NetLink Connect NLC

Network Connectivity Module

Installation and Operation Manual

LifeSafety Power®
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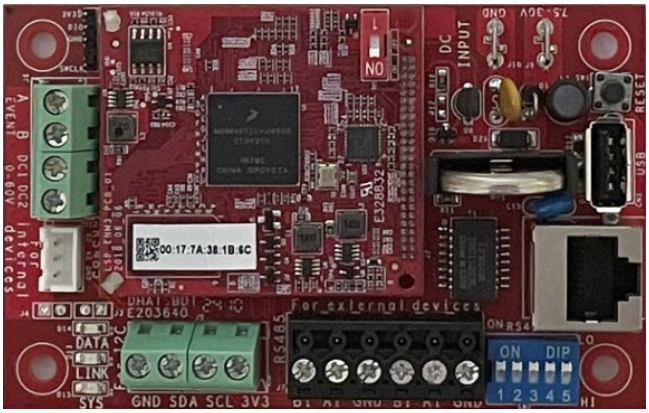

c UL us

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LSP Cybersecurity Guidelines

Protect data by implementing best practices

- Create custom password / User ID on setup
- Configure for secure web-based mgmt
- Use TLS (”https”) whenever possible
- Set SSL option to high whenever possible
- Use SNMP v3 with secured credentials
- Use IPV6 whenever possible

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⚠ *This manual covers Firmware Revision 3.1.12*

Older firmware revisions may not have all features described. See the latest firmware release notes at LifeSafetyPower.com/en/support/downloads

⚠ *Resetting the NetLink*

If the user name or password is unknown for a NetLink board, press and hold the reset button located next to the backup battery for 10 seconds to return these values to default. Pressing the reset button for 30 seconds will also reset the IP address, certificate, and Cipher Suite to default. See section 2.2.1.1 for more information.

⚠ *Upgrading NetLink Firmware*

The browser history / cache should be cleared after performing a firmware upgrade and before accessing the NetLink again to prevent any cached pages from giving outdated information. See Section 3.3 for detailed steps for firmware upgrades.

Notes and Warnings

Symbol Definitions

The following symbols are used throughout this manual

This symbol is intended to alert the installer of shock hazards within the enclosure. Service should only be performed by qualified service personnel

This symbol is intended to alert the installer to important information or information intended to help the installer avoid personal injury or property damage

Warnings

Installation and service should be performed only by qualified service personnel and should conform to all local codes

L'installation et l'entretien doivent être effectués uniquement par du personnel qualifié et doivent être conformes à tous les codes locaux

To reduce the risk of electric shock or fire, do not expose this equipment to rain or moisture

Pour réduire le risque de choc électrique ou d'incendie, n'exposez pas cet équipement à la pluie ou à l'humidité

This equipment shall be installed in a manner which prevents unintentional operation by employees, cleaning personnel, or others working in the premises, by falling objects, customers, building vibration, or similar causes

Cet équipement doit être installé de manière à empêcher tout fonctionnement involontaire par les employés, le personnel de nettoyage ou d'autres personnes travaillant dans les locaux, par la chute d'objets, de clients, de vibrations du bâtiment ou de causes similaires.

This equipment is not intended for use within the patient care areas of a Health Care Facility

Cet équipement n'est pas destiné à être utilisé dans les zones de soins aux patients d'un établissement de santé

Replace fuses only with the same type and rating as indicated in the specifications section of this manual.

Remplacez les fusibles uniquement par le même type et le même calibre que ceux indiqués dans la section des spécifications de ce manuel.

To prevent impaired operation, ensure that all wiring is routed and secured to prevent accidental open or short circuit conditions

Pour éviter un fonctionnement altéré, assurez-vous que tout le câblage est acheminé et sécurisé pour éviter les conditions accidentelles d'ouverture ou de court-circuit

The system and any batteries (if used) should be tested at least once per year to ensure proper operation

Le système et toutes les batteries (le cas échéant) doivent être testés au moins une fois par an pour assurer un fonctionnement correct

Regulatory Information

The following equipment discussed within this manual has been tested to the following standards:

- UL294, UL2610
- ULC S318
- CAN/ULC 60839-11-1

Conventions Used Within this Manual

Positional information (e.g. top, bottom, up, down, left, right, etc.) is referenced with the board or enclosure in the orientation shown in the illustrations in this manual.

Introduction

Product Description

The LifeSafety Power NetLink® Connect NLC module is an accessory module which may be used with LifeSafety Power (LSP) power systems to provide remote monitoring and control of the power system and connected devices. It features an embedded interface which can be accessed through the local or wide area network. Automated system status alerts may be sent via email, SNMP, XML, or through direct integration with an access control panel's dashboard.

The NLC allows the user to monitor power system status while providing values such as output voltage, fault status, battery voltage, battery charging current, and temperature. Additionaly, automated battery testing may be run manually, or scheduled to happen at defined intervals, eliminating the need for a technician to be on-site. When used with an M8, SD4, or SD16 managed output board, voltage and current for each individual output is provided, and each output may be individually power cycled.

The NLC monitors for and reports fault conditions, service due date approaching, battery condition, or on a time basis for status updates on regular intervals. A time and date stamped log of the past 1000 events is kept and may be viewed on demand, or immediately on an alert occurrence. When all parameters are in range, the log is updated once per selected interval with a snapshot of current values.

The NLC module provides two voltmeter inputs for monitoring a low voltage DC source, and an event input for monitoring dry contacts such as the enclosure tamper switch. Internal temperature is also sensed, and an I2C sensor input allows temperature and humidity monitoring of the space where the NLC is installed to alert of HVAC issues.

The NLC communicates to other managed accessory boards via a secure OSDP connection. Remote devices may be monitored via an OSDP connection to an NXB expansion board (see the NXB manual for more information).

Specifications

Power Input	Voltage	7.5–30VDC
	Current	60mA Nominal
ADC Inputs	Voltage	0–30VDC
	Resolution	10 Bits
	Accuracy	± 3% (from 10-30V)
Event1 Input	Voltage	8–30VDC
	Current	15mA Max.

Use typical wiring material type: UL/CSA recognized insulated wire, Insulation rating 300V or higher, 105C or higher, such as UL AWM Style 1581

Class 2 power limited wiring must be seperated from non-power limited wiring by a minimum of 1/4 inch and must use seperate knockouts

The installation and all wiring methods shall be in accordance with ANSI/NFPA70 and all local codes.

For ULC compliance, installation and all wiring methods shall be in accordance with the Canadian Electrical Code, C22.1, Part I, Section 32.

All input/output wiring to the module shall be located within the same room (3 m. max.).

The remote control features have not been investigated by UL.

The module shall be installed in UL Listed LifeSafety Power enclosures only.

Wiring to Event inputs shall be limited to 10m.

Le câblage à puissance limitée de classe 2 doit être séparé du câblage sans limitation de puissance d'au moins 1/4 de pouce et doit utiliser des débouchures séparées

L'installation et toutes les méthodes de câblage doivent être conformes à la norme ANSI / NFPA70 et à tous les codes locaux.

Pour la conformité ULC, l'installation et toutes les méthodes de câblage doivent être conformes au Code canadien de l'électricité, C22.1, partie I, section 32.

Tous les câbles d'entrée / sortie du module doivent être situés dans la même pièce (3 m. Max.).

Les fonctionnalités de la télécommande n'ont pas été étudiées par UL.

Section 1 – Installation

The following pages cover the installation of the NetLink Connect NLC Module.

1.1 Mounting the NLC Module

Use the following procedure when mounting the NetLink module to a LifeSafety Power enclosure.

1. Locate the appropriate mounting holes in the enclosure and snap the four standoffs provided into the holes.
2. Align the board mounting holes (mounting hole locations are indicated in the drawing below) with the standoffs and snap the board onto the standoffs. Be sure the board is properly oriented before snapping the board onto the standoffs.

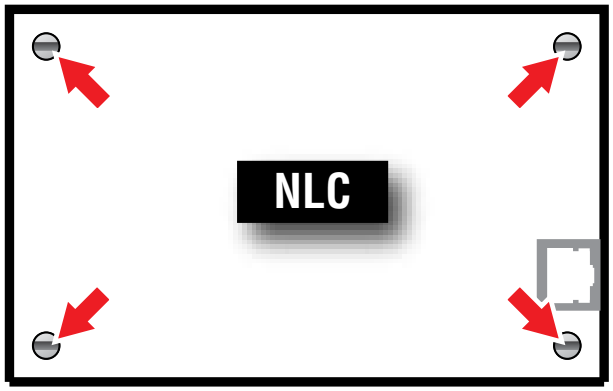

Figure 1.1

1.2 NLC Module Overview

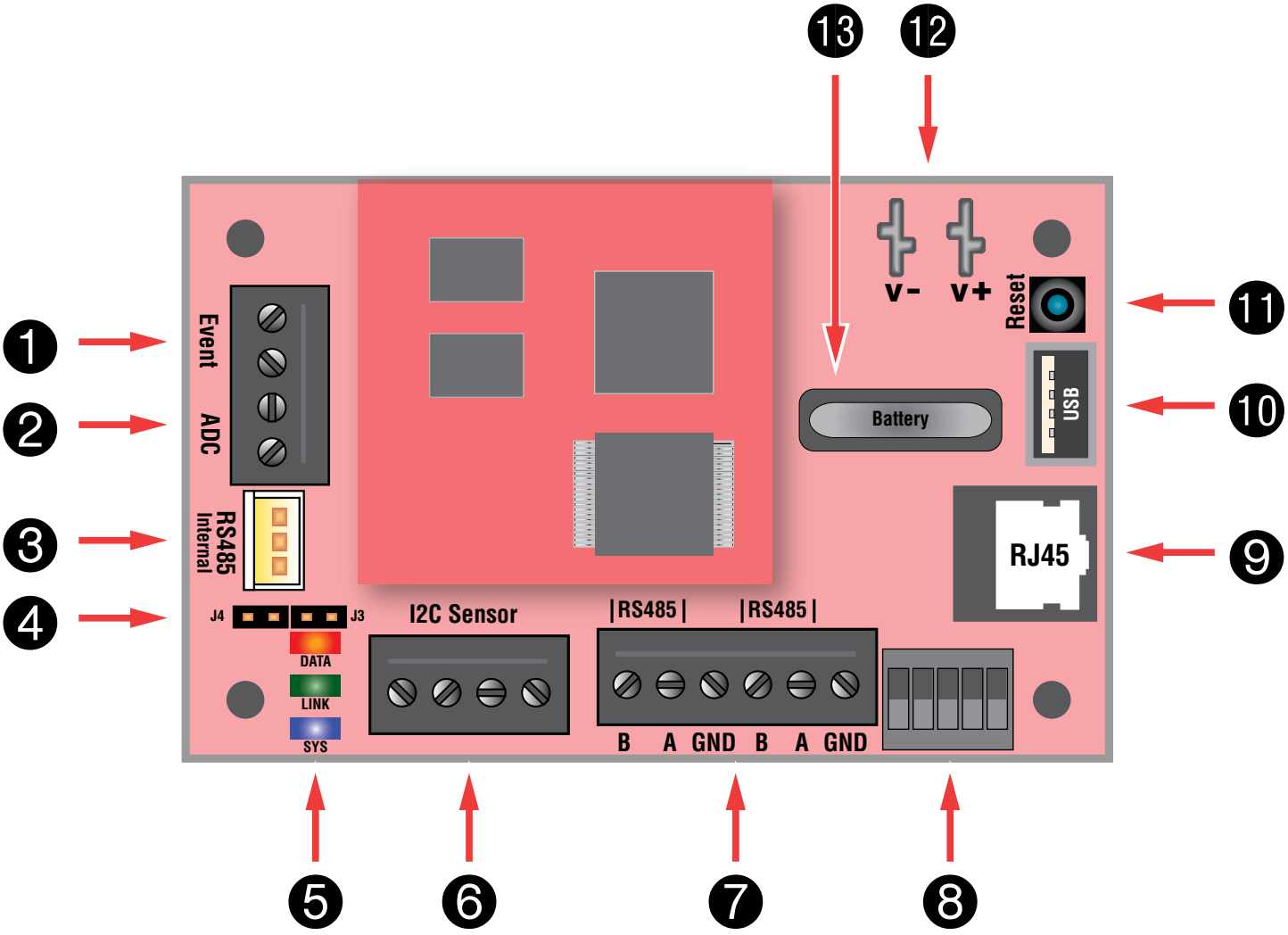

Figure 1.2 - NLC Board Layout

The following are basic NLC board descriptions. Refer to the appropriate section for more detailed information.

1 Event Input

These terminals are for the Event1 input. This input will accept 9-30VDC to initiate an event alert. This input will only indicate an active or inactive condition and will not measure the voltage level. See section 1.3.5

2 ADC Input

This is the Analog to Digital Converter (ADC) input, which acts as a voltmeter. It accepts 0-30V and is used to measure positive or negative system voltages which are common grounded with the NetLink module. The ADC cable wiring must be routed away from high voltages. See section 1.3.7

3 RS485 Internal Connection

This connector allows for quick connection of accessory modules within the same enclosure as the NLC. For RS485 connections external to the enclosure, see #7.

