management Protocol

The Management Protocol Menu allows you to enable or disable SNMP and configure management protocols. Consult your network administrator for these settings.

```
Management Protocol Menu
------------------------
1: SNMP Agent          enabled
2: SNMP Communications

<ESC>: Cancel menu level
Please select a key ?>
```

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To change any parameter:

1. Choose **IP Network Settings** from the Main Menu, then **Management Protocol**.
2. Select an option to change, then use the following guide to make changes.

Table 10: Management protocol ranges

Parameter	Description & Telnet Menus
SNMP Agent	Enable or disable SNMP for remote management. `Enable SNMP Agent? [y/n] ?>`

SNMP Communications	Set up access privileges, configure the Web card to send traps, described in the next section, **5.2.1 - SNMP Communications Menu**.
	
	 For details on viewing support information, see **9.2 - Events and Parameters**.
	
	 `SNMP Communications Menu`
	 `------------------------`
	 `1: Authentication Traps      'no'`
	 `2: Display/Modify Communities`
	 `3: Display/Modify Trap Communities`
	 `4: Support Information`
	
	 `<ESC>: Cancel menu level`
	 `Please select a key ?> 1`

Web Interface

To access Management Protocol settings through the Web interface:

•   Click on the **Configure** tab, then **Management Protocol** in the left panel and finally **Edit** in the right panel. After making changes, click **Save**.

5.2.1 SNMP Communications Menu

Use the SNMP Communications Menu to enable authentication traps and view or change communities and trap communities, events and parameters. For details on viewing support information, see **9.2 - Events and Parameters**.

```
SNMP Communications Menu
------------------------
1: Authentication Traps   'no'
2: Display/Modify Communities
3: Display/Modify Trap
   Communities
4: Support Information

<ESC>: Cancel menu level
Please select a key ?>
```
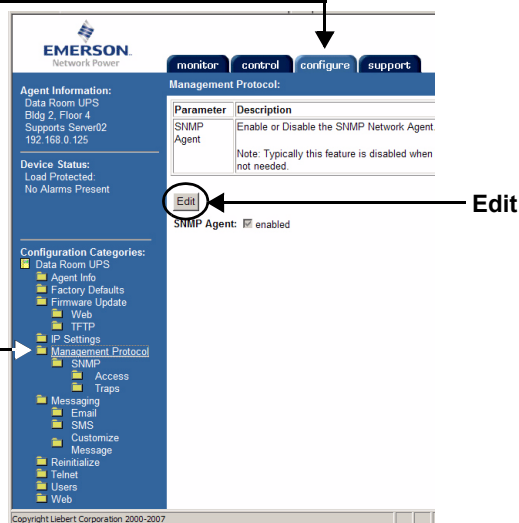
To access these options:

1. Choose **IP Network Settings** from the Main Menu, then **Management Protocol** and **SNMP Communications**.
2. Select an option to change, then use the following guide to make changes.

Authentication Traps

Enable Authentication Traps to receive security alerts when the Web card detects a request with an invalid community string.

Display/Modify Communities

View devices that have permission to access the Web card, identified by IP address, read/write permission and community string. Up to 20 devices may be configured for access.

```
Communities - Example
------------------------
1:    10.0.0.5     write      public1
2:    10.0.0.6     write      public1

Entry    IP        Access    Community
 #     address   (read/write)  string
Codes for →  <a>dd  <d>elete  <e>dit
editing      Complex lines allowed. e.g. <a 198.1.1.1 write public> ?>
```

Each device is identified by:

- **Entry Number** - use the entry number (1-20) to edit or delete an entry
- **IP address** - the address of the device with access (MultiLink server, Nform server, Network Management System)
- **Access (read/write)** - **read** allows users to view but not change data; **write** allows full permission for configuration, control and viewing
- **Community string** - the community string used by the IP host for this Entry Number (case-sensitive, up to 32 characters)

To make changes:

Add a device (see example at right to enter all parameters in one line): • Enter **a** to add an entry, then press Enter. • Enter the IP address of the device to be added, then press Enter. • Enter **1** for read or **2** for write access for this device, then press Enter. • Enter the community string, then press Enter.	**Example** *a 10.0.0.5 write public1* (then press Enter)
Edit a device (see example at right to enter all parameters in one line): • Enter **e** to edit an entry, then press Enter. • Type the Entry Number, then press Enter. • Enter the new IP address, then press Enter. • Enter **1** for read or **2** for write access for this device, then press Enter. • Enter the new community string, then press Enter.	**Example** *e 2 10.0.0.7 read public2* (then press Enter)
Delete a device (see example at right to enter parameters in one line): • Enter **d**, then press Enter. No confirmation message will appear. • Type the Entry Number, then press Enter.	**Example** *d 2* (then press Enter)

NOTE
Avoid the following setting—it permits access by any host and may pose a security risk:
- *IP address = 0.0.0.0*
- *Access = write*
- *Community = public*

Display/Modify Trap Communities

View devices that are configured to receive notifications from the Web card, identified by IP address, trap listen port and community string. Up to 20 devices may be configured to receive traps.

```
Trap Communities - Example
------------------------------
 1:    10.0.0.5        162        public1
 2:    10.0.0.6        162        public1

Entry      IP          Port to     Community
  #     address    receive traps    string
<a>dd  <d>elete  <e>dit
Complex lines allowed. e.g. <a 198.1.1.1 162 public> ?>
```

Codes for editing →

Each device is identified by:

- **Entry Number** - use the entry number (1-20) to edit or delete an entry
- **IP address** - the address of the device to receive traps (MultiLink server, Nform server, Network Management System)
- **Port** - the Trap Listen Port where traps will be sent; use **162** if the host computer uses standard ports (161/162)
- **Community string** - the community string used by the IP host for this Entry Number (case-sensitive, up to 32 characters)

To make changes:

Add a device (see example at right to enter all parameters in one line): • Enter **a** to add an entry, then press Enter. • Enter the IP address of the device to be added, then press Enter. • Enter the port number (default is **162**), then press Enter. • Enter the community string, then press Enter.	**Example** *a 10.0.0.5 162 public1* (then press Enter)
Edit a device (see example at right to enter all parameters in one line): • Enter **e** to edit an entry, then press Enter. • Type the Entry Number, then press Enter. • Enter the new IP address, then press Enter. • Enter the port number (default is **162**), then press Enter. • Enter the new community string, then press Enter.	**Example** *e 2 10.0.0.7 162 public2* (then press Enter)
Delete a device (see example at right to enter parameters in one line): • Enter **d**, then press Enter. No confirmation message will appear. • Type the Entry Number, then press Enter.	**Example** *d 2* (then press Enter)

5.3   Web Server

Use the Web Server Menu to configure access to the card through the Web interface. Consult your network administrator if needed.

```
Web Server Menu
----------------
1: Web Server Mode       HTTP (Not Secure)
2: HTTP Transport Port    80
3: Password Protect Site 'disabled'
4: Configuration/Control 'enabled'
5: Refresh Rate          30  seconds
<ESC>: Cancel menu level
Please select a key ?>
```

5.3.1   Specify Web Server Settings

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To change any parameters:

1. Choose **IP Network Settings** from the Main Menu, then **Web Server**.
2. Select an option to change, then use the following guide to make changes.

Table 11   Web server settings

| Parameter	Description & Valid Settings
Web Server Mode	Select the operation mode of the Web server. • **Disabled** - Web server is disabled • **HTTP** - Standard Web port, not encrypted • **HTTPS** - Standard secure Web port, all communication is encrypted
HTTP Transport Port	Web Server listening port number. • For HTTP mode (non-encrypted communications), the default port is 80. • For HTTPS mode (encrypted communications), the default port is 443. For HTTPS, you must also install a security certificate for Internet Explorer. Refer to the appropriate section for your version of Internet Explorer: • **5.3.2 - Install Security Certificates - Internet Explorer 6 or earlier** • **5.3.3 - Install Security Certificates - Internet Explorer 7 or later**
Password Protect Site	When enabled, the entire site is password-protected. (If disabled, all pages are accessible without a password except configure and control functions.)
Configuration/Control	Enable or disable the use of a Web browser to perform configuration and control operations. Note: This feature affects configuration and control operations from the Web interface only. If disabled, these functions may still be available using other system interfaces.
Refresh Interval	The interval in seconds (10 to 600 seconds) between automatic updates of dynamic Web pages—parametric data and device status in the right panel. RECOMMENDATION: Consider whether frequent updates will slow down the system. If many users will access the device simultaneously, select a larger value to best serve all users. Recommended values range from 20 to 60 seconds.

Web Interface

To access Web Server settings through the Web interface:

· Click on the **Configure** tab, then **Web** in the left panel and finally **Edit** in the right panel. After making changes, click **Save**.
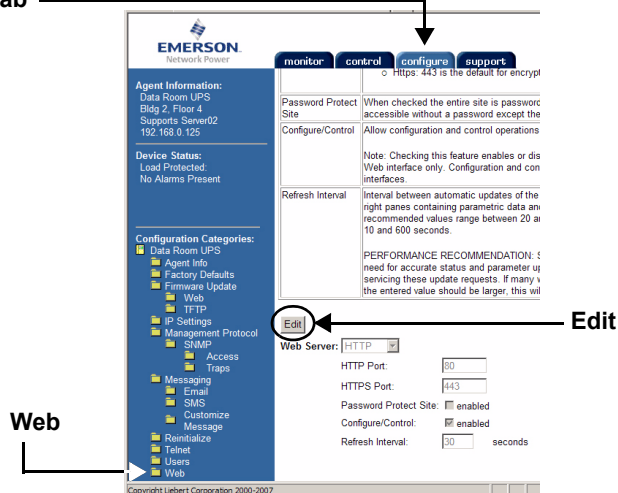
5.3.2 Install Security Certificates - Internet Explorer 6 or earlier

If you use Internet Explorer 6 or an earlier version and select **HTTPS** as the operation mode of the Web server (see **5.3.1 - Specify Web Server Settings**), follow these instructions to install a security certificate.

