

LifeSafety Power Netlink®

Network Communication Modules
Installation and Operation

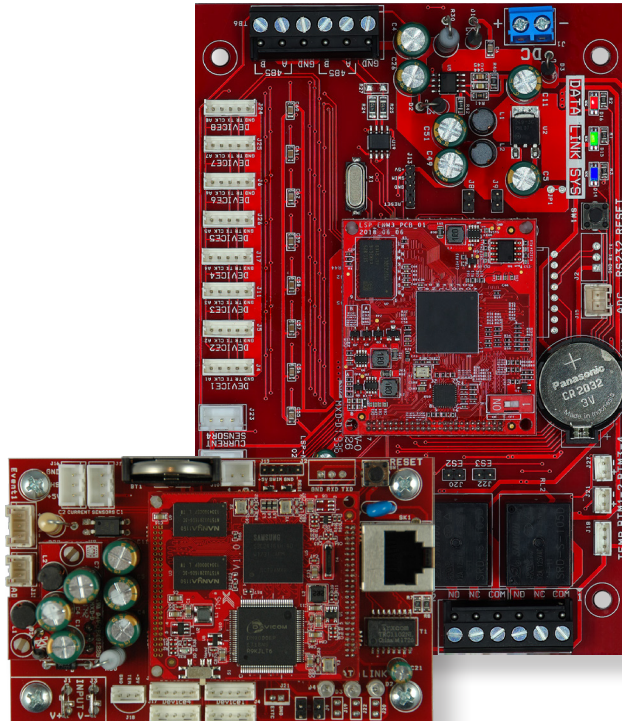


Power is knowledge.™

LifeSafety Power®



FLEXPOWER®



LifeSafety Power, Inc. | PH 888.577.2898 | TechSupport@LifeSafetyPower.com



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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 Manual covers Firmware Rev 9.50 (NLX Rev 0.40)

Older firmware revisions may not have all features described. See the latest firmware release notes at <http://www.lifesafetypower.com/support/software-firmware-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after performing the firmware upgrade and before accessing the Netlink again to prevent any cached pages from giving outdated information.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:

- UL 294, UL 603, UL 1076
- ULC S318, ULC S319, ULC S533
- CSA C22.2 #205

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® NL2, NL4, and NLX modules are network appliances which may be used with LSP power systems to provide remote monitoring and control of the power system and connected devices. The NL4 provides four ports and the NLX provides eight ports plus RS485 for connection to LSP power supply boards and M8 managed output boards. The NL2 provides two ports for connection to LSP power supply boards only.

The Netlink module monitors power supply system status over a local or wide area network and provides values such as output voltage, fault status, battery voltage, battery charging current, and temperature. In addition, automated battery tests may be run manually, or scheduled to happen automatically. When used with an M8 managed output board (NLX and NL4 only), voltage and current for each individual output is provided, and each output may be individually power cycled.

Automated alerts may be sent via email or SNMP on any detected fault condition, 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.

All Netlink modules provide a voltmeter input, event input (for monitoring devices such as the enclosure tamper switch), and one, two, or four current sensors. Internal temperature is also sensed, and the NL4 and NLX also include a 6 foot external temperature probe for monitoring room temperature. The NL2 and NL4 provide two outputs for controlling external equipment using LifeSafety Power's RB series of relays. The NLX provides two form C relays on-board for external control.

If using the NetLink in an FPA AC voltage system, an NS2 module must be used to provide DC power to the NetLink and may also be used to remotely switch the output power.

Specifications

Power Input	Voltage	8–30VDC
	Current	60mA Nominal
ADC Input	Voltage	0–30VDC
	Resolution	10 Bits
	Accuracy	± 3% (from 10-30V)
Event1 Input	Voltage	8–30VDC
	Current	15mA Max.
Control Outputs (NL2/NL4)	Current	50mA Max. (Open Collector Output)
Control Outputs (NLX)	Current	5A Max. (Form C Relay Output)
Current Sensors	Current	0–20A ±0.1A +5% of reading

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

For ULC S533 Installations: Wiring method shall be in accordance with CAN/ULC-S524 Installation of Fire Alarm Systems

Class 2 power limited wiring must be separated from non-power limited wiring by a minimum of 1/4 inch and must use separate 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.

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 Network Communication Module.

1.1 Mounting the Communication 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.

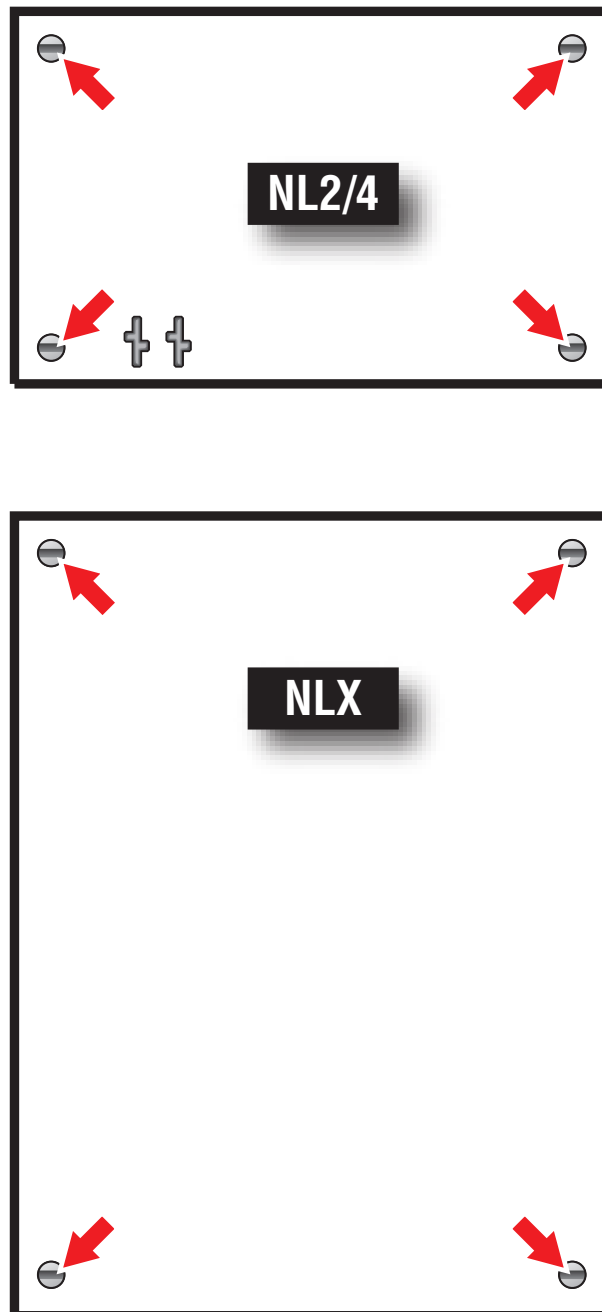
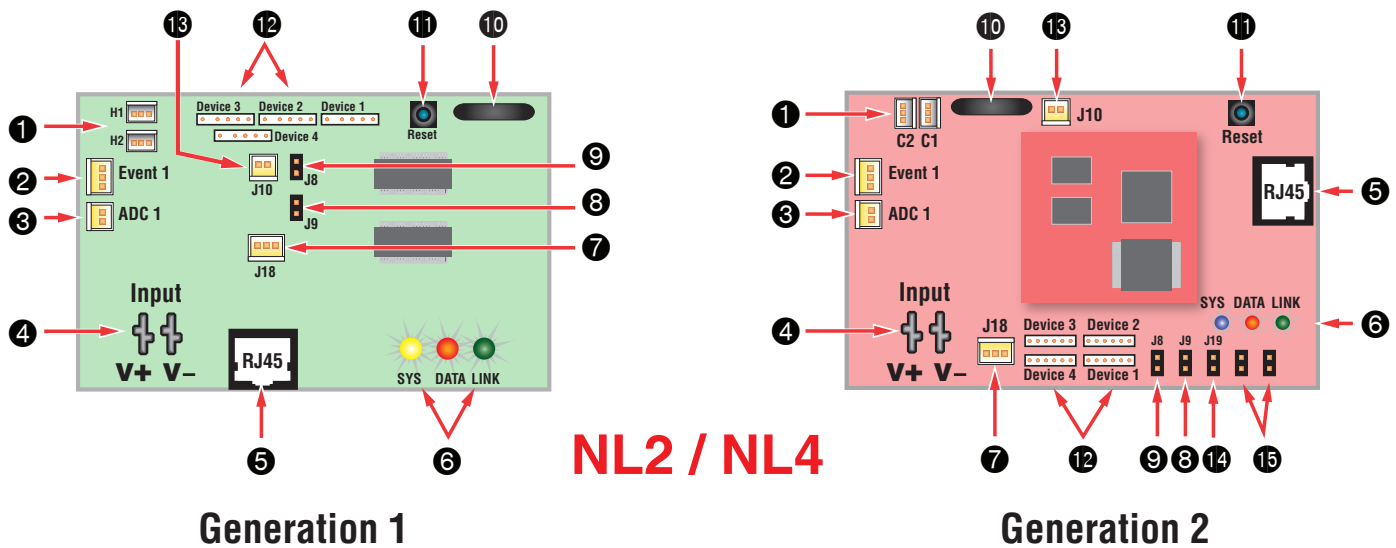


Figure 1.1

1.2 Network Module Overview



The following are basic Netlink board descriptions. Refer to the appropriate section for more detailed information.
 NOTE - There are two generations of NetLink NL2/NL4 boards. Generation 2 can be identified by the red PCB color, while Generation 1 uses a green PCB. Use the appropriate illustration above.

1 C1 through C4 (H1/H2) Inputs (J12,J16,J19,J23)

These are the connectors for the current sensors. Only a Net-Link current sensor should be plugged into this connector. The sensors have a range of +/-20A and are typically used to monitor battery discharge current. See section 1.3.4

2 Event 1 Input (J14)

This is the connector 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

3 ADC1 Input (J15)

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 board. The ADC cable wiring must be routed away from high voltages. See section 1.3.7

4 Input V+ & V- (J1 [NLX] or J1&J3 [NL2/NL4])

This is the power input for the Netlink board. This input accepts 8 to 30VDC ONLY from any power supply. If the Netlink is being used in an FPA series system, an NS2 board is *required* to convert the AC power to DC power. See Appendix 2.
 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.

5 Ethernet Connection (SK1)

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.

6 Status LED Indicators (D2, D3, D4)

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

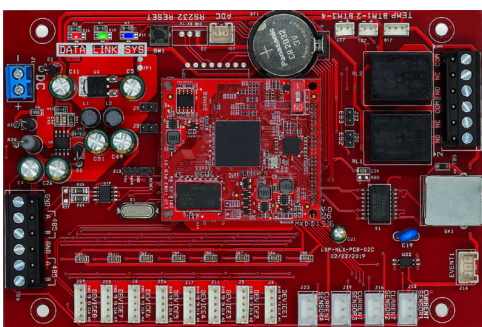
Blue (SYS) Lights when the Netlink is fully booted up and running. During the bootup process, this LED may flash on and off several times. The Netlink will not be able to be accessed until this LED lights steady. Older NetLink boards may have a Yellow SYS LED.

7 External Temperature Sensor

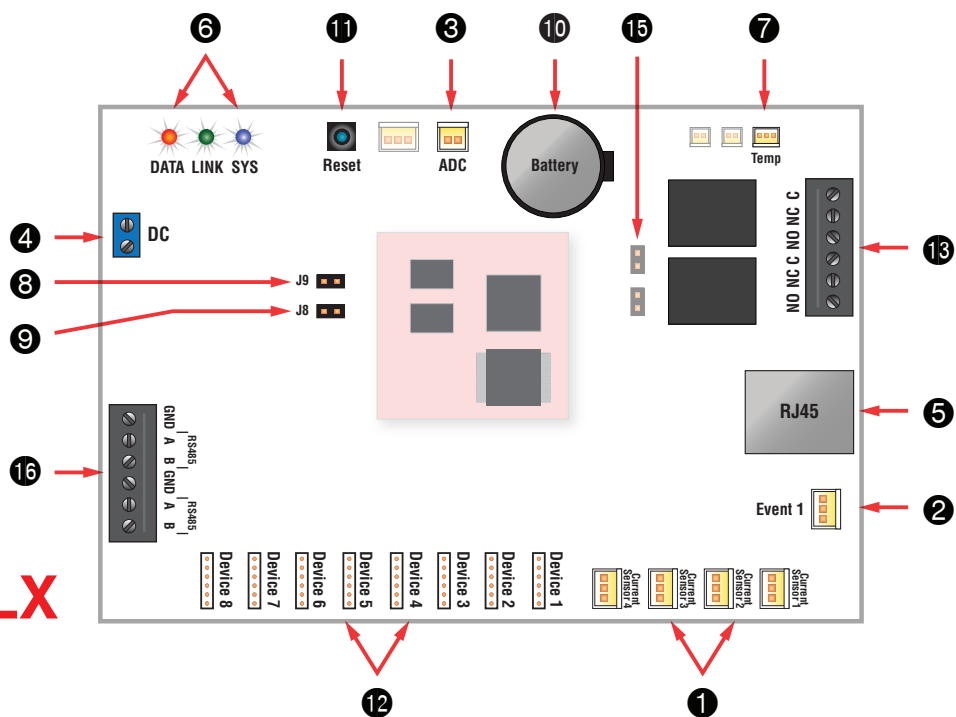
This connector is for the external temperature sensor and is only present on the NL4 and NLX boards. See section 1.3.6

8 Dual ADC Jumper (J9)

This jumper enables "Dual ADC Mode" when using the Netlink with an NS2 board. If an NS2 board is not being used, leave this jumper OFF.



NLX



9 Event1 Input Invert Jumper (J8)

This jumper inverts the action of the Event 1 Input. See section 1.3.5

Jumper Position:

- OFF Event 1 active when voltage is applied
- ON Event 1 active when voltage is removed

10 Backup Battery (BT1)

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

11 Factory Reset Button (SW1)

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 Device 1 - Device xx (J4, J5, J6, J11, J17, J24, J25, J26)

Data is passed between the Netlink board and its connected devices through these Device serial port links. The NL2 has two serial ports to monitor two power supply boards. The NL4 has four ports to monitor up to four devices (maximum combination of two power supplies, three M8). The NLX has eight links for up to eight devices. Power supplies 1-4 must connect to Device 1-4 respectively. See Section 1.3.3.