4 Jumpers J3 & J4

These jumpers have no user function and should be left open at all times.

5 Status LED Indicators

These LEDs indicate the status of the Ethernet link to the NetLink board.

LED Indicator:

Green (LINK) Lights when NetLink is connected to a network

Red (DATA) Flashes during data transfer

Blue (SYS) Lights when the NetLink is fully booted up and running. During the bootup process, this LED may flash on and off several times. The NetLink will not be able to be accessed until this LED lights steady.

6 I2C Sensor Input

These terminals allow the connection of a temperature or temperature/humidity sensor to the NLC. This sensor may be used to monitor the environmental conditions of the room where the NLC is installed.

7 RS485 External Connection

This terminal strip allows the NLC to connect to managed LSP accessory boards outside of the enclosure where the NLC is located when used with an NXB expansion board. Communication is via OSDP. This RS485 buss utilizes 32 addresses, one of which is used by the NLC module. See #8.

For RS485 connections internal to the enclosure, see #3.

8 RS485 DIP Switches

These DIP switches set the RS485 address of the NLC board on the External RS485 buss (See #7). This address must be a unique address not used by an NXB board or other devices on the RS485 External connection.

9 Ethernet Connection

This is the RJ45 jack for the network connection. The ethernet cable is plugged into this jack. See section 1.3.2

⚠ NOTE: This port does not accept PoE power. Do not connect PoE to this port.

10 USB Port

This port is for future use and should be left open.

11 Factory Reset Button

This button resets the User Name, Password, and IP Address settings back to factory default. Typically used when IP and/or login information has been lost. See section 2.2.1.1 for more information.

12 Input V+ & V-

This is the power input for the NetLink board. This input accepts 8 to 30VDC ONLY from any power supply.

Note - The voltage input of the NetLink must be connected directly to the DC1 output or to the V+/V- fastons (if present) of the power supply.

13 Backup Battery

This is the coin cell battery for maintaining the clock when all power is removed from the NetLink. The battery type is CR2032.

1.3 Connecting the NLC Network Module

1.3.1 Making the Power Connections to the NLC Board

The DC power source for the NLC is connected to the DC INPUT fastons (Page 2, #12). The voltage of this source must be between 8 and 30VDC and should be backed up with a battery set or UPS to maintain communication during a loss of primary AC voltage. Do not attampt to power the NLC with PoE or AC power.

The power connections for the NetLink must connect directly to the main output or the V+/V- faston connectors (if present) of the power supply. (Figure 1.3)

⚠ **Note:** *Do not power the NetLink through another accessory board's output or from the B1/B2 connectors of the aqccessory board chain.* (Figure 1.4)

1.3.2 Making the Ethernet Connection to the NetLink

Plug the Ethernet cable into the RJ45 jack on the NetLink until the locking tab clicks. Connect the other end of the Ethernet cable to the network.

⚠ **Note:** This port does not accept PoE power. Do not connect PoE to this port.

⚠ **Note:** The NetLink board should be configured via a direct connection to a laptop or PC before connecting to the network. See the Initial Configuration Section (Section 2) of this manual for more details.

1.3.3 Connecting the Event Input

The Event Input monitors for presence or absence of a voltage. If monitoring a relay or switch contact (a common example would be the tamper switch of the enclosure), an external voltage must be run through the contact.

Example:
To monitor the NC tamper switch in an LSP enclosure, connect a positive voltage (from the power supply or distribution board) to one lead of the tamper switch. Connect the other lead of the tamper switch to the B (positive) terminal of the Event Input terminals. Connect the A (negative) terminal of the Event input terminals to the negative (DC Common) of the voltage source. (Figure 1.5)

1.3.4 Connecting the ADC (Voltmeter) Input

The ADC (voltmeter) input, measures a DC voltage. When using the voltmeter input, connect the voltage to be measured to the ADC terminals, observing polarity as marked on the PCB. The ADC wiring must be routed away from high voltages and the wire used must be rated for the voltages and temperatures in the area in which it is installed.

⚠ **Note:** The voltage being measured by the ADC input MUST be common grounded with the voltage source of the NLC board.

1.3.5 I2C Remote Temperature Sensor Input

The I2C remote temperature sensor input allows measuring a temperature up to 6 feet away from the NLC board. Wire the sensor into the I2C terminals (matching GND/SDA/SCL/3V3 with the markings on the sensor) and run the sensor wire to the area or device to be monitored.

1.3.6 Setting the NXB Address

The NLC and each NXB module must have unique addresses on the RS485 External buss. The NLC module is typically set to address 0. Setting the address is via DIP switch on the NLC PCB as follows:

Address	Switch Settings	Address	Switch Settings
0	On | On | On | On | On	16	Off | On | On | On | On
1	On | On | On | On | Off	17	Off | On | On | On | Off
2	On | On | On | Off | On	18	Off | On | On | Off | On
3	On | On | On | Off | Off	19	Off | On | On | Off | Off
4	On | On | Off | On | On	20	Off | On | Off | On | On
5	On | On | Off | On | Off	21	Off | On | Off | On | Off
6	On | On | Off | Off | On	22	Off | On | Off | Off | On
7	On | On | Off | Off | Off	23	Off | On | Off | Off | Off
8	On | Off | On | On | On	24	Off | Off | On | On | On
9	On | Off | On | On | Off	25	Off | Off | On | On | Off
10	On | Off | On | Off | On	26	Off | Off | On | Off | On
11	On | Off | On | Off | Off	27	Off | Off | On | Off | Off
12	On | Off | Off | On | On	28	Off | Off | Off | On | On
13	On | Off | Off | On | Off	29	Off | Off | Off | On | Off
14	On | Off | Off | Off | On	30	Off | Off | Off | Off | On
15	On | Off | Off | Off | Off	31	Off | Off | Off | Off | Off

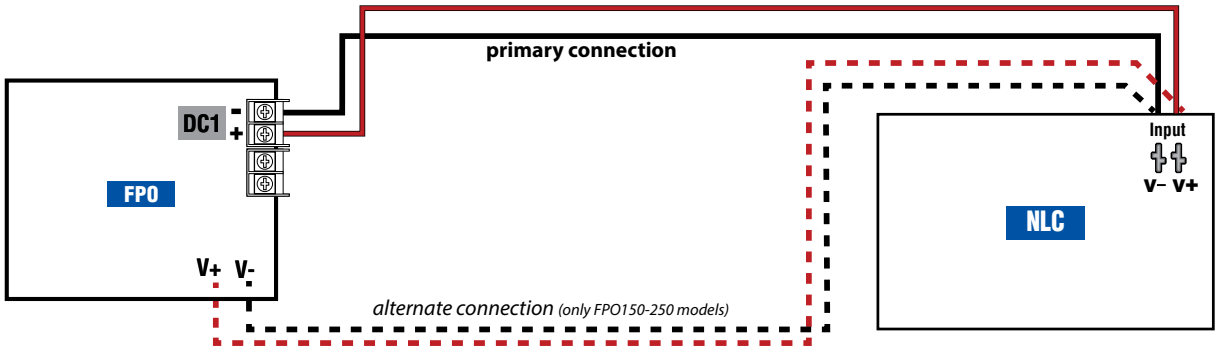

Figure 1.3 - Power the NLC from the V+/V- or DC ouput terminals on the main power supply

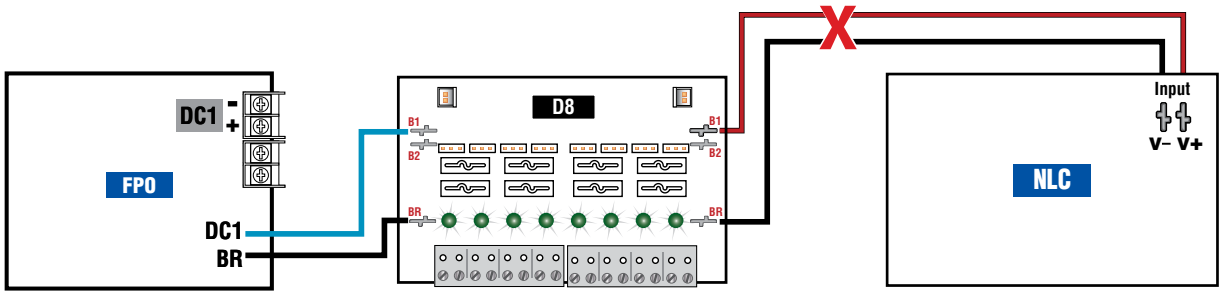

Figure 1.4 - Do not power from another accessory board's output terminals or B1/B2 connection

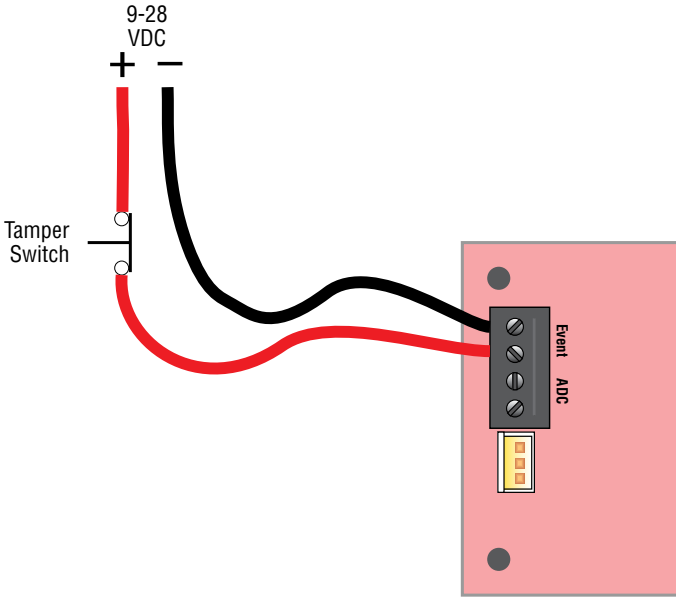

Figure 1.5 - Event Input Tamper Switch Wiring

1.3.7 Connecting Devices to be Monitored to the NetLink

Devices within the same enclosure as the NLC

Local devices connect to the NLC via the RS485 Internal connection (Page 2, #3). Plug one end of the RS485 cable into the NLC. Connect the other end to the RS485 connector of the device to be monitored (such as an FPO, B150, M8, or SD board - see the manual for the device being connected for the location of the RS485 connector).

If the device to be connected only has an RS485 terminal strip and does not have a pluggable connector, the end of the RS485 cable may be cut off in order to connect to the terminals.

Up to 32 local devices may be connected to the NLC.

Devices outside of the enclosure containing the NLC

The RS485 terminal strip (Page 2, #7) allows connection of devices outside of the enclosure where the NLC is installed by using NXB boards. Up to 31 NXB boards can be connected to the NLC. See the NXB manual for more information. Alternatively, monitored devices may be connected directly to the RS485 terminals without an NXB.

The RS485 terminal strip has two connections available, for up to two RS485 branches. Both branches share the 32 addresses available.

RS485 Terminals:

A	Signal Line A
B	Signal Line B
GND	Ground

The A, B, and GND terminals from the NLC must be connected to the A, B, and GND terminals of the NXB or monitored device.

The next device in the chain should connect from the second set of RS485 terminals on the monitored device to the next device in the chain and so on. The final device in the chain must have a termination resistor installed between A and B on the second RS485 terminal set.

RS485 communication between the NLC and NXB modules uses the OSPD protocol. Wiring for the RS485 buss must be a single 24AWG twisted pair with drain wire and shield with 120 ohm impedance. The maximum total combined wire length is 2000ft.

⚠ **Note:** Failure to use the proper wire type, connection methods, and termination resistor may prevent proper communication.

⚠ **Note:** NXB boards and other devices connected to the RS485 terminals must each be set to a unique address. See the manual of the connected devices for addressing information. The NLC board must also have a unique address set using the dip switches (Page 2, #8)

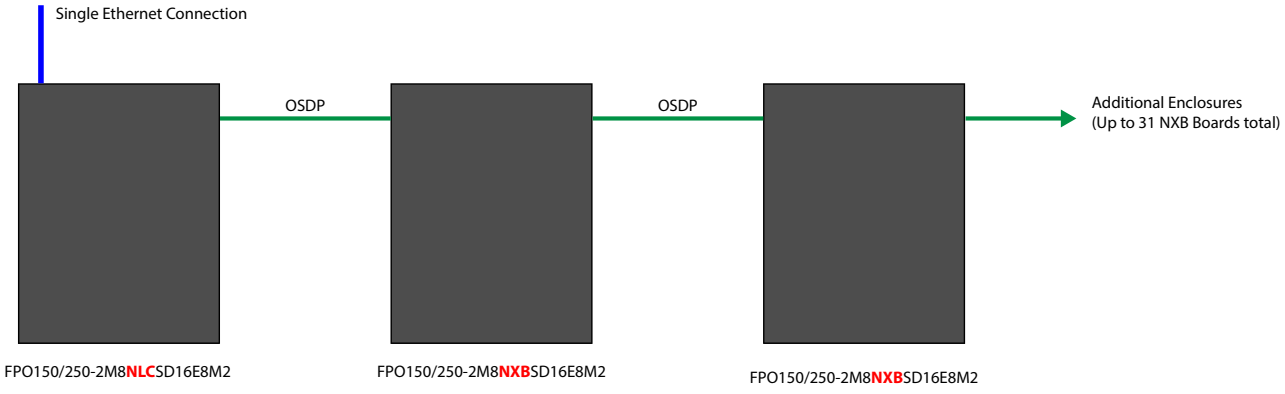

Figure 1.6 - Distributed Power Monitoring using the NLC & NXB

Section 2 – Initial Configuration

Before connecting the NetLink Connect to a network for the first time, the board must be configured using a laptop.

