

LifeSafety Power NetLink[®]

Network Communication Modules
Installation and Operation

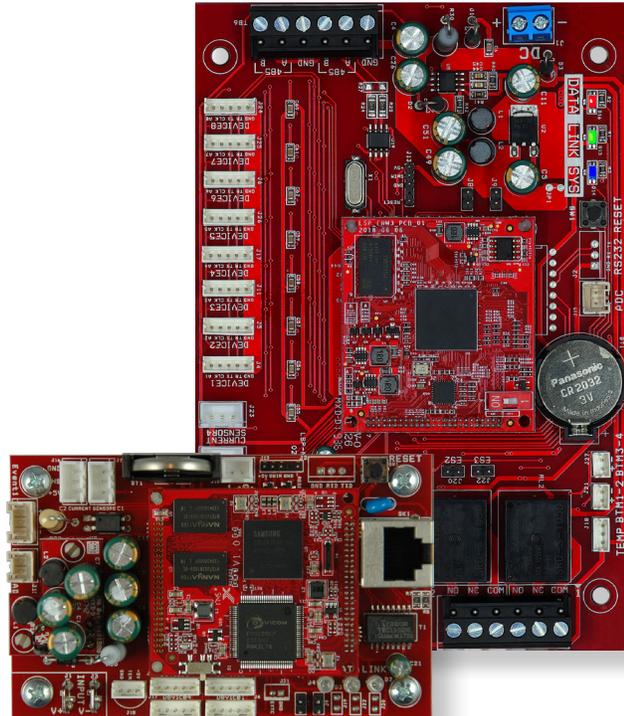


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LifeSafety Power[®]



FLEXPOWER[®]



LifeSafety Power | 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 9.82 (NLX Rev 0.82)

Older firmware revisions may not have all features described. See the latest firmware release notes at <https://www.lifesafetypower.com/en/support/downloads#onecms-tabs-cmp-item-NetLink-tab>

⚠ Resetting the NetLink

If the user name or password is unknown for 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 information 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after performing the firmware upgrade and before accessing the NetLink again to prevent any cached pages from giving outdated information.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® 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 managed output boards.

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, SD4, or SD16 managed output board, 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.

NetLink modules provide a voltmeter input, event input (for monitoring devices such as the enclosure tamper switch), and two or four current sensors. Internal temperature is also sensed with an included 6 foot external temperature probe for monitoring room temperature. The NL4 provides two outputs for controlling external equipment using LifeSafety Power's RB8 relay. The NLX provides two form C relays on-board for external control.

Specifications

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

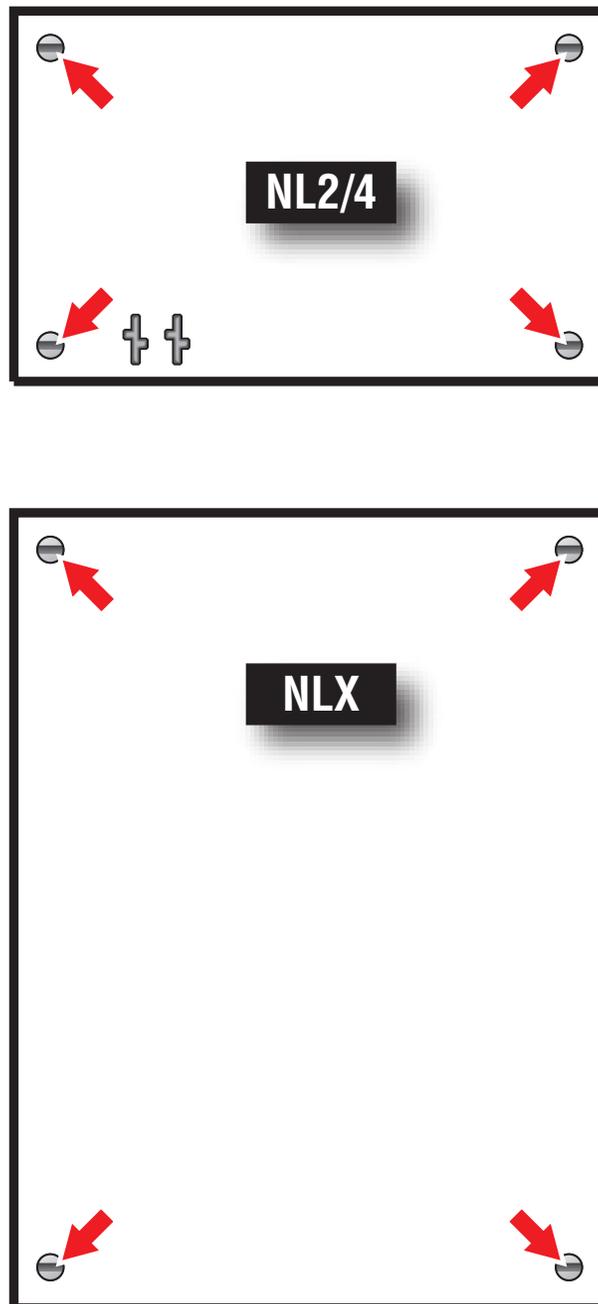
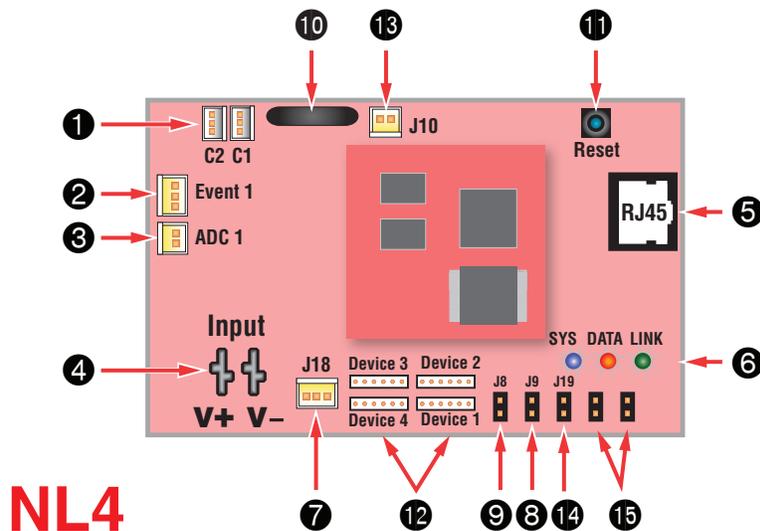