- Open Internet Explorer and enter **https://** followed by the IP address of the Web card—for example, **https://192.168.0.125**—in the address bar. The following message appears.
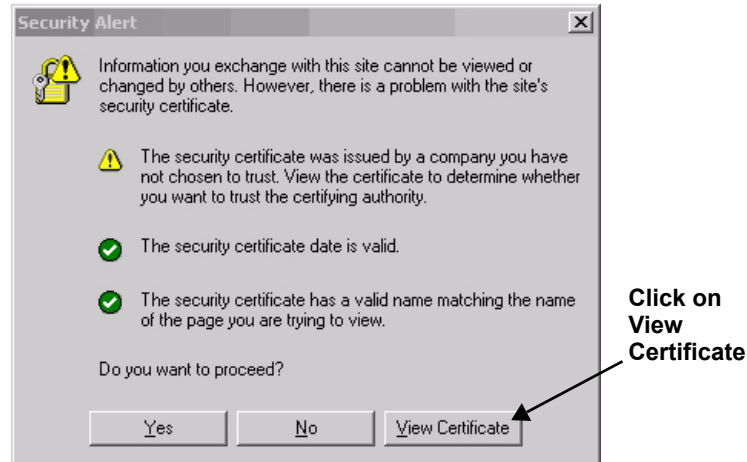

- Click the **View Certificate** button. This opens the Certificate window.
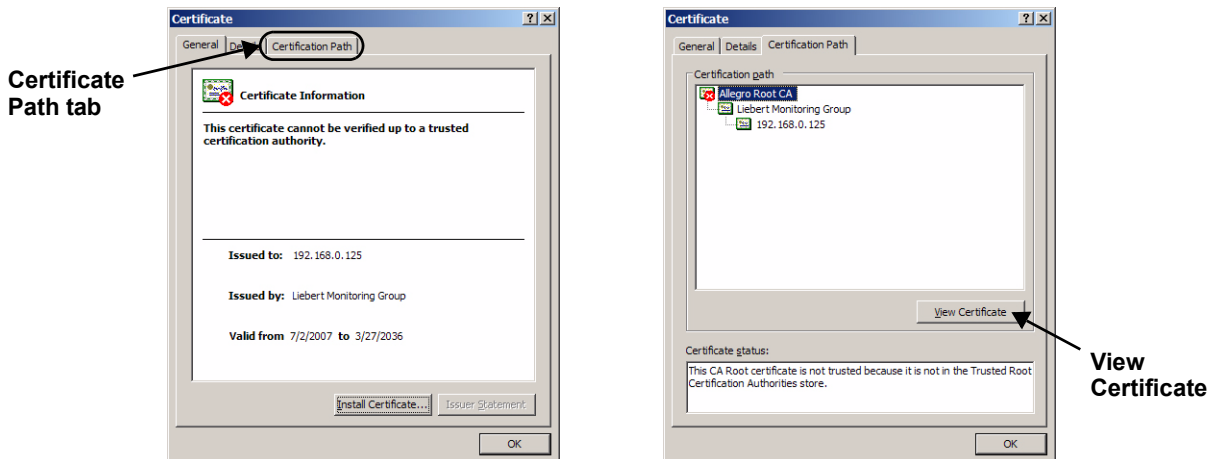
- In the Certificate window, above left, click the **Certificate Path** tab.
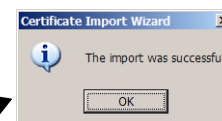- In the Certificate Path tab, above right, click on **Allegro Root CA**, then on **View Certificate**.
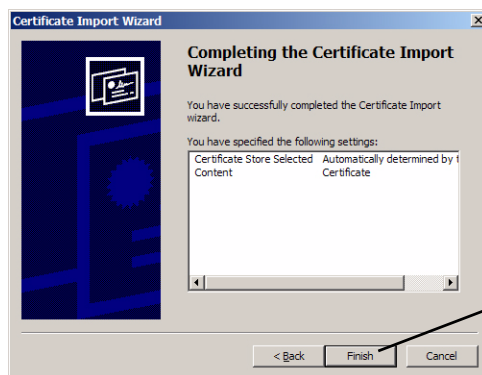
- In the Certificate window, click the **Install Certificate** button, as shown below.

Install Certificate

- The Certificate Import Wizard opens. Click **Next**.
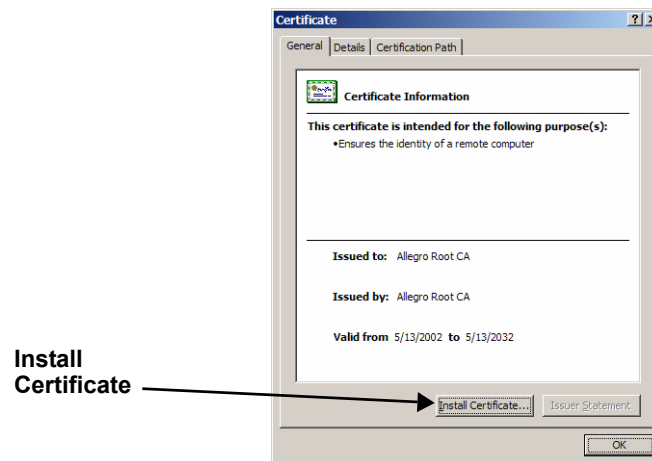
Automatically select...
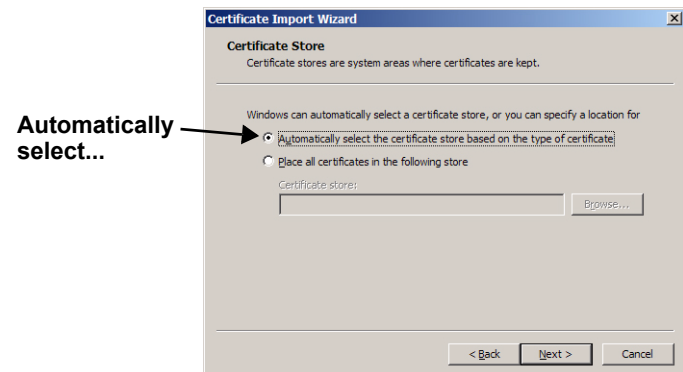
- Click on **Automatically select the certificate store based on the type of certificate**, then click **Next**.

- The final Wizard window appears with a message that the process is complete. Click **Finish**.
- A confirmation box appears with a message that the import was successful. Click **OK**.

### 5.3.3 Install Security Certificates - Internet Explorer 7 or later

If you use Internet Explorer 7 or later and select **HTTPS** as the operation mode of the Web server (see **5.3.1 - Specify Web Server Settings**), follow these instructions to install a security certificate.

To do this:

- Open Internet Explorer and enter **https://** followed by the IP address of the Web card—for example, **https://192.168.0.125**—in the address bar. The following message appears.
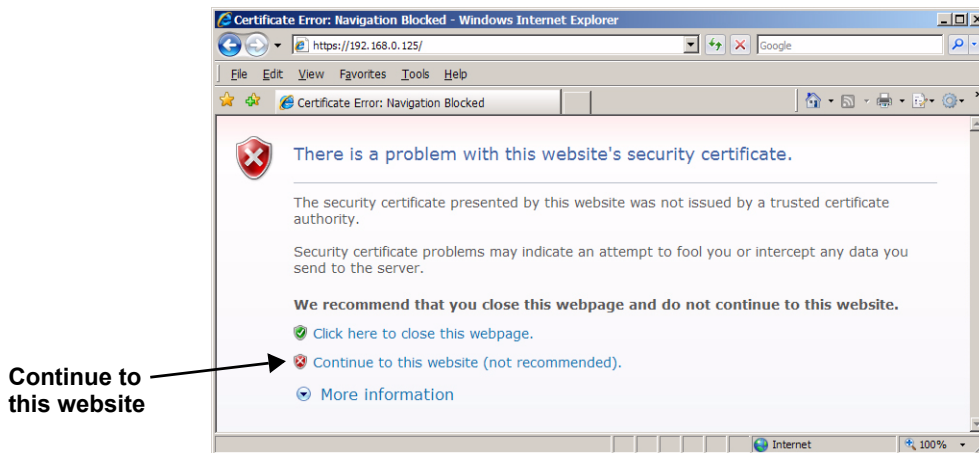
- Click on **Continue to this website (not recommended)** to open a connection to the Web card.
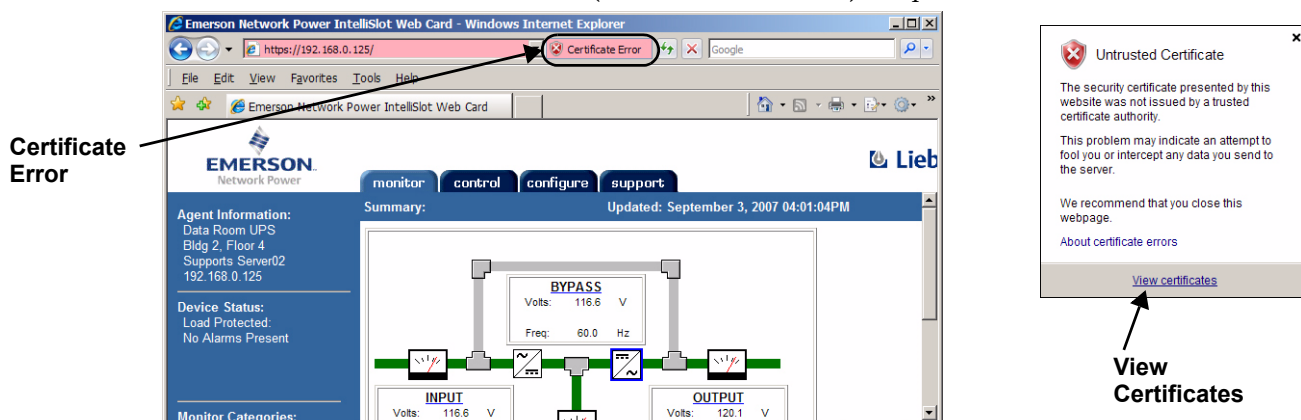

- Click the **Certificate Error** box next to the address bar, shown above left.
- In the window that pops up, shown above right, click the **View Certificates** link. This opens the Certificate window.
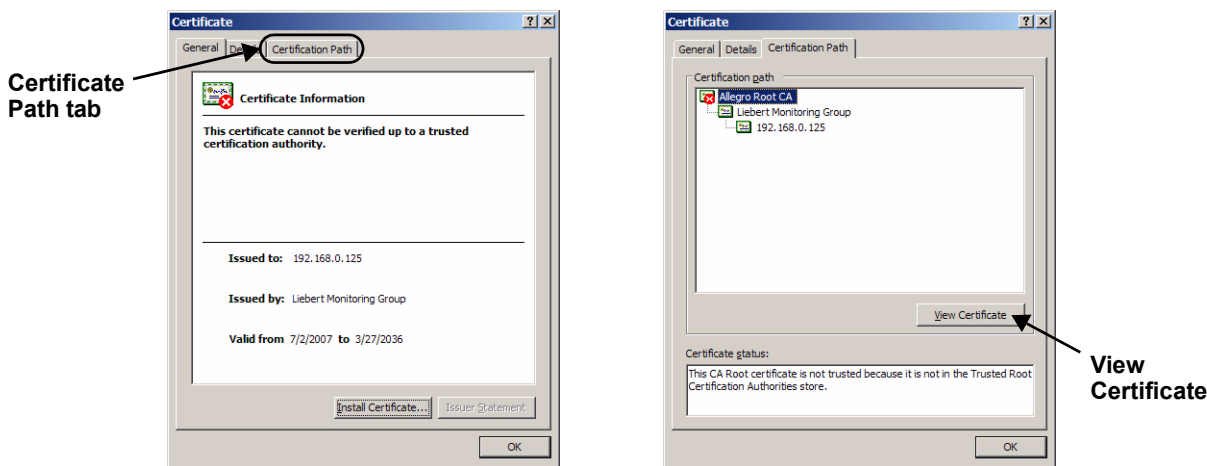
- In the Certificate window, above left, click the **Certificate Path** tab.
- In the Certificate Path tab, above right, click on **Allegro Root CA**, then on **View Certificate**.

- In the Certificate window, click the **Install Certificate** button, as shown below.