⚠ If using DHCP, a Network Scan Tool must be used to locate the NetLink device on the network.

2.1 Preparing to configure the Network Module

In order to perform the initial configuration of the NetLink, you will need the following:

- A computer (PC or Mac) set to a static IP address in the subnet 192.168.1.xxx, where xxx is a subnet address (0 to 255) not being used by any other device on the network. Do not use 192.168.1.9 or the final IP address you will be using for the NetLink. Disable any active WiFi connections. See Figure 2.1.
- A web browser installed on the computer.
- A standard (not crossover) ethernet cable long enough to reach between the computer and the NetLink.
- The NetLink to be configured must be wired into the system and powered. After powering the NetLink, wait for it to initialize - when ready, the blue SYS LED will be lit steady.

After the NetLink is powered within the system and initialized, connect the Ethernet cable between the Ethernet ports of the computer and the NetLink.

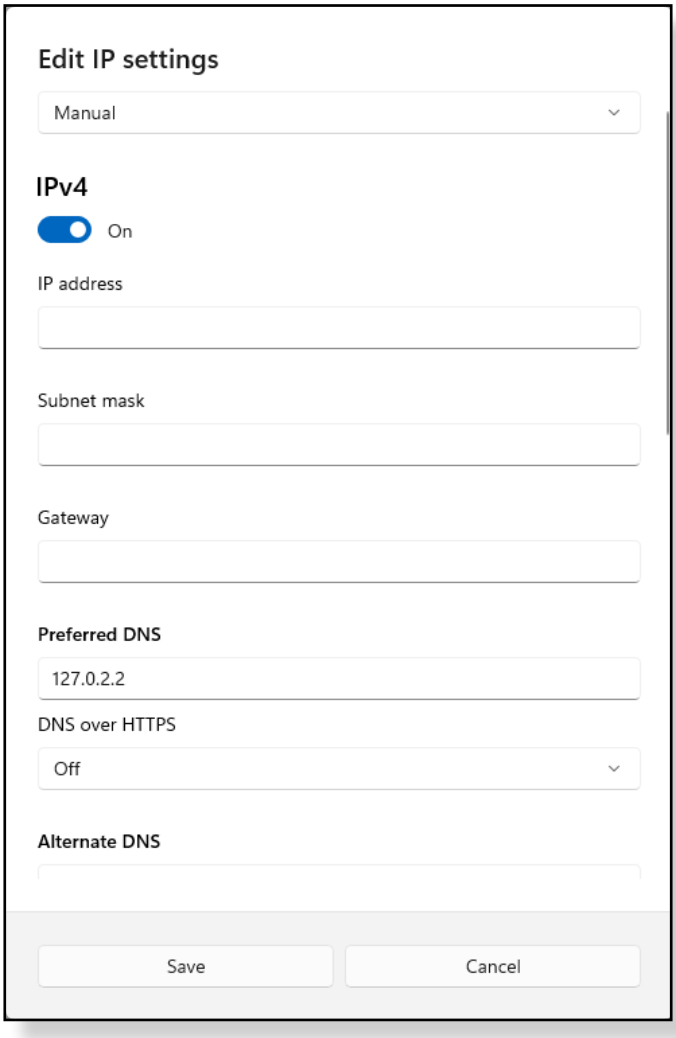

Figure 2.1 - Example of a PC Ethernet Port Settings Window

2.2 Configuring the NetLink Module

2.2.1 Logging into the NetLink for the first time

From the factory, the NetLink is preset with the following settings:

- IP Address: 192.168.1.9
- Username: admin
- Password: admin

Open a browser on the computer and enter the IP address into the address bar. When prompted, enter the user name and password. Note that BOTH are case sensitive (See Figure 2.2). On initial login, the NetLink will force a password change to a secure password. The home page for the NLC should appear in the browser window (See Figure 2.3).

⚠ If the wrong password is entered three consecutive times, the user will be locked out of the device for the programmed lockout time (24 Hours, by default). Enter the password carefully to avoid lockout. This time period may be changed on the configure page.

2.2.1.1 Resetting the NetLink

To reset the NetLink to factory default user name and password press and hold the reset button for 10 seconds.

To reset the NetLink to factory default user name, password, IP address, certificate, and Cipher Suite settings, press and hold the reset button for 30 seconds.

After releasing the button, the NetLink will reset and reboot - the reboot process could take up to 3 minutes to complete.

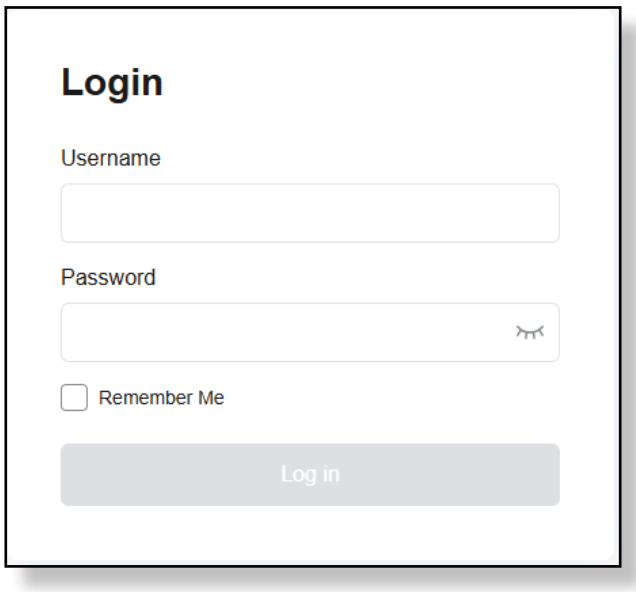

Figure 2.2 The NetLink Login Window (May appear different, depending on browser)

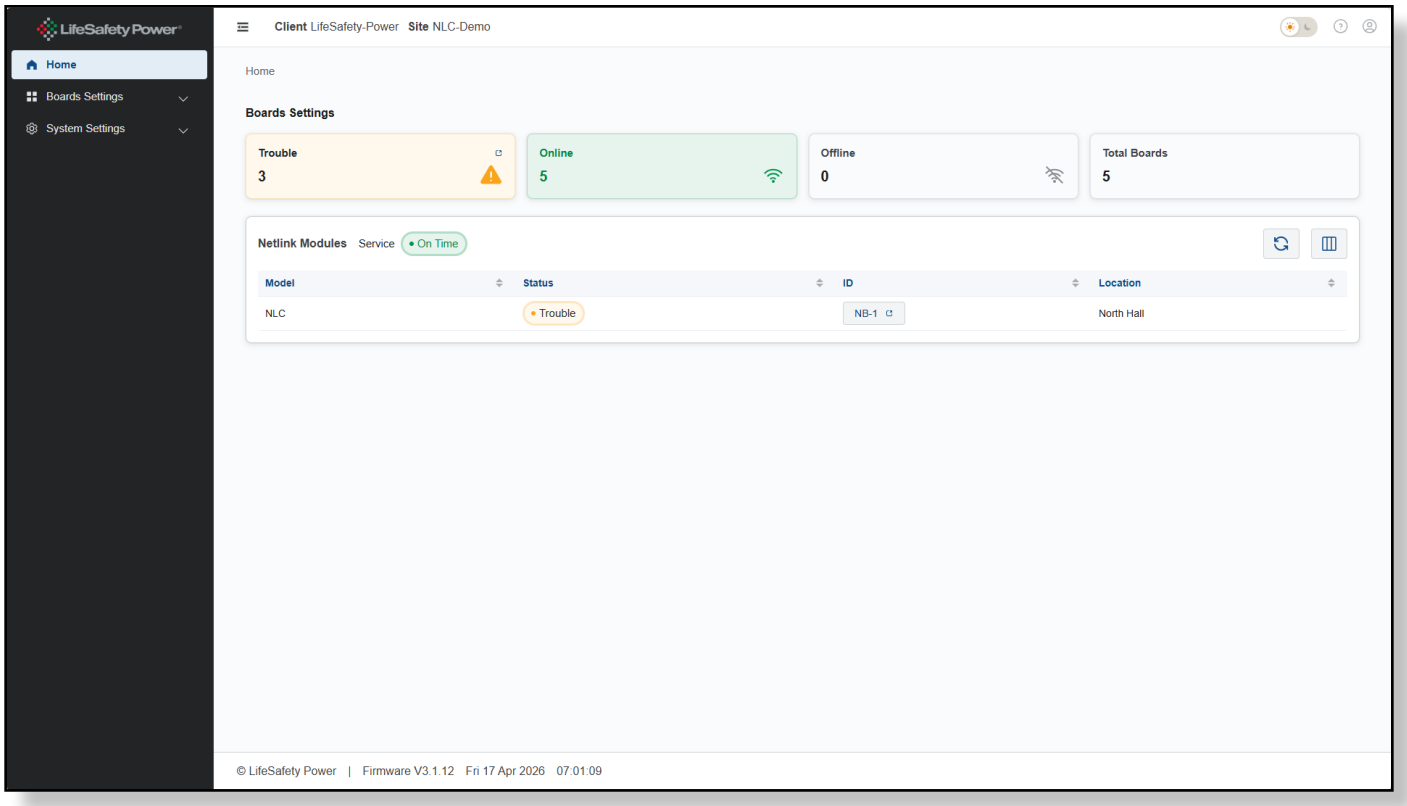

Figure 2.3 - Typical NLC Home Page

2.2.2 Configuring the IPV4 and IPV6 TCP/IP Settings

In the left menu bar (Figure 2.3), select "System Settings", then "Network Connectivity". In the Network Connectivity screen (See Figure 2.4), select the IPV4 or IPV6 tab, as appropriate, and set the TCP/IP settings to the desired values for the network to which the NetLink will be connected. Consult your IT department for information on how to complete these settings.

After completing the TCP/IP settings, click the "Save" button at the bottom of the screen. IPV4 and IPV6 settings are both available and either or both protocols may be enabled. **Note that the new TCP/IP settings will not take effect until the NetLink is rebooted or power to the NetLink is cycled.**

If the NetLink is connected to a DHCP network and DHCP is enabled, the DHCP server will automatically configure the TCP/IP settings. **Note that you will need a Network Scan tool to locate the NLC board's IP address.**

If still connected to the NetLink directly with a laptop, the NetLink can now be connected to and accessed through the network.

If using OneDrop, check "Enable Tunnel", enter the Mercury port number, and click Save. The Mercury board must also be configured for tunneling - see the SDU / OneDrop manual for more information.