Figure 1.1

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 NL4 boards. Generation 2 can be identified by the red PCB color, while Generation 1 uses a green PCB. This manual covers Generation 2. Contact LSP for Generation 1 information.

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

These are the connectors for the current sensors. Only a NetLink current sensor should be plugged into this connector. The sensors have a range of +/-20A and are may be used to monitor current drawn by a device. See section 1.3.4

2 EventInput (J14)

This is the connector for the Event 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 [NL4])

This is the power input for the NetLink board. This input accepts 8 to 30VDC ONLY from any power supply. Note - The voltage input of the NetLink must be connected directly to the DC1 output or to the V+/V- fastons (if present) of the power supply.

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

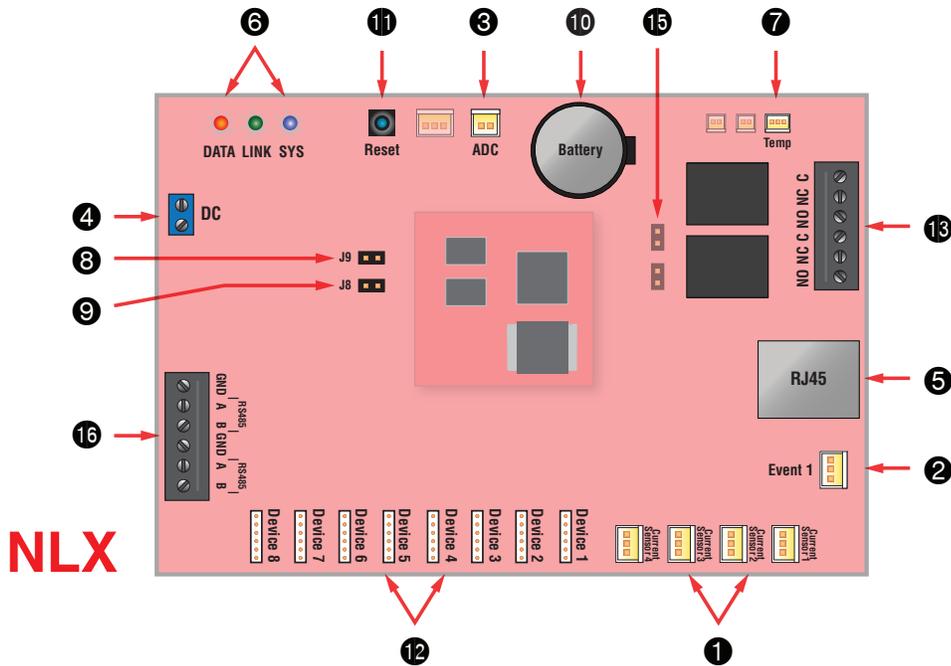
Blue (SYS) Lights when the NetLink is fully booted up and running. During the bootup process, this LED may flash on and off several times. The NetLink will not be able to be accessed until this LED lights steady. Older NetLink boards may have a Yellow SYS LED.

7 External Temperature Sensor

This connector is for the external temperature sensor. See section 1.3.6

8 No Use (J9)

This jumper is not currently used, leave this jumper OFF.



9 Event Input Invert Jumper (J8)

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

Jumper Position:

- OFF Event active when voltage is applied
- ON Event 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 it's connected devices through these Device serial port links. The NL4 has four ports to monitor up to four devices (maximum combination of two power supplies, three M8/SD4/SD16). The NLX has eight links for up to eight devices. See Section 1.3.3.

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

This connector is for the two control outputs. On the NL4, these outputs are open collector (transistor) low-current outputs for use with an RB8 Relay Board 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.