13 Control Outputs (J10 [NL2/NL4] or TB5 [NLX])

This connector is for the two control outputs. On the NL2 and NL4, these outputs are open collector (transistor) low-current outputs for use with RB Relay Boards or other low-current inputs. On the NLX, these are form C relay outputs, labeled on the PCB. The Control Output cable wiring must be routed away from high voltages. See Section 1.3.8

14 Enable 100Mbps (J19)

If present, this jumper enables 100Mbps speed for the network connection.

15 Future Use (J20 & J22)

If present, these jumpers are reserved for future use and should be left OFF.

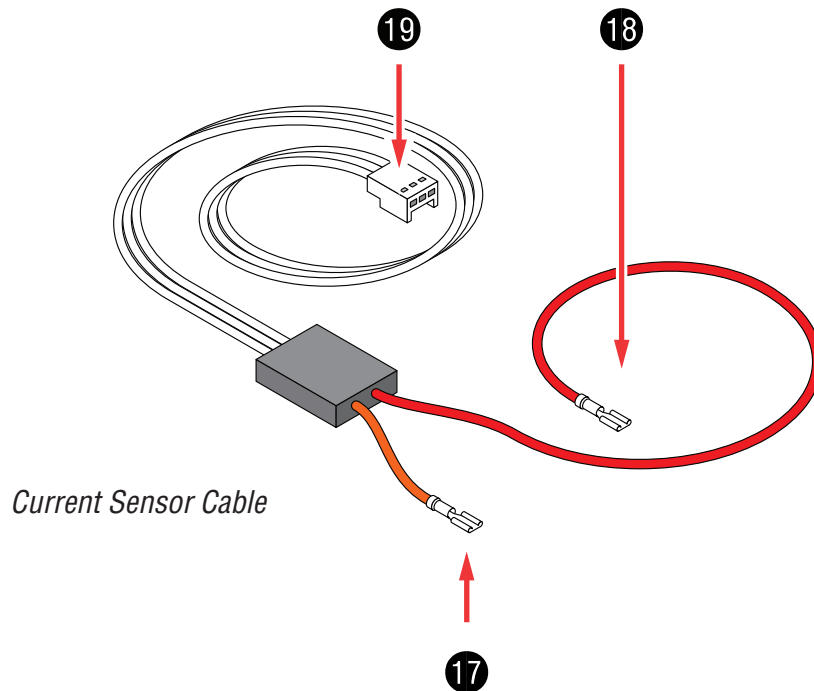
16 RS485 Port

The RS485 port allows the connection of up to 16 additional devices to the NLX. The connected devices must be Generation 2 FPO or M8 modules with the optional RS485 module installed (RSMOD).

RS485 Terminals:

- A** Signal Line A
- B** Signal Line B
- GND** Ground

There are two sets of RS485 terminals to allow two branches from the NLX. These may be used interchangeably. See Section 1.3.9 for more details on the RS485 port.



17 Current Sensor - Current Lead 1 (Short)

The short orange lead connects in-line with the current to be measured toward the more negative side of the current flow. Positive current is measured when current flows from Current Lead 2 (Long Lead) to Current Lead 1 (Short Lead). When using to measure battery discharge current, this lead goes to the positive battery terminal. See section 1.3.4

18 Current Sensor - Current Lead 2 (Long)

The long red lead connects in-line with the current to be measured toward the more positive side of the current flow. Positive current is measured when current flows from Current Lead 2 (Long Lead) to Current Lead 1 (Short Lead). When using to measure battery discharge current, this lead goes toward the BAT+ terminal on the power supply. See section 1.3.4

19 Current Sensor - Data Connector

This connector connects to the Netlink board's C1-C4 input (H1 or H2 on Gen 1 boards) to provide the current reading to the Netlink. See section 1.3.4



1.3 Connecting the Network Module

1.3.1 Making the Power Connections to the Netlink

DC Systems ONLY

In a DC system, the DC power source for the Netlink is connected to the INPUT (V+ & V-) fastons or terminals. 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.

The power connections for the Netlink must connect directly to the DC1 output or the V+/V- faston connectors (if present) of the FPO power supply. (Figure 1.4)

⚠ Note: Do not power the Netlink through another accessory board's output or from the B1/B2 connectors. (Figure 1.5)

AC Systems

⚠ WARNING - DO NOT CONNECT AC POWER TO THE Netlink BOARD'S INPUT (V+ & V-) TERMINALS OR DAMAGE TO THE Netlink WILL OCCUR.

In an AC system, power to the Netlink board MUST be supplied by an NS2 board, which is sold separately. See Appendix 2 for more information.

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 Devices to be Monitored to the Netlink

Connect one end of the SPI cable to one of the "Device" connectors on the Netlink. Connect the other end to the Data-Link (DL) connector of the device to be monitored (such as an FPO - see the manual for the device being connected for the location of the DL connector). If monitoring more than one device, repeat this process for devices 2 through 8 as appropriate. Note that both ends of these cables are keyed and will only plug in one direction.

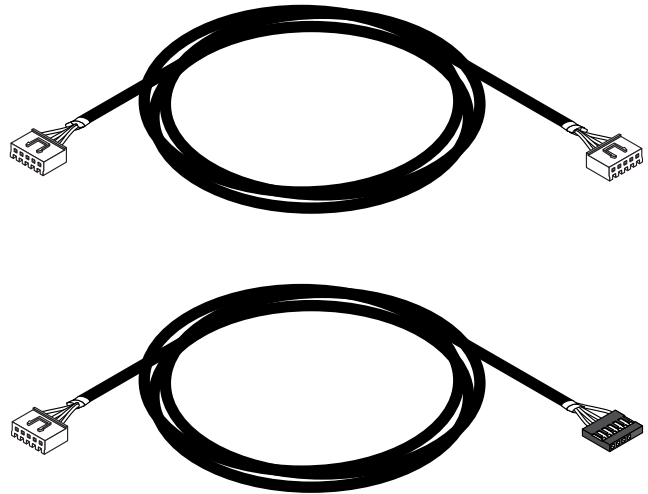


Figure 1.3 - The SPI Cable

There are two types of SPI connector which have been used. (Figure 1.3) The Netlink is supplied with two SPI cables for use with the new-style connector (top drawing in Figure 1.3, above). If the device being connected to the Netlink uses the old-style connector, contact LifeSafety Power for an adaptor cable (bottom drawing in Figure 1.3, above).

If monitoring the battery health of FPO power supplies using the Current Sensors, the Netlink will assign Current Sensor 1 to the FPO power supply connected to Device 1. Current Sensor 2 will be assigned to Device 2, etc.

⚠ Note: The NL2 can accommodate any combination of a maximum of two power supply boards.

⚠ Note: The NL4 can accommodate any combination of a maximum of two power supply boards and three M8 boards.

⚠ Note: The NLX can accommodate any combination of a maximum of four power supply boards and seven M8 boards connected to the SPI ports.

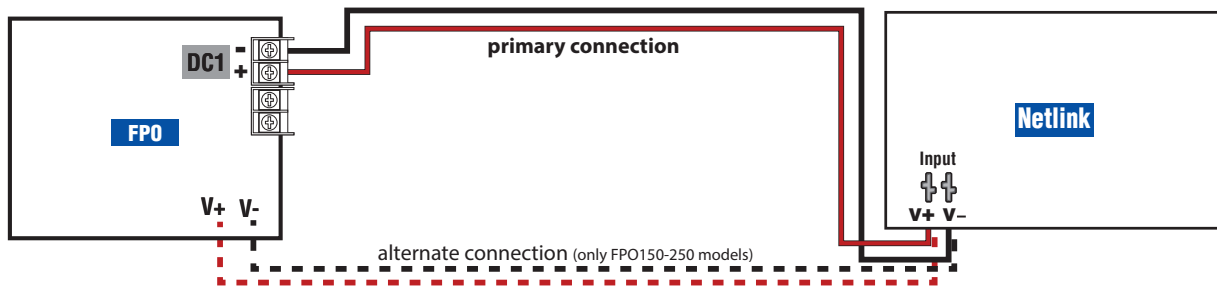


Figure 1.4 - Power the Netlink from the FPO V+/V- or DC1 terminals

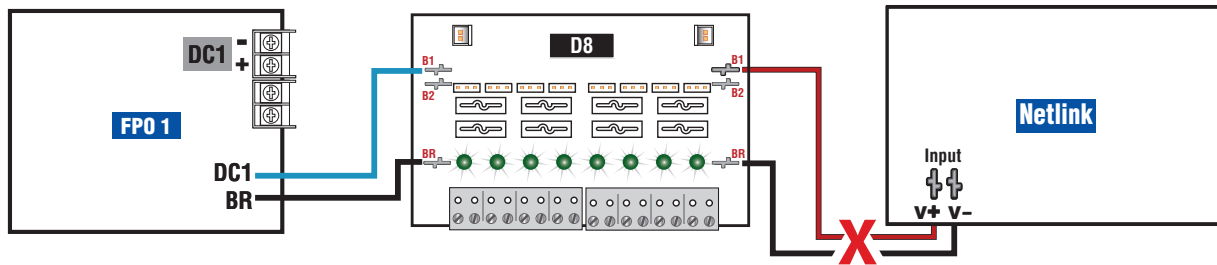


Figure 1.5 - Do not power from another accessory board's output

⚠ **Note:** NL2/NL4 shown - NLX Similar.



1.3.4 Connecting the Current Sensor(s)

On Generation 1 FPO boards (green PCB), the current sensor is typically used to measure battery discharge current to allow battery testing and utilization of the Battery Condition bar graph. In this application, the short orange lead connects toward the power supply and the long red lead connects toward the battery. See Figure 1.6 for wiring details. **Note that Generation 2 FPO power supplies have an on-board current sensor and battery disconnect and do not require these external modules.**

If not using the current sensor for the battery, connect the Current Sensor in-line with the device(s) to be monitored. To read current in the correct polarity, the positive current should flow from the longer (red) lead to the shorter (orange) lead of the Event cable. If current is being displayed in the opposite polarity than expected, swap the short/orange and red/long leads.

1.3.5 Connecting the Event Input

Connect one end of the Event cable to the Event1 connector on the Netlink board and cut off the connector at the other end of the Event cable. Connect the red and black wires to the voltage to be monitored. 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. Set the Event1 Input Invert Jumper as required.

Example:

To monitor the NC tamper switch in an LSP enclosure, connect a positive voltage (from the FPO power supply or distribution board) to one lead of the tamper switch. Connect the other lead of the tamper switch to the red (positive) lead of the Event cable. Connect the black (negative) lead of the Event cable to the negative (DC Common) of the voltage source. (Figure 1.7) Since we want to cause an alert on the removal of voltage, leave the Event1 Input Invert Jumper OFF.

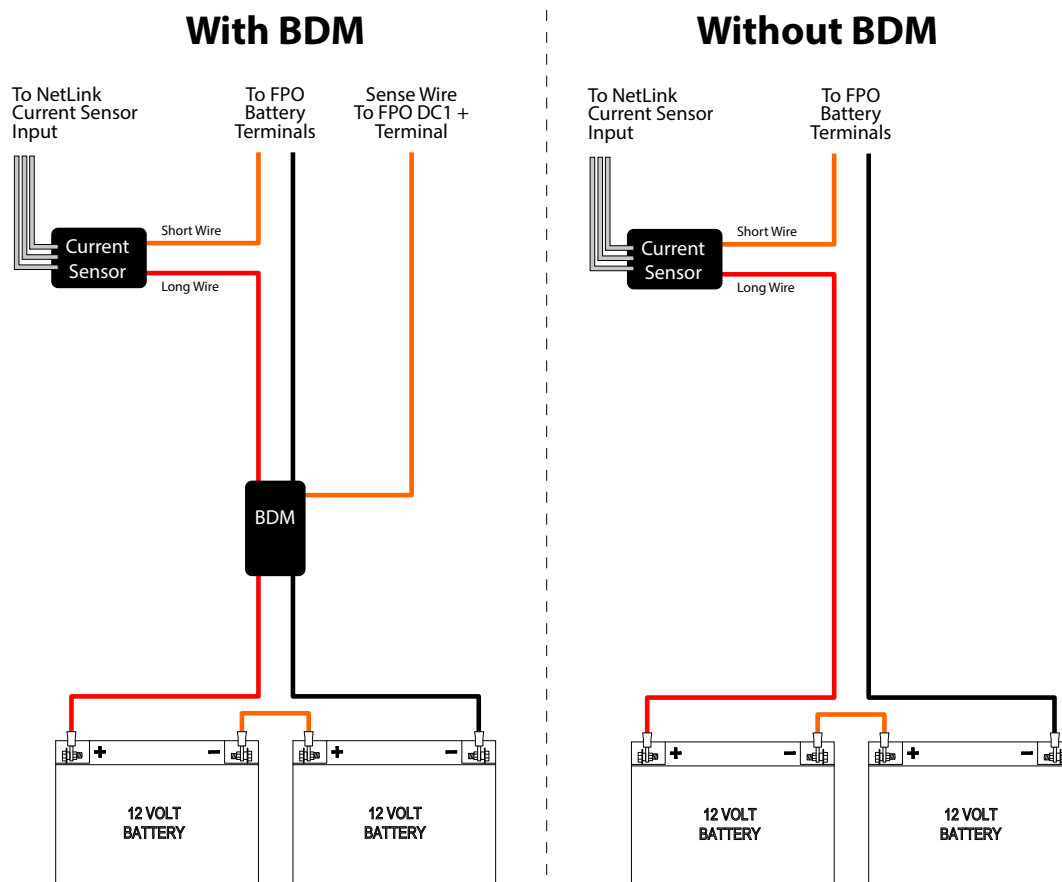


Figure 1.6 - FPO Gen 1 Current Sensor Wiring (Battery Discharge Current)

1.3.6 Remote Temperature Sensor (NL4/NLX only)

The remote temperature sensor allows measuring a temperature up to 6 feet away from the NL4 or NLX board. Plug the sensor into J18 and run the sensor wire to the area or device to be monitored.