Note: *The port number used by the NetLink can be set in the HTTPS Port field. By default the NetLink is set to use port 443. Connection to the NetLink must be through HTTPS.*

Note: *To access the NetLink board from outside the installation site's firewall, the firewall must have the ports used by the NetLink for https, and SNMP (if used) open. See your IT department for firewall port opening details.*

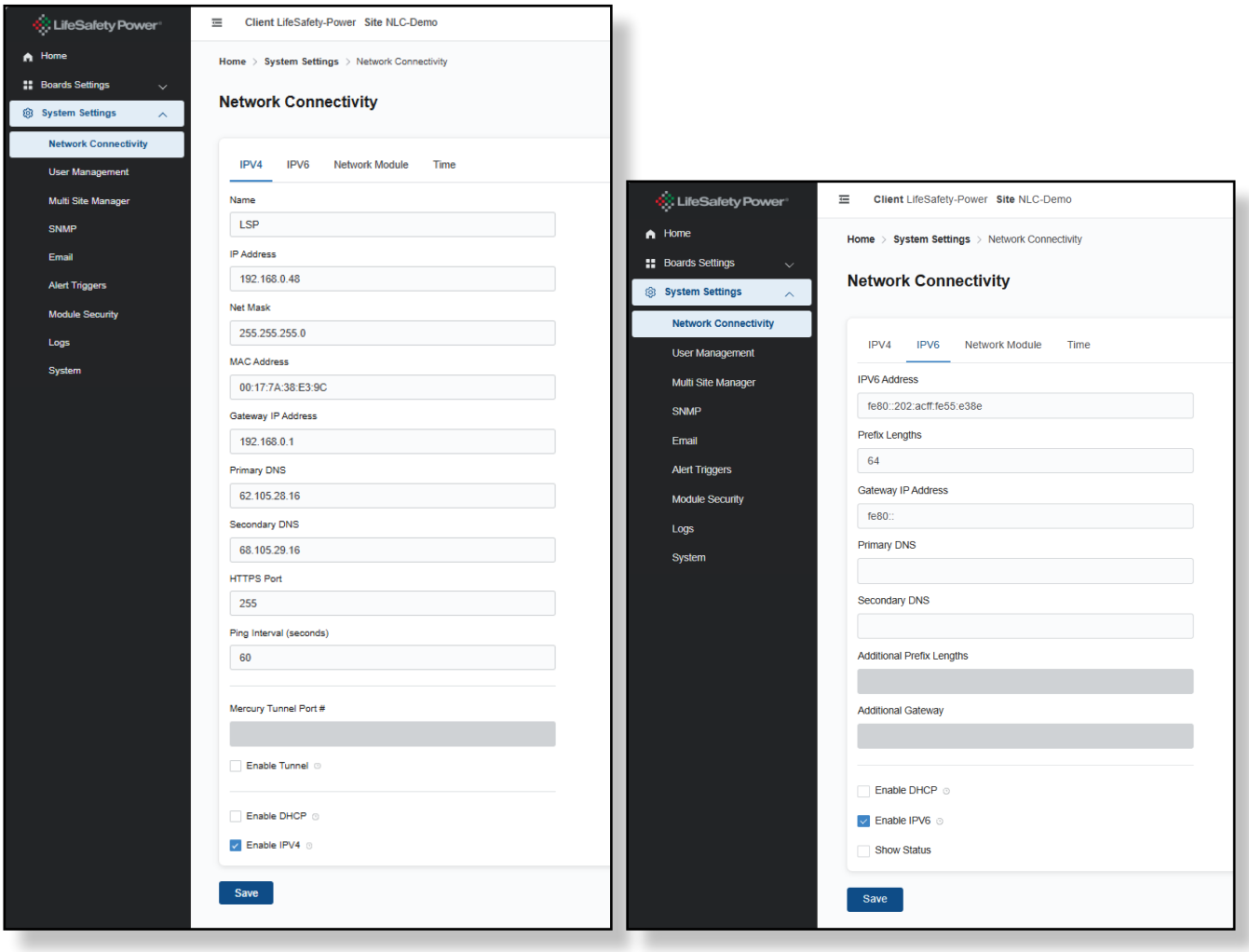

Figure 2.4 - IPV4 and IPV6 Settings

2.2.3 Time Settings

To program the time and date, select the Time tab from the System Settings>Network Connectivity page (See Figure 2.5). First, select the correct time zone from the drop down list. After the time zone is set, the time and date can be set one of three ways:

Sync With Computer

The "Sync with Computer" section will set the date and time of the NetLink to match the computer currently being used to access the NetLink. The new date and time will take effect immediately. Click the "Sync Now" button to sync the time.

Using an NTP Server

The NTP Server fields allow you to enter one or two NTP server addresses for automatic setting of the time and date via the internet. The NLC must be configured for internet access before this setting will work. Either the IP address of the server or the DNS name of the server may be entered. After entering at least one server address, click the "Get GMT Time" button to set the NetLink time and date. Depending on server traffic, it could take several seconds for the time setting to complete.

Manual Entry

Enter the correct time and date in the following format:

For Date: **YYYY - MM - DD**

For Time: **HH : MM : SS**

⚠ ALWAYS enter two digits in the time fields. ie., 7AM = 07, not 7

The new date and time will take effect immediately.

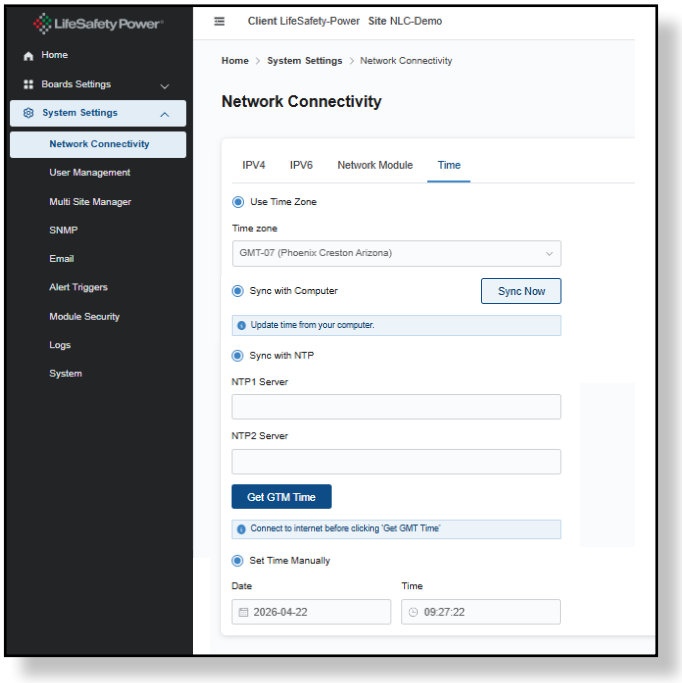

Figure 2.5 - Time Settings

2.2.4 User Management

In the left menu bar, select User Management under the System Settings menu (Figure 2.6). From this section, user names, passwords, access levels, and password complexity for the NetLink board may be set.

The default user is "admin" and the password for this account is also "admin". On first login to the NLC, the user will be prompted to change this password for security reasons. Note that there must ALWAYS be at least one admin-level user.

Adding a New User

To add another user, click the "Add User" button. The Add User section will appear (See figure 2.6). Enter the new user's name and select the authorization level for the user. Three authorization levels are available:

- Admin — Admin-level users have full control over the NetLink. There are no restrictions.
- Manager — Manager-level users have access to all areas of the NetLink except for system configuration settings.
- Guest — Guest-level users may only view information on the NetLink screens. No changes can be made and none of the control features are available.

Below the Name and Authorization fields, a blue field appears to explain the authorization level selected.

Next, enter the user's password. Passwords must meet the complexity level setting requirements. The requirements shown below the password fiels will light green when satisfied. Re-enter the password into the Verify Password field.

After clicking Save, the new user will be active.

Editing and Deleting a User

To delete an existing user, click the red trash can icon to the right of the user name. T edit a user's name, password, or authorization level, click the blue pencil icon to the right of the user's name.

Password Complexity

The "Password Complexity" field selects between normal or enhanced complexity requirements. Normal complexity requires that the password has at least 1 uppercase letter, 1 lowercase letter, 1 number and a total length of at least 10 characters. Enhanced complexity requires at least 1 uppercase letter, 1 lowercase letter, 1 special character, 1 number and a total length of at least 14 characters.

If the password complexity is changed, each user will be propted to change their password on their next login.

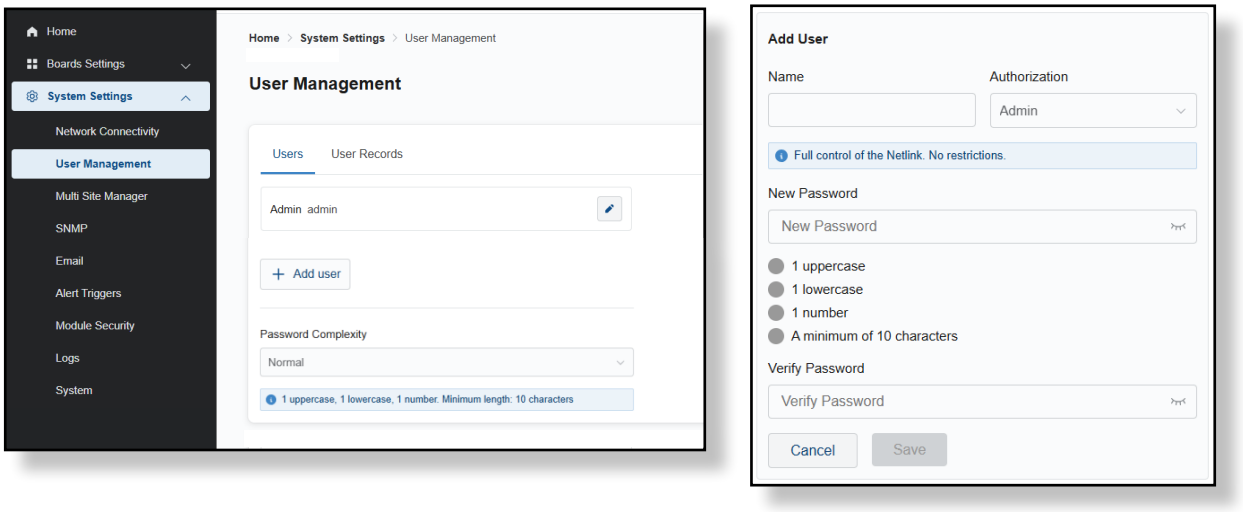

Figure 2.6 - User Management Settings and Add User Section

User Records

The User Records tab on the User Management page allows viewing of user logins as well as any activity performed by users.

Checking "Show Login Log" opens a box showing all user logins. The Export button will export this log as a CSV file.

Checking "Show Activity Log" opens a box showing user activity for all users. The Export button will export this log as a CSV file. Checking "Email Log on New Activity" will cause the NetLink to send an email whenever new activity is detected. Attached to the email will be the CSV log file. The "Log Information" dropdown allows the user to select a send frequency for periodic emails with the User Activity Log CSV file attached.

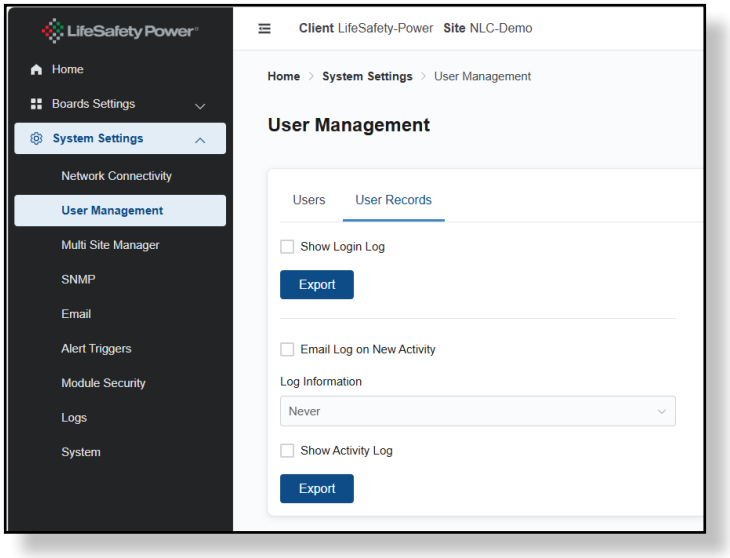

Figure 2.7 - User Records Settings

2.2.5 MultiSite Manager Settings

Settings to connect the NetLink to the MultiSite Manager Enterprise (MSM) server can be accessed by selecting "Multi Site Manager" from the System Settings menu in the left menu bar (See Figure 2.8). Each NetLink board must be pointed to the MSM server for it to appear.

To configure the NetLink for MSM, Check "Enable MSM" and enter the IP address of the MSM Server in the "MSM Server IP Address" field. Set the Destination Port number as appropriate (typically 9888) in "Destination Port" and the Source port (if used) in the "Source Port" field. In Group Name, enter the group name for this NLC board within MSM. If using a certificate, check "Enable Certificate". Click "Save" to start the MSM connection. The "Connected Status" field should change to "Success". If thr connection fails, verify the information entered and check "Show MSM Log" for more information in the connection. Consult the MSM Enterprise manual for more information.