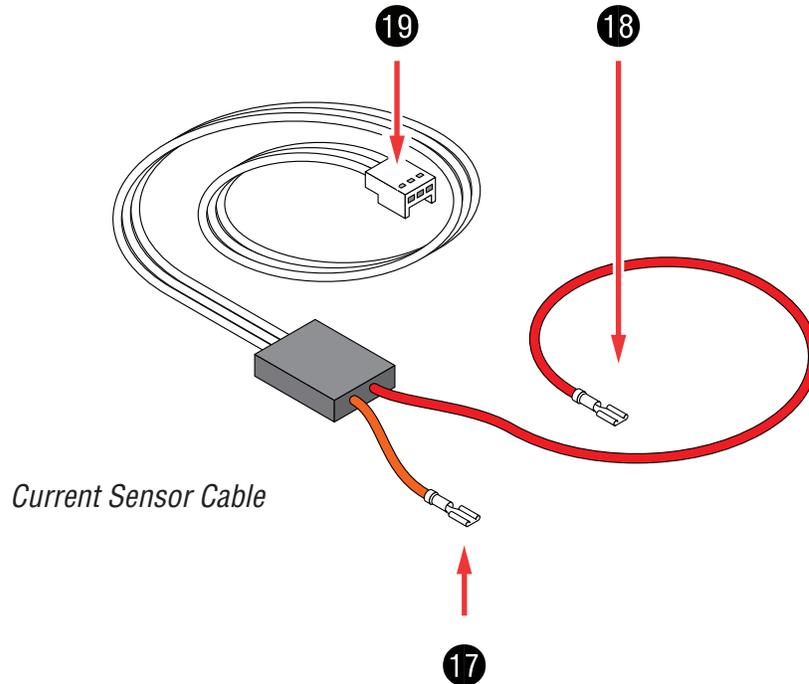
16 RS485 Port (NLX Only)

The RS485 port allows the connection of up to 16 additional devices to the NLX. The connected devices must be Generation 2 FPO or output modules with an RS485 connection. Some modules require an optional RS485 module to be 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). 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). See section 1.3.4

19 Current Sensor - Data Connector

This connector connects to the NetLink board's C1-C4 input 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

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)

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 Local Devices 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.

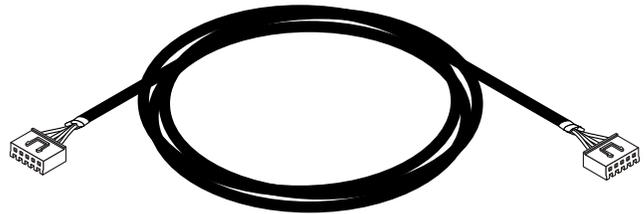


Figure 1.3 - The SPI Cable

⚠ Note: The NL4 can accommodate any combination of a maximum of two power supply boards and three M8, SD4, or SD16 boards.

⚠ Note: The NLX can accommodate any combination of a maximum of eight power supply boards or M8, SD4, or SD16 boards connected to the SPI ports.

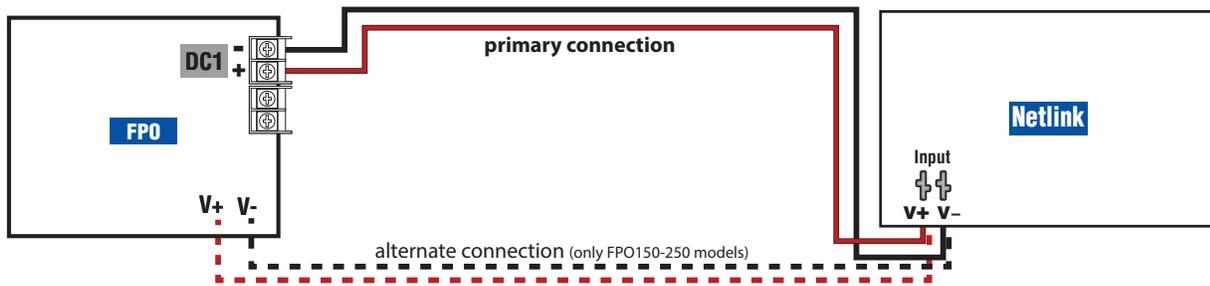


Figure 1.4 - Power the NetLink from the FPO V+/V- or DC1 terminals

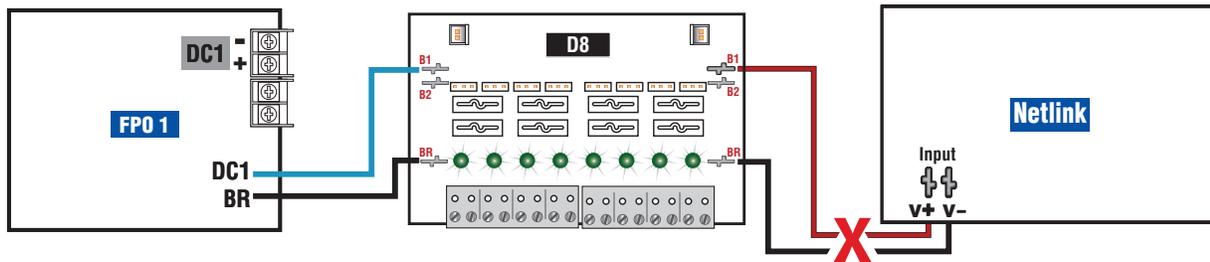


Figure 1.5 - Do not power from another accessory board's output

⚠ Note: NL4 shown - NLX Similar.



1.3.4 Connecting the Current Sensor(s)

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 on the current sensor. 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 Event 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 Event 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 Event Input Invert Jumper OFF.