Install Certificate
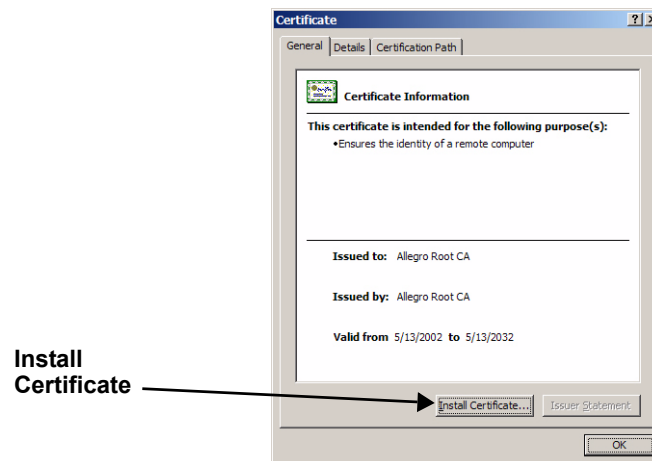
- The Certificate Import Wizard opens. Click **Next**.

Automatically select...
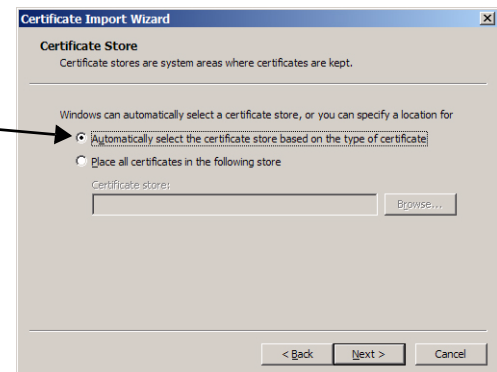
- Click on **Automatically select the certificate store based on the type of certificate**, then click **Next**.

- The final Wizard window appears with a message that the process is complete. Click **Finish**.
- A confirmation box appears with a message that the import was successful. Click **OK**.

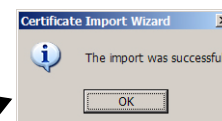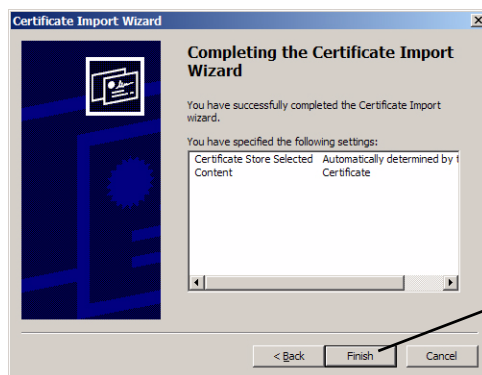## 5.4 Telnet Server

Use the Telnet Server Menu to enable or disable access to the Web card through a Telnet interface.

```
Telnet Server Menu
--------------------
1: Telnet Server      'enabled'

<ESC>: Cancel menu level
Please select a key ?>
```

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To change this setting:

1. Choose **IP Network Settings** from the Main Menu, then **Telnet Server**.
2. Choose Telnet Server, then specify:
   - **Enabled** to permit Telnet access
   - **Disabled** to block access via Telnet

Web Interface

To access Telnet settings through the Web interface:

- Click on the **Configure** tab, then **Telnet** in the left panel and finally **Edit** in the right panel. After making changes, click **Save**.

5.5   Change Username / Password

The Web card is designed for two types of access, each with a default user name and password. For security, be sure to change the default password.

Table 12   Factory default passwords

Type of User	Factory Default		Description
Administrator	Username	Liebert	Full access to configuration and control functions, as well as viewing privileges
	Password	Liebert	
General User	Username	User	Viewing privileges only—no access to configuration or control functions
	Password	User	

Follow these guidelines to change the user name and password.

Table 13   Username and password guidelines

Maximum length	32 characters (6 or more characters recommended)
Valid characters	Any printable character EXCEPT colon, tab, double quote, question mark
Upper/lowercase	Case-sensitive—letters must be uppercase or lowercase as entered
Tips	Avoid common names, words and phrases as passwords

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To change the Administrator or General user name or password:

1. Choose **IP Network Settings** from the Main Menu, then choose either:
    - **Change Administrator Username/Password** or
    - **Change General Username/Password**
2. Enter a user name—the current user name is shown in brackets.

```
Enter Administrator Username, press enter for [Liebert]: (Max 32 chars) ?>
```

3. Enter a password, then verify by typing the password again.

```
Enter New Password: (Max 32 chars) ?> ********
Verify Password: ?> ********
```

Web Interface

To access usernames and passwords through the Web interface:

- Click on the **Configure** tab, then **Users** in the left panel and finally **Edit** in the right panel. After making changes, click **Save**.

5.6   Reset Authentication to Factory Defaults

You may reset the Administrator and General User usernames and passwords to the factory defaults.

If you forget your username or password, you may reset them using a serial configuration cable connection (see Section **2.1.1** or **2.2.1 - Connect the Cable**), which provides direct access to the card without a username or password. To enter a new username and password, see **5.5 - Change Username / Password**.

Table 14   Factory default passwords

Type of User	Factory Default		Description
Administrator	Username	Liebert	Full access to configuration and control functions, as well as viewing privileges
	Password	Liebert	
General User	Username	User	Viewing privileges only—no access to configuration or control functions
	Password	User	

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To reset the usernames and passwords to the factory defaults:

1. Choose **IP Network Settings** from the Main Menu, then **Reset Authentication to Factory Defaults**.

    ```
    Reset authentication to factory Defaults? [y/n] ?>
    ```

2. Enter **y** to reset the Administrator and General User usernames and passwords to the default settings.

NOTE
This feature is not available through the Web interface

6.0   MESSAGING

The Messaging menu is used to set up e-mail and text message notifications from the Web card.

```
Messaging Menu
---------------
1: Email  'disabled'
2: SMS    'disabled'
3: Email Configuration
4: SMS Configuration


<ESC>: Cancel menu level

Please select a key ?>
```

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To access these options:

1. Choose **Messaging** from the Main Menu.
2. Select an option, then use the following guide to make changes.

Table 15   Messaging menu guide

Menu item	Refer to:
E-Mail Configuration	page 26
SMS Configuration	page 27
Customize Messages (E-Mail and SMS)	page 28

Web Interface

To access Messaging settings through the Web interface:

- Click on the **Configure** tab, then **Messaging** in the left panel and finally **Edit** in the right panel. After making changes, click **Save**.
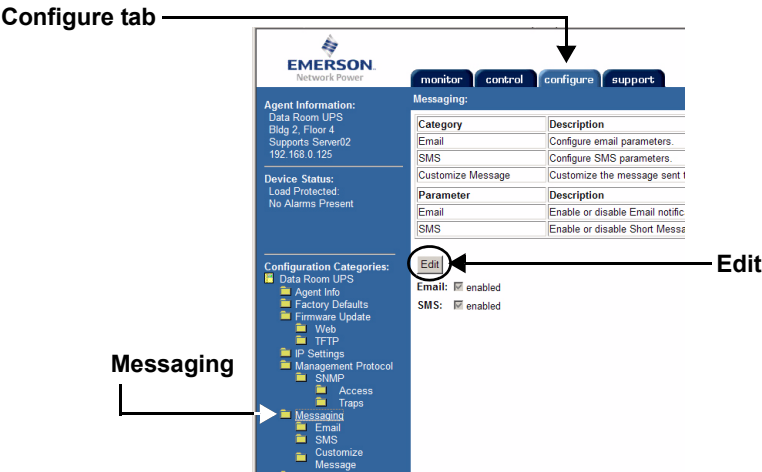
6.1   E-Mail Configuration

Setting up event notifications to be sent via e-mail involves two steps: enabling the function, then specifying the parameters.

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To activate and set up e-mail messages:

1. Choose **Messaging** from the Main Menu, then **Email**.

   ```
   Enable Email? [y/n] ?>
   ```

2. To enable the e-mail feature, enter **y** (yes) at the prompt.
3. Choose **Email Configuration** from the Messaging Menu, then select an option and use the following guide to make changes.

```
Email Configuration Menu
------------------------
1: Email From   'Uninitialized'
2: Email Message Recipients
3: Email Subject
4: Email Customize Message
5: SMTP Server  'Uninitialized'
6: Port         25
7: Test Email
8: View Test Email Log File

<ESC>: Cancel menu level

Please select a key ?>
```

Table 16   E-mail configuration guide

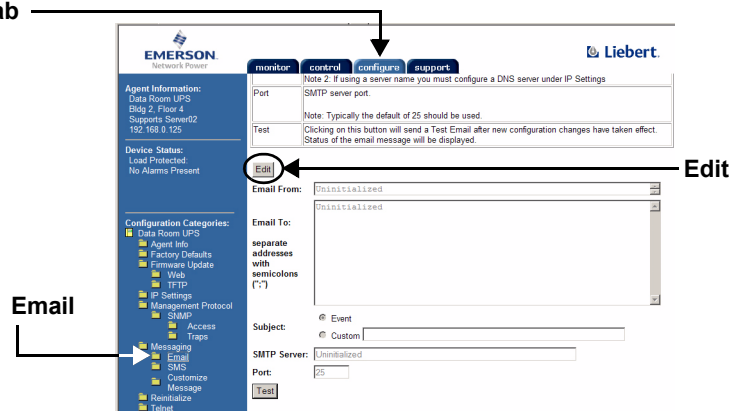| Parameter	Description	Maximum
Email From	The e-mail address of the sender—for example, *support@company.com*—typically, the address where replies should be sent.	64 characters
Email Message Recipients	The e-mail will be sent to this list of addresses. To add an e-mail address, use the format **a jsmith@abc.com**. Multiple addresses must be added individually. Changes may be made by entering **d** to delete an entry or **e** to edit an entry. **NOTE:** To specify multiple recipients of the e-mail message in the Web interface, use a semicolon (;) to separate addresses in the Email To box.	64 characters
Email Subject	The subject line of the e-mail. By default, this is the event description—e.g., *AlarmOnBypass*—but it may be customized.	120 characters
Email Customize Message	The text of the message sent to e-mail recipients. Choose from a list of items to include in the message. For details, see **6.3 - Customize Messages**.	—
SMTP Server	The IP address or domain name of the SMTP e-mail server that sends messages.	32 characters
Port	SMTP server port—typically the default port, 25.	—
Test Email	After saving changes to e-mail parameters, send a test e-mail message to verify the settings are correct. The message status will be displayed.	—
View Test Email Log File	Choose this option to display a log showing the results of test e-mails.	—

Web Interface

To access E-Mail Configuration through the Web interface:

- Click on the **Configure** tab, then **Email** in the left panel and finally **Edit** in the right panel. After making changes, click **Save**.

6.2 SMS Configuration

```
SMS Configuration Menu
----------------------
1: SMS From      'Uninitialized'
2: SMS Message Recipients
3: SMS Subject
4: SMS Customize Message
5: SMTP Server  'Uninitialized'
6: Port          25
7: Test SMS
8: View Test SMS Log File

<ESC>: Cancel menu level
Please select a key ?>
```

Setting up event notifications for SMS text messages involves two steps: enabling the function, then specifying the parameters.