1.3.7 Connecting the ADC (Voltmeter) Input

When using the voltmeter input, connect one end of the ADC cable to the ADC1 input on the Netlink board. Cut off the other end of the ADC cable and connect it to the voltage source to be monitored, observing polarity. The red wire is the positive input and the black wire is the negative (DC Common) input. The ADC cable 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 Netlink board.

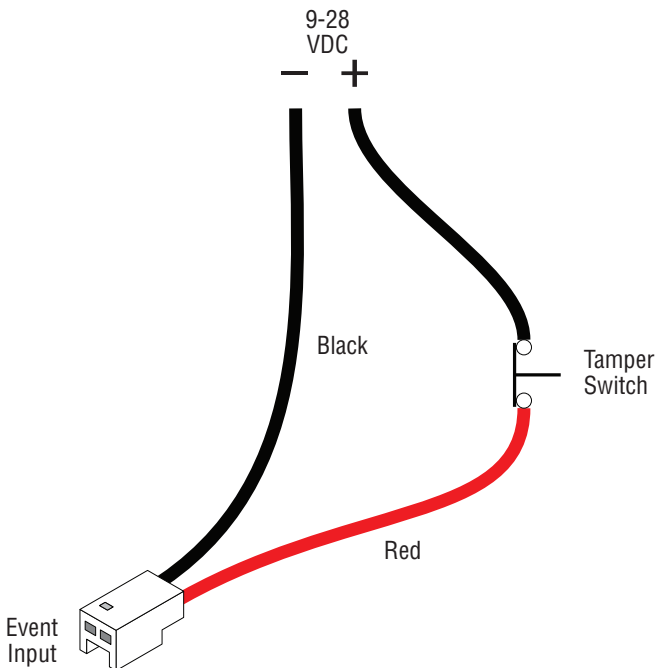


Figure 1.7 - Event1 Tamper Switch Wiring

1.3.8 Wiring the Control Outputs

The NLX provides Form C relay contacts which may be used directly for control. These relays are rated for 1A maximum. The NL2 and NL4 provide a low-current open collector output. When using the control outputs, connect one end of the Control Output cable to the Control Outputs connector on the Netlink. Cut off the other end of the control output cable. The wire going to the pin on the connector labeled "FLT" is Control Output # 1. The wire going to the pin labeled "EN_FAI" is Control Output #2.

The Control Outputs are low-current, open collector (transistor) outputs which pull to ground when activated. These outputs can be used to activate sensitive trip relays such as LifeSafety Power's RB Series, supply the ground side to an FAI Input, or other similar uses. See Figure 1.8 for an example using an RB relay.

⚠ Note: Do not connect these outputs directly to a voltage source or damage to the Netlink will occur. Also, ensure the wire used is rated for the voltages and temperatures in the area which it is installed.

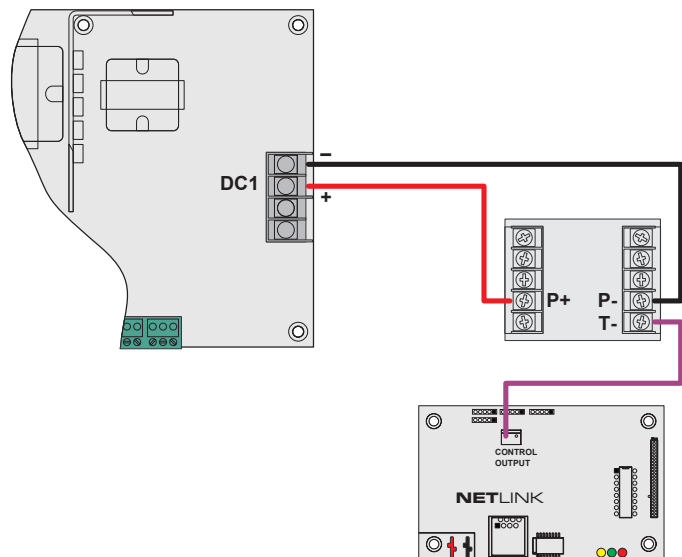


Figure 1.8 - Control Output Wiring Example

1.3.9 RS485 Port (NLX only)

The RS485 port allows connection of up to 16 additional LSP devices. The connected devices must be Generation 2 FPO or M8 modules with the optional RS485 module (RSMOD) installed. See figure 1.9.

RS485 Terminals:

- A** Signal Line A
- B** Signal Line B
- GND** Ground

There are two sets of RS485 terminals which may be used interchangeably to allow two branches from the NLX. The A, B, and GND terminals from the NLX must be connected to the A, B, and GND terminals of the 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.

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.

Devices connected via RS485 must each be set to a unique address. See the FPO or M8 manual for addressing information

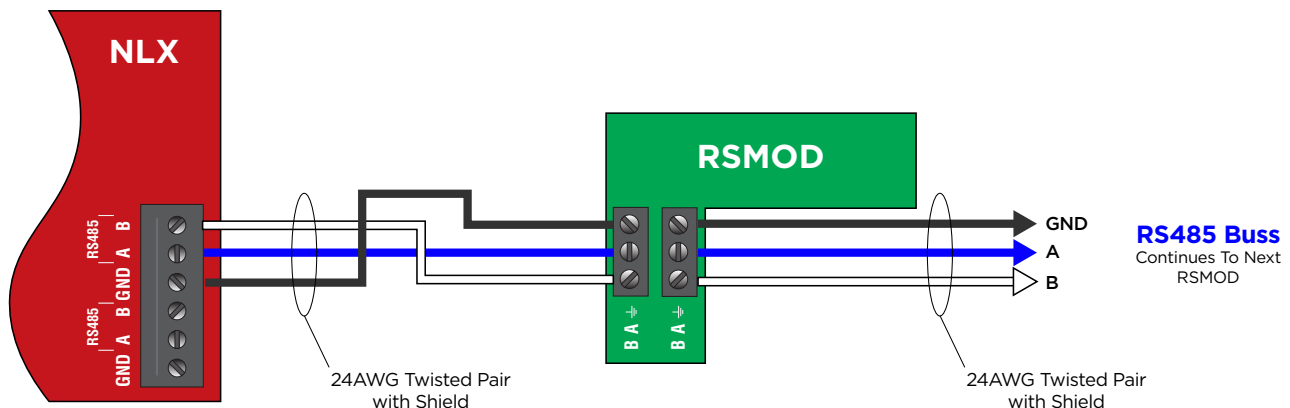
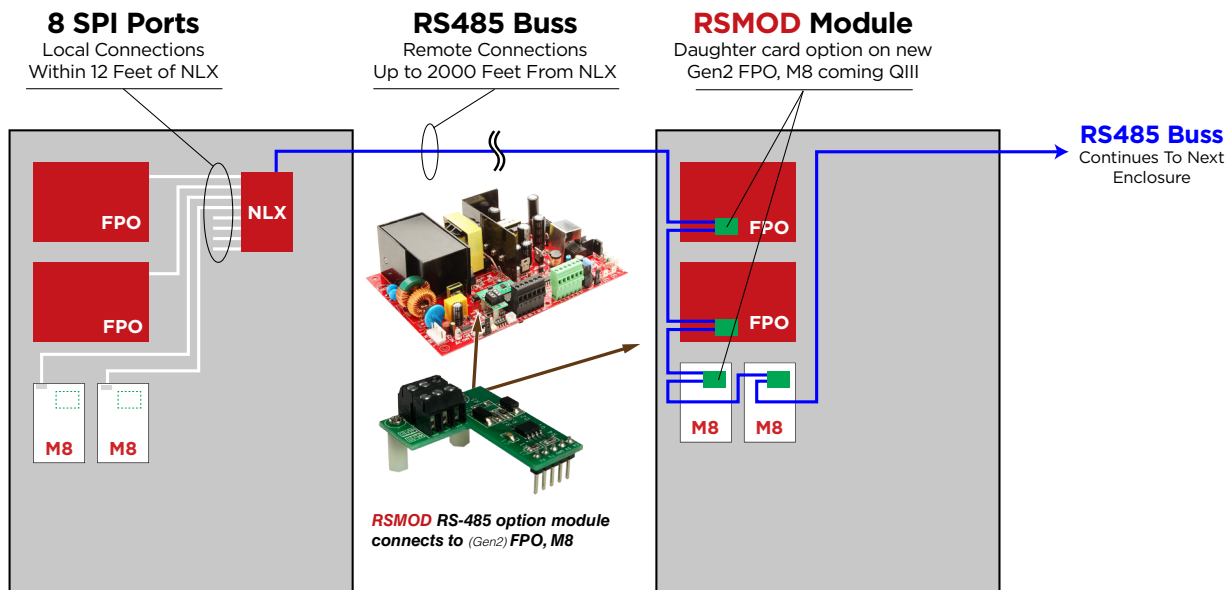


Figure 1.9 - RS485 Wiring

Section 2 – Initial Configuration

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

⚠ Unless otherwise specified, all screens shown are of the NL4 GUI. NL2 and NLX screens are similar, with changes as noted in the text.

⚠ If using DHCP, a Network Scan Tool used for finding LSP devices is available at <http://www.lifesafetypower.com/support/software-firmware-downloads>.

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 yellow SYS LED will be lit steady.

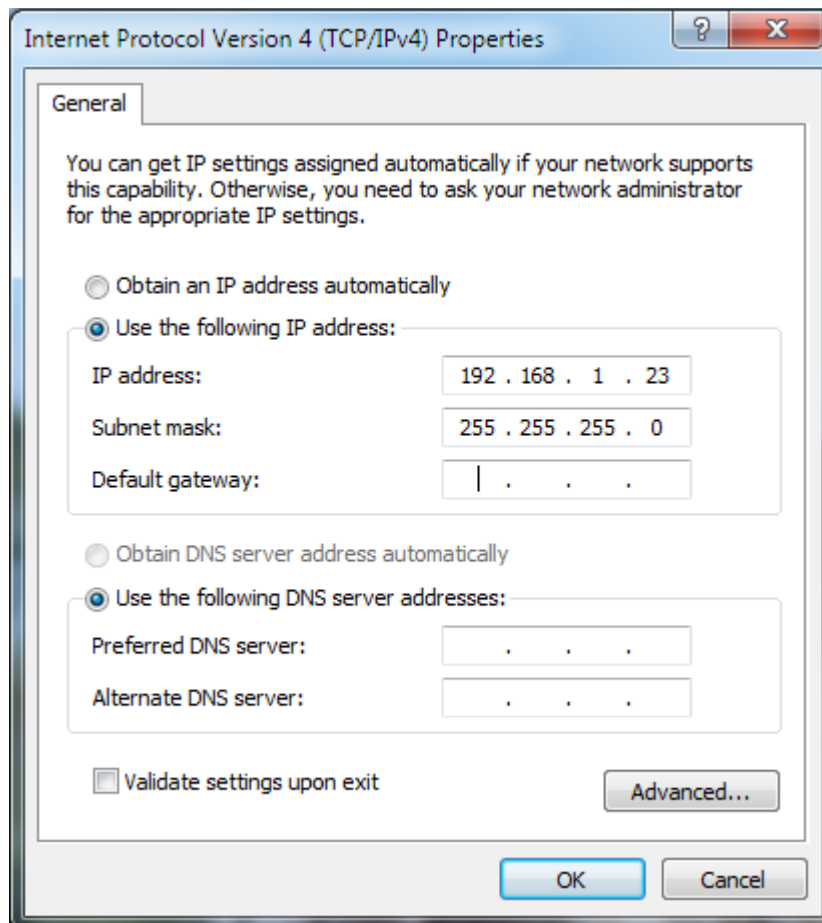


Figure 2.1 - Example of a PC Ethernet Port Settings Window

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



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 Netlink should appear in the browser window (See Figures 2.3 and 2.4).

⚠ 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.

Depending on the firmware revision, the Netlink may default to DHCP after reboot. If a DHCP server is found, an IP address will be assigned. The LifeSafety Power scan software, or a third party software must then be used to find the IP address of the Netlink.

The image shows a login window with the following elements:

- A text input field labeled "Username" with a person icon on the left.
- A text input field labeled "Password" with a lock icon on the left.
- A checkbox labeled "Remember me" which is checked.
- A blue button labeled "Sign in".