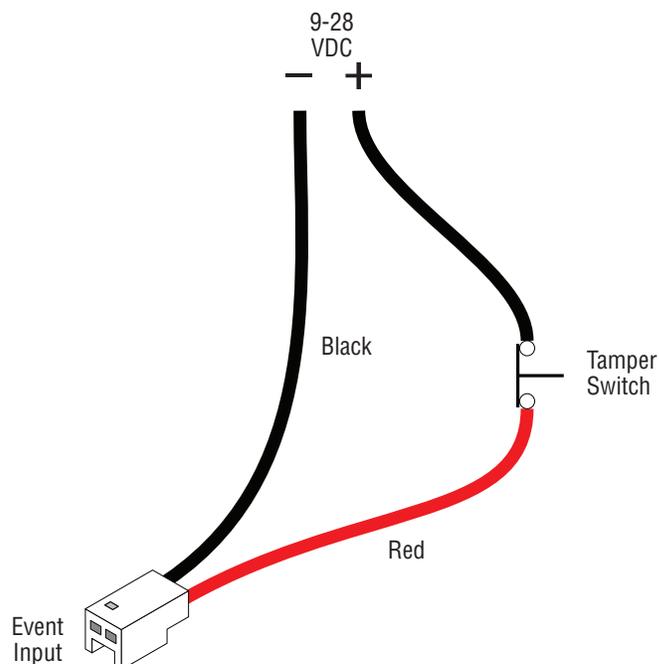


Figure 1.7 - Event Tamper Switch Wiring

1.3.6 Remote Temperature Sensor

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.

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 NL4 provides 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 RB8, supply the ground side to an FAI Input, or other similar uses. See Figure 1.8 for an example using an RB8 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.

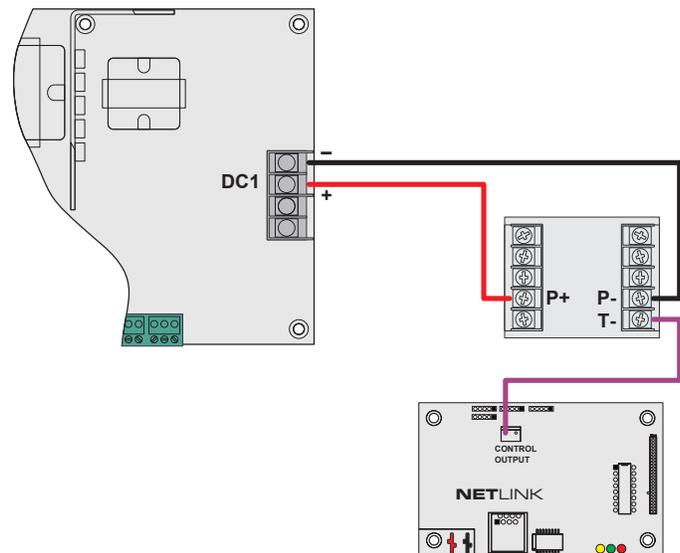


Figure 1.8 - NL4 Control Output Wiring Example

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, B150, M8, SD4, or SD16 modules with the optional RS485 module (RSMOD) installed if required. 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 120 ohm 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 manual for the connected device for addressing information

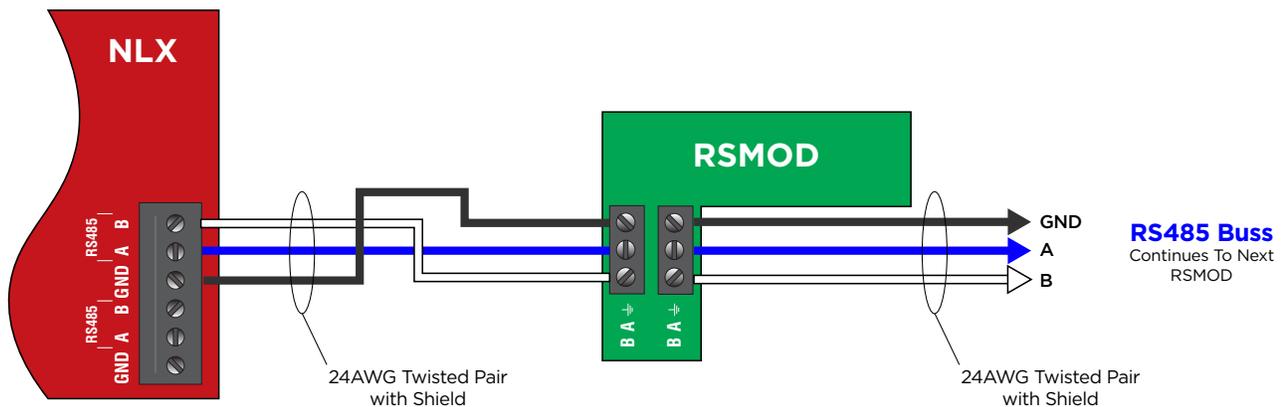
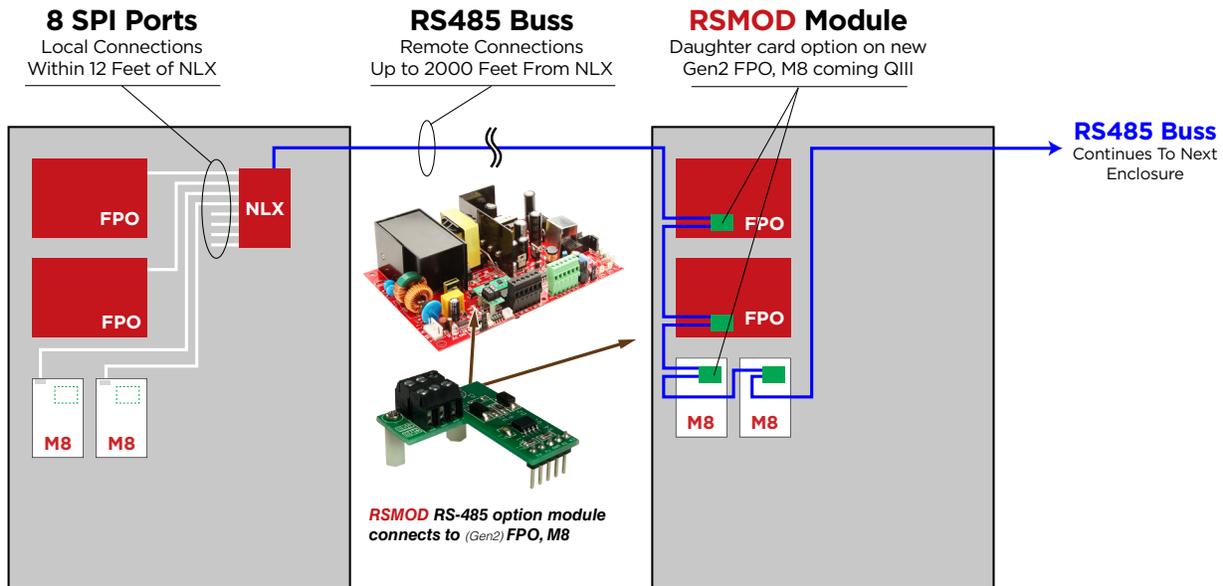