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To activate and set up SMS messages:

1. Choose **Messaging** from the Main Menu, then **SMS**.

   ```
   Enable SMS [y/n] ?>
   ```

2. To enable the SMS feature, enter **y** (yes) at the prompt.
3. Choose **SMS Configuration** from the Messaging Menu, then select an option and use the following guide to make changes.

Table 17   SMS configuration guide

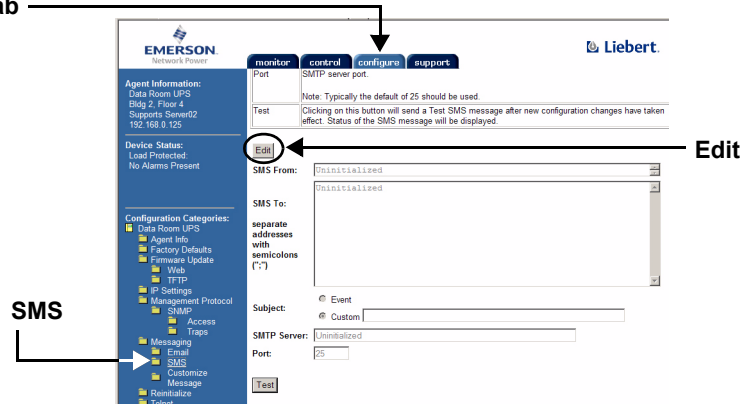| Parameter	Description	Maximum
SMS From	The e-mail address of the sender—for example, *support@company.com*—typically, the address where replies should be sent.	64 characters
SMS Message Recipients	The message will be sent to this list of addresses. The SMS/Text Message address is usually a 10-digit phone number followed by @____.com (where ____ might be a company name). To add an SMS address, use the format **a 1112223333@abc.com**. Multiple addresses must be added individually. Changes may be made by entering **d** to delete an entry or **e** to edit an entry. **NOTE:** To specify multiple recipients of the SMS message in the Web interface, use a semicolon (;) to separate addresses in the SMS To box.	64 characters
SMS Subject	The subject line of the message. By default, this is the event description—e.g., *AlarmOnBypass*—but it may be customized.	120 characters
SMS Customize Message	The text of the message sent to e-mail recipients. Choose from a list of items to include in the message. For details, see **6.3 - Customize Messages**.	—
SMTP Server	The IP address or domain name of the SMTP e-mail server that sends messages.	32 characters
Port	SMTP server port—typically the default port, 25.	—
Test SMS	After saving changes to SMS parameters, send a test SMS message to verify the settings are correct. The message status will be displayed.	—
View Test SMS Log File	Choose this option to display a log showing the results of test messages.	—

Web Interface

To access SMS Configuration through the Web interface:

- Click on the **Configure** tab, then **SMS** in the left panel and finally **Edit** in the right panel. After making changes, click **Save**.

6.3   Customize Messages

```
Email/SMS Customize Message Menu
--------------------------------
1: IP Address          'disabled'
2: Event               'disabled'
3: Event Date & Time   'disabled'
4: Name                'disabled'
5: Contact             'disabled'
6: Location            'disabled'
7: Description         'disabled'
8: Web link & Port     'disabled'

<ESC>: Cancel menu level
Please select a key ?>
```

Both e-mail and SMS text messages may be customized to include items such as the IP address, event name and a link to the Web card in the body of the message.

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

1. Choose **Messaging** from the Main Menu, then **Email Configuration** (or **SMS Configuration**).
2. Choose **Email** (or **SMS**) **Customize Message** from the Configuration menu.
3. Choose an option from the Email (or SMS) Customize Message Menu, then enter **y** (yes) at the prompt to confirm your choice. Repeat for each item to be included in messages. Refer to the following guidelines to make changes:

Table 18   E-mail and SMS message guidelines

Parameter	Description—if enabled, outgoing messages will include:	Defined in:
IP Address	The IP Address of the Web card	**5.1 - Boot/IP Settings**
Event	Description of the SNMP event	**9.0 - Support Information**
Event Date & Time	The date & time when the SNMP event occurred	—
Name	The name for the Liebert unit	**4.0 - System Information**
Contact	The contact person or department	**4.0 - System Information**
Location	The location of the Liebert unit	**4.0 - System Information**
Description	Other information about the Liebert unit	**4.0 - System Information**
Web Link & Port	A clickable link to the Web card through the Web interface	**5.1 - Boot/IP Settings**
	The port number of the SMTP server port	**6.1 - E-Mail Configuration** **6.2 - SMS Configuration**

Web Interface

To access Customize Message settings through the Web interface:

*   Click on the **Configure** tab, then **Customize Messages** in the left panel and finally **Edit** in the right panel. Choose the items to include in each type of message in the Email and SMS columns.
*   After making changes, click **Save**.

7.0 FACTORY SETTINGS

Factory default values may be restored for all configuration settings. This step:

- Replaces all user-defined settings described in this manual (see **3.0 - Configuration Overview** through **6.0 - Messaging**)
- Restores DHCP service, the factory default, replacing a static IP address, if configured during installation (see **2.0 - Installation**)

7.1 Reset to Factory Defaults

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To restore the factory default settings:

1. Choose **Factory Settings** from the Main Menu, then choose **Reset to Factory Defaults**.

   ```
   Reset to factory Defaults? [y/n] ?>
   ```

2. Enter **y** (yes) at the prompt to confirm your choice. To cancel, enter **n** (no).
3. A message appears until the process is complete.

   ```
   Resetting card to factory defaults...
   ```

```
Factory Settings Menu
----------------------
1: Reset to Factory Defaults
2: Agent Card Information

<ESC>: Cancel menu level

Please select a key ?>
```
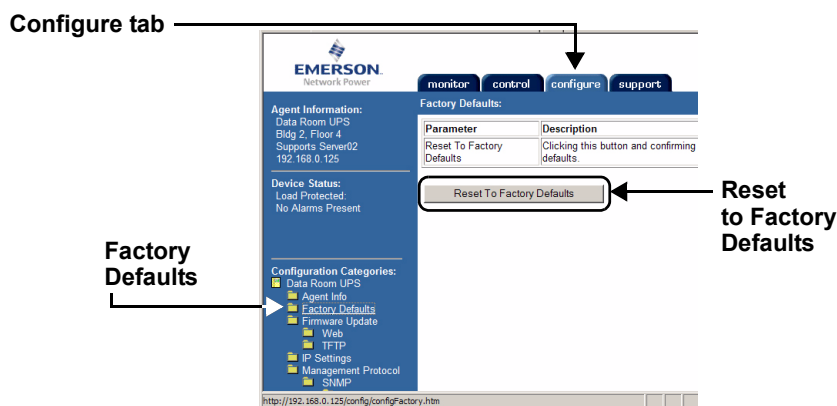
Web Interface

To restore the factory default settings through the Web interface:

- Click on the **Configure** tab, then **Factory Defaults** in the left panel and finally **Reset to Factory Defaults** in the right panel.

7.2   Liebert DS - Local Node Settings for Multiple Cards

If you use two cards of the same type with the Liebert DS, you will need to change the local node setting of one card. These steps apply only when both cards are the same type, either:

- Two Liebert IntelliSlot Web cards (P/N IS-WEBLBDS)
       or
- Two Liebert IntelliSlot 485 cards (P/N IS-485LBDS)

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To access local node settings:

1.   Choose **Factory Settings** from the Main Menu.
2.   Choose **Advanced Communication Settings** from the Factory Settings Menu.
3.   Choose **Local Node Settings** from the Advanced Communication Settings Menu.
4.   Choose **Node 1** from the Local Node Settings Menu, then use the following guide to make changes.

     If there are two Liebert IntelliSlot Web cards or two Liebert IntelliSlot 485 cards, you must change the address of one card (see **Table 19**):

     - For the Liebert IntelliSlot Web card, the default address is **1**. For two Web cards, set the address of the second card to **2**.
     - For the Liebert IntelliSlot 485 card, the default address is **2**. For two 485 cards, set the address of the second card to **1**.

```
Liebert DS
Factory Settings Menu
----------------------
1: Advanced Communication
   Settings
2: Reset to Factory Defaults
<ESC>: Cancel menu level

Please select a key ?>
```

```
Liebert DS
Advanced Communication Settings
Menu
-------------------------------
1: Local Node Settings
2: Managed Device Settings
2: Reset to Default
<ESC>: Cancel menu level

Please select a key ?>
```

```
Liebert DS
Local Node Settings Menu
------------------------
1: Node ID: 1
2: Communication Rate: 38400
3: Maximum Master Address: 3
4: Maximum Retry Count: 5
5: Retry Interval(sec): 5
<ESC>: Cancel menu level

Please select a key ?>
```

Table 19   Factory default MAC addresses

Liebert IntelliSlot Card	Part Number	Factory Default MAC Address	Set Node 1 Address of Second Card to:
Liebert IntelliSlot Web Card-LBDS	IS-WEBLBDS	0x01	2
Liebert IntelliSlot 485 Card-LBDS	IS-485LBDS	0x02	1

# 8.0   MONITOR AND CONTROL FUNCTIONS - WEB ONLY

🌐 Web Interface Only

The Web interface allows you to monitor and control the Liebert equipment where the Web card is installed, in addition to configuration capabilities presented in previous sections.

8.1   Monitoring Liebert Equipment

To view monitoring data through the Web interface:

- Open the Web interface (if needed, see **3.5 - Open the Web Interface**).
- Click on the **Monitor** tab if needed. This is always the opening view after connecting to the Web interface, as shown in the following example.
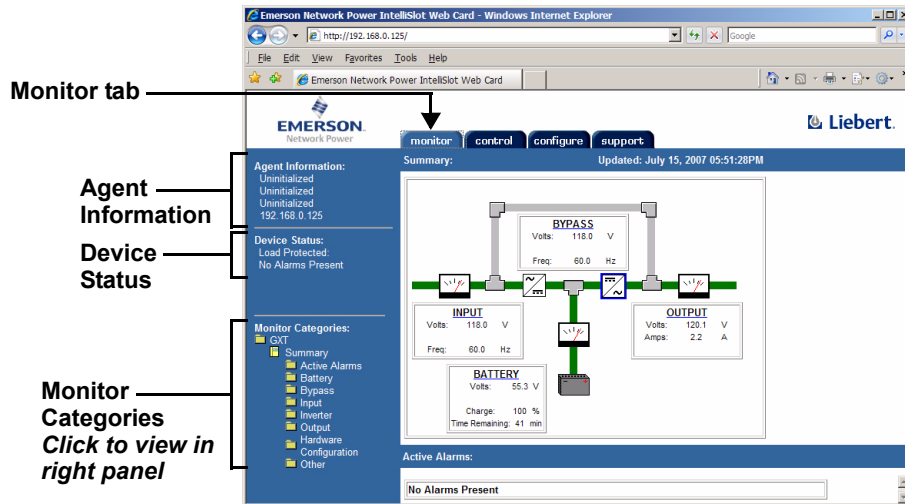
- The top portion of the left panel displays information that appears on all pages:
  - **Agent Information** - name, contact, location and description of the Liebert unit (as defined in **4.0 - System Information**)
  - **Device Status** - current status of the Liebert unit and whether any alarms are active (if so, the most recent alarm is listed)
- **Monitor Categories** appear at bottom left, organized with folder icons and showing the available Monitoring functions.
- Click on a category to view parametric data in the right panel. The example above shows a graphic representation of the current state of a Liebert UPS. Other categories show data in table format. The information will vary according to the type of Liebert unit.