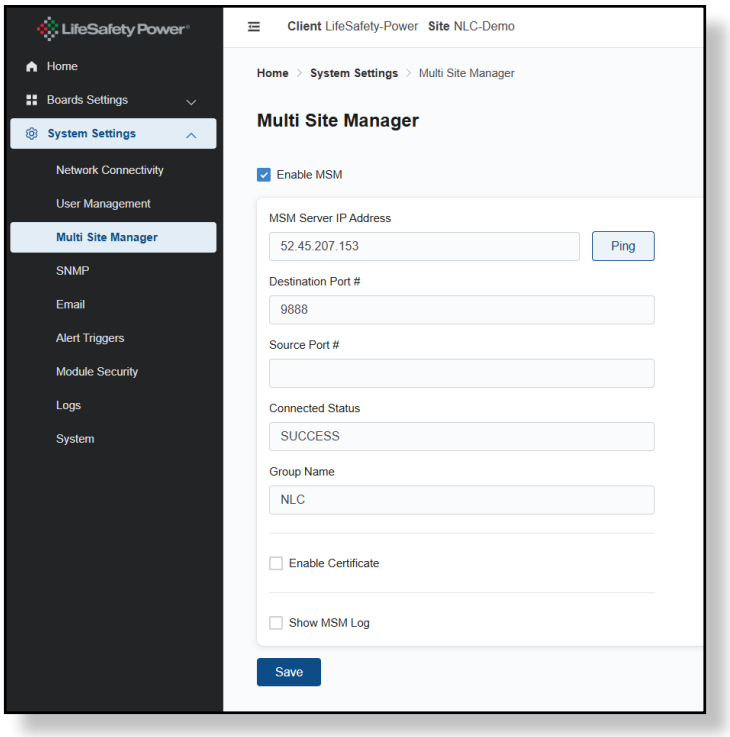

Figure 2.8 - MultiSite Manager Settings

2.2.6 Configuring SNMP Settings

If using SNMP, the SNMP settings can be accessed throught the SNMP Settings selection in the System Settings in the left menu (Figure 2.9). In the Basic tab, set the Read and Write Community to "public" or as appropriate, and set Location to a meaningful name of your choice. This name will help you identify the specific NetLink board when multiple NetLink boards are installed on the same subnet. This entry will be read by an SNMP system as "syslocation", OID .1.3.6.1.2.1.1.6. The port used for SNMP may also be changed in this section (161 default). Be sure to open the SNMP port if accessing SNMP outside your firewall. Below the port number setting, select the trap type and version. Click the "Save" button at the bottom to save the settings. These settings will take effect after a reboot of the NetLink.

The "Security Name" tab of the SNMP Settings page (Figure 2.9) provides extra security to v1 and v2 access. Multiple source networks can be added to the Security Name Setting tab. Be sure to click the "Save" button to save the settings. The settings will take effect after a reboot of the NetLink.

The "V3 User" tab of the SNMP Settings page (Figure 2.10) allows for a user to set up SNMP v3 user names and passwords. With a user name and password, the NetLink board may be accessed from anywhere via the internet by using the SNMP v3 protocol. No security name setup is required for v3 users and multiple v3 users may be set up in the same table. Click the "Save" button to save the settings, which will take effect after rebooting the NetLink.

The SNMP Trap Receiver IP and Port settings (Figure 2.10) should be set to the proper address for the SNMP Trap receiver. Click the "Save" button and reboot the NetLink for the settings to take effect.

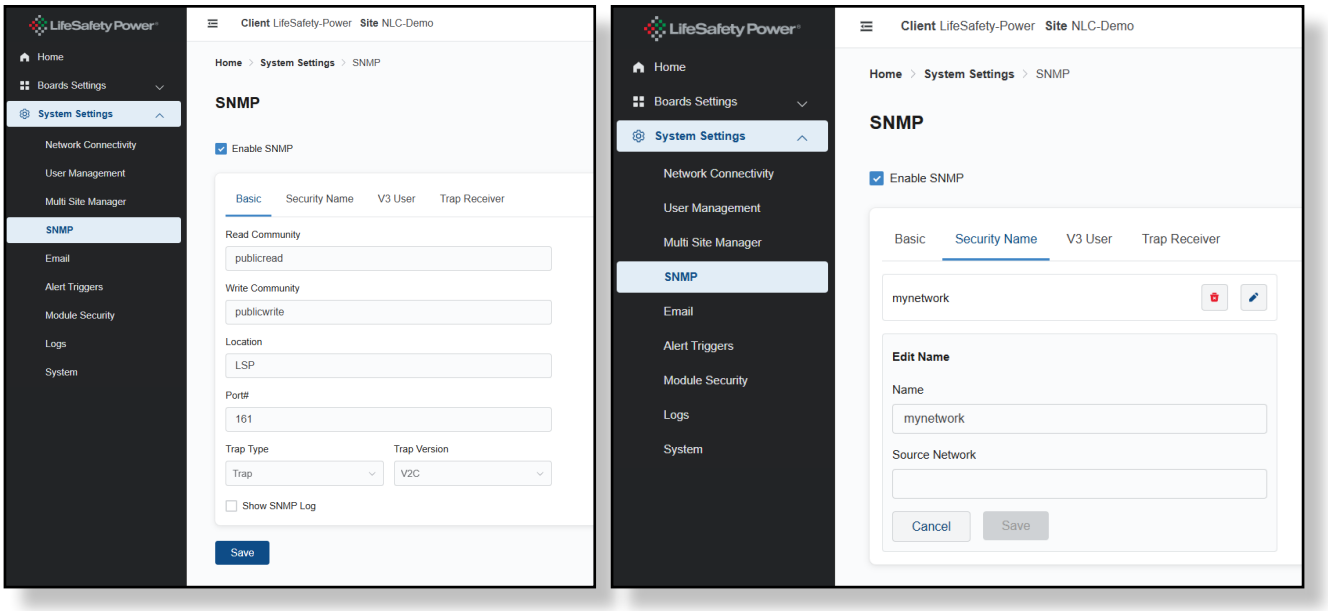

Figure 2.9 - SNMP Basic and Security Name Settings

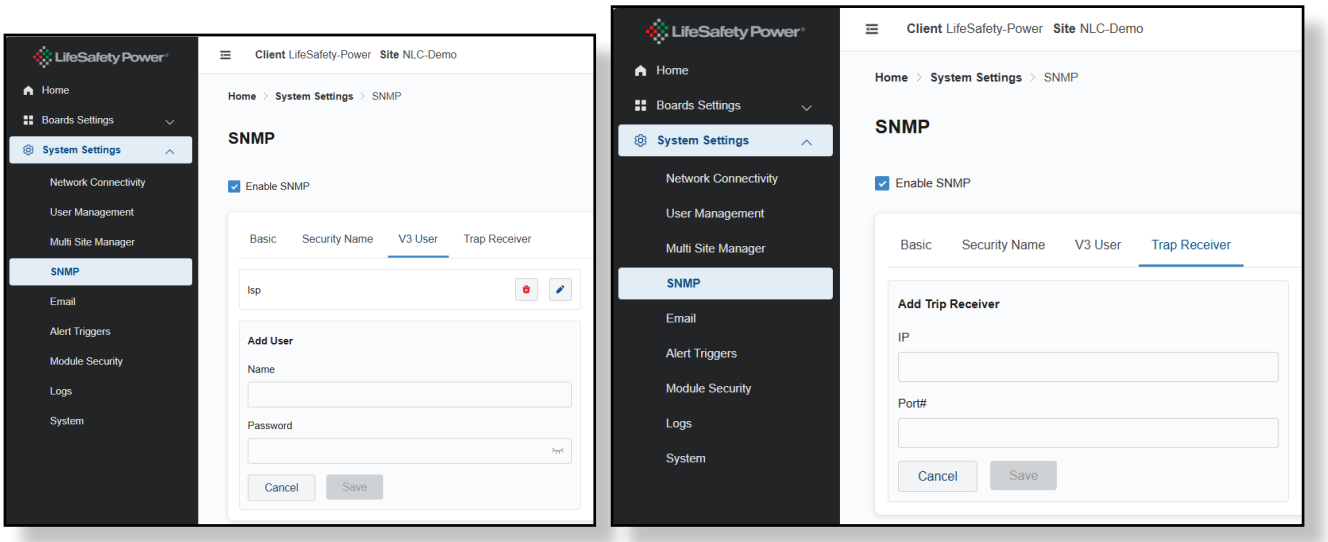

Figure 2.10 - SNMP V3 User and Trap Receiver Settings

2.2.7 Configuring the Email Settings

The NetLink can be configured to send email alerts on user-specified conditions and for periodic status reports. Access the Email Settings by selecting Email in the System Settings menu on the left (Figure 2.11). Check "Enable Email" to receive email alerts.

Under "Receiver", enter an email address to receive alerts and reports and click "Add Email". Repeat this process for additional email recipients. Up to four recipient email addresses may be added.

Under "Sender", the settings of the account to send the emails should be entered. These settings include:

SMTP Server	This is the address of the SMTP server for the email provider. Consult with your email provider for this address.
Email	This is the email address which the NetLink will use to send emails.
Email Password	This is the password associated with the sender's email account
SMTP Port #	Enter the port number required by your email provider for sending email. Often, this is "25".
Authentication	Choose the proper authentication method for your email provider from the drop-down list. Usually, this is "login". Select "off" to completely disable authentication.
Status Report Send Period	Selects how often the NetLink sends a regular email status report. This period can vary from "Never" to 6 months. Note that the "Send Period" setting does not affect the sending of email alerts generated on faults or events selected by the user, only the periodic status reports.
TLS	Check this box if your email provider requires TLS or SSL encryption
Show Email Log	Check this box to see the authentication log between the NetLink and email server. This can help with troubleshooting email problems.

⚠ **Note:** *Regarding Microsoft Exchange – Often, Microsoft Exchange will not be configured to accept SMTP connections. To use the NetLink's email functions through Microsoft Exchange, the Exchange service must be configured to allow SMTP connections. Consult with the administrator of your Microsoft Exchange Server.*

⚠ **Note: Click the "Save" button to save the settings, which will take effect after rebooting the NetLink.**

TIP: *Most mobile phone providers have an email address available which will convert an email into an SMS text message. This email address is usually in the form of: (the mobile phone number)@xxxxxx. Consult with your mobile provider for more information. The CSV attachment will be removed, since SMS text messages are not compatible with attachments. Because of this, it is recommended that the SMS email be entered as an ADDITIONAL "Receive Address" on the NetLink, so that the CSV file will still be available via regular email.*

2.2.8 Alert Triggers

Selecting "Alert Triggers" under the System Settings left menu item allows the user to select which conditions will cause an alert to be sent through Email, SNMP, or access panel integration (Figure 2.12). Generally it is best to leave all items selected, unless there is a specific case for disabling an alert.

⚠ **Note:** *Items on this page will vary based on the modules connected to the NetLink.*

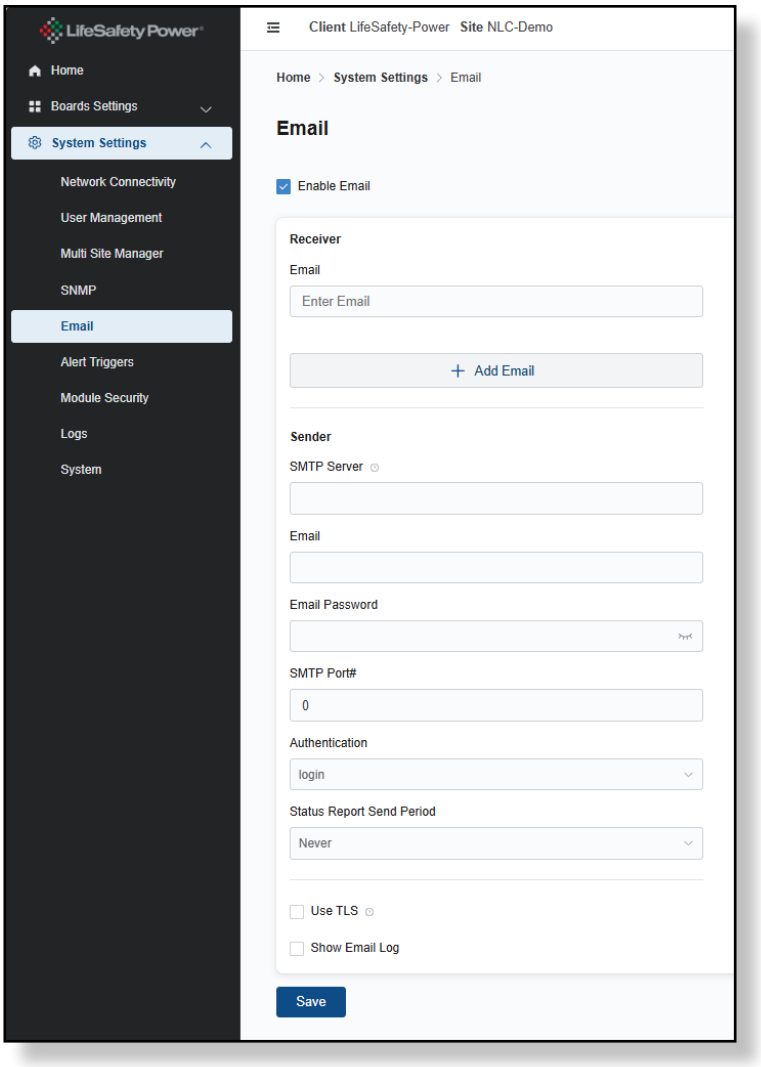

Figure 2.11 - Email Settings

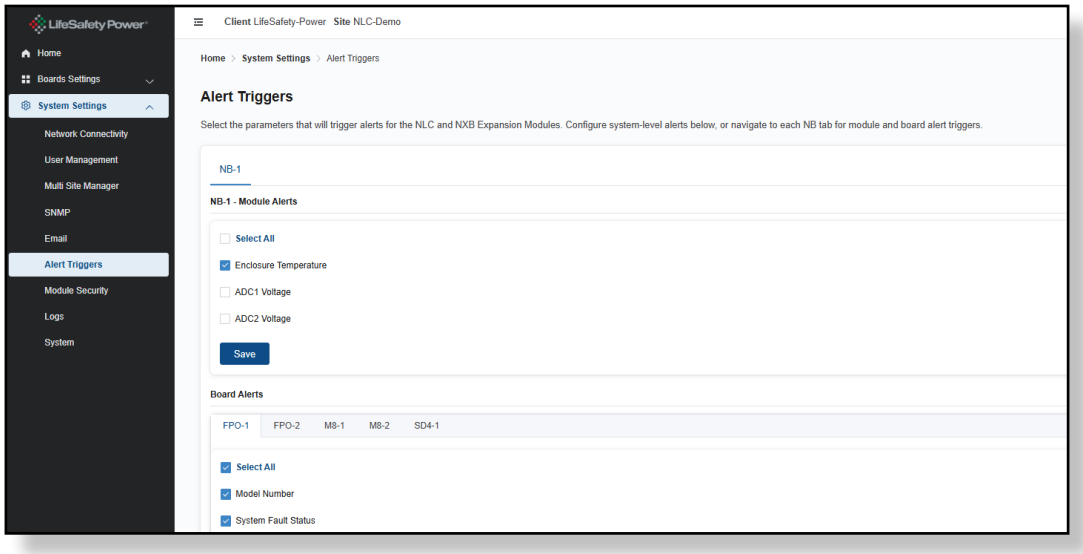

Figure 2.12 - Alert Triggers

2.2.9 Configuring Network Module Settings

Application-specific parameters of the NLC can be set from the Network Module tab under the System Settings>Network Connectivity menu selection (See Figure 2.13). The available parameters are:

Client ID	Enter any meaningful name to help identify the site or customer. The Client ID will appear at the top of the home page for the user's information, but is not used anywhere by the NetLink.
Site ID	Enter any meaningful name to help identify the installation site of the NLC module. The Site ID text will appear at the top of the Home page, as well as in the subject line of email alerts and reports. If using MSM Enterprise or one of NetLink's access control integrations, the Site ID will also be used for identification.
Report Number	This selects how many datapoints will be included in the CSV file within the email reports. Up to 1000 events may be stored.
View Number	This selects how many datapoints will be shown when viewing historical data within the NLC. Up to 1000 events may be stored.
Data Buffer Interval	This selects the time period between "snapshots" of the data logged by the NetLink. Typically, this value should be set to 12 or 24 hours. Setting the interval too short will cause data to be pushed out of the buffer more quickly. Any fault, fire alarm, or service occurrance will be logged independently of these snapshots.
Password Lockout Delay	Selects the length of time to lock out a user after three consecutive incorrect password attempts. Selections range from 5 minutes to 24 hours.
Temperature Unit	This selects between Fahrenheit and Celsius for all temperature measurements.
Next Service Due	Enter a date and time indicating the next service due date. If "Service Due" is selected as an email alert condition, an alert email will be sent out to the specified email recipient(s) when the system time matches the due date time.
Reminder Message	This is the message that will be transmitted with the Next Service Due reminder. An example would be "Visual system inspection due".

⚠ **Note:** After entering the above information into the NetLink Network Module Setting block, click the "Save" button to save the settings. These settings will take effect immediately without rebooting the NetLink board.

2.2.10 Configuring Module Security

Configuring the cybersecurity features of the NetLink can be done from the "Module Security" selection under System Settings in the left menu (Figure 2.14).

Certificate Settings

The NetLink allows user-supplied certificates to be used (Figure 2.14) through the Certificate tab. Select the certficate type to be used, upload the certificate and enter the password (if required), and click the Execute button. Contact your IT department for more information on the certificate used.

The "Show Certificate Log" checkbox will display the certificate log on-screen. Uncheck to hide the log.

SSL Protocol and CipherSuite Settings

This section allows the user to select which SSL protocol to use (Normal or High) through the SSL Protocol and Cyphersuite tab of the System Settings>Module Security left menu selection (Figure 2.15).

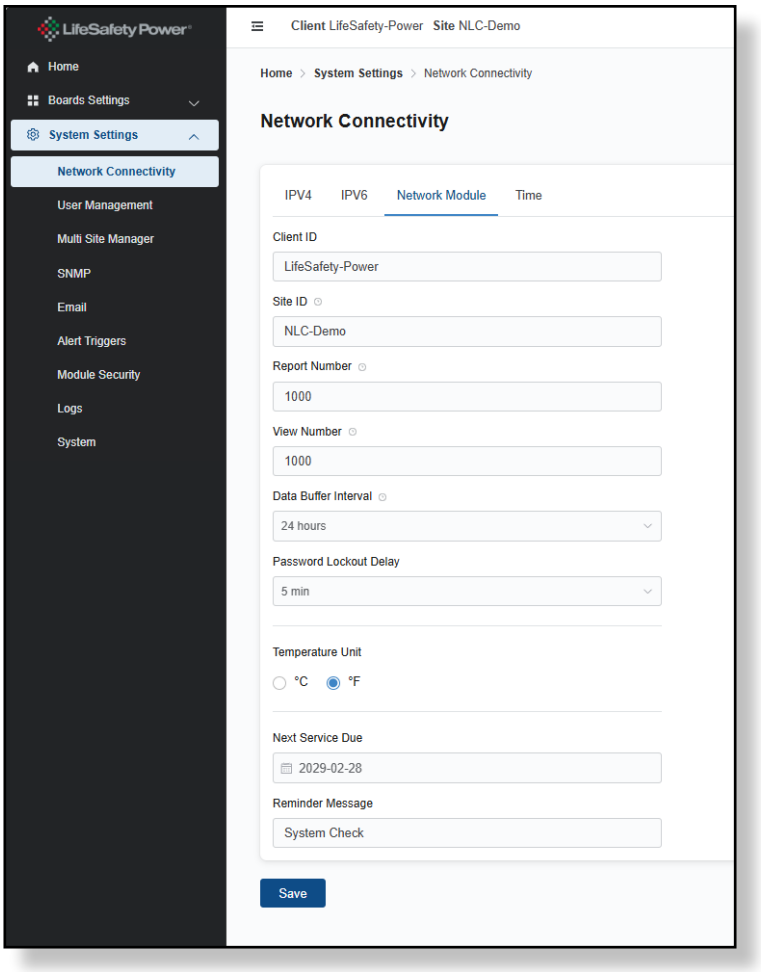

Figure 2.13 - Network Module Settings

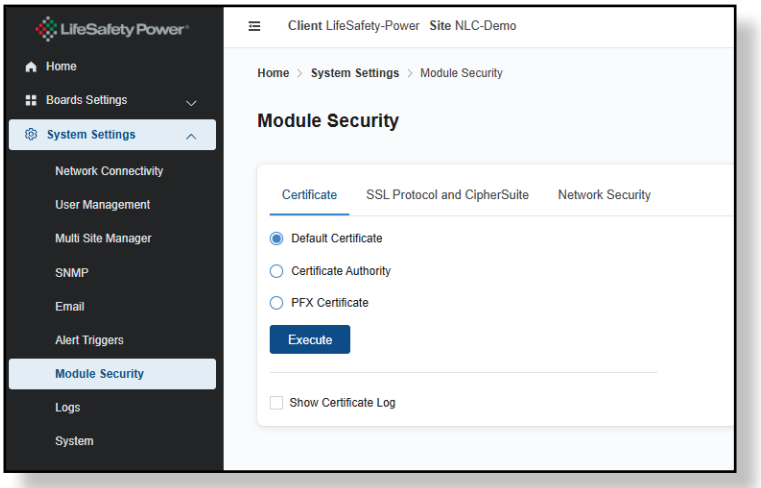

Figure 2.14 - Module Security Settings

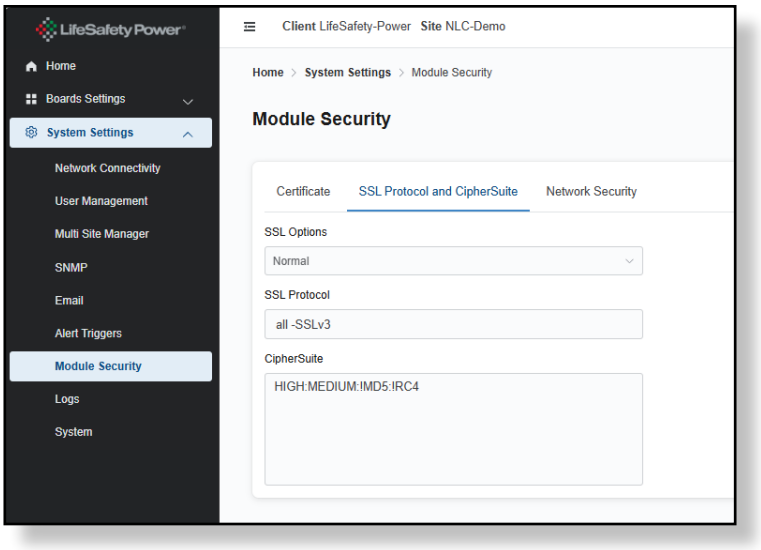

Figure 2.15 - SSL and Cyphersuite Settings

2.2.11 Viewing the System Logs

All system logs for the NLC can be viewed in their respective section of the interface, or centrally by selecting "Logs" under the System Settings left menu (Figure 2.16). Each tab represents a log (or set of logs) that is available. See the respective section of this manual for descriptions of each log.

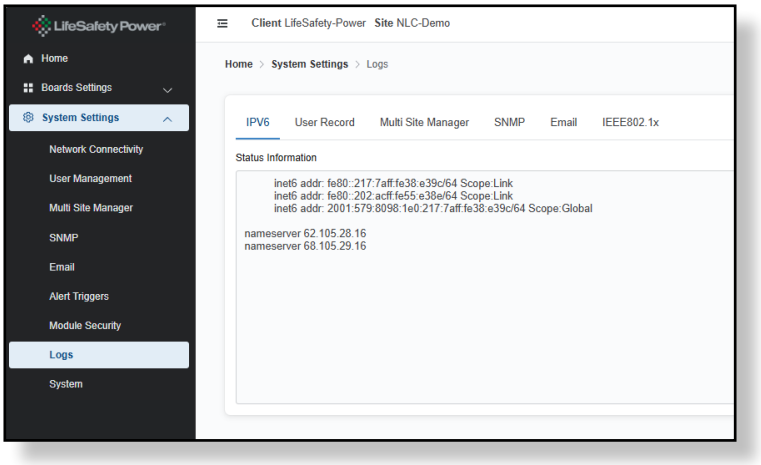

Figure 2.16 - NetLink System Logs

2.2.12 General System Settings

System level maintenance and configuration tools are accessed by selecting "System" under the System Settings left menu (Figure 2.17).

Maintenance

The Maintenence tab allows updating firmware, rebooting, and restoring of the default login for the NetLink (Figure 2.17). Click the appropriate button and follow the on-screen instructions to complete each action.

Configuration File

The Configuration File tab allows importing and exporting of configuration files for the NetLink module (Figure 2.18). Click "Export Configuration" to export the settings and configuration for the NetLink module. Clicking "Import Configuration" will open a window to select the file. Once imported, a window will open allowing the user to select which parameters will be applied from the configuration file.

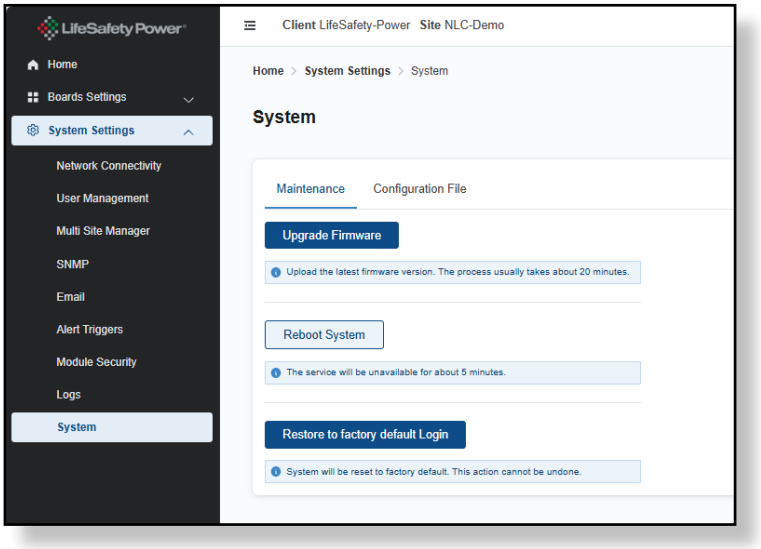

Figure 2.17 - System Settings

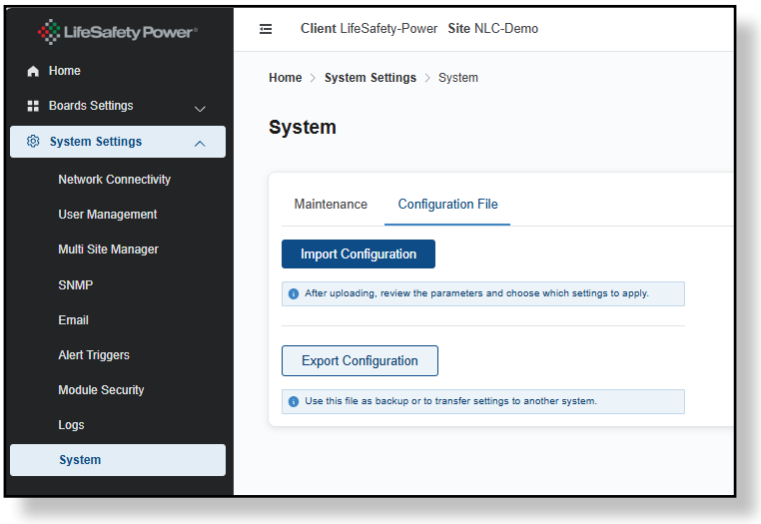

Figure 2.18 - Configuration File

Section 3 – Using the NLC Module

Before system parameters can be viewed, you must be logged into the NLC module using the proper IP address, user name, and password as shown in Section 2 of this manual.