Figure 1.9 - RS485 Wiring

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. 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 <https://www.lifesafetypower.com/en/support/downloads#onecms-tabs-cmp-item-NetLink-tab>

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.

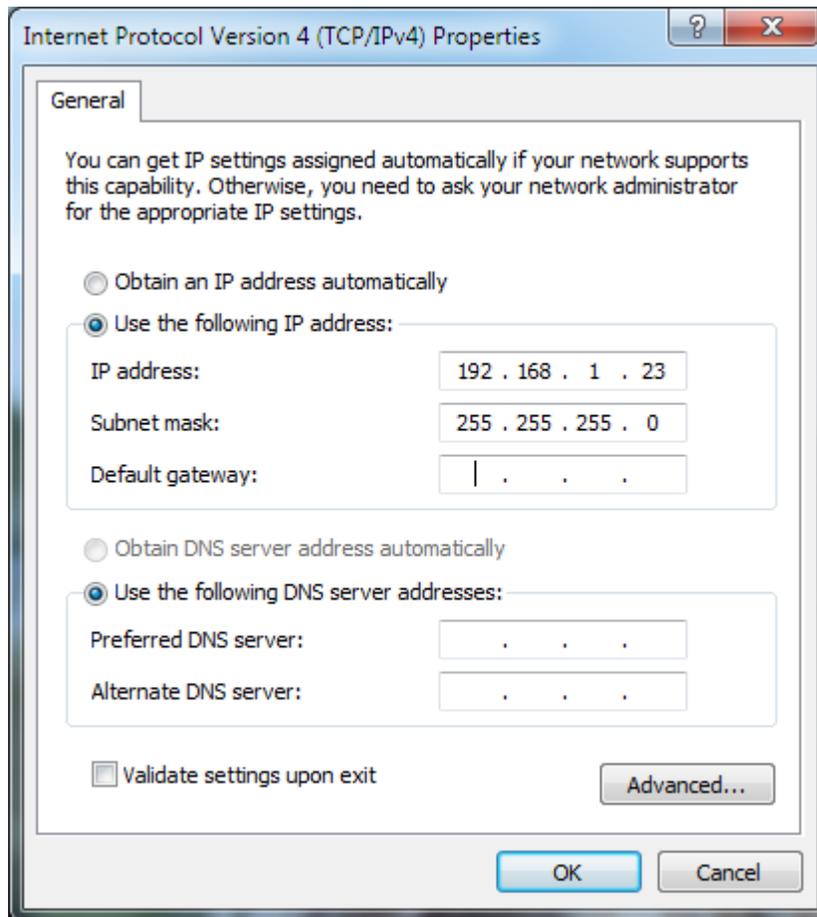


Figure 2.1 - Example of a PC Ethernet Port Settings Window

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 more 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 form with two input fields: 'Username' and 'Password'. The 'Username' field has a person icon on the left, and the 'Password' field has a lock icon on the left. Below the fields is a checkbox labeled 'Remember me' which is checked. At the bottom is a blue button labeled 'Sign in'.

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

The screenshot displays the LSP SYSTEM MANAGER POWERCOM interface. At the top, there are navigation tabs: Home, Reporting, Configure, and Tools. The user is logged in as 'msm' and the firmware version is 9.82.1. The main header shows Client ID 'ISCAN', Site ID 'LSP Univ - FPO DV', Date 'Thu Apr 10 2025', and Time '09:28:49'.

System status metrics include:

- Enclosure Temperature: 111.79 °F
- Current Sense 1: -0.04 Amps
- Current Sense 2: -0.09 Amps
- ADC1 Reading: 0.02 VDC
- Tamper Switch: Inactive
- Service Due: No
- SPI Connections: 1, 2, 3, 4 (all green)

Control and monitoring options include:

- View Data Number: 1000
- Fault Data Only:
- View Data button
- Device On/Off Control: Control 1 (ON/OFF), Control 2 (ON/OFF), Fire Alarm (Status: Off), Control 2 (Status: Off)
- Temperature: °F, °C

Device Status Legend: Normal (Green), Trouble (Yellow), Service (Blue), Fire Alarm (Red).