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



REMOTE REPORTING

SYSTEM MANAGER POWERCOM®

HOME
Reporting
Configure
Tools
admin Log Out
Firmware: 9.3

Client ID

Site ID

Date Time

Enclosure Temperature 40.42 °C

External Temperature 26.24 °C

CurrentSense1 -0.09 Amp

Test -0.09 Amp

ADC1Reading 12.34 VDC

Event1 Inactive

Service Due No

SPI Connections: ■ 1 ■ 2 ■ 3 ■ 4

View/Export past point(s) history [View Data](#)

Fault Data Only

Device On/Off Control

Control 1 <input type="radio"/> ON <input checked="" type="radio"/> OFF Control 1 Status: Off	Control 2 <input type="radio"/> ON <input checked="" type="radio"/> OFF Control 2 Status: Off
---	---

Temperature

°F
 °C

Device Status: ● Normal | ● Trouble | ● Service | ● Fire Alarm


<div style="text-align: center;">  <p>DEVICE 1</p> <hr/> <p>ID: FP-1</p> <p>Model: FPO250</p> <p>Voltage: 12.46 VDC</p> <hr/> <p>Status: ●</p> </div>	<div style="text-align: center;">  <p>DEVICE 2</p> <hr/> <p>ID: FP-2</p> <p>Model: FPO75</p> <p>Voltage: 24.54 VDC</p> <hr/> <p>Status: ●</p> </div>
<div style="text-align: center;">  <p>DEVICE 3</p> <hr/> <p>ID: M8-1</p> <p>Model: M8</p> <hr/> <p>Status: ●</p> </div>	<div style="text-align: center;"> <p>DEVICE 4</p> <hr/> </div>

Figure 2.3 - Typical NL2 / NL4 Home Page (NL4 Shown)

REMOTE REPORTING
LSP

SYSTEM MANAGER **POWERCOM®**

HOME Reporting Configure Tools msm Log Out Firmware: 0.22

Client ID: Netlink
 Site ID: NLX RS485 Demo Unit
 Date: Fri Jun 12 2020 Time: 09:20:56

Enclosure Temperature: 89.80 °F
 Current Sense 1: 0.04 Amp
 Current Sense 2: -0.04 Amp
 Current Sense 3: 0.09 Amp
 Current Sense 4: -0.09 Amp
 ADC1 Reading: 0.02 VDC
 External Event: Inactive
 Service Due: No

View/Export past 1000 point(s) history View Data
 Fault Data Only

Device On/Off Control

Control 1	Control 2	Temperature <input checked="" type="radio"/> °F <input type="radio"/> °C
<input type="radio"/> ON <input checked="" type="radio"/> OFF	<input type="radio"/> ON <input checked="" type="radio"/> OFF	
Control 1	Control 2	
Status: Off	Status: Off	

SPI Connections: 1 2 3 4 5 6 7 8
 RS485 Connections: 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

Device Status: Normal Trouble Service Fire Alarm

Device	ID	Model	Status	Voltage	Device	ID	Model	Status	Voltage
9	FP-1	FPG100	<input checked="" type="radio"/>	12.62 VDC	10	FP-2	FPG200	<input checked="" type="radio"/>	25.01 VDC
11	FP-3	G2 FPO150	<input type="radio"/>	12.33 VDC	12	FP-4	G2 FPO250	<input type="radio"/>	24.93 VDC
13	M8-1	M8	<input checked="" type="radio"/>		14	M8-2	M8	<input checked="" type="radio"/>	
15	M8-3	M8	<input checked="" type="radio"/>		16	M8-4	M8	<input checked="" type="radio"/>	
17	M8-5	M8	<input checked="" type="radio"/>		18	M8-6	M8	<input checked="" type="radio"/>	
19	M8-7	M8	<input checked="" type="radio"/>		20	M8-8	M8	<input checked="" type="radio"/>	
21	M8-9	M8	<input checked="" type="radio"/>		22	M8-10	M8	<input checked="" type="radio"/>	
23	M8-11	M8	<input checked="" type="radio"/>		24	M8-12	M8	<input checked="" type="radio"/>	

Figure 2.4 - Typical NLX Home Page

2.2.2 Configuring the TCP/IP Settings

In the menu bar at the top of the browser screen (Figure 2.4.1 and 2.4.2), click the "Configure" link. In the TCP/IP Settings block of the Configuration screen (See Figure 2.5 - next page), 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 these settings.

After completing the TCP/IP settings, click the "Submit" button in the bottom right corner of the TCP/IP Settings box. **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 the Network Scan tool available at <http://www.lifesafetypower.com/support/software-firmware-downloads>** to locate the Netlink's IP address before logging into the Netlink board.

Note: The port number used by the Netlink can also be set in the 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.

2.2.3 Time Settings

The Time Settings block (See Figure 2.5) is where the time and date are programmed into the Netlink. First, select the correct time zone from the drop down list and click Submit. After the time zone is set, the time and date can be set one of three ways:

Manual Entry

Enter the correct time and date in the following format and click the "Submit" button:

For Date: **YYYY MM DD**

For Time: **HH MM SS**

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

The new date and time will take effect immediately.

Sync With Computer

The "Sync Date/Time with computer" button 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.

Using an NTP Server

The NTP Server fields allow you to enter one or two NTP servers for automatic setting of the time and date via the internet. The Netlink 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, 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.

The screenshot displays the configuration interface for a LifeSafety Power Netlink. At the top, there are navigation tabs: HOME, Reporting, Configure, and Tools. The current page is the 'Configure' page, showing the Client ID as 'LifeSafety Power' and the SITE ID as 'FPO75-250-B100M8NL4E2'. The current date is 'Tue Mar 16 2021' and the time is '14:12:39'. The firmware version is '9.50'. Below the navigation, there are four main configuration sections:

- TCP/IP Settings:** Includes fields for Name (LSP), IP Address (192.168.1.9), Net Mask (255.255.255.0), MAC Address (00:02:AC:55:D4:8C), Gateway IP Address (192.168.1.1), DNS0 IP Address (75.75.75.75), DNS1 IP Address (75.75.76.76), HTTPS Port # (443), and an 'Enable DHCP' checkbox. There are 'Submit' and 'Restore to factory default Login' buttons.
- Time Settings:** Features a 'Select timezone:' dropdown menu set to '(GMT-05:00)Eastern Time(US&Canada)', a 'Submit' button, and date/time input fields: 'Insert Date: Year 2021, Mon 03, Day 16' and 'Insert Time: Hour 14, Min 12, Sec 05'. A 'Sync Date/Time with computer' button is also present.
- IPv6 Settings:** Includes fields for IPv6 Address, Prefix Lengths, Gateway IP Address, DNS0 IP Address, DNS1 IP Address, Additional PrefixLen (64), and Additional Gateway. There is an 'Enable DHCP' checkbox and 'Show Status' and 'Submit' buttons.
- MSM Settings:** Includes 'Mercury Tunnel Port', 'Enable Tunnel' checkbox, 'IP Address' (192.168.1.199), 'Destination Port #' (9888), 'Source Port #' (0), 'Connected Status' (SUCCESS), and 'Group Name' (Group1). There are 'Ping', 'Submit', and 'Show MSM Log' buttons.

Figure 2.5 - Typical Configure Page (top portion)

2.2.4 MSM Settings

These settings are used when connecting the NetLink to an MSM Enterprise server. Enter the IP address of the MSM Server in the "IP Address" field. Set the Port numbers as appropriate (typically 9888 for Destination Port). Click Submit when done to save the settings. Consult the MSM Enterprise manual for more information.



2.2.5 Configuring the SNMP Settings

Scrolling down in the Configure page reveals the "SNMP Settings" section (Figure 2.6).

Figure 2.6 - Typical Configure Page (upper-middle portion)

In the SNMP Setting block, under the "Basic" heading, set Read and Write Community to "public" and set Location to a meaningful name of your choice. This entry 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 (Trap or Inform). Click the "Submit" button at the bottom of the "Basic" section to save the settings, otherwise you will lose the settings. These settings will take effect after a reboot of the Netlink.

The "Security Name" section of the SNMP Setting block allows you to grant only specified computers (by IP address) SNMP v1 and v2 access. Since v1 and v2 do not have password protection, the Security Name settings add security to v1 and v2 access. The web server is password protected and a user must have the web server password in order to setup a computer in the Security Name settings and gain v1 and v2 access. Multiple source networks can be added to the Security Name Setting block. Be sure to click the "Submit" button to save the settings. The settings will take effect after a reboot of the Netlink.

The "V3 User" section of the SNMP Setting block allows for a user to set up an SNMP v3 user name and password. 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 "Submit" button to save the settings, which will take effect after rebooting the Netlink.

The SNMP Trap Receiver IP and Port settings should be set to the proper address for the SNMP Trap receiver. Click the "Submit" button and reboot the Netlink for the settings to take effect. The SNMP Trap Version may be selected using "Select Trap Version". The SNMP Inform Log may be seen by clicking the "Show Inform Log" button. If the trap type is set to "Trap", no data will be displayed in this section. Click "Hide Inform Log" to hide the log window.

2.2.6 Configuring the Email Settings

The Netlink can be configured to send email alerts on user-specified conditions and periodic status reports. Underneath the SNMP Settings block on the Configure page is the Email Settings block (See Figure 2.6).

Under "Receive Addresses", the email address or addresses to receive the alerts and reports should be entered. Up to four recipient email addresses may be entered.

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

Sender SMTP Server	This is the address of the SMTP server for the email provider. Consult with your email provider for this address.
Sender's Email	This is the email address which the Netlink will use to send emails.
Sender Email Password	This is the password associated with the Sender's Email account
TLS	Check this box if your email provider requires TLS or SSL encryption
SMTP Port #	Enter the port number required by your email provider for sending email. Usually 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.
Send Period	Selects how often the Netlink sends a regular email status report. The period can vary from 1 hour to 6 months or, if you do not want the Netlink to send periodic reports, select "Never". 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 report.

⚠ Note: *Regarding Microsoft Exchange – By Default, Microsoft Exchange will not 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 "Submit" 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.*

2.2.7 The Email Test Section

Below the Email Settings section is the Email Test section. (See Figure 2.6) After configuring the email settings, the Email Test button will send a test email to all Email Receive addresses. Please note that it could take an hour or more to receive the email, depending on the speed of your email server. Clicking the Show Email Log button will show the feedback from the email server. This can be useful for diagnosing email problems.

2.2.8 VPN Settings

The VPN Settings section is for the discontinued MSM-200 hardware VPN (See Figure 2.7). The MSM-200 has been replaced with MSM-Enterprise. If connecting to an existing MSM-200 system, see the MSM-200 manual for more information.



2.2.9 Configuring the Network Module Settings

Below the VPN Settings block is the Network Module Settings block, where application-specific parameters of the Netlink can be set (See Figure 2.7).

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.
Site ID	Enter any meaningful name to help identify the installation site. 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.
Data Buffer Interval	This selects the time period between "snapshots" of the data for the email/csv reports. Typically, this value should be set to 24 hours
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.
External Event	Enter a name related to the usage of the Event1 input. In the example, this setting is labeled "Event1".
Current Sense x	Enter a name indicating the current being measured by each current sensor connected to the C1-C4 (H1/H2) connectors of the Netlink. In the example, the labels are "CurrentSensor1" and "CurrentSensor2".
Current Sense x Lower Limit	This is the lower current limit for each Current Sensor. If the measured current goes below this value, an alert will be generated. By default, this value is set to -3A to disable the limit.
Current Sense x Upper Limit	This is the upper current limit for each Current Sensor. If the measured current goes above this value an alert will be generated. By default this value is set to 15A.
Control 1	Enter a name for the Control 1 output. This label will appear below the Netlink Control Setting 1 radio buttons on the home page.
Control 2	Enter a name for the Control 2 output. This label will appear below the Netlink Control Setting 2 radio buttons on the home page.
ADC1 Reading	Enter a name indicating the voltage being measured by the ADC input of the Netlink. This reading is the voltage between the two ADC input pins. In the example, the label is "ADC1Reading". Note that if the Dual ADC jumper is in place (ONLY when using an NS2 board with the Netlink), a second setting, labeled ADC2 Reading, will appear under the ADC1 Reading setting.
ADC1 Lower Limit	This is the lower voltage limit for the ADC1 input. If the measured voltage goes below this value, an alert will be generated. By default, this value is set to -30V to disable the limit.
ADC1 Upper Limit	This is the upper voltage limit for the ADC1 input. If the measured voltage goes above this value, an alert will be generated. By default, this value is set to 30V.
External Temperature (NL4/NLX only)	Enter a name for the external temperature measurement.
Temperature Lower Limit (NL4/NLX only)	Enter a lower temperature limit for the external temperature sensor input. If the temperature measured by the sensor goes BELOW this value, an alert will be triggered.
Temperature Upper Limit (NL4/NLX only)	Enter an upper temperature limit for the external temperature sensor input. If the temperature measured by the sensor goes ABOVE this value, an alert will be triggered.
Next Service Due	Enter a date 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	Enter a brief message to indicate the type of service which is due in the email alert. This message will appear in the Subject line of the alert email.

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

The screenshot displays the configuration interface for the LifeSafety Power Netlink. The page is titled "SYSTEM MANAGER POWERCOM®" and includes navigation links for HOME, Reporting, Configure, and Tools. The user is logged in as "admin" and the firmware version is 9.32.

VPN Settings

EnableRemoteVPNServer: IP Address: User Name: Password:

Submit

NL4 Network Module Settings NL4 ver:1.40

Client ID: LifeSafety Power Control 1: Control 1
 Site ID: FPO75-250-B100M8NL4E2 Control 2: Control 2
 Data buffer interval: 5 Min ADC1 Reading: ADC1Reading
 Password Lockout Delay: 5 Min ADC1 Lower Limit: -30.00 VDC
 External Event: Event1 ADC1 Upper Limit: 30.00 VDC
 External Temperature: External Temperature Current Sense 1: CurrentSense1
 Temperature Lower Limit: 0.00 °C Current Sense 1 Lower Limit: -3.00 Amp
 Temperature Upper Limit: 80.00 °C Current Sense 1 Upper Limit: 15.00 Amp
 Current Sense 2: Test
 Current Sense 2 Lower Limit: -3.00 Amp
 Current Sense 2 Upper Limit: 15.00 Amp
 Next Service Due: Year 2020 Mon 12 Day 31 Hour 11 Min 00 Sec 00
 Reminder Message: Reminder Message

Submit

Current Sensor Calibration

CurrentSense1 -0.09 Amp Test -0.09 Amp

Zeroing

Make sure there is no current flowing through the current sensor cable before zeroing the current sensor. Zero the sensor current after installation to calibrate sensing circuitry. See manual for proper use of current sensor.

User Settings

Authorization	User Name	Password	Verify Password	
admin	admin	<input type="password"/>	<input type="password"/>	<input type="checkbox"/>
guest	guest	<input type="password"/>	<input type="password"/>	<input type="checkbox"/>
admin	<input type="text"/>	<input type="password"/>	<input type="password"/>	

Password Complexity: Normal

Submit Delete

Figure 2.7 - Typical Configure Page (lower-middle portion)

2.2.10 Current Sensor Calibration

In this block, any connected current sensors can be calibrated by selecting the current sensor to calibrate and clicking the "Zeroing" button. Ensure both high current leads of the current sensor are disconnected and the white data cable is connected before clicking the Zeroing button.

2.2.11 User Settings

In the User Settings block of the Configure screen (bottom of Figure 2.7), you can enter the user names, passwords, access levels, and password complexity for the Netlink board.

The default user is "admin" and the password for this account is also "admin". It is highly recommended to change this user name and password for security reasons. Click Submit when done. Note that there must ALWAYS be at least one admin-level user.

Adding a New User

To add another user, first select the Authorization level desired 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 the Configure page.
- 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.

After selecting the Authorization level, enter the new user name in the User Name column and enter the password into the Password column. Passwords must meet the complexity level setting requirements. Re-enter the password into the Verify Password column.