> 🔍 **NOTE**
> *If any alarms are currently active, they are listed below the graphic in the opening window. Click on the **Active Alarms** category to view more details about any alarms that are active.*

8.2   Controlling Liebert Equipment

To perform Control operations through the Web interface:

- Open the Web interface (if needed, see **3.5 - Open the Web Interface**).
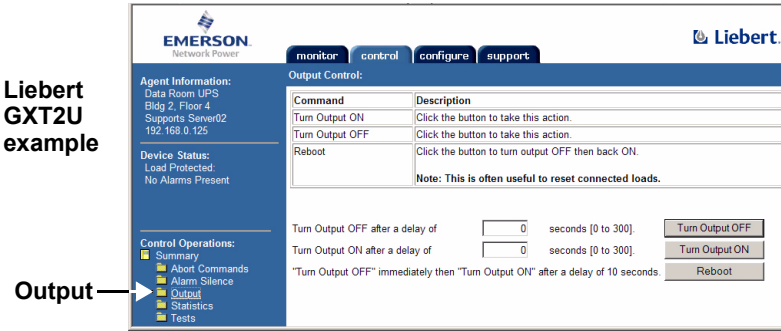- Click on the **Control** tab, as shown in the following example.
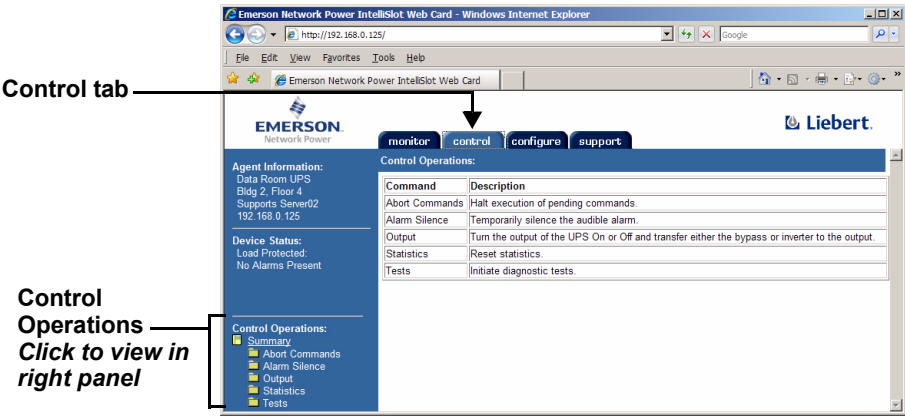
- **Control Operations** categories appear at bottom left, organized with folder icons and showing the available Control functions. Clicking on a category changes the view in the right panel. The example above shows the summary page.

The following guide is a partial list of Control operations—these vary by the type of Liebert unit.

Table 20   Control operations parameters—functions vary by Liebert unit

Command	Description
Abort Commands	Prevent any pending commands from being completed.
Alarm Silence / Alarms	Temporarily silence an audible alarm that is active. Reset or acknowledge alarms
Output / System	Turn the Liebert unit On or Off; reboot the unit.
Statistics	Reset statistics—for example, battery or power statistics
Tests	Initiate diagnostic tests on the Liebert unit.
Setpoints	Change setpoints for the Liebert unit.

- To perform an operation, click on a Control Operations category at left, then click on the appropriate button in the right panel. The example below shows control operations for two Liebert units.
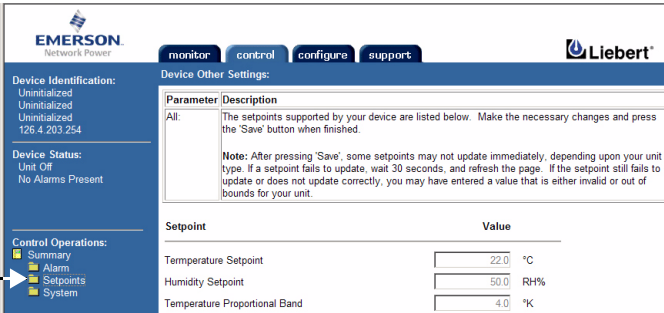
9.0 SUPPORT INFORMATION

Support data includes identifying information for the Web card, as well as events and parameters available for the Liebert equipment.

9.1 View Web Card Information

Identifying information for the Web card may be viewed through any interface and includes the MAC address, model and part number, serial number and firmware version.

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To view Web card information:

1. Choose **Factory Settings** from the Main Menu, then choose **Agent Card Information**.

2. The Web card information appears, as shown in the following example. Press the Enter key to return to the previous menu.

```
Factory Settings Menu
---------------------
1: Reset to Factory Defaults
2: Agent Card Information

<ESC>: Cancel menu level

Please select a key ?>
```

```
MAC Address          00-00-68-16-82-C1
Network Card Model   IntelliSlot Web Card
Network Card Part #  OCWEBCARD
Manufacture Date     APR 28,2004
Serial Number        416701G105T2004APR280074
Boot Version         2.300.0
Boot Label           OCWEBCARD_HID3_2.300.0_034380
App Version          2.300.0
App Label            OCWEBCARD_HID3_2.300.0_035191
Hardware Version     3
CPU Speed            50 MHz
Flash Usage          4327 Out Of 8388 KByte

Hit Enter to Exit
```

Web Interface

To view Web card information through the Web interface:

• Click on the **Support** tab, then **Summary** in the left panel. The Web card information appears in the right panel.

9.2 Events and Parameters

You may view a list of all supported events and parameters for the Liebert equipment through any interface. Depending on the Liebert IntelliSlot Web card, the list might include SNMP and Modbus.

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

To view this data:

- Choose **IP Network Settings** from the Main Menu.
- Choose **Management Protocol**, then **SNMP Communications**.
- Choose **Support Information** from the SNMP Communications Menu to display the menu at right.

  The menu displays:
  - the number of events
  - the number of parameters
  - the total number of objects (sum of events and parameters)
- Choose **Display Events** to view a list of supported events for the Liebert unit, as shown in the example at right.

  These events may vary according to the Liebert unit where the card is installed.
- Choose **Display Parameters** to view a list of supported parameters for the Liebert unit, as in the example at right.

  These parameters vary according to the Liebert unit where the card is installed.

```
SNMP Communications Menu
------------------------
1: Authentication Traps    'no'
2: Display/Modify Communities
3: Display/Modify Trap
   Communities
4: Support Information

<ESC>: Cancel menu level
Please select a key ?>
```

```
Support Information Menu
------------------------
1: Display Events
2: Display Parameters
   Total Events:        40
   Total Parameters:   141
   Total Objects:      181

<ESC>: Cancel menu level
Please select a key ?>
```

```
Display Events       (Example)
-----------------
AlarmOnBypass,1.3.6.1.2.1.33.
   1.6.3.9
lgpAgentDeviceCommunicationLost,
   1.3.6.1.4.1.476.1.42.2.3.0.1
Hit any key to continue...
```

```
Display Parameters  (Example)
----------------------
sysDescr,1.3.6.1.2.1.1.1.0
sysObjectID,1.3.6.1.2.1.1.2.0
Hit any key to continue...
```

Web Interface

To view events and parameters through the Web interface:

- Click on the **Support** tab, then **Events** (or **Parameters**) in the left panel. The events or parameters are listed in the right panel. The example below shows a list of Events.

APPENDIX A - FIRMWARE UPDATES

A.1 INTRODUCTION

Liebert's IntelliSlot® cards may be updated to take advantage of the latest release of the firmware with enhanced features, compatibility with new units or service patches. Upgraded firmware may be downloaded with a browser, such as Internet Explorer. Liebert maintains firmware upgrades on its Web site, **www.liebert.com/downloads**.

Liebert manufactures various types of network cards for Liebert products. Before beginning any upgrade, determine the type of Liebert IntelliSlot card to be upgraded.

This identifying information—the type of card and firmware version currently installed—may be found in the documentation shipped with the card or by reading the card's support information through a terminal emulation, Telnet or Web interface, as described in **A.3.2 - Determine the Liebert IntelliSlot Card Type and Firmware Version**.

> **NOTE**
> *Liebert recommends that users read all the instructions prior to attempting a firmware upgrade.*

A.1.1 Overview

The firmware upgrade involves these steps:

Table A1   Overview of the upgrade process

Step	For details, see:
1. Decide which interface to use to connect to the Liebert IntelliSlot card	**A.2 - Connect to the Card - Terminal Emulation, Telnet or Web Interface**
2. Prepare for the upgrade	
• Make sure you have everything needed to perform the upgrade	**A.3.1 - Requirements to Update the Liebert IntelliSlot Card's Firmware**
• Check the type of card and firmware version currently installed	**A.3.2 - Determine the Liebert IntelliSlot Card Type and Firmware Version**
• Download the upgrade file from Liebert's Web site	**A.3.3 - Download the Firmware Upgrade File to the Computer**
• Decide which method to use for the upgrade	**A.3.4 - Choose a Method to Install the Firmware Upgrade**
3. Follow the step-by-step instructions to upgrade the firmware with the chosen method:	
• HTTP (Web) Method	**A.4 - Updating the Firmware - HTTP (Web) Method**
• TFTP (HyperTerminal, Telnet, Web) Method	**A.5 - Updating the Firmware - TFTP (HyperTerminal, Telnet, Web) Method**
• Xmodem (Serial) Method	**A.6 - Updating the Firmware - Xmodem (Serial) Method**

A.1.2 Estimated Time to Download the Firmware Upgrade File

The amount of time required to download the firmware upgrade file depends on the upgrade method used. Refer to **Table A2** for estimated times for each method.

Table A2   Estimated Time for downloads

Upgrade Method	Expected Speed	
HTTP (Web) Method (.bin file)	6-7 minutes (subject to network traffic)	
TFTP (HyperTerminal, Telnet, Web) Method (.bin file)	5-6 minutes (subject to network traffic)	
Xmodem (Serial) Method Xmodem 1K 115,200 bps	1st file	2 minutes
	2nd file	2 minutes
	3rd file	3-5 minutes

A.2 CONNECT TO THE CARD - TERMINAL EMULATION, TELNET OR WEB INTERFACE

Upgrading the firmware requires connecting to the card with one of these interfaces.

A.2.1 Open the Terminal Emulation Interface - Serial Connection
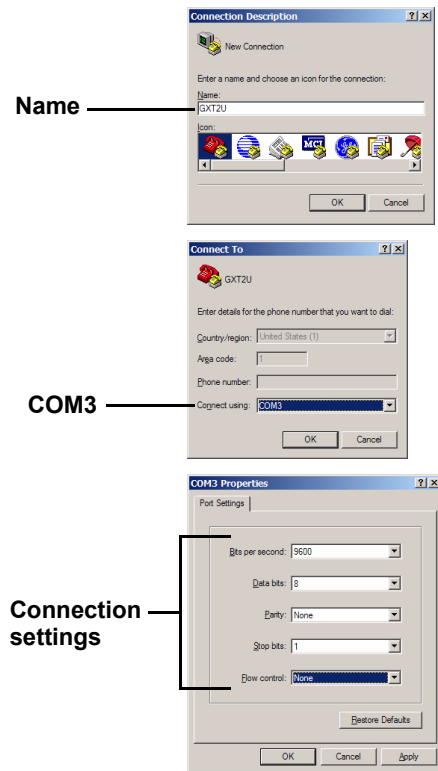
To connect to the card using terminal emulation software with a serial connection to the Web card:

1. Open a terminal emulation application, such as HyperTerminal.
    To do this:
    *   Click the **Start** button, then **Programs**, **Accessories**, **Communications** and finally **HyperTerminal**.
2. In the Connection Description window, enter a name for the connection—for example, **GXT2U**—then click **OK**.
3. In the Connect To window:
    *   Choose **COM3** from the Connect Using drop-down list.
    *   Click **OK**.
4. In the COM3 Properties window, enter the communication settings shown in **Table A3**.