Device Details:

- DEVICE 1:** ID: FP-1, Model: G2 FPO250, Voltage: 12.48 VDC, Status: Trouble (Yellow)
- DEVICE 2:** ID: FP-2, Model: G2 FPO150, Voltage: 25.31 VDC, Status: Trouble (Yellow)
- DEVICE 3:** ID: M8-1, Model: M8, Status: Normal (Green)
- DEVICE 4:** (Empty panel)

Figure 2.3 - Typical NL4 Home Page

Client ID: RS485 Demo
 Site ID: LSP Univ - DPM
 Date: Thu Jul 06 2000
 Time: 07:14:42

Enclosure Temperature: 102.11 °F
 Current Sense 1: 0.00 Amps
 Current Sense 2: 0.04 Amps
 Current Sense 3: -0.14 Amps
 Current Sense 4: -0.19 Amps
 ADC1 Reading: 0.05 VDC
 External Event: Inactive
 Service Due: No

View Data Number: 1000
 Fault Data Only:

Device On/Off Control
 Control 1: ON OFF
 Control 2: ON 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	Location	Status	Voltage	Device	ID	Model	Location	Status	Voltage
9	M8-1	M8	IDF1-1	Normal		10	M8-2	M8	IDF1-1	Normal	
11	M8-3	M8	IDF1-1	Normal		12	FP-1	G2 FPO150	IDF1-1	Trouble	12.45 VDC
13	FP-2	G2 FPO250	IDF1-1	Normal	12.42 VDC						

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 using IPV6, click the "Enable IPV6" checkbox and fill in the IPV6 information.

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 <https://www.lifesafetypower.com/en/support/downloads#onecms-tabs-cmp-item-NetLink-tab>** 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

Select the correct date and enter the time in the drop down window and click the "Submit" button:

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 or the DNS name of the server. 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 the LifeSafety Power Netlink. The top navigation bar includes 'Home', 'Reporting', 'Configure', and 'Tools', along with 'msm' and 'Firmware: 0.82.4'. The main configuration area is divided into several sections:

- Client Information:** Client ID (RS485 Demo), Site ID (LSP Univ - DPM), Date (Thu Jul 06 2000), and Time (07:17:12).
- TCP/IP Settings:** Fields for Name (LSP), IP Address (192.168.0.91), Net Mask (255.255.255.0), MAC Address (00:02:AC:56:58:EE), Gateway IP Address (192.168.0.1), DNS0 IP Address (68.105.28.16), DNS1 IP Address (68.105.29.16), HTTPS Port# (881), Ping Interval Seconds (60), Enable DHCP (checked), and Enable IPv4 (checked).
- Time Settings:** Select timezone (GMT-07 (Phoenix, Creston, Arizona)), Insert DateTime (2000-07-06 07:16:25), and buttons for 'Submit', 'Sync Date/Time with computer', and 'Get GMT Time'.
- IPv6 Settings:** Fields for IPv6 Address (fe80::202:acff:fe55:e38e), Prefix Lengths (64), Gateway IP Address (fe80::), DNS0 IP Address, DNS1 IP Address, Additional PrefixLen (64), and Additional Gateway. Includes 'Enable DHCP' (unchecked) and 'Enable IPv6' (checked).
- MSM Settings:** Fields for Mercury Tunnel Port#, IP Address (52.45.207.153), Destination Port# (9888), Source Port# (0), Connected Status (SUCCESS), and Group Name (LSP-LBT). Includes 'Enable Tunnel' (unchecked), 'Enable Certificate' (unchecked), and 'Enable MSM' (checked).

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 TCP PSIA and SNMP Settings

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

The screenshot displays the configuration page for LSP SYSTEM MANAGER POWERCOM. The interface includes a navigation menu (Home, Reporting, Configure, Tools) and a status bar (msm, Firmware: 0.82.4). The main content is divided into several sections:

- TCP PSIA Settings:** Includes fields for IP Address, Destination Port#, Source Port#, Connected Status (FAILURE), Enable Certificate, and Enable TCP PSIA. Buttons for Submit, Show TCP PSIA Log, and Default are present.
- SNMP Settings:**
 - Basic:** Fields for Read Community (publicread), Write Community (publicwrite), Location (LSP), Port# (161), Trap Type (Trap), and Trap Version (V2C). Buttons for Submit and Show Inform Log are included.
 - Security Name:** Fields for Name (mynetwork) and Source Network (192.168.1.0/24). Buttons for Submit and Delete are present.
- V3 User:** Fields for User Name (lsp) and Password (masked). Buttons for Submit and Delete are included.
- Trap Receiver:** Fields for IP and Port#. Buttons for Submit and Delete are present.
- Email Settings:**
 - Receive Addresses:** Four fields for E-Mail Address 1 through 4.
 - Sender:** Fields for Sender SMTP Server, Sender EMail, EMail Password, SMTP Port# (25), TLS (unchecked), Authentication (login), and Send Period (Never). A Submit button is located at the bottom.
- Email Test:** Buttons for Email Test and Show Email Log.

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

If connecting to a device which uses the TCP PSIA protocol, check the "Enable TCP PSIA" and enter the IP and port information.

If using SNMP, 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 and version. 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 IP addresses 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 device 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.

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.
Email Password	This is the password associated with the Sender's Email account
SMTP Port #	Enter the port number required by your email provider for sending email. Usually this is "25"
TLS	Check this box if your email provider requires TLS or SSL encryption
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 Configuring the Network Module Settings

Below the Email Test 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, and as an identifier in MSM Enterprise.
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 Event input.
Current Sense x	Enter a name indicating the current being measured by each current sensor connected to the C1-C4 connectors of the NetLink.
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.
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)	Enter a name for the external temperature measurement.
Temperature Lower Limit	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	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.