3.1 The NLC Home Page

The Home page of the NLC displays basic system information as well as the NLC and any connected NXB modules.

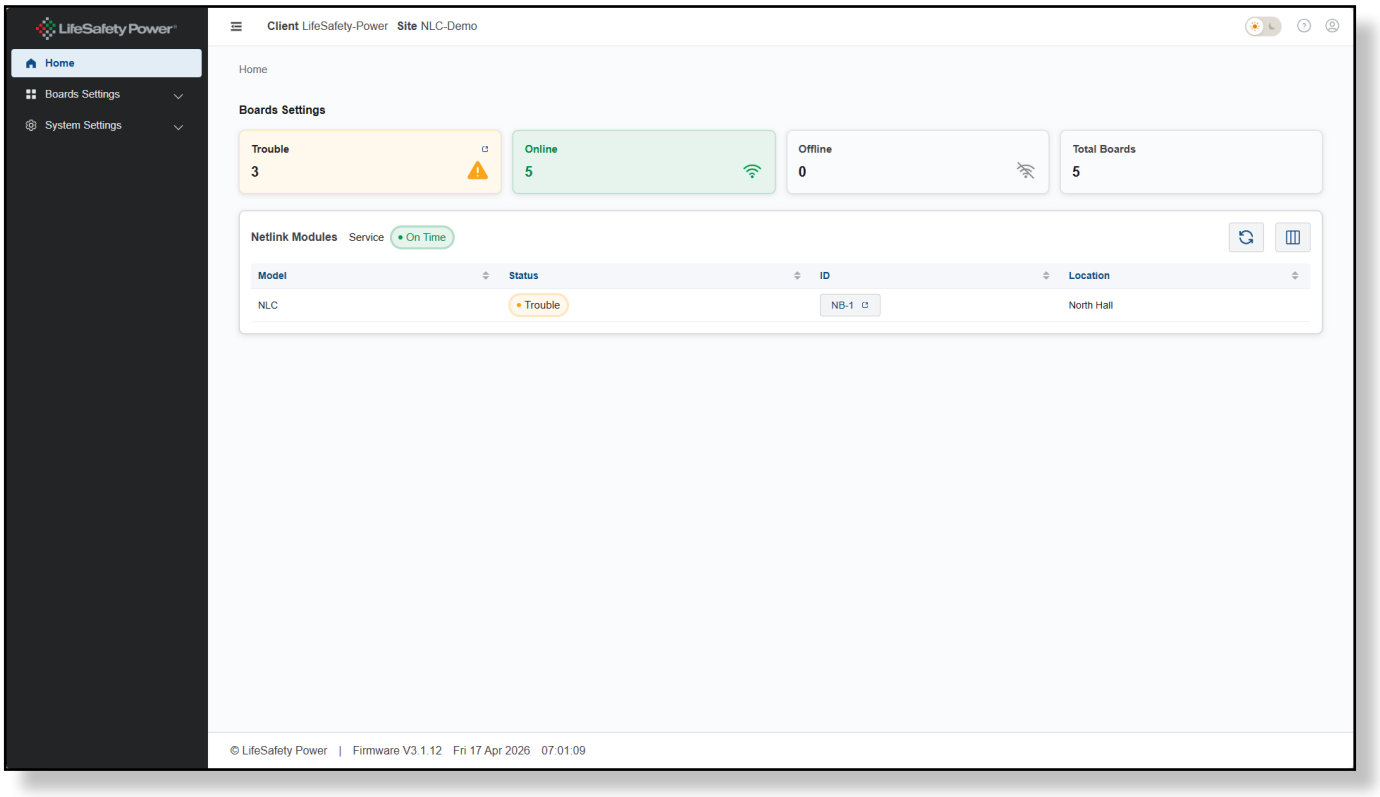

Figure 3.1 - Typical NLC Home Page

3.1.1 Top & Bottom Header

The top header of the NLC Home page lists the Client ID and Site ID as programmed in settings (Figure 3.1). This information carries through on every screen within the NLC, NXB, or other connected modules. The switch to the far right selects between light mode and dark mode.

The bottomheader displays the current installed firmware revision, as well as the system date and time.

3.1.2 Board Information and Connection Status

The section labeled "Boards Settings" provides summary information on all connected modules across the NLC and all NXB modules. The information provided includes:

- **Trouble** displays the total number of boards in trouble. This block is clickable to provide a summary list of trouble conditions (Figure 3.2).
- **Online** displays the total number of boards currently online.
- **Offline** displays the total number of boards that were once online, but are currently offline. These boards could be showing offline due to RS485 connection issues, power issues, internal problems with the board, or other conditions.
- **Total Boards** displays the total number of boards that are or have been connected to the NLC. This number should equal the total of the online and offline boards.

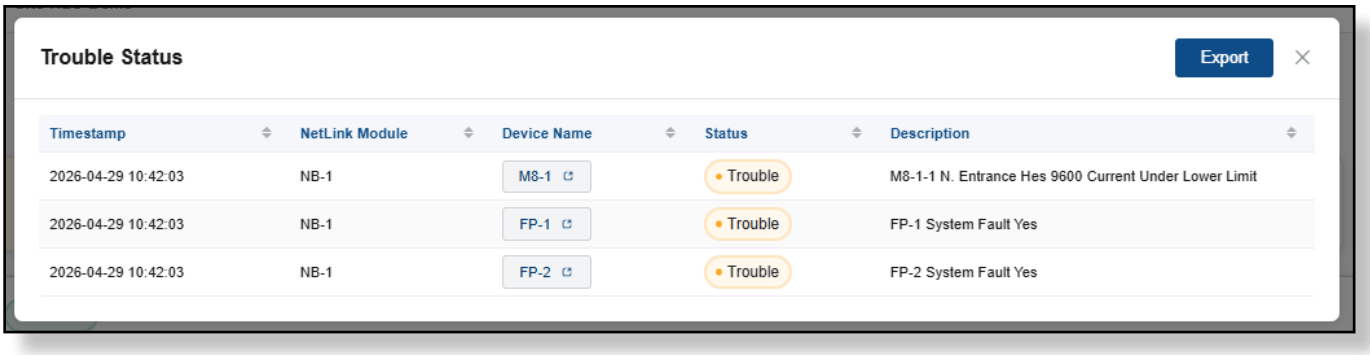

Figure 3.2 - Trouble Summary

3.1.2 NLC and Connected External Devices

The bottom of the home page (Figure 3.1) shows the NetLink Modules section which lists the NLC and any NXB devices connected to the External RS485 buss of the NLC. The boards may be sorted by clicking one of the column headings. Available columns include:

- **Model** - The model number of the board
- **Status** - the current status of the board. Status conditions include Normal, Trouble, FAI, and Service.
- **ID** - this is the identification number given to the board by the NLC.
- **Location** - This is the location ID set by the user within the board's settings. It is used to indicate the enclosure or location within the building where the board is located.

The Service icon in the top header of the section will indicate when a service item is due. To the right, the circular arrow button performs an immediate manual refresh of these connected modules. The Columns button provides the ability to show or hide the available columns.

Click the button in the ID column to access that board's interface. See the manual for the connected device for details on that device. See Section 3.2 of this manual for more information on internal devices connected to the NLC module.

3.2 Connected Internal Devices

To view the detailed data for internal devices connected to the NLC, click the button for the NLC in the Device Name column of the NLC home screen (Figure 3.1). This will open the NLC status page (Figure 3.3).

3.2.1 The NLC Status Page

The NLC Status page displays the devices connected to the Local RS485 buss of the NLC, as well as the parameters being monitored directly by the NLC. Click the Return (left arrow) button at the top to return to the NLC home page. The following sections describe the different areas of the NLC status page.

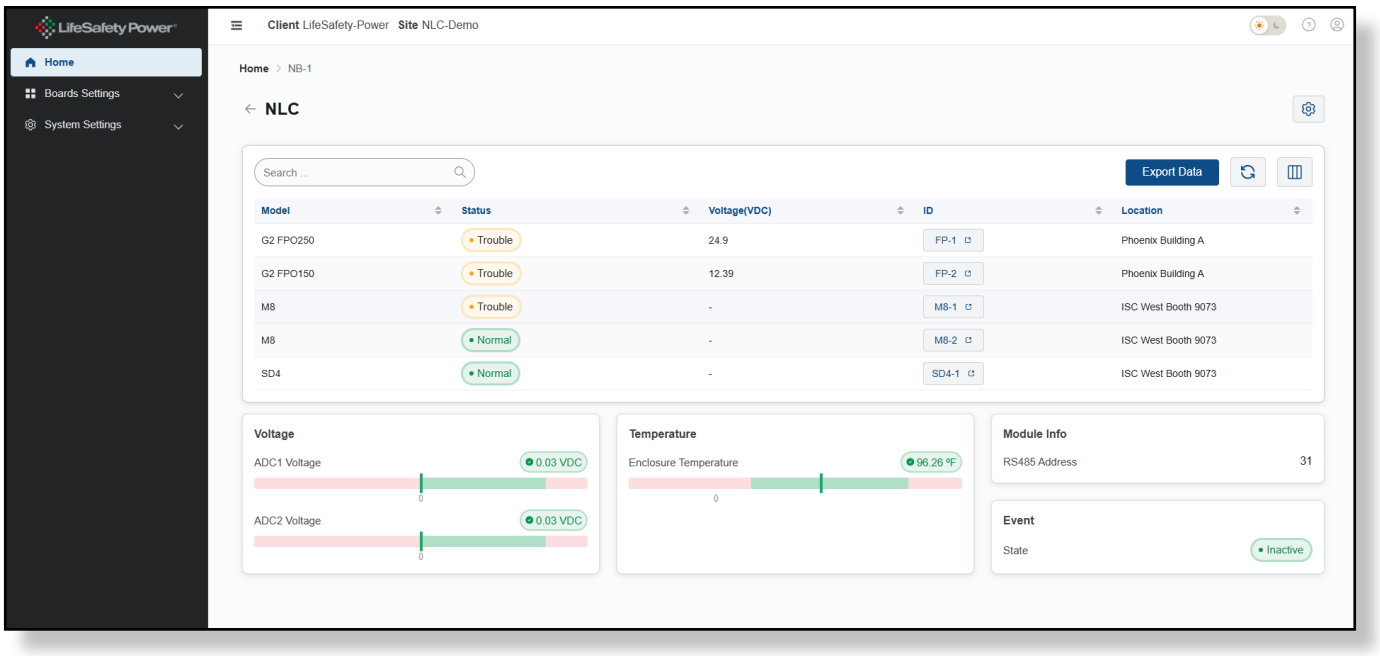

Figure 3.3 - Typical NLC Status Page

3.2.2 Connected Devices Section

The top portion of the NLC Status page shows the devices connected to the Internal RS485 buss of the NLC (See Figure 3.4). The device table displays the following parameters:

Model	The model number of the connected module.
Status	This column shows the current status of the connected modules. Green "Normal" indicates a normal state, yellow "Trouble" indicates a fault, blue "Service" indicates a service item, and a red "FAI" indicates that an FAI activation has been received by the device.
Voltage	Power supplies and power conversion modules connected to the NLC will display the measured voltage of their output.
ID	This is a unique ID given by the NLC to each device connected to its Internal RS485 buss.
Location	This is the location programmed into the connected module. This allows the user to identify the location where this module is installed. Note that this is separate from the NLC Location field.

Clicking the button in the ID column for the connected device opens the status page for that device. Consult the manual for the connected device for more information.

The device table can be sorted by any column by clicking the header of the column. A search feature is included to locate a specific module, location, etc. To the right, the circular arrow button performs an immediate manual refresh of these connected modules and the Columns button provides the ability to show or hide the available columns in the device table.