Table A3   Communication settings

Baud Rate:	9600
Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	None

5. When the message at right appears in the HyperTerminal window, press the Enter key.

Name ———

COM3 ———

Connection settings ———

A.2.2 Open the Terminal Emulation Interface - TCP/IP Connection

To connect to the card using terminal emulation software with an Ethernet connection to the Web card:

1. Open a terminal emulation application, such as HyperTerminal.
    To do this:
    *   Click the **Start** button, then **Programs**, **Accessories**, **Communications** and finally **HyperTerminal**.
2. In the Connection Description window, enter a name for the connection—for example, **GXT2U**—then click **OK**.
3. In the Connect To window:
    *   Choose **TCP/IP (Winsock)** from the Connect Using drop-down list.
    *   Enter the IP address of the Web card—for example, **192.168.0.125**—in the Host Address box, then click **OK**.
4. When the message at right appears in the HyperTerminal window, press the Enter key.
5. Enter the Administrator username and password (both are case-sensitive):
    a. **Login** (username—default is *Liebert*)
    b. **Password** (default is *Liebert*)

Name ———

TCP/IP (Winsock) ———

```
RTCS v2.96.00 Telnet server

Service Port Manager Active
<Esc> Ends Session
```

```
Login: Liebert
Password: ********
```

A.2.3 ▢ Open the Telnet Interface
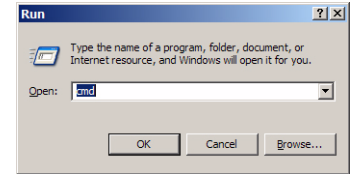
To connect to the card using Telnet:

1. Open a Telnet connection on a computer with an Ethernet connection to the Liebert unit. To do this:
   - Open a command prompt window—click the **Start** button, then **Run**.
   - Enter **cmd** and click **OK**.
   - In the command prompt window that opens, enter **telnet** followed by a space and the IP address of the Web card—for example:

     telnet 192.168.0.125

2. When the message at right appears in the command prompt window, press the Enter key.
3. Enter the Administrator username and password (both are case-sensitive):
   a. **Login** (username—default is *Liebert*)
   b. **Password** (default is *Liebert*)

```
C:>telnet 192.168.0.125
```
```
RTCS v2.96.00 Telnet server

Service Port Manager Active
<Esc> Ends Session
```
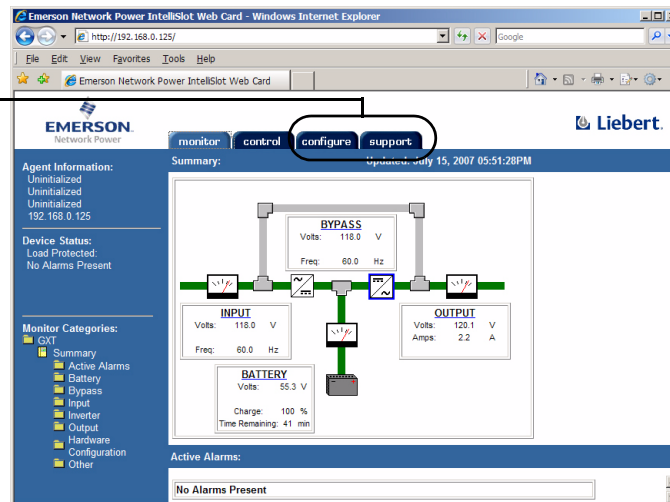
```
Login: Liebert
Password: ********
```

A.2.4 🌐 Open the Web Interface

To connect to the card using the Web interface:

1. Open a Web browser such as Internet Explorer.
2. Enter the IP address of the Web card in the address bar—e.g., **192.168.0.125**.
3. Click on a tab at the top of the window.

Configure and Support Tabs

A.3 PREPARING TO UPDATE LIEBERT INTELLISLOT FIRMWARE

A.3.1 Requirements to Update the Liebert IntelliSlot Card's Firmware

Make sure you have the following before starting the update:

- Firmware upgrade downloaded from Liebert's Web site (see **A.3.3 - Download the Firmware Upgrade File to the Computer**)
- A computer running Internet Explorer 5.5 or newer
- A Liebert IntelliSlot card
- A connection to the Liebert IntelliSlot card
    - Null modem cable—serial upgrade method
    - Ethernet connection—TFTP or HTTP upgrade method
- An Internet connection

A.3.2 Determine the Liebert IntelliSlot Card Type and Firmware Version

Each type of Liebert IntelliSlot card uses different firmware. Attempting to upgrade a card with the firmware for another type of card will fail and may damage the card.

To determine the type of card in your Liebert equipment:

Terminal Emulation (Serial or TCP/IP Connection) / Telnet

```
Factory Settings Menu
----------------------
1: Reset to Factory Defaults
2: Agent Card Information

<ESC>: Cancel menu level

Please select a key ?>
```

To view Web card information using terminal emulation or Telnet:

1. Open a connection to the Liebert IntelliSlot card (if needed, see instructions in **A.2.1 - Open the Terminal Emulation Interface - Serial Connection**, **A.2.2 - Open the Terminal Emulation Interface - TCP/IP Connection** or **A.2.3 - Open the Telnet Interface**).
2. Choose **Factory Settings** from the Main Menu, then choose **Agent Card Information**.
3. The Liebert IntelliSlot card model, part number and firmware version appear in the following example. Press the Enter key to return to the previous menu

```
MAC Address           00-00-68-16-82-C1
Network Card Model    IntelliSlot Web Card
Network Card Part #   OCWEBCARD
Manufacture Date      APR 28,2004
Serial Number         416701G105T2004APR280074
Boot Version          2.300.0
Boot Label            OCWEBCARD_HID3_2.300.0_034380
App Version           2.300.0
App Label             OCWEBCARD_HID3_2.300.0_035191
Hardware Version      3
CPU Speed             50 MHz
Flash Usage           4327 Out Of 8388 KByte

Hit Enter to Exit
```

Model and Part Number

Firmware Version

Web Interface

To view Web card information using a Web browser:

1. Open a connection to the Liebert IntelliSlot card (if needed, see instructions in **A.2.4 - Open the Web Interface**).
2. Click on the **Support** tab, then **Summary** in the left panel. The Liebert IntelliSlot card model, part number and firmware version appear in the right panel.

Support tab

Summary

Model, Part Number and Firmware Version

A.3.3 Download the Firmware Upgrade File to the Computer

> **NOTE**
> *Turn off the power management on your PC or laptop before beginning the update to ensure that communication will not be disrupted during the process.*

To download the upgrade file:

1. Open a Web browser, such as Internet Explorer (5.5 or newer).
2. Navigate to Liebert's Web site, **www.liebert.com/downloads**.
3. Choose the firmware upgrade for your card from the selections on the Web page (see **A.3.2 - Determine the Liebert IntelliSlot Card Type and Firmware Version**).
4. Click on the link to download the file.
5. Save the file to your computer's hard drive.
   Be sure to make a note of the location where the file is saved.

A.3.4 Choose a Method to Install the Firmware Upgrade

To install the firmware upgrade, choose one of these three methods and refer to the associated step-by-step directions:

- HTTP (Web) - see **A.4 - Updating the Firmware - HTTP (Web) Method**
- TFTP - see **A.5 - Updating the Firmware - TFTP (HyperTerminal, Telnet, Web) Method**
- Xmodem (Serial) - see **A.6 - Updating the Firmware - Xmodem (Serial) Method**

A.4   UPDATING THE FIRMWARE - HTTP (WEB) METHOD

Follow these steps to install the firmware upgrade using the HTTP (Web) method. This method is available through the Web interface only and requires an Ethernet connection to the Web card.
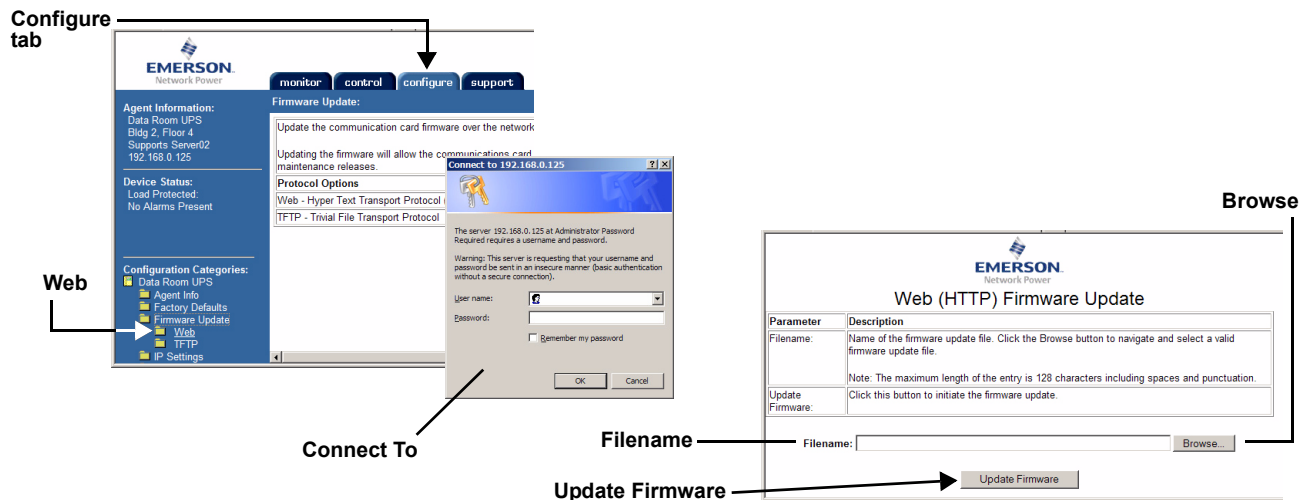
A.4.1   Install the Firmware Upgrade

NOTE

Turn off the power management on your PC or laptop before beginning the update to ensure that communication will not be disrupted during the process.

To update the Liebert IntelliSlot card firmware using the HTTP (Web) method:

1. Open a connection to the Liebert IntelliSlot card (if needed, see instructions in **A.2.4 - Open the Web Interface**).
2. Click on the **Configure** tab, then click on **Web** (under Firmware Update) in the left panel. The Connect To box opens for you to enter the username and password.
3. Enter the Administrator username and password (both case-sensitive):
   a. **User Name** (default is *Liebert*)
   b. **Password** (default is *Liebert*)
4. Click **OK**. The Web (HTTP) Firmware Update window opens, as shown at right below.