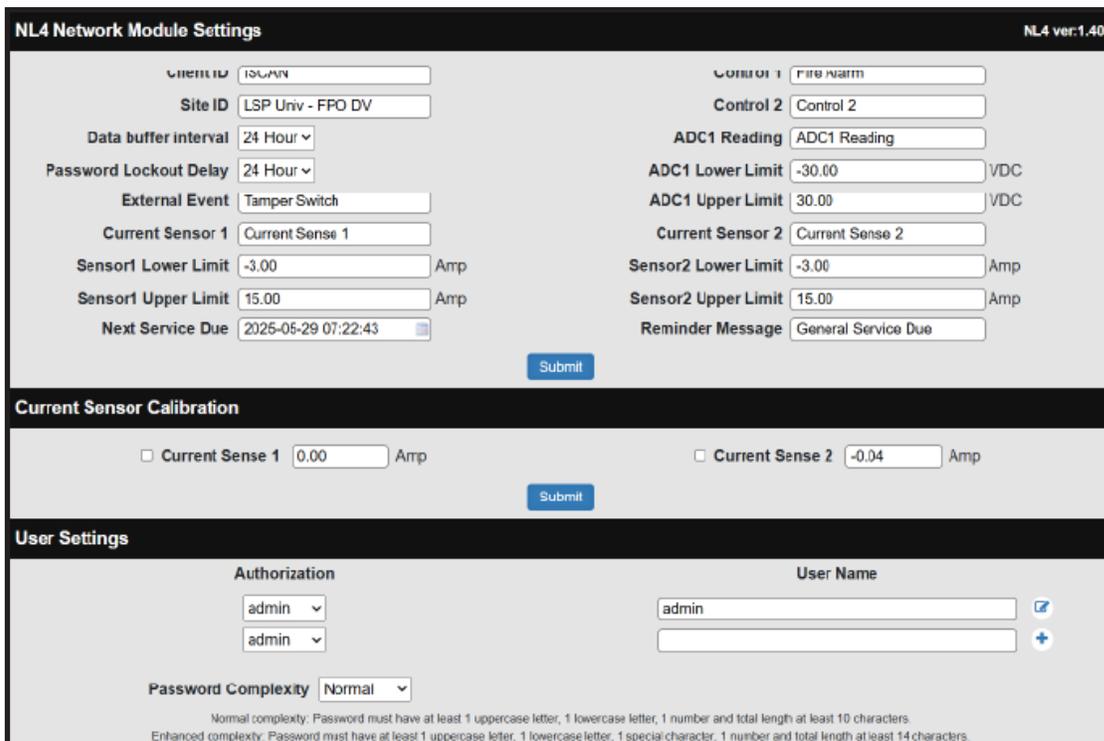


Figure 2.7 - Typical Configure Page (lower-middle portion)

2.2.9 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.

2.2.10 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". The NetLink will force the user to change the password on first login. It is highly recommended to also change this user name 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 click the plus sign. Enter the password into the Password field. Passwords must meet the complexity level setting requirements as shown on screen. 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.

2.2.11 Certificate Settings

The NetLink allows a user-supplied certificate to be used. Enter the password (if required), then click the "Upload Certificate" button to add a certificate (Figure 2.8). 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 PFX button to add and test the certificate. Click Exec Cert to begin using the certificate

Certificate Settings

PFX Certificate	Certificate Authority	Default Certificate
Certificate: <input type="button" value="Upload Certificate"/> Password: <input type="text"/> <input type="button" value="Submit"/> <input type="button" value="Test PFX"/> <input type="button" value="Exec Cert"/>	Certificate: <input type="button" value="Upload Certificate"/> <input type="button" value="Exec Cert"/>	<input type="button" value="Exec Cert"/>
The current use of the certificate is a default certificate.		
Certificate Log		
<input type="button" value="Show Certificate Log"/>		

Figure 2.8 - Certificate Settings

2.2.12 Certificate Log

Click Show Certificate Log to view the certificate activity log. Click Hide Certificate Log to hide the window. See Figure 2.8

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 Import and Export Configuration File

The NetLink allows the user to export the configuration settings 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 Figure 2.9). 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.

2.2.15 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.

2.2.16 User Login Record

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

2.2.17 User Activity Record

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

REMOTE REPORTING
LSP SYSTEM MANAGER POWERCOM®

Home Reporting Configure Tools [msm](#) Firmware: 0.82.4

SSLProtocol and CipherSuite Settings

SSL Options: High
 SSLProtocol: TLSv1.2
 CipherSuite: ECDHE-RSA-AES128-GCM-SHA256:ECDHE-ECDSA-AES256-GCM-SHA384:ECDHE-ECDSA-AES128-GCM-SHA256

Submit

Import and Export Configuration File

Import Configuration File Export Configuration File

IEEE802.1x Settings

EAP Method: EAP-MD5
 User Name:
 Enable Alert:
 Service Due: No

Enable IEEE802.1x:
 Password:
 Certificate Expiration: 30
 EAP State: NULL

Submit

IEEE802.1x Log

Show IEEE802.1x Log

User Login Record

Show Login Log Export Login Log

User Activity Record

Email Activity Log on New Activity:
 Send Period: Never

Show Activity Log Export Activity Log

Figure 2.9 - Typical Configure Page (bottom portion)

2.2.18 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 2.10). Examples of fields that can be enabled or disabled are below. See the manual for the connected module for more information on the available parameters.