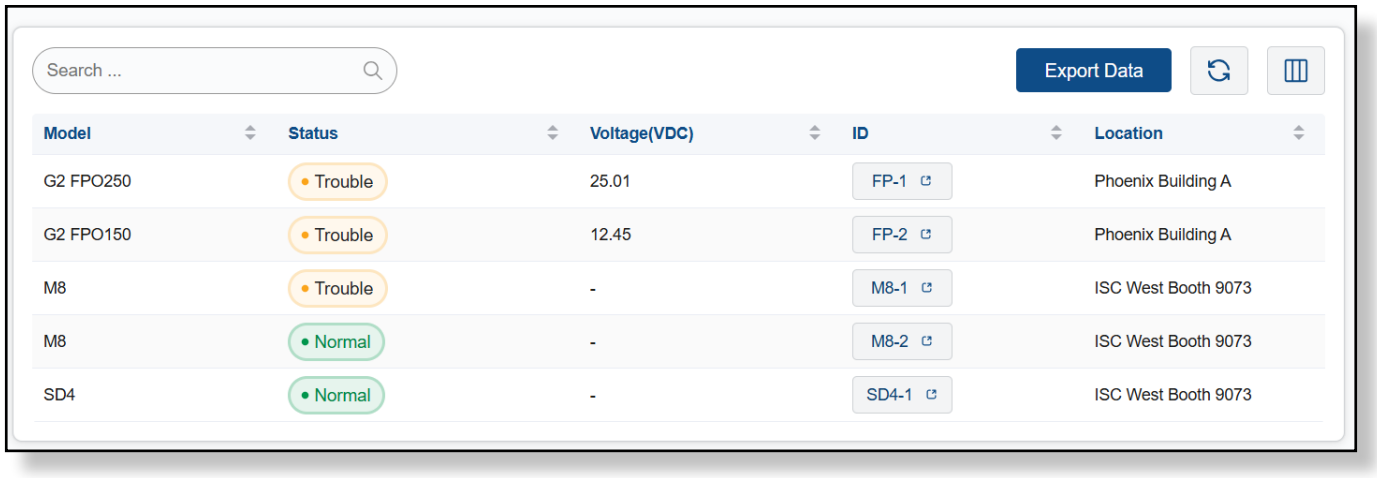

Figure 3.4 - Typical NLC Device Table

3.2.3 NLC Parameters

Below the connected devices table are the parameters collected directly by the NLC module and some basic module information (See Figure 3.5).

Voltage	These are the voltages measured by the two on-board Analog-to-Digital converters (ADC1 and ADC2). This measurement is shown as a positive or negative voltage in Volts DC, and also shown as a horizontal bar graph. In the graph, the green area represents the aceptable voltage range, while the red indicates the voltage out of range settings.
Temperature	Enclosure Temperature is the temperature of the NLC module. This temperature sensor is installed directly on the NLC PC board and is always available. If an external temperature sensor is connected to the I2C sensor input, the External Temperature parameter will appear and display the external sensor's temperature. These temperatures are shown both as numeric values and also as horizontal bar graphs. In the graphs, the green area represents the aceptable temperature range, while the red indicates the temperature out of range settings.
Module Info	This area displays the programmed RS485 address of the NLC module. Typically, the NLC is address 0.
Event	This field shows the state of the Event 1 input. This field will show "Active" or "Inactive" to indicate the status of the Event1 input.

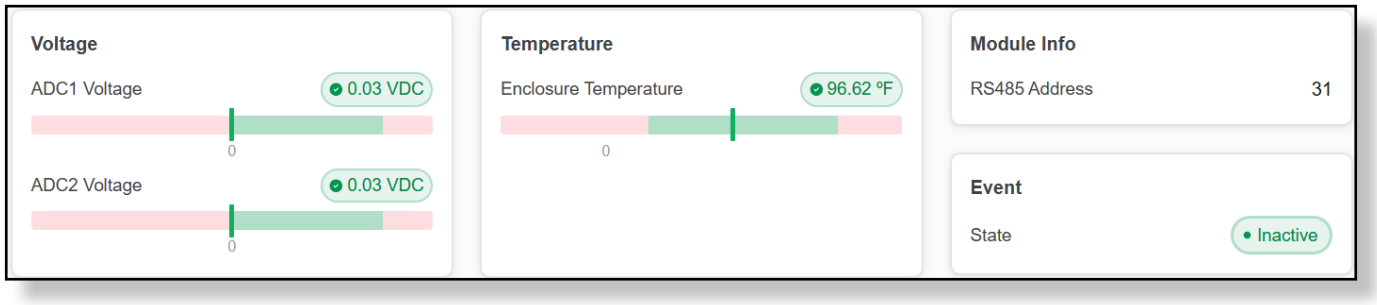

Figure 3.5 - NLC Parameters

3.2.4 NLC Board Settings Menu

The gear icon in the top right of the NLC Status page opens the settings popup menu. There are two options:

- **Alert Triggers** - This opens the Alert Triggers settings page from the System Settings left menu. See Section 2.2.8 for more information on the Alert Triggers page.
- **Alert Thresholds** - This screen allows the user to program the upper and lower limits of measured values, set the NLC location field, and configure the Event input for NO/NC. See section 3.2.5 for more information.

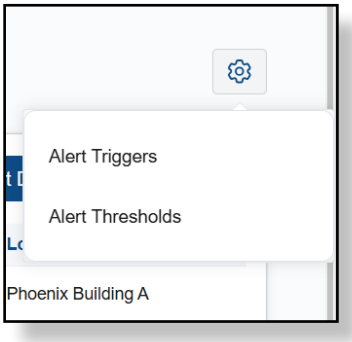

Figure 3.6 - NLC Board Settings Menu

3.2.5 Alert Thresholds Settings

The Alert Thresholds settings page (Figure 3.7) allows the user to set upper and lower limits of the values measured directly by the NLC module as well as other miscellaneous settings. This page may be accessed either through the Settings menu on the NLC Status page or through the Boards Settings>NLC option in the left menu. The parameters able to be configured include:

- **Location** - This sets the Location field for the NLC board, as shown on the home page (Section 3.1.2). This field accepts up to 20 characters.
- **Temperature Upper and Lower Limits** - These limits allow a range to be set for the Enclosure Temperature and External Temperature (If used) measurements. These limits will trigger an alert if crossed.
- **ADC Input Names and Limits** - These fields allow the user to rename the ADC inputs for easier identification and set the upper and lower voltage limits. These limits will trigger an alert if crossed.
- **Event Input** - This field allows the Event Input to be set to accept a Normally Open (NO) or Normally Closed (NC) contact for activation.

Check the "Send Email Alerts (On Fault)" button to receive email alerts on any of these parameters being out of range. When done making changes, click the Save button to save the changes.

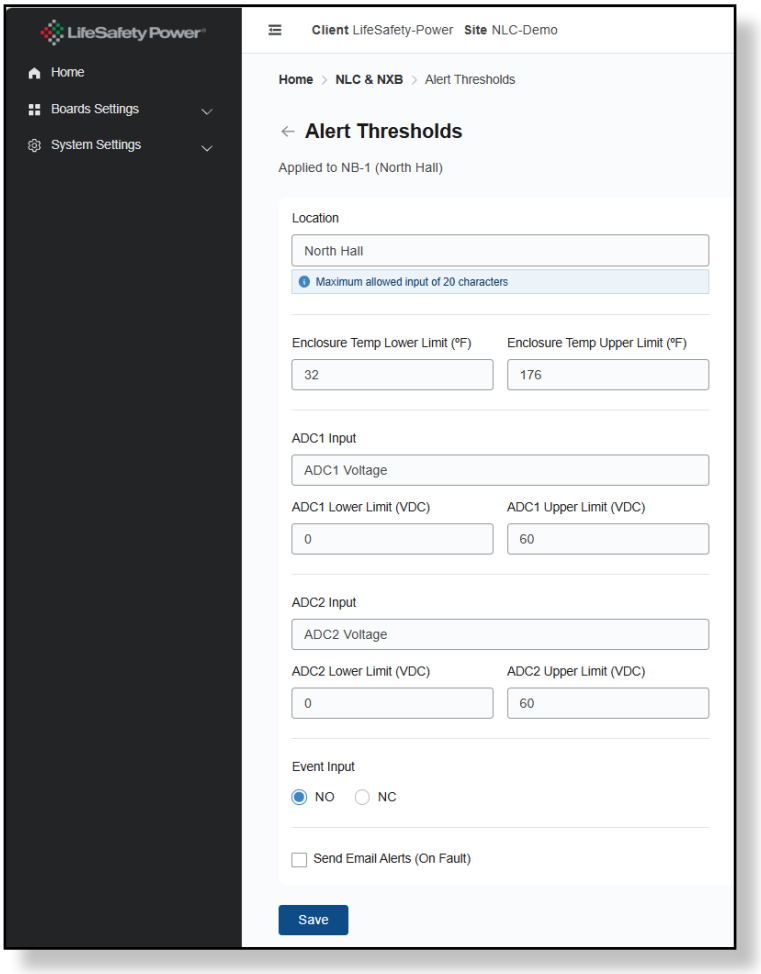

Figure 3.7 - NLC Alert Threshold Settings

Appendix 1 – Software Agreement

LIFESAFETY POWER INC. SOFTWARE LICENSE AGREEMENT AND WARRANTY STATEMENT

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7. Miscellaneous.

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(i) Corporate Headquarters, Mailing Address: LIFESAFETY POWER INC., 304 Terrace Drive, Mundelein, IL, 60060 USA.

(ii) Website Address: www.lifesafetypower.com

(b) Independent Contractors. The parties are independent contractors and will so represent themselves in all regards. Neither party is the agent of the other and neither may bind the other in any way. Nothing in this AGREEMENT is intended or shall be construed to create between the Parties a relationship of principal and agent, partners, joint venturers, or employer and employee. No Party shall hold itself out to others or seek to bind or commit another Party in any manner inconsistent with this AGREEMENT.

(c) No Waiver. Neither party will be deemed to have waived any of its rights under this AGREEMENT by lapse of time or by any statement or representation other than (i) by an Authorized Representative and (ii) in an explicit written waiver. No waiver of a breach of this AGREEMENT will constitute a waiver of any prior or subsequent breach of this AGREEMENT.

(d) Force Majeure. To the extent caused by force majeure, no delay, failure, or default will constitute a breach of this AGREEMENT.

(e) Choice of Law & Jurisdiction. This AGREEMENT shall be governed solely by the internal laws of the State of Illinois, without reference to such State's principles of conflicts of law. The parties consent to the personal and exclusive jurisdiction of the federal and state courts of Illinois, United States of America.

(f) Severability. All of the provisions of this AGREEMENT are intended to be distinct and severable. To the extent permitted by applicable law, the parties hereby waive any provision of law that would render any clause of this AGREEMENT invalid or otherwise unenforceable in any respect. In the event that a provision of this AGREEMENT is held to be invalid or otherwise unenforceable, such provision will be interpreted to fulfill its intended purpose to the maximum extent permitted by applicable law, and the remaining provisions of this AGREEMENT will continue in full force and effect.

(g) Conflicts among Attachments. In the event of any conflict between the terms of this main body of this AGREEMENT and those of any attachment including those of any documentation, the terms of this main body will govern.

(h) Electronic Execution, Binding Agreement. This AGREEMENT may be executed as a "click-wrap" or "browse-wrap" AGREEMENT or by other form of electronic signature and Recipient agrees that this execution shall result in a binding AGREEMENT between the parties. RECIPIENT AGREES THAT THIS AGREEMENT IS ENFORCEABLE LIKE ANY WRITTEN NEGOTIATED AGREEMENT SIGNED BY RECIPIENT OR RECIPIENT'S AUTHORIZED REPRESENTATIVE. THIS AGREEMENT IS ENFORCEABLE AGAINST RECIPIENT AND ANY LEGAL ENTITY THAT OBTAINED THE SOFTWARE AND ON WHOSE BEHALF IT IS USED. IF YOU DO NOT AGREE, DO NOT INSTALL OR USE THIS SOFTWARE.

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(j) Entire Agreement. This AGREEMENT sets forth the entire AGREEMENT of the parties and supersedes all prior or contemporaneous writings, negotiations, and discussions with respect to the subject matter hereof. Neither party has relied upon any such prior or contemporaneous communications.

(k) Modification or Amendment. Notwithstanding any modifications related to Upgrades made in accordance with section 3(b) above, this AGREEMENT may not be modified or amended except (i) by Authorized Representatives of each party and (ii) in a written contract signed by both parties.

(l) Headings. The headings of sections and subsections have been included for convenience only and shall not be considered in interpreting this AGREEMENT.

(m) Counterparts. This AGREEMENT may be executed in one or more counterparts, each of which shall be deemed to be an original, and all of which together shall constitute one and the same AGREEMENT.

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P03-108_4 05/26

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