5. Click on the **Browse** button to locate the upgrade file. This is the file with the extension ".bin" downloaded in **A.3.3 - Download the Firmware Upgrade File to the Computer**. Then click **Open** to return to the update screen.
6. When ready to begin the update, click the **Update Firmware** button.
   A screen will appear, showing the firmware update progress.

NOTE

Do not refresh your browser or open another browser window. Wait until the firmware update has been completed before opening other applications or using the computer for other tasks.

7. A message appears indicating whether the update was successful.

After the firmware update is completed, the card will reinitialize and you may return to the Liebert IntelliSlot card's Web interface.

Check the new firmware version if you wish (see **A.3.2 - Determine the Liebert IntelliSlot Card Type and Firmware Version**).

A.5 UPDATING THE FIRMWARE - TFTP (HYPERTERMINAL, TELNET, WEB) METHOD

Follow these steps to update the firmware using the TFTP method. This method is available through the terminal emulation, Telnet and Web interfaces with an Ethernet connection to the Web card.

> **NOTE**
> *This method includes a time-sensitive operation requiring expeditious location of the upgrade files downloaded in **A.3.3 - Download the Firmware Upgrade File to the Computer**. Read through this entire section before beginning the upgrade.*

A.5.1 TFTP Method - Terminal Emulation / Telnet Interface

To update the Liebert IntelliSlot card firmware using the TFTP method with a terminal emulation or Telnet interface:

Open a Connection to the Card

1. Open a terminal emulation or Telnet connection to the Liebert IntelliSlot card (if needed, see instructions in **A.2.2 - Open the Terminal Emulation Interface - TCP/IP Connection** or **A.2.3 - Open the Telnet Interface**).
2. Choose **Firmware Updates** from the Main Menu.
3. Choose **TFTP Update** from the Firmware Updates menu, shown at right.

```
Firmware Updates Menu
---------------------
1: TFTP Update
```

Specify TFTP Server and Upgrade Filename

4. The TFTP Update Menu, shown at right, displays the TFTP server's IP address and listening port, along with the name of the firmware update file.
5. Select options as needed and refer to the following guide to change any settings.

```
TFTP Update Menu
----------------
1: IP Address   0.0.0.0
2: Port         69
3: Filename     Uninitialized
4: Initiate TFTP Firmware Update

<ESC>: Cancel menu level

Please select a key ?>
```

Table A4   Firmware update settings - TFTP

Parameter	Description
Server	The IP address of the TFTP server—for example, **192.168.0.125**.
Port	Port that the TFTP server is using, typically **69**.
Filename	Name of the firmware update file—128 characters maximum, including spaces and punctuation. This is the file with the extension "**.bin**" downloaded in **A.3.3 - Download the Firmware Upgrade File to the Computer**.

6. After making changes, press the Escape key twice to return to the Main Menu.
7. Choose **Exit and Save** to save your changes and reboot the card.

Reconnect to the Card

8. Connect to the Liebert IntelliSlot card again (if needed, see **A.2.3 - Open the Telnet Interface** or **A.2.1 - Open the Terminal Emulation Interface - Serial Connection**).
9. Choose **Firmware Updates** from the Main Menu.
10. Choose **TFTP Update** from the Firmware Updates menu, shown at right.

```
Firmware Updates Menu
---------------------
1: TFTP Update
```

Begin the Upgrade Process

11. When ready to begin the update, choose **Initiate TFTP Firmware Update**.

12. Open the TFTP application and start TFTP. Ensure that all settings are ready to transfer the file, including the location of the upgrade file. Refer to your TFTP user manual for more details.

13. Return to the terminal emulation/Telnet screen. At the confirmation message prompt, enter **y** (yes) to confirm your choice. (To cancel, enter **n** for no.)

14. A message appears, as shown at right, showing the progress by percent complete.

15. When the progress screen shows 100% complete, the card will be rebooted. Press Enter when this is finished.

16. Press the Escape key to return to the Main Menu, then choose **Exit and Save**.

The upgrade is now complete.

Check the new firmware version if you wish (see **A.3.2 - Determine the Liebert IntelliSlot Card Type and Firmware Version**).

```
TFTP Update Menu
----------------
1: IP Address 192.168.0.125
2: Port       69
3: Filename   OCWEBCARD_HID3_2.300.0_035780_AppFwUpdt.bin
4: Initiate TFTP Firmware Update

<ESC>: Cancel menu level

Please select a key ?>
```

```
All Code In Flash Will Be Rewritten, Confirm? [y/n]
```

```
TFTP Update initiated

The firmware on this card is currently being updated.
This operation may take 6 or more minutes depending
on network traffic and other factors.  The card will be
rebooted upon successful completion of the process OR
control will be returned to this terminal session upon
failure so another firmware update attempt can be made.

Firmware update in process... Percent Complete(0%)
```

```
Main Menu
----------
1: System Information
2: IP Network Settings
3: Messaging
4: Factory Settings
5: Firmware Updates
q: Quit and abort changes
x: Exit and save
Please select a key ?>
```

A.5.2 🌐 TFTP Method - Web Interface

To update the Liebert IntelliSlot card firmware using the TFTP method with a Web interface:

Open a Connection to the Card

1. Open a connection to the Liebert IntelliSlot card (if needed, see instructions in **A.2.4 - Open the Web Interface**).
2. Click on the **Configure** tab, then **TFTP** in the left panel.
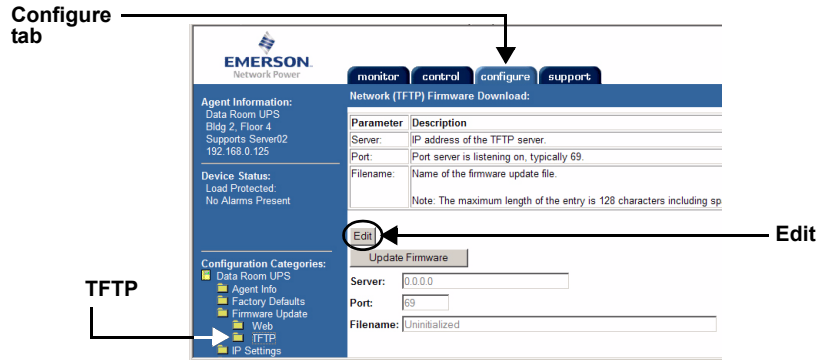
3. Enter the Administrator username and password (both are case-sensitive):
   a. **Login** (username—default is *Liebert*)
   b. **Password** (default is *Liebert*)

Specify TFTP Server and Upgrade Filename

4. Click the **Edit** button in the right panel.
5. Select options as needed and refer to the following guide to change any settings.

Table A5   Firmware update settings - Web

Parameter	Description
Server	The IP address of the TFTP server—for example, **192.168.0.125**.
Port	Port that the TFTP server is using, typically **69**.
Filename	Name of the firmware update file—128 characters maximum, including spaces and punctuation. This is the file with the extension "**.bin**" downloaded in **A.3.3 - Download the Firmware Upgrade File to the Computer**.

6. After making changes, click **Save**, then click **Reinitialize** in the left panel to reboot the card.
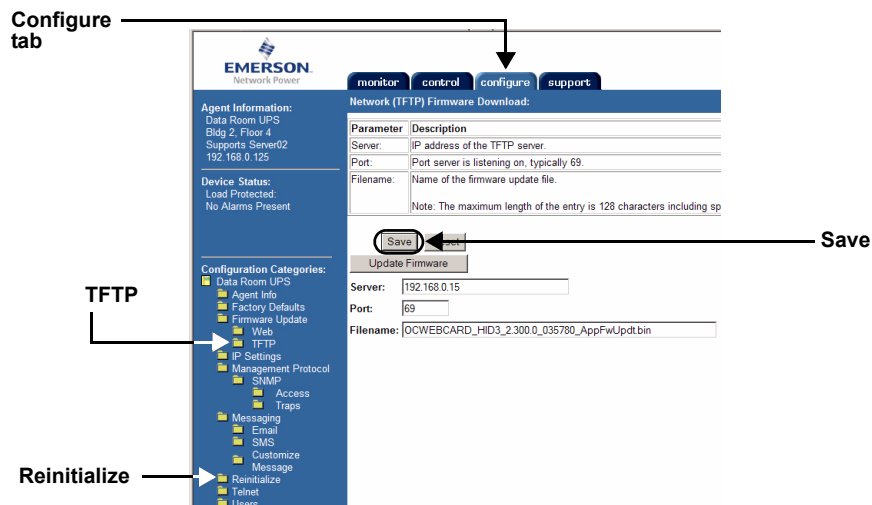

Reconnect to the Card

7. Click the **Configure** tab, then **TFTP** and enter the username and password (**Steps 2** and **3**) to return to the TFTP screen as shown above.

Begin the Upgrade Process

8. Open the TFTP application and start TFTP. Ensure that all settings are ready to transfer the file, including the location of the upgrade file. Refer to your TFTP user manual for more details.

9. Return to the Web interface.

10. When ready to begin the download, click the **Update Firmware** button.
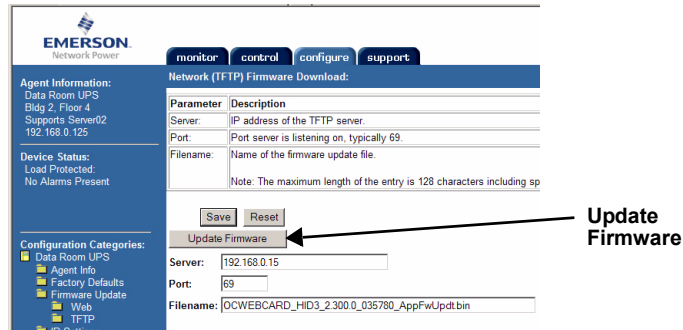
11. During the update, the window displays a progress bar, as shown below left.

NOTE

Do not close the Web browser during this process or the update will abort.

