FLEXPOWER®

NETLINK NL1
TWO PORT NETWORK MODULE
INSTALLATION AND OPERATION

LifeSafety Power, Inc.

PH 888.577.2898

TechSupport@LifeSafetyPower.com

P03-031 Rev A06

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⚠ *Resetting the NL1*

If the IP address or user name/password is unknown for an NL1 board, press and hold the reset button located next to the backup battery for five seconds. Note that this will reset the IP configuration information, user names, passwords, and SNMP settings to the factory default values and will require reconfiguration of these fields.

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 damag

Warnings

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

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

⚠ 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

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

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

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

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

Regulatory Information

The equipment discussed within this manual is an ETL Recognized Component:

- Conforms to ANSI/UL Std. 294 and ANSI/UL Std. 2044
- Certified to CAN/CSA Standard C22.2 No. 60950-1

Conventions Used Within this Manual

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

Introduction

Product Description

The NL1 module is a networking appliance which may be used with the FlexPower product line. The NL1 is used to monitor power supply system status over a local or wide area network. When used with a FlexPower FPO DC system, the NL1 will allow limited control of the power system and provide values on demand for power supply output voltage, operational fault status, battery charging voltage, battery charging current, and fire alarm input status. In addition, the NL1 may be used with any 8-30VDC power supply in a limited fashion.

Automated reports may be generated on any detected fault condition, battery aging, fire alarm interface activation, and event activation, or on a time base for scheduled confirmation of proper operation. A time and date stamped log of the past 100 events is kept as history in a buffer and may be accessed on demand, as a scheduled report, or immediately on an alert or occurrence. The buffer is updated once per hour with all parameters in normal range.

In addition to providing two data ports for connection to FlexPower FPO power supplies, the NL1 provides three additional inputs for standalone or FlexPower use to monitor an additional DC voltage value, an Event input (voltage), and a DC current via an optional current sensor device. The surrounding air temperature is also measured and reported. The Event input logic can be programmed to respond to the application or removal of voltage to compensate for NO or NC activity.

The NL1 provides two outputs for use in controlling external equipment which may be connected to LifeSafety Power's RB2, RB5, or RB8 DPDT relay modules or to the NS2 accessory module for use in controlling external equipment from the network or internet. The NS2 output controller module is typically used in an FPA or RA FlexPower AC System.

Specifications

Power Input	Voltage	8-30VDC
	Current	60mA Nominal
ADC Input	Voltage	0-30VDC
	Resolution	10 Bits
	Accuracy	+/- 3%
Event1 Input	Voltage	9-30VDC
	Current	15mA Max.
Control Outputs	Current	50mA Max.
Current Sensor	Current	0-20A ±0.1A +5% of reading

Section 1 – Installation

The following pages cover the installation of the NL1 Network Communication Accessory.

1.1.1 Mounting the NL1 Network Communication Accessory

Use the following procedure when mounting an NL1 Network Communication 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 above) with the standoffs and snap the board onto the standoffs. Be sure the board is properly oriented before snapping the board onto the standoffs.