After clicking Submit, the new user will be active and another blank row will appear for entering the next user name.

2.2.12 Select Certificate

The Netlink allows a user-supplied certificate to be used. Click the "Select Certificate" button (Figure 2.9) to enter the Import Certificate screen (Figure 2.8). Contact your IT department for more information.

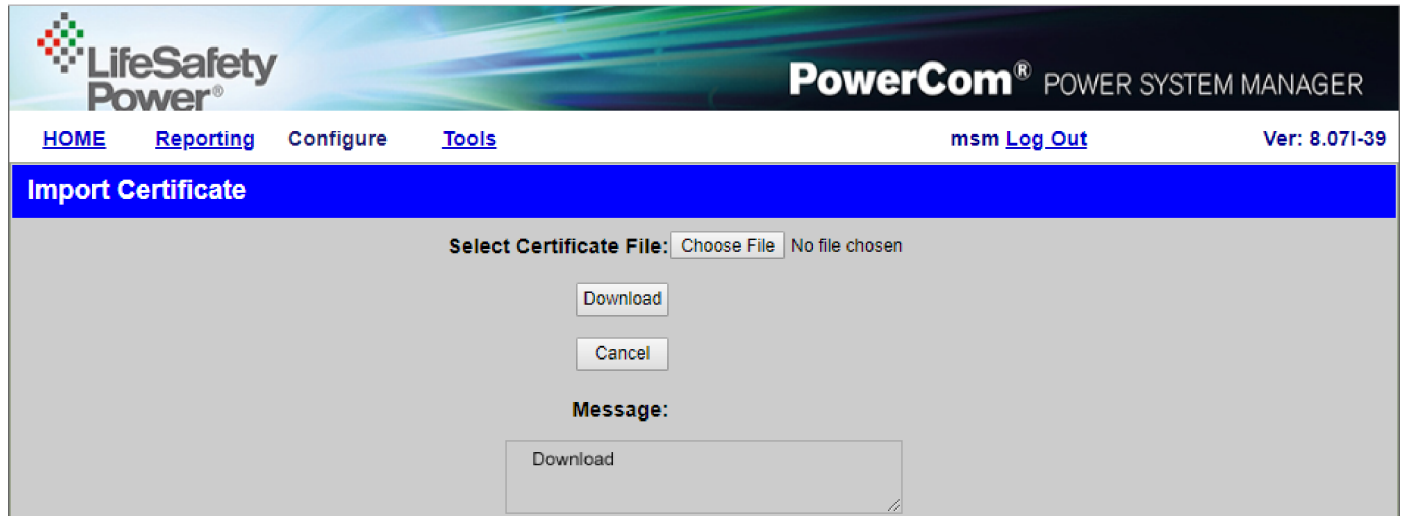


Figure 2.8 - Import Certificate Screen

Click the Choose File button to select the certificate to be used, then click Download, then Confirm to download the certificate. Click the Submit and Test button to use and test the certificate.

2.2.13 SSL Protocol and CipherSuite Settings

This section allows the user to select which SSL protocol to use. The default setting is Normal. See Figure 2.9

2.2.14 Certificate Log

Click Show Certificate Log to view the certificate activity log. Click Hide Certificate Log to hide the window. See Figure 2.9

2.2.15 Import and Export Configuration File

The Netlink allows the user to export the settings that are configured in the Netlink to a file. This file can be used as a backup or to transfer these settings to other Netlink devices that require similar settings. The settings exported include:

- From Configure Page: Time Settings (including NTP Server), MSM Settings, SNMP Settings, VPN Settings, Netlink Module Settings, User Settings
- From Reporting Page: Alert Enable On, Netlink Report, FPO1/2 Report, FPV1/2 Report
- Power Supply Settings (FPO/FPV) - for all connected power supplies
- M8 Programming - for all connected M8 boards (NL4/NLX only)

To export the settings, click the Export Configuration File button (See Figures 2.9 and 2.10). The exported file saves to the default download location of the browser.

To import a configuration file, click the Import Configuration File button to open the Import Settings screen.

Click the Choose File button and select the configuration file to be imported. Click Download, then Confirm to import the settings.

2.2.16 IEEE802.1x Settings and Log

This section allows the user to set up IEEE802.1x authentication, if required. Click Submit after completing this section. The "Show IEEE802.1x Log" button will show or hide the log on screen.

2.2.17 User Login Record

Click the Show Login Log button to show the history of login information for the Netlink board. See Figure 2.9

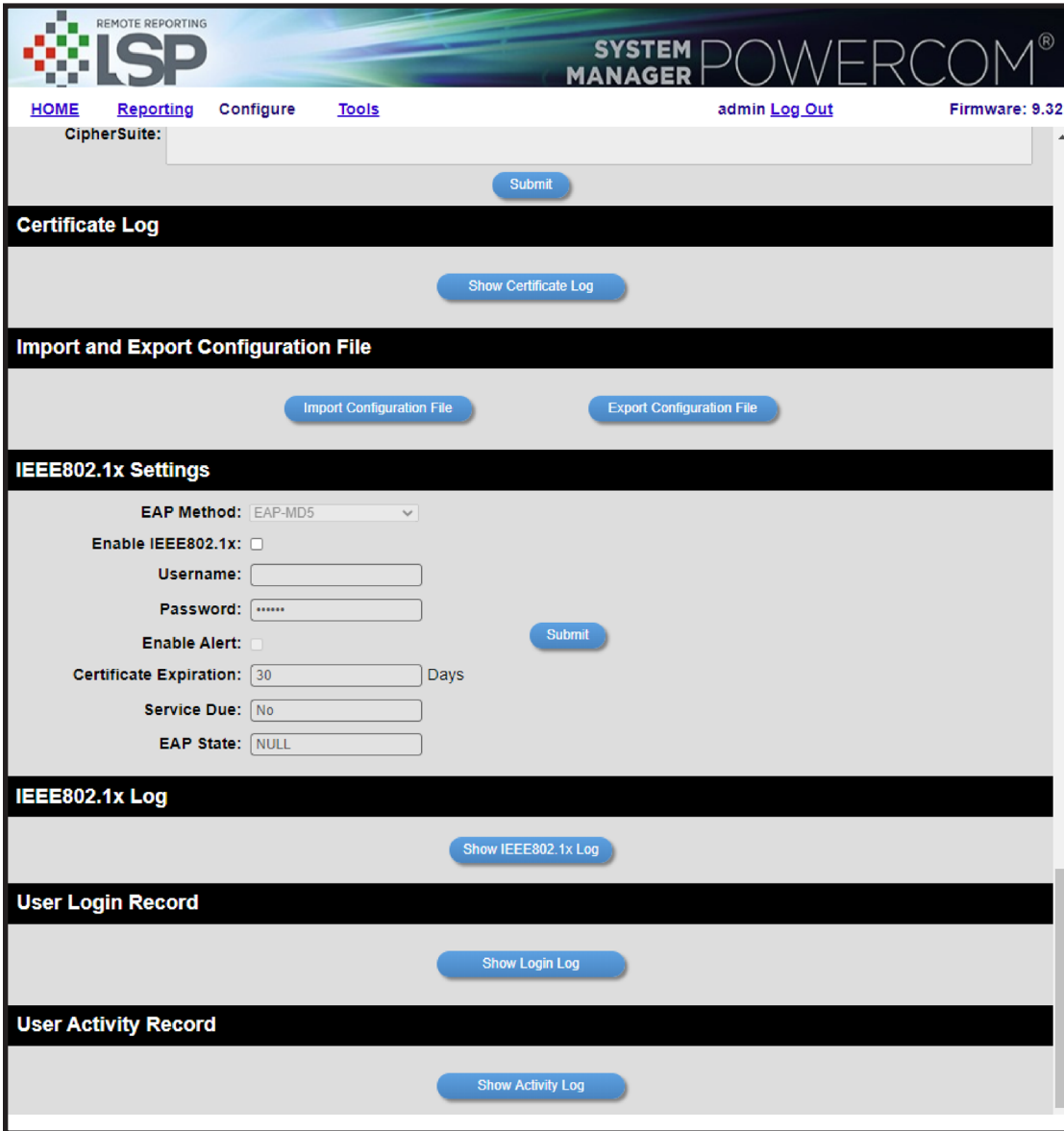


Figure 2.9 - Typical Configure Page (bottom portion)

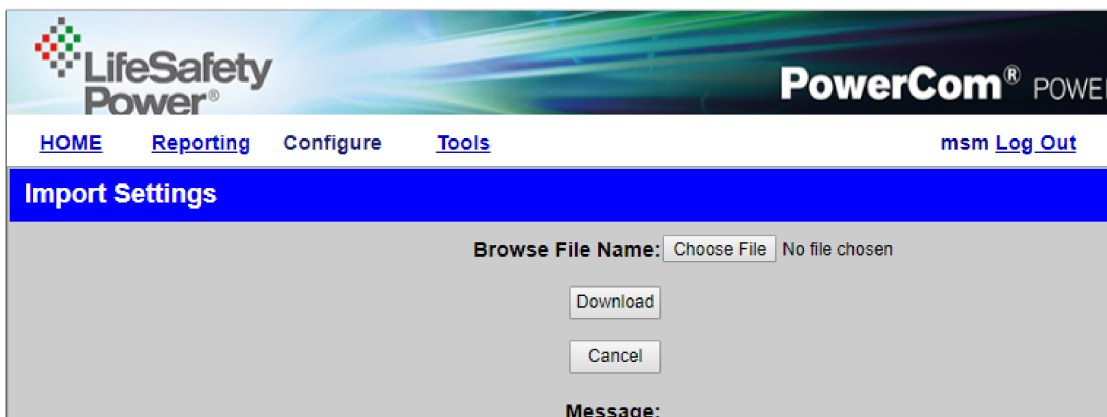


Figure 2.10 - Import Settings Page



2.2.18 User Activity Record

Clicking the "Show Activity Log" button will show a time and date-stamped log of all user activity.

2.2.19 Setting up the Parameters for the Email Reports

The Netlink can send email alerts based on selectable conditions. If enabled, when the selected conditions are met, the Netlink will send an email with an attached report file (in CSV format). To set up the email alert conditions, click the "Reporting" link in the top menu.

Select the Email Alert Triggers

The "Alert Enable On" block of the Reporting page contains checkboxes for the various conditions that can cause an email alert to be sent (See Figure 2.11).

System Fault	If checked, a System Fault condition on a connected device will generate an email alert.
AC Fault	If checked, an AC fault condition on a connected device will generate an email alert.
Battery Backup Time	If checked, an alert will be generated if the required standby time is not able to be met with the installed battery.
Current Sensor x	If checked, a current outside the range set for the selected Current Sensor will generate an email alert.
External Temperature	If checked, an external temperature outside of the range set will generate an email alert. (NL4/NLX Only)
Event1	If checked, a valid input on the Event1 Input will generate an email alert.
FAI Active	If checked, an active FAI Input on a connected device will cause an email alert.
Battery End of Life	If checked, an email alert will be sent when the Battery Runtime of the connected device reaches the "Rated Battery Life" setting on the Configure page. When a new battery is installed, the "Reset Timer for New Battery Installation" box on the Programming page should be set to reset the Battery Runtime counter.
Battery Condition	An email alert will be sent when the battery charge is less than 20% (one yellow bar on the "Bat. Condition" display on the power supply page).
ADC1 Reading	If checked, a voltage outside the range set for ADC1 will generate an email report.
Service Reminder	An email alert will be sent when the "Next Service Due" date and time on the Configure page are reached.
Device Detect	An email alert will be sent when a device (FPO, M8) is connected or disconnected from the Netlink board. This will notify the email recipient if the Netlink loses communication with a connected device.

After setting the email alert triggers, click the "Submit" button at the bottom of the "Alert Enable On" section for the settings to take effect.

Select the Occurrences to Report

The "Select Occurrences to Report" block of the Reporting page allows the setting of the number of history events to be included in the report file attached to the alert email (See Figure 2.11). The Netlink records a snapshot of device parameters at the time period selected on the Configure page. Up to 1000 history events can be recorded. The user can enter between 1 (the latest event only), up to 1000 (for all events). After entering the number of history events to email, click the "Submit" button to save this setting.

Select the Devices and Parameters to Report

The bottom section of the Reporting page contains the devices and parameters selection area (See Figure 2.11). Any connected devices will show here, along with a section for the Netlink itself.


The Netlink and each device also have selectable parameters listed below their headings. Checking these parameters will add them to the report attached to the email alert. These are the same parameters as seen on the Home page.

Available Netlink parameters include: enclosure temperature, external temperature, current sensor readings, the ADC1 reading, and the Event Status (these may appear as the labels set on the Configure page).

Available FPO parameters include: Model Number, System Fault Status, AC Fault Status, FAI Status, FAI Latch Status, FPO Output Voltage, Battery Voltage, Battery Charge Current, Total Power-up time, Battery Installed time, AC Fault Total, System Fault Total, Battery State Of Charge, Battery Runtime Test Total, Battery Runtime Test Failed Total, Required Standby, and Actual Standby.

M8 parameters are set on the M8's configure page (NL4/NLX only - see the M8 Manual for more information).

After setting the devices and parameters to be reported, be sure to click the "Submit" button for each device.



REMOTE REPORTING
LSP

SYSTEM MANAGER POWERCOM®

HOME Reporting Configure Tools
admin [Log Out](#)
Firmware: 9.32

Client ID

SITE ID

 Date Time

Alert Enable On

System Fault

Event1

Battery End of Life

Service Reminder

AC Fault

FAI Active

Battery Condition

Device Detect

Battery Backup Time

ADC1Reading

External Temperature

CurrentSense1

Test

Input AC Voltage

Select Occurrences to Report

select: Occurrence

NL4 Report

Enclosure Temperature

Event1

Control 1

Control 2

ADC1Reading

External Temperature

CurrentSense1

Test

FP1 Report

FP2 Report

Model Number
 System Fault Status
 AC Fault Status
 FAI Status
 FAI Latch Status
 AC Voltage
 Output Voltage
 Battery Voltage
 Battery Charge Current
 Output Current
 Total Power-up Time
 Battery Installed Time
 AC Fault Total
 System Fault Total
 Battery State of Charge
 Battery Runtime Test Total
 Bat Runtime Test Failed Total
 Required Standby
 Actual Standby

Model Number
 System Fault Status
 AC Fault Status
 FAI Status
 FAI Latch Status
 AC Voltage
 Output Voltage
 Battery Voltage
 Battery Charge Current
 Output Current
 Total Power-up Time
 Battery Installed Time
 AC Fault Total
 System Fault Total
 Battery State of Charge
 Battery Runtime Test Total
 Bat Runtime Test Failed Total
 Required Standby
 Actual Standby

Figure 2.11 - Typical Reporting Page

Section 3 – Using the Network Module

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

⚠ Unless otherwise specified, all screens shown are of the NL4. NL2 and NLX screens are similar, with changes as noted in the text.