After the firmware update is completed, the card will reinitialize automatically. A reboot message, as shown below right, remains until the rebooting is finished.
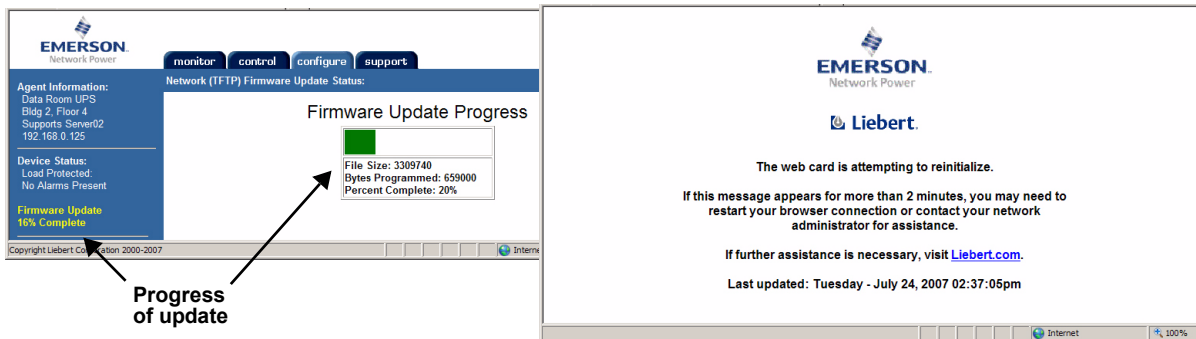
When the rebooting is complete, the Web browser window returns to the default opening view. The upgrade is now complete.
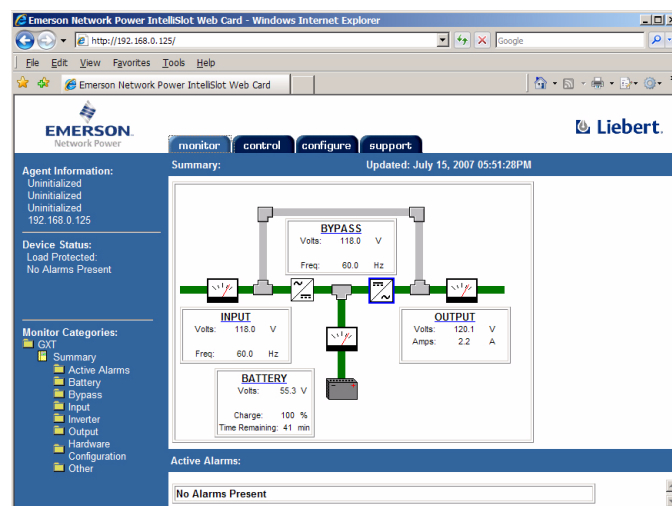
Check the new firmware version if you wish (see **A.3.2 - Determine the Liebert IntelliSlot Card Type and Firmware Version**).

A.6   UPDATING THE FIRMWARE - XMODEM (SERIAL) METHOD

Follow these steps to update the firmware using the Xmodem (serial) method. This method works through the Web card's serial port, employing terminal emulation software, such as HyperTerminal.

> **NOTE**
> *This method includes a time-sensitive operation requiring expeditious location of the upgrade files downloaded in **A.3.3 - Download the Firmware Upgrade File to the Computer**. Read through this entire section before beginning the upgrade.*

Connect a Cable to the Serial Ports

1. Connect one end of a DB-9 null modem or file transfer cable to the Web card's serial port and the other to the computer's serial port. The correct cable will have at a minimum, Pins 2 and 3 crossed at the ends, as shown in **Figure A1**.

Figure A1   Null connection

DTE Device   DTE Device

Receive Rx (Pin 2)   Receive Rx (Pin 2)

Transmit Tx (Pin 3)   Transmit Tx (Pin 3)

Open a Terminal Emulation Connection

2. Open a connection to the Liebert IntelliSlot card (if needed, see instructions in **A.2.1 - Open the Terminal Emulation Interface - Serial Connection**).

3. Choose **Firmware Updates** from the Main Menu.

4. Choose **XMODEM Update** from the Firmware Updates menu, seen at right, and enter **y** (yes) to confirm your choice.

5. Choose **Xmodem1K** from the Select Firmware Update Protocol, as shown at right.

```
Firmware Updates Menu
---------------------
1: XMODEM Update
2: TFTP Update
```

```
Firmware Update (Step 1/3)
--------------------------
Select Firmware Update Protocol
-------------------------------
1: XmodemCrc
2: Xmodem1K
x: Exit/Cancel
Please select a key ?>
Current Communications Rate is 9600 bps.
```

Change the Baud Rate to 115200

6. Choose **115200 bps** from the menu, shown below left.

7. From the HyperTerminal menu, click on **Call**, then choose **Disconnect** (this will not close the HyperTerminal connection to the card).

8. In the HyperTerminal menu bar, click on **File**, then choose **Properties**.

9. Click on the Connect To tab and click the **Configure** button. This opens Port Settings tab in the COM1 Properties window, as shown below right.

10. Choose **115200** from the Bits Per Second drop-down list and click **OK**, then click **OK** to close the Properties window.

11. In the HyperTerminal menu bar, click on **Call**, then choose **Call** from the drop-down menu and press the Enter key.

115200 bps

Call menu

Configure button
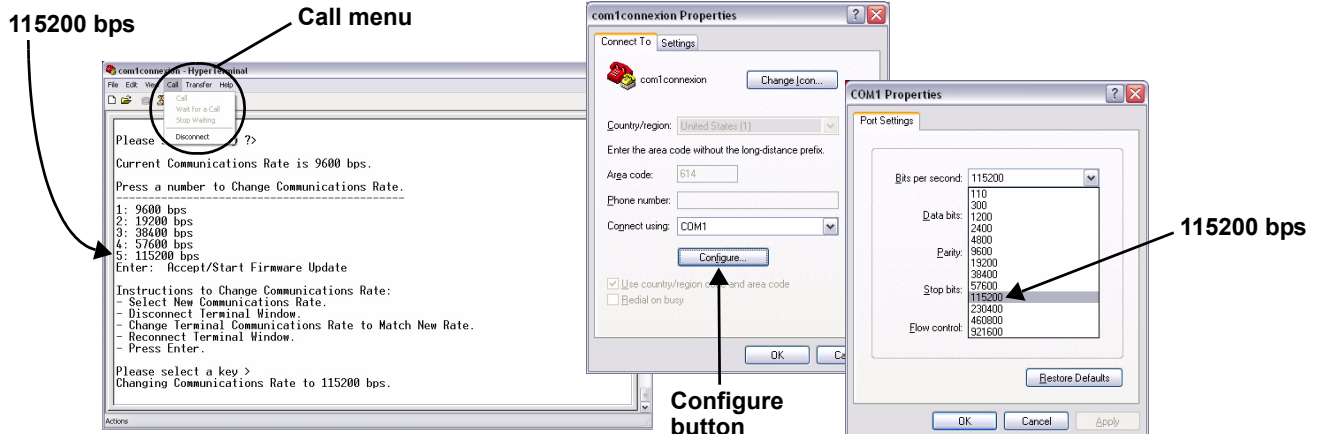
115200 bps

Download the First Firmware Update File

12. After changing the communication rate to 115200 bps, press Enter to resume the firmware update.

    After you press Enter, HyperTerminal displays **C**s as it counts down the time remaining to locate and begin transferring the upgrade files.

    NOTE

    *After you begin the initialization process in **Step 12**, you must complete **Steps 13** through **15** within 60 seconds. Before beginning, check to ensure that you know the location of the firmware files and read through the following steps to understand what needs to be done.*

    This 60-second limit also applies to downloading the second and third upgrade files.

13. In the HyperTerminal menu, click on **Transfer**, then **Send File**.

Browse to locate upgrade file

Press Enter to start firmware update

Choose 1K Xmodem

Progress window shows elapsed time...

... and remaining time

14. Click the **Browse** button to locate an upgrade file. Select the files in order—the filename ending in FILE1 for the first download, then FILE2, and finally FILE3—then click **Open**.

15. In the Send File window, choose **1K Xmodem** from the Protocol drop-down list and click **Send**.

    A progress window opens, showing the elapsed time and amount of time remaining for the first file to be downloaded to the Liebert IntelliSlot card. The window closes after the first file is downloaded.

    NOTE
    Do not press any keys while the progress window remains open or the download will abort.

### Download the Second and Third Firmware Update Files

16. When the progress window closes, enter **y** (yes) in HyperTerminal to continue the upgrade.

17. Choose **Xmodem1K** in the Select Firmware Update Protocol menu.

18. The screen shows that the communication rate is 115200. This does not need to be changed.

19. Press Enter to continue.

20. Repeat **Steps 12** through **15** within the 60-second limit to browse to the second upgrade file and download it to the Liebert IntelliSlot card.

21. Wait for the Progress window to close after the second file is downloaded.

    Then repeat **Steps 16** through **20** to download the third upgrade file. This file is the largest and may take 30 minutes or longer to download.

```
Would You Like to Continue (Y or N)?
Firmware Update (Step 2/3)
-------------------------
Select Firmware Update Protocol
-------------------------------
1: XmodemCrc
2: Xmodem1K
x: Exit/Cancel
Please select a key ?>
Current Communications Rate is 115200 bps.
Press a number to Change Communications Rate.
-------------------------------
1: 9600 bps
2: 19200 bps
3: 38400 bps
4: 57600 bps
5: 115200 bps
Enter:  Accept/Start Firmware Update
Please select a key >
Press Enter to Start Firmware Update.
```

Complete the Upgrade and Restore Communication Rate

22. Choose **9600 bps** from the menu, shown below left.

23. From the HyperTerminal menu, click on **Call**, then choose **Disconnect** (this will not close the HyperTerminal connection to the card).

24. In the HyperTerminal menu bar, click on **File**, then choose **Properties**.

25. Click on the Connect To tab and click the **Configure** button. This opens Port Settings tab in the COM1 Properties window, as shown below right.

26. Choose **9600** from the Bits Per Second drop-down list and click **OK**, then click **OK** to close the Properties window.

27. In the HyperTerminal menu bar, click on **Call**, then choose **Call** from the drop-down menu.

28. Press the Enter key.

Call menu

Configure button

9600 bps
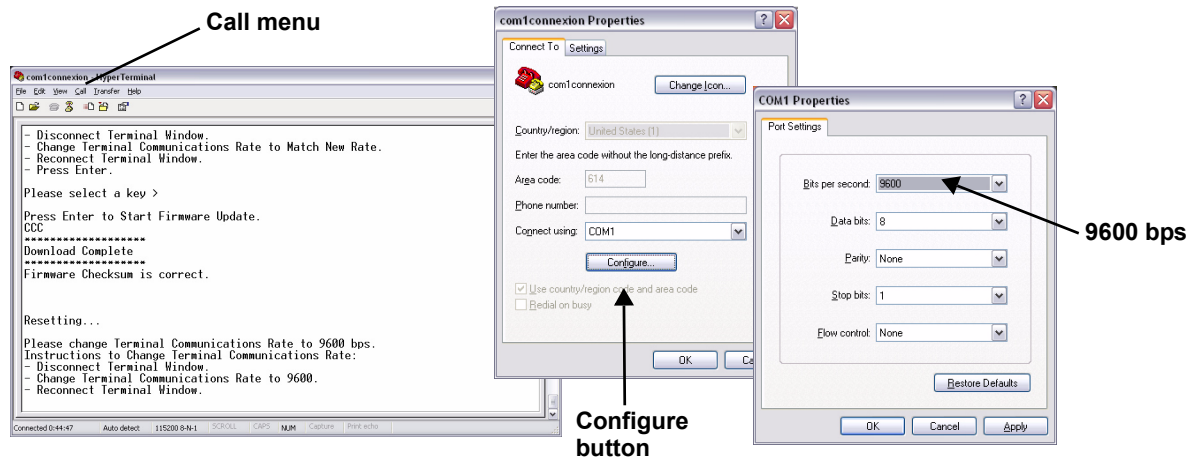
29. Choose **Exit and Save** from the Main Menu to reboot the card. When rebooting is complete, the upgrade is finished.

Check the new firmware version if you wish (see **A.3.2 - Determine the Liebert IntelliSlot Card Type and Firmware Version**).

```
Main Menu
----------
1: System Information
2: IP Network Settings
3: Messaging
4: Factory Settings
5: Firmware Updates

q: Quit and abort changes
x: Exit and save

Please select a key ?> 5
```

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