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.
Event	If checked, a valid input on the Event 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, SD4, SD16, B150) 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 2.10). 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 sections of the Reporting page contains the devices and parameters selection area (See Figure 2.10). 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).

See the manual for the connected device for more information on the parameters available for that module.

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
msm Firmware: 9.82.1

Client ID

Site ID

Send Email Report Date Time

Alert Enable On

<input checked="" type="checkbox"/> System Fault	<input checked="" type="checkbox"/> Tamper Switch	<input checked="" type="checkbox"/> Battery End of Life	<input checked="" type="checkbox"/> Service Reminder
<input checked="" type="checkbox"/> AC Fault	<input checked="" type="checkbox"/> FAI Active	<input checked="" type="checkbox"/> Battery Condition	<input checked="" type="checkbox"/> Device Detect
<input checked="" type="checkbox"/> Battery Backup Time	<input checked="" type="checkbox"/> Input AC Voltage	<input checked="" type="checkbox"/> ADC1 Reading	<input checked="" type="checkbox"/> Current Sense 1
<input checked="" type="checkbox"/> Current Sense 2			
<input checked="" type="checkbox"/> Select All	<input type="button" value="Submit"/>		

Select Occurrences to Report

Select Occurrence

NL4 Report

<input checked="" type="checkbox"/> Enclosure Temperature	<input checked="" type="checkbox"/> ADC1 Reading	<input checked="" type="checkbox"/> Tamper Switch	<input checked="" type="checkbox"/> Fire Alarm
<input checked="" type="checkbox"/> Control 2	<input checked="" type="checkbox"/> Current Sense 1	<input checked="" type="checkbox"/> Current Sense 2	
<input checked="" type="checkbox"/> Select All	<input type="button" value="Submit"/>		

M8 / SD16 / SD4 Report

Output #	1	2	3	4	5	6	7	8
<input checked="" type="checkbox"/> M8-1	<input checked="" type="checkbox"/>							

FP1 G2 FPO250 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
- Battery Runtime Test Failed Total
- Required Standby
- Actual Standby
- Select All

FP2 G2 FPO150 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
- Battery Runtime Test Failed Total
- Required Standby
- Actual Standby
- Select All

Figure 2.10 - 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. 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' tabs. The 'Reporting' tab is active. The page title is 'SYSTEM MANAGER POWERCOM®'. Below the navigation bar, there is a header section with 'Client ID' (ISCAN), 'Site ID' (LSP Univ - FPO DV), 'Date' (Thu Apr 10 2025), and 'Time' (09:28:49). The 'msm' logo and 'Firmware: 9.82.1' are also visible.

The main content area is divided into several sections:

- System Parameters:** A list of real-time parameters with green progress bars: Enclosure Temperature (111.79 °F), Current Sense 1 (-0.04 Amps), Current Sense 2 (-0.09 Amps), ADC1 Reading (0.02 VDC), Tamper Switch (Inactive), and Service Due (No). Below these are four SPI Connection status indicators (1, 2, 3, 4).
- Data View:** A section for 'View Data Number' (1000) and 'Fault Data Only' (checked), with a 'View Data' button.
- Device On/Off Control:** Two control panels for 'Control 1' and 'Control 2', each with 'ON' and 'OFF' radio buttons and 'Status' buttons (both set to 'Off').
- Temperature Control:** A section for 'Temperature' with radio buttons for °F and °C.
- Device Status Legend:** A row of icons representing 'Normal' (green), 'Trouble' (yellow), 'Service' (blue), and 'Fire Alarm' (red).
- Device Status Grid:** A grid showing the status of four devices:
 - DEVICE 1:** ID: FP-1, Model: G2 FPO250, Voltage: 12.48 VDC, Status: Trouble (yellow circle).
 - DEVICE 2:** ID: FP-2, Model: G2 FPO150, Voltage: 25.31 VDC, Status: Trouble (yellow circle).
 - DEVICE 3:** ID: M8-1, Model: M8, Status: Normal (green circle).
 - DEVICE 4:** No data displayed.

Figure 3.1 - Typical 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 (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 and may read higher than the room temperature.
External Temperature	If the external temperature sensor is connected, this temperature field 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.
Event Indicator	This field shows the status of the Event input. It will appear as the label set for the Event 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 Event 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 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). 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).

For more information on the device interface, consult the manual for the device(s) being used.

FPO Power Supply	P03-040
M8 / M8P Lock Control Module	P03-036
SD4 / SD4P Auxiliary Output Module	P04-104
SD16 Auxiliary Output Module	P03-100
B150 Power Conversion Module	P03-105

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.

The screenshot shows the 'Tools' page in the NetLink interface. At the top, there is a navigation bar with 'Home', 'Reporting', 'Configure', and 'Tools' links. The 'Tools' link is active. To the right of the navigation bar, there is a 'msm' icon and 'Firmware: 0.82.4'. Below the navigation bar, there are two main sections: 'Upgrade Firmware' and 'Reboot'. Each section has a corresponding blue button: 'Upgrade Firmware' and 'Reboot Netlink'. Below these sections is a 'User Notes(up to 1000 characters)' section with a large white text area. At the bottom of the text area, there are 'Save' and 'Clear' buttons.

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 LED on the board 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				
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
34							

Figure 3.9 - Example Email Report CSV File

Appendix 1 – Software Agreement

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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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