3.1 Viewing System Parameters on the Netlink Home Page

The Home page contains all of the real-time parameters monitored directly by the Netlink as well as status of the connected devices. The Home page is broken into several sections as follows.

The screenshot displays the Netlink Home Page interface. At the top, there is a navigation bar with 'HOME', 'Reporting', 'Configure', and 'Tools' menus, along with 'admin Log Out' and 'Firmware: 9.32'. The main content area is divided into several sections:

- Client Information:** Client ID: LifeSafety Power, Site ID: FPO75-250-B100M8NL4E2, Date: Fri Jun 12 2020, Time: 11:36:23.
- System Parameters:**
 - Enclosure Temperature: 40.90 °C
 - External Temperature: 26.73 °C
 - CurrentSense1: -0.09 Amp
 - Test: -0.09 Amp
 - ADC1Reading: 12.34 VDC
 - Event1: Inactive
 - Service Due: No
 - SPI Connections: 1, 2, 3, 4 (all green)
- View/Export past 1 point(s) history** (View Data button)
- Fault Data Only** (checkbox)
- Device On/Off Control:**
 - Control 1: ON OFF (Status: Off)
 - Control 2: ON OFF (Status: Off)
 - Temperature: °F °C (radio buttons)
- Device Status:** Normal (green), Trouble (yellow), Service (blue), Fire Alarm (red).
- Device 1:** FP-1, Model: FPO250, Voltage: 12.46 VDC, Status: Normal (green).
- Device 2:** FP-2, Model: FPO75, Voltage: 24.63 VDC, Status: Service (blue).
- Device 3:** M8-1, Model: M8, Status: Normal (green).
- Device 4:** (Empty)

Figure 3.1 - Typical NL2/NL4 Home Page
See Figure 2.4 for NLX Home Page

3.1.1 Basic Site Information

The top portion of the Netlink Home page lists the Client ID and Site ID (as programmed on the Configure page) as well as the system time and date (Figure 3.1). The Site ID field will be green if there are no faults or service alerts detected. This field will turn yellow on any fault condition or blue on any service alert conditions.

3.1.2 Network Module Data, & History and Control Sections

Below the Basic Site Information are the parameters and settings related to the Netlink board and the Web Interface itself (See Figure 3.1).

Enclosure Temperature	This is the temperature of the Netlink board. This temperature sensor is installed on the Netlink's PC board.
External Temperature (NL4/NLX only)	If an external temperature sensor is connected to J18, this temperature display will display the external sensor's temperature.
Current Sensor Measurements	These will appear as the labels you set for the Current Sensors on the Configure page. These measurements are shown as a positive or negative current in Amps DC. A positive current measurement indicates current flow from the longer red lead of the current sensor to the shorter orange lead of the current sensor. If current is being displayed in the opposite polarity than expected, swap the short and long leads. See section 1.3.4 for more information on the current sensor.
ADC Voltage Measurement	This is the voltage measured by the on-board Analog-to-Digital converter (ADC) and will appear as the label you set for the ADC input on the Configure page. This measurement is shown as a positive or negative voltage in Volts DC.
Event1 Indicator	This field shows the status of the Event1 input. It will appear as the label set for the Event1 input on the configure page. This field will show "Active" on a yellow background or "Inactive" on a green background to indicate the status of the Event1 input.
Service Due	This field will display "Yes" when the "Next Service Due" date programmed on the Configure page has been reached and will display "No" before the due date. If the "Service Due" checkbox is enabled on the Reporting page, the color of the "Service Due" field will be blue if service is required or green if not required.
SPI / RS485 Connection Status	These blocks show the connection status of each SPI connection. NLX boards will also show the status of RS485 devices. Green indicates the device is connected. Gray indicates no device is connected.
View/Export History	The Netlink saves a snapshot of data at the programmed interval. These snapshots can be reviewed by entering the number of events to view or export then clicking the View Data button. To view only the detected fault data, check the Fault Data Only box before clicking View Data. There are up to 1000 events available for review. To save the data, click the Export to CSV File button. Click the Return button at the top to return to the home page.
Device On/Off Control	These two pairs of radio buttons select the state of the two Control Outputs of the Netlink board. After changing the radio button, it could take up to 10 seconds for the status to change. The labels entered for these outputs on the Configure page appear below the radio buttons.
Temperature	This changes the display of the Netlink temperature between Celsius and Fahrenheit on the browser display. It could take up to 10 seconds for the change to take effect.

3.1.3 Connected Devices Section

The bottom of the home page shows the devices connected to the Device connectors of the Netlink with a SPI cable. On the NL2 and NL4, each device will display a photo of the device and the model number. The NLX will not show the photo (See figure 2.4.2). The Device ID is a unique number given by the Netlink to each device. The "Status" indicator shows the current status of the device. Green indicates a normal state, yellow indicates a fault, and blue indicates a service item. A fire indicator shows that an FAI request has been received by the device. Power supplies will also display the measured output voltage. To access the page for a device, click either the photo of the device or the model number. See Section 3.2 of this manual for more information on connected devices.



3.2 Accessing and Programming Connected Devices

When devices are connected to the Netlink, detailed information relating to these devices may be viewed and various parameters can be programmed through the Netlink's interface. Note that programming these parameters changes the operation of the device itself. To access the page for a device, click on the device in the Netlink Connected Devices section of the home page. (See bottom of Figure 3.1).

3.2.1 Power Supplies

The Power Supply page (Figure 3.2) contains the same Client ID, Site ID, Time, and Date information as the Home page of the Netlink; below that are five main sections.

3.2.1.1 Power Supply Parameters & History

The section at the top left of the screen will show the available parameters of the Power Supply.

The screenshot displays the POWERCOM SYSTEM MANAGER interface for a power supply device. The top navigation bar includes 'HOME', 'Reporting', 'Configure', and 'Tools', along with 'msm Log Out' and 'Firmware: 9.50'. The main content area is divided into several sections:

- Client Information:** Client ID: LifeSafety Power, SITE ID: FPO75-250-B100M8NL4E2, Date: Tue Mar 16 2021, Time: 14:19:00.
- Device ID:** FP-1, G2 FPO150, Ver:1.2.
- Power System Monitoring:**
 - Output Reset Delay: 5 Sec (Reset Output button)
 - Output Voltage: 12.48 VDC
 - Output Current: 0.33 A
 - AC Input Voltage: 130.35 V
 - AC Fault Status: No
 - System Fault Status: Yes
 - Battery Voltage: 12.99 VDC
 - Battery Chg Current: 0.31 Amp
 - FAI Status: Inactive
 - FAI Latch: Inactive
- System History:**
 - AC Fault Count: 0
 - System Fault Count: 17
 - Battery Installed Time: 0 Hours
 - Battery Tests Performed: 1
 - Battery Tests Failed: 1
 - System Installed Date: 2019/09/30
 - Total Power-up Time: 2278 Hours
- Battery Status Monitoring:**
 - Charge State: 65%
 - Battery Status: Charging
 - Required Standby: 0.00 Hours
 - Actual Standby: 0.00 Hours (Clear Result button)
 - Replace Battery By: 2021/03/16
- Battery Test:**
 - Schedule Test: YYYY MM DD hh mm AM PM
 - Repeat Test Interval: 0 Days
 - Start Manual Test button
- Email Report:** Y ● N ○

System Fault Details: External Fault

Figure 3.2 - Typical Power Supply Page (top portion)

3.2.1.2 Power System Monitoring & System History

Any power supply connected to a device input will provide the following parameters (Figure 3.2):

Device ID	This is the identifying label for the device. The FP-1 through FP-12 label is given by the Netlink and is not user settable. Also displayed is the model number of the power supply.
Output Voltage	This is the measured system output voltage (in Volts DC) of the supply, as measured directly out of the power supply engine within the power supply board. This voltage is distributed to the outputs of the supply.
Output Current	If the power supply has a built-in output current sensor, this field will display the total output current from the power supply.
AC Input Voltage	If the power supply has built-in AC voltage monitoring capability, this field will display the measured AC input voltage.
AC Fault Status	Indicates whether the supply is reporting a low or missing AC voltage. "No" on a green background indicates that no problem is being reported. "Yes" on a yellow background indicates an AC Fault condition. See the power supply manual to troubleshoot.
System Fault Status	Indicates whether the supply is reporting a System Fault condition. "No" on a green background indicates that no problem is being reported. "Yes" on a yellow background indicates a System Fault condition. See the power supply manual to troubleshoot.
Battery Voltage	Indicates the measured battery voltage in Volts DC. This field only indicates the terminal voltage of the battery set and does not necessarily indicate the condition or state of charge of the battery set.
Battery Chg Current	This field indicates the charge current being applied to the battery set (in Amps DC). This field only represents charge into the battery and does not show battery discharge current. Use the Netlink current sensor to measure both charge and discharge current (See Section 1.3.4).
FAI Status	This field indicates the status of the FAI Input of the supply. "Inactive" on a green background indicates that the FAI input is not activated. "Active" on a red background indicates that the FAI input is activated.
FAI Latch	This field indicates the status of the FAI Latch Input of the supply. If the Latch Input is being used and the FAI Input is active and latched, this field will show "Active" on a red background. If FAI Latch is not being used this field will show "Inactive" on a green background.
System Fault Detail	If a system fault is present, this area will give basic details on the cause of the fault, causes include Earth Ground Fault, Output Short, Output Short Latched, Battery Fault, External Fault, Output Over Load, Output Over Load Latched, Power Supply Fault, Output Voltage Fault.
AC Fault Count	This field shows the number of AC Faults detected since the last fault counter reset. When new, a supply may contain a random number in this field and the counter should be reset (in the Power Supply Settings section) before being used.
System Fault Count	This field shows the number of System Faults detected since the last reset of the fault counter. A supply may contain random data in this field when new and the counter should be reset (in the Power Supply Settings section) before being used.
Battery Installed Time	This field displays the battery runtime in hours since the last reset of the battery runtime counter. The battery runtime field may display random data on a new supply and should be reset on the Power Supply Settings section before use. This Runtime is independent of the Battery End-of-Life / Bat. Replacement Date.
Batt Tests Performed	The total number of automated battery tests performed (See Section 3.2.1.4)
Battery Tests Failed	The number of failed battery tests that have occurred (See Section 3.2.1.4)
System Installed Date	This field allows the installer to enter the initial installation date for the power supply as a service record.
Total Power-up Time	This field displays the total power-up time in hours for the supply. This value cannot be reset. It is normal for several hours to show in this field on a new supply, due to burn-in testing at the factory.



3.2.1.3 Battery Status

The section at the left of the middle section of the screen shows the current battery status. (Figure 3.3) This section will only be enabled if a current sensor built into the power supply or is connected in line with the battery (See Section 1.3.4).

Battery State of Charge

If enabled, a bar graph will display indicating the estimated condition of the battery connected to the supply. Once the battery is connected and the Netlink detects current flow, an enable/disable button will appear at the bottom of the Battery Status area. If the button is enabled, a four segment bar graph display will appear with one end labeled "Full". Note that it can take several minutes for an accurate indication of battery condition. The various possible states of the Bat Condition bar graph display are as follows:

4 Green Bars	Battery is at 80% to 100% charge
3 Green Bars	Battery is at 60% to 79% charge
2 Green Bars	Battery is at 40% to 59% charge
1 Green Bar	Battery is at 20% to 39% charge
1 Yellow Bar	Battery is at 6% to 19% charge (email alert will be sent, if enabled)
1 Red Bar	Battery is at 5% or lower charge

When the battery discharges to one yellow bar, an email alert will be sent if the Battery Condition checkbox on the Reporting page is enabled.

Note that if no current sensor is available, the Battery Condition display not appear.

Battery Status

The Status field gives the state of the battery. Possible states are "Charging", "Charged", or "Discharging".

Required Standby

The required standby time as set set in the Battery Settings section (See section 3.2.1.6)

Actual Standby

The measured battery standby time as recorded during the Battery Test (See section 3.2.1.4)

Replace Battery By

This displays the scheduled battery replacement date, which is calculated based on the current date and the "Rated Battery Life" setting entered on the Configure page. If the battery is within its calculated life, the field will be green. Once the due date has passed, this field will change to blue and an email alert will be sent if enabled on the Reporting page.

Clear Result Button

This button will clear the battery standby test results (Figure 3.3).

The screenshot shows a 'Battery Status Monitoring' window with the following fields and values:

- Charge State:** A bar graph with four green segments followed by the text 'Full'.
- Battery Status:** A dropdown menu showing 'Charging'.
- Required Standby:** A text input field containing '0.00' followed by the label 'Hours'.
- Actual Standby:** A text input field containing '0.00' followed by the label 'Hours'.
- Replace Battery By:** A text input field containing '2024/03/25' with a green background.
- Clear Result:** A blue button with white text.

Figure 3.3 - Clear Results Button (Power Supply main screen)

3.2.1.4 Battery Test

The Battery Test section allows the user to test the actual run-time of a system with the installed battery set. (Figure 3.2). This test may be run manually or may be scheduled for a one-time or repeating automated test. If email is configured on the Netlink, a report of the results can be emailed.

⚠ WARNING: *During the Battery Run Time Test, the system battery will be discharged to 85% of the nominal voltage, leaving essentially 0% battery capacity should AC power be interrupted during or immediately after the test. Appropriate measures MUST be taken to ensure the security/safety of the building and its occupants during the Battery Run Time Test.*

To run a test manually

- Ensure a battery set is connected to the power supply and that a battery current sensor is available. See Section 1.3.4 for more information on the Current Sensor.
- Select whether or not you want a report emailed at the end of the test by selecting "Y" or "N" in the "Battery Test" header. Email parameters must be properly set up on the Configure page of the Netlink, or this selection will be unavailable.
- Click the "Start Manual Test" button.
- While the test is in progress, there will be two messages on the page - one indicating "Battery discharging..." in the Battery Test section, and one indicating "Caution Battery test in progress. System powered by battery" in the Power System Monitoring section (See Figure 3.5)
- At the conclusion of the test, the measured battery runtime and last test date will be displayed in the Battery Test section (See Figure 3.6). The results will also be emailed if emailing is enabled.

To Schedule a Test

- Ensure a battery set is connected to the power supply and that a Current Sensor is available. See Section 1.3.4 for more information on the Current Sensor. The "Enable/Disable" button in the Battery Status section must be ENABLED.
- Select whether or not you want a report emailed at the end of the test by selecting "Y" or "N" in the "Battery Test" header. Email parameters must be properly set up on the Configure page of the Netlink, or this selection will be unavailable.
- Enter the Year, Month, Day, Hour, Minute, and am/pm for when you want the test to begin.
- Enter the test interval (in days) for repeating the battery test. For example, to run the test yearly, enter 365. Set to 0 for a one-time test.
- Click the "Schedule Test" Button - the Scheduled Start Time will appear.
- At the conclusion of the test, the measured battery runtime and last test date will be displayed in the Battery Test section (See Figure 3.6). The results will also be emailed if enabled.
- If the tested battery standby time is less than the Required Battery Standby entered in the Battery Settings section, an alert will be generated. (See section 3.2.1.5)

3.2.1.5 Battery Settings

The Battery Settings block is under the Battery Test block on the power supply page (See Figure 3.7). The available settings are as follows:

Required Battery Runtime	Enter the required standby time for the application. This number is only used for comparison to the measured standby time after the battery test.
Rated Battery Life	Enter the rated battery life or desired replacement period in years. This is used by the Netlink to calculate the Battery End-of-Life alert time. Note: The current time and date MUST be set BEFORE setting the rated battery life for proper Battery End-of-Life date calculation.
Rated Capacity	Enter the battery capacity of the battery connected to the power supply. This rating is used by the Netlink to approximate how much capacity is remaining in the battery (if a battery current sensor is available).
Battery Type	This field allows the NetLink to adjust the battery test as appropriate for the battery type selected.

⚠ Note: After setting the battery information, click the "Submit" button for the changes to take effect.

The screenshot displays the LSP SYSTEM MANAGER POWERCOM interface. At the top, it shows navigation links (HOME, Reporting, Configure, Tools), user information (admin Log Out), and firmware version (9.32). The main area is divided into several sections:

- Client Information:** Client ID: LifeSafety Power, SITE ID: FPO75-250-B100M8NL4E2, Date: Fri Jun 12 2020, Time: 12:00:54.
- Device ID:** FP-1, FPO250, Ver:3.4.
- Power System Monitoring:**
 - Output Voltage: 13.48 VDC
 - AC Fault Status: No (with a red **Caution** label: Battery test in progress.)
 - System Fault Status: No (with a red label: System powered by battery.)
 - Battery Voltage: 13.54 VDC
 - Battery Chg Current: 0.00 Amp
 - FAI Status: Inactive
 - FAI Latch: Inactive
- System History:**
 - AC Fault Count: 88
 - System Fault Count: 183
 - Battery Installed Time: 1864 Hours
 - Battery Tests Performed: 1
 - Battery Tests Failed: 0
 - System Installed Date: 2016/01/12
 - Total Power-up Time: 37066 Hours
- Battery Status Monitoring:**
 - Charge State: Full (indicated by a green bar)
 - Battery Status: Discharging (indicated by a yellow bar)
 - Required Standby: 0.00 Hours
 - Actual Standby: 0.00 Hours (with a Clear Result button)
 - Replace Battery By: 2024/03/25
- Battery Test:**
 - Email Report: Y ● N ●
 - Battery discharging... (with a Stop Test button)

Figure 3.5 - Battery Test in Progress

The screenshot shows the Battery Test configuration and results screen. It includes the following elements:

- Battery Test** and **Email Report** (Y ● N ●) headers.
- Schedule Test** button with a date and time picker (YYYY, MM, DD, hh, mm, AM, PM).
- Repeat Test Interval:** 0 Days.
- Start Manual Test** button.
- Last Test Date:** 2020/06/12.
- Battery Run Time:** 00:00:55.

Figure 3.6 - Battery Test Results

3.2.1.6 Power Supply Settings

The power supply section shows the programmable settings for the power supply.

The following parameters are available:

Battery Charge Selector	Select the proper battery size range for optimal charging rate.
AC Fault Reporting Delay	Select the desired delay for reporting an AC fault in hours, minutes, and seconds. Note that this delay will affect the AC Fault LED and relay as well as email reporting. Check your local codes regarding fault delays.
System Fault Reporting Delay	Select the desired delay for reporting System fault conditions in hours, minutes, and seconds. Note that this delay will affect the Sys Fault LED and relay as well as email reporting. This setting should be used with caution, as intermittent faults may be masked by a fault delay. System Fault delays should typically be kept to 5 seconds or less to prevent critical faults from being masked. Check your local codes regarding fault delays.
Reset Timer for New Battery Installation	Select this option after installing a new battery set in order to reset the battery replacement alert counter. The Netlink uses this counter along with the user-entered "Battery Rated Life" to calculate the next battery replacement date. See section 3.2.1.5.
Enter Installation Date	Enter the date the system was initially installed. This value is only for the user's information and is not used by the Netlink.
Reset AC and System Fault Counts	Selecting this option will reset the AC and System Fault counters. This is typically done after testing or servicing the system.
Input AC Voltage Lower Limit	Programmable lower limit for reporting low AC voltage
Input AC Voltage Upper Limit	Programmable upper limit for reporting low AC voltage
Location	User programmable field to indicate the location of the power supply board when remote from the NLX via RS485. This helps to identify which enclosure the power supply board is located in for Distributed Power Monitoring (DPM) applications

After entering the values or selecting the appropriate options, click the "Apply" button at the bottom of the Power Supply Settings area. These settings will take effect immediately without rebooting the Netlink.

3.2.1.7 Input AC Volt Meter Calibration

The Input AC Volt Meter Calibration block will appear at the bottom of the power supply page if the power supply does has AC voltage measuring capability. To calibrate the measurement follow the on-screen instructions.



Power Supply Settings	Battery Settings
<input type="checkbox"/> Battery Charge Selector <div style="border: 1px solid #ccc; padding: 2px; display: inline-block;">18 to >80 Ah Battery ▾</div>	Required Battery Runtime: <input type="text" value="0.00"/> Hours
<input type="checkbox"/> AC Fault Reporting Delay In <div style="display: flex; gap: 10px;"> <input type="text" value="0"/> Hr <input type="text" value="0"/> Min <input type="text" value="0"/> Sec </div>	Discharge Cutoff Voltage: <input type="text" value="8.6"/> V
<input type="checkbox"/> System Fault Reporting Delay In <div style="display: flex; gap: 10px;"> <input type="text" value="0"/> Hr <input type="text" value="0"/> Min <input type="text" value="0"/> Sec </div>	Rated Battery Life: <input type="text" value="0.00"/> Years
<input type="checkbox"/> Reset Timer for New Battery Installation	Rated Capacity: <input type="text" value="0.00"/> A-Hr
<input type="checkbox"/> Enter Installation Date (mm/dd/yyyy) <div style="display: flex; gap: 10px;"> <input type="text" value="4"/> ▾ / <input type="text" value="8"/> ▾ / <input type="text" value="2020"/> ▾ </div>	Battery Type: <input type="text" value="SLA"/>
<input type="checkbox"/> Reset AC and System Fault Counts	<p>Required Battery Runtime: Only used for comparison to the battery test results and does not affect any operation of the NL/FPO.</p> <p>Discharge Cutoff Voltage: The voltage at which the discharging battery will be disconnected from the load in order to prevent the battery from being damaged due to over-discharge.</p> <p>Rated Battery Life and Rated Capacity: Allow the software to calculate the battery replacement date and create data for battery SoC meter.</p> <p>Battery Type: is the type of battery you selected via the onboard battery type select jumper. Make sure the displayed battery type SLA (Sealed Lead Acid) or LFP (Lithium Iron Phosphate) matches the batteries connected to the power supply/charger, or battery damage may occur.</p>
<input type="checkbox"/> Input AC Voltage Lower Limit: <input type="text" value="0.00"/> V	
<input type="checkbox"/> Input AC Voltage Upper Limit: <input type="text" value="260.00"/> V	
<input type="checkbox"/> Location: <input type="text" value="Location1"/>	
<div style="display: flex; justify-content: space-around; gap: 20px;"> Apply Export Import </div>	
Input AC Volt Meter Calibration	
<p>Step 1: Use an accurate AC volt meter to measure the voltage between LINE and NEUTRAL</p>	
<p>Step 2: Enter the measured reading in V here <input type="text" value="120.20"/></p>	
<p>Step 3: Click the calibration button here Calibrate</p>	

Figure 3.7 - Typical Power Supply Page (bottom portion - NLX Shown)

3.3 Using the Tools Page

Clicking the Tools link at the top of the display will bring up the Tools page (See Figure 3.8). This page allows upgrading of the firmware and rebooting the Netlink board.

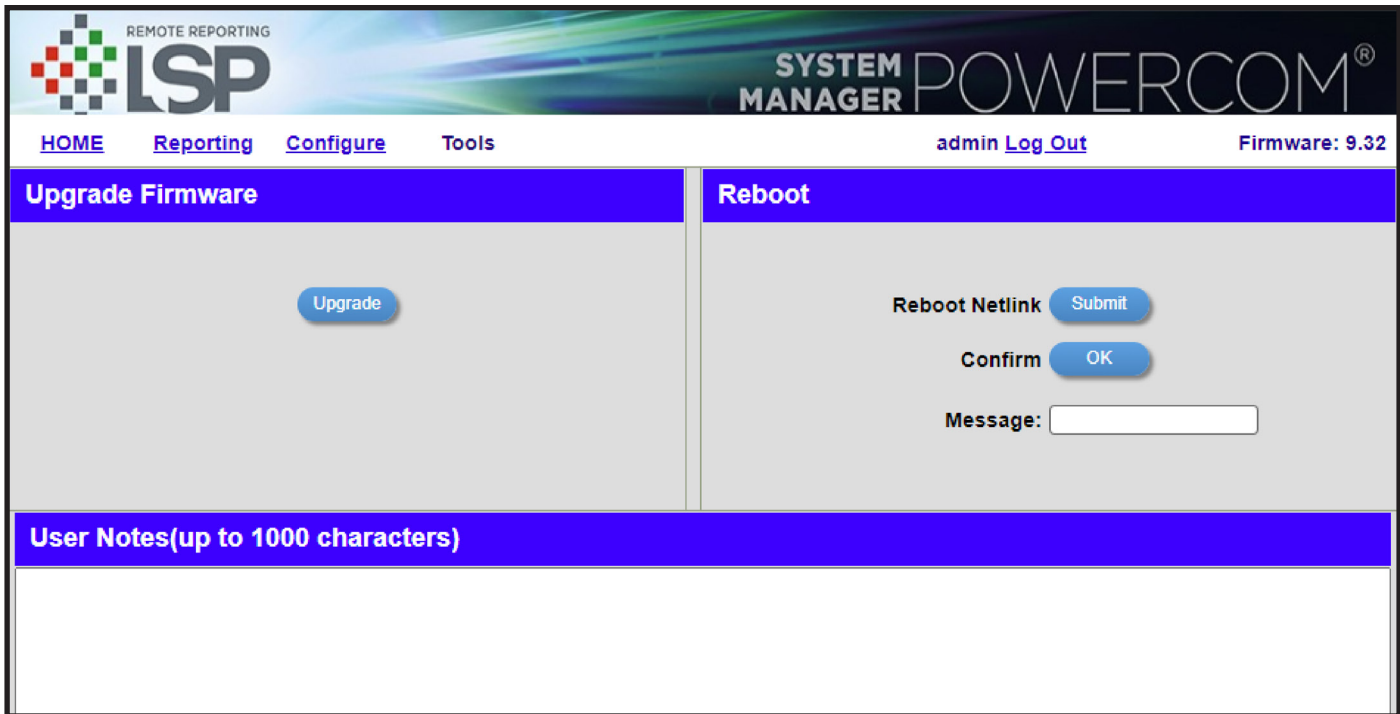


Figure 3.8 - The Tools Page

Upgrading Firmware

The Upgrade Firmware section is at the top left of the Tools page (See Figure 3.8). To upgrade the firmware, first ensure that the new firmware file is available on your computer, then click the "Upgrade" button and the Upgrade window will appear.

Click the "Browse..." button and locate the new firmware file with the file extension ".bin" on your computer. Once the file is selected, click the "Download" button to temporarily download the new firmware into the RAM of the Netlink board. This process will take from 30 seconds to three minutes depending on network speed and traffic, and the message box will display "Download...". Once the firmware is loaded into the Netlink's RAM, it can then be burned to the processor in the Netlink. Verify the correct file name and click the "Confirm" button to confirm the upgrade. Next click the "Burn" button to begin burning the firmware to the Netlink's processor.

⚠ Note: This process may take up to 12 minutes - **DO NOT REMOVE POWER TO THE NETLINK DURING THIS PROCESS** or the Netlink will be rendered nonfunctional.

Once the update is complete, a message will appear in the message box indicating "Update Finished". The Netlink must be rebooted in order to start the new firmware.

⚠ Note: The browser history / cache should be cleared after performing the firmware upgrade and before accessing the Netlink again to prevent any cached pages from giving outdated information.

Rebooting the Netlink Board

The "Reboot" section is on the top right of the Tools page (See Figure 3.8). To reboot the Netlink, click the "Submit" button. Once the "Confirm Reboot" message appears in the Message window, click the OK button to Confirm the reboot. The rebooting process will take approximately 1-2 minutes, during which time you will lose communication with the Netlink. Communication will be restored once the blue (yellow on Gen 1) LED lights steady.

User Notes

This section allows the user to enter notes such as service history, installation specifics, reminders, etc. Up to 1000 characters may be entered.



3.4 Understanding The Email Report

The report file sent by email by the Netlink is sent as an unformatted .CSV file. Many programs, such as Microsoft Excel, will import a .CSV file to allow viewing of the data (See Figure 3.9). Note that the fields included will vary depending on the specific system and which parameters are selected on the Reporting page.

The example in Figure 3.9 has been reformatted for better readability in Excel. The top three rows of data give the following basic information:

Site ID	BGO Chicago Office - This is set in the "Site ID" setting on the Configure Page of the Netlink
Report Trigger	Report Period - this is a periodic status report. The frequency of the status reports is set by the "Send Period" setting in the Email Settings section of the Configure page.
Service Due	No - The "Next Service Due" date set on the Configure page has not been reached.

Below the top three rows is data specific to the Netlink and any devices connected to it.

Device Name	This column shows which device the associated parameter belongs to. In this example, the devices are the Netlink and FP1.
Device Parameter	This column shows the available parameters which are being monitored. These parameters vary depending on the device(s) connected to the Netlink.
Date/Time Stamp	To the right of the Parameter column are columns with date/time stamps. These columns are the data, measured hourly at the dates and times listed. The number of columns displayed is set by the "Select Occurrences to Report" setting on the Reporting page.

	A	B	C	D	E	F	G
1	Site ID	BGO Chicago Office					
2							
3	Report trigger: report period						
4							
5	Service due	no					
6							
7	Device name	Device parameter	Wed Jul 10 2013 09:00:00	Wed Jul 10 2013 08:00:00	Wed Jul 10 2013 07:00:03	Wed Jul 10 2013 06:00:02	Wed Jul 10 2013 05:00:01
8							
9	Netlink	Cabinet internal temperature	87.83 Deg.F	87.83 Deg.F	87.83 Deg.F	94.74 Deg.F	96.46 Deg.F
10							
11	FP1	Model number	FPO250-200	FPO250-200	FPO250-200	FPO250-200	FPO250-200
12							
13	FP1	System fault status	No	No	No	No	No
14							
15	FP1	AC fault status	No	No	No	No	No
16							
17	FP1	FAI status	Active	Active	Active	Active	Active
18							
19	FP1	Output latching on FAI	Inactive	Inactive	Inactive	Inactive	Inactive
20							
21	FP1	Output voltage	12.46 Volts	12.46 Volts	12.46 Volts	12.46 Volts	12.46 Volts
22							
23	FP1	Battery voltage	13.84 Volts	13.81 Volts	13.81 Volts	13.78 Volts	13.81 Volts
24							
25	FP1	Battery charger current	0.00 Amps	-0.00 Amps	-0.00 Amps	-0.00 Amps	-0.00 Amps
26							
27	FP1	Total power-up time	12469 Hours	12468 Hours	12467 Hours	12466 Hours	12465 Hours
28							
29	FP1	Battery installed time	12263 Hours	12262 Hours	12261 Hours	12260 Hours	12259 Hours
30							
31	FP1	# of AC faults detected		133	133	133	133
32							
33	FP1	# of system faults detected		106	106	106	106

Figure 3.9 - Example Email Report CSV File

Appendix 1 – Software Agreement

LIFESAFETY POWER INC. SOFTWARE LICENSE AGREEMENT AND WARRANTY STATEMENT

NOTICE: PLEASE READ THIS DOCUMENT CAREFULLY. This Software License Agreement ("AGREEMENT") defines and governs use of LIFESAFETY POWER INC. Software and includes WARRANTY DISCLAIMERS. Your acceptance of this AGREEMENT is an acknowledgement, representation and warranty that you have the full right and authority to enter into, execute, and perform obligations under this AGREEMENT, or that you have the authority to enter into and execute this AGREEMENT as an Authorized Representative of a business entity or corporate entity and to bind that business entity or corporate entity to perform obligations under this AGREEMENT by your acceptance, acknowledgment and representation.

TERMS AND CONDITIONS

1. Definitions.

- (a) "Authorized Representative" refers to any person duly authorized by a business entity or corporate entity (i.e. a "legal entity") to enter into this AGREEMENT and to bind the legal entity to the terms and conditions herein.
- (b) "Recipient" refers to any individual or legal entity, entering into and executing this AGREEMENT for purposes of use of LIFESAFETY POWER INC. Software, where "use" is as defined by this AGREEMENT.
- (c) "Documentation" refers to any related explanatory written materials or files including, without limitation, any end-user manual, specifications or other written materials provided to Recipient for the Software.
- (d) "Facility" refers to any facility where LIFESAFETY POWER INC. Equipment is located and/or where the Software is installed or used under control of Recipient in conjunction with such Equipment.
- (e) "Software" refers to all the contents of files provided to Recipient by electronic download, on physical media (including EEPROM or ROM chips etc.) and/or any other method of distribution, disk(s), CD-ROM(s), DVD-ROM(s), or other media with which this AGREEMENT is provided, including, without limitation, fonts, graphics, user-interfaces, Upgrades, updates, additions to, and any copies of the foregoing, provided to Recipient by LIFESAFETY POWER INC.
- (f) "Upgrades" refers to new versions, updates, and revisions of the Software provided to Recipient by LIFESAFETY POWER INC.
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Appendix 2 – NS2 Board

The following pages cover the NS2 for use with the NL2 or NL4 NetLink module in FPA AC output systems.

A2.1 Mounting the NS2 Output Controller Accessory

Use the following procedure when mounting an NS2 Output Controller Accessory 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.

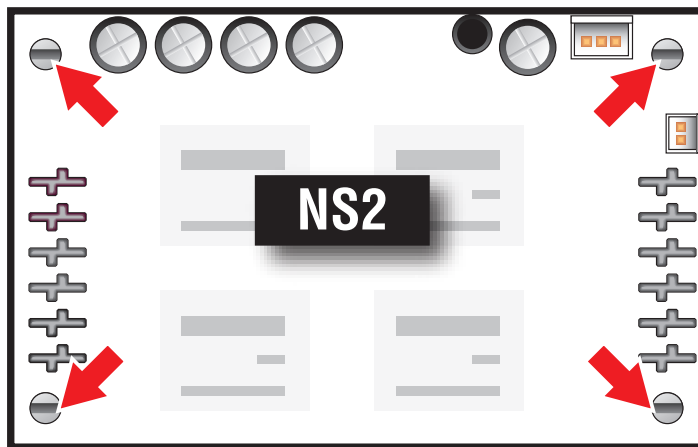
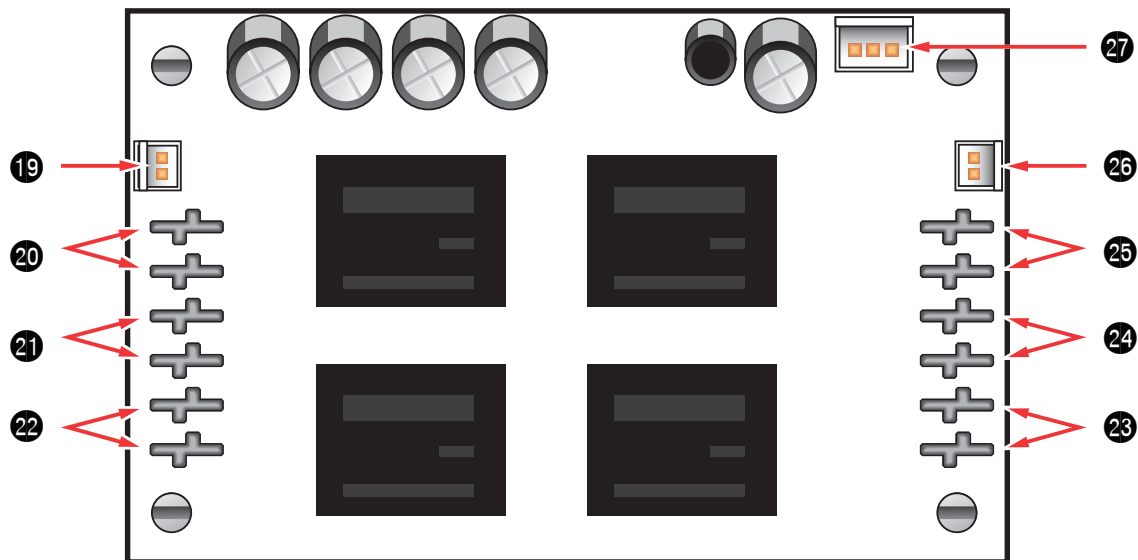


Figure A2.1



A2.2 NS2 Module Overview



19 NS2 - ADC Output (ADC1 & ADC2)

This connector provides voltage outputs for measurement by the Netlink board, indicating presence of voltage on SB1-1 and SB1-2. Using the supplied cable, this connects to the ADC Input of the Netlink board (J15). The voltages indicated are not accurate and are only for indication of presence of voltage. Place jumper J9 on the Netlink board ON when using this output.

20 NS2 - Buss Inputs - Power Source 1 (B1-1 & B2-1)

These faston connectors are the B1 and B2 power inputs to the NS2 for power source #1. Typically, in a LifeSafety Power FPA system, this would be the blue and orange wires from Transformer #1. The power return (brown wire in an FPA System) connects to the BR1 faston - See #20.

21 NS2 - Buss Inputs - Power Source 2 (B1-2 & B2-2)

These faston connectors are the B1 and B2 power inputs to the NS2 for power source #2. Typically, in a LifeSafety Power FPA system, this would be the blue and orange wires from Transformer #2. The power return (brown wire in an FPA System) connects to the BR2 faston - See #20.

22 NS2 - Buss Inputs - Power Returns (BR1 & BR 2)

These are the power returns for the Buss Inputs. See #18 and #19. Typically, in a LifeSafety Power FPA system, these would connect to the brown secondary wires of the transformers.

23 NS2 - Buss Outputs - Power Returns (SBR1 & SBR2)

These are the switched power returns out to the BR terminals of the A8 distribution boards in a LifeSafety Power FPA system.

24 NS2 - Buss Outputs - Power Source 2 (SB1-2 & SB2-2)

These are the switched B1 and B2 outputs from power source 2. When the control output #2 of the Netlink board is activated, power will be removed from these outputs. Typically, these are connected to the B1 and B2 inputs of the A8 distribution boards in a LifeSafety power FPA system. The BR of the A8 connects to the SBR2 faston - See #21.

25 NS2 - Buss Outputs - Power Source 1 (SB1-1 & SB2-1)

These are the switched B1 and B2 outputs from power source 1. When the control output #1 of the Netlink board is activated, power will be removed from these outputs. Typically, these are connected to the B1 and B2 inputs of the A8 distribution boards in a LifeSafety power FPA system. The BR of the A8 connects to the SBR1 faston - See #21.

26 NS2 - Control Inputs (J9)

This is the control input from the Netlink board, allowing control of the power to the outputs via the Netlink's web interface. Using the cable with two 2-pin plugs, connect between this connector and J10 on the Netlink board - See #13 in Section 1.2.

27 NS2 - Netlink Power Output (+12V-)

This is the power output for powering the Netlink board in an AC-only system. The NS2 converts AC power from the buss inputs to regulated DC power for the Netlink board. Using the supplied cable, connect this connector to the V+/V- input of the Netlink.

A2.3 Wiring the NS2

1.3.8 NetLink Power Connection

In an AC system, power to the Netlink board MUST be supplied by an NS2 board, which is sold separately. The NS2 board converts the AC power from the low voltage transformer to DC voltage for powering the Netlink board. (Figure A2.2)

Use the cable with the three pin connector at one end and two faston connectors at the other end to make the connection. The three-pin connector plugs into the "+12-" connector (J1) on the NS2 board. The female fastons at the other end of the cable plug into the INPUT (V+ & V-) male fastons on the Netlink board. (Figure A2.2)

1.3.8 Connecting the ADC (Voltmeter) Input

When using an NS2 board with the Netlink, connect one end of the ADC cable to the Netlink's ADC input and the other end of the ADC cable to the ADC1/ADC2 connector on the NS2 board.

1.3.8 Wiring the Control Outputs

When using an NS2 board with the Netlink, connect one end of the Control Output cable to the Netlink's control output and the other end of the Control output cable to the NS2's Control Input (J9).

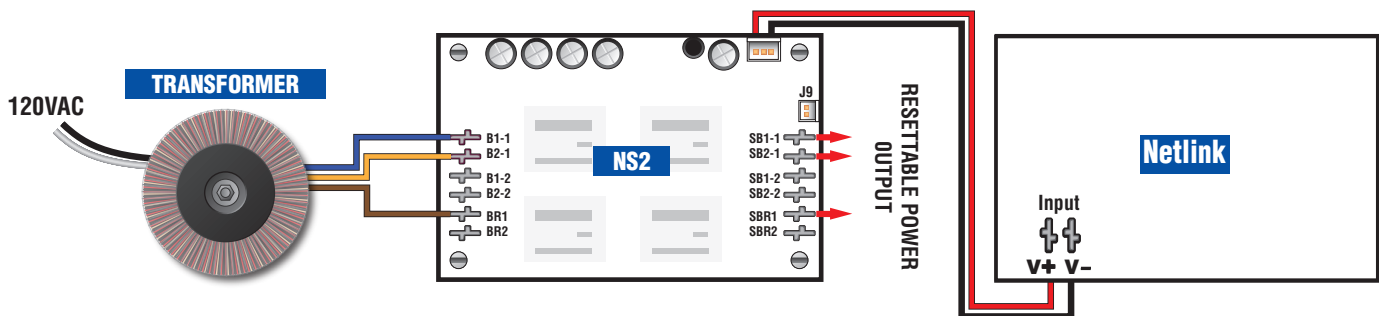


Figure A2.2 - Powering a Netlink in an AC System using an NS2 board



LifeSafety Power

10027 S 51st St, Suite 102
Phoenix, AZ 85044 USA

www.lifesafetypower.com

Phone (888) 577-2898

info1@lifesafetypower.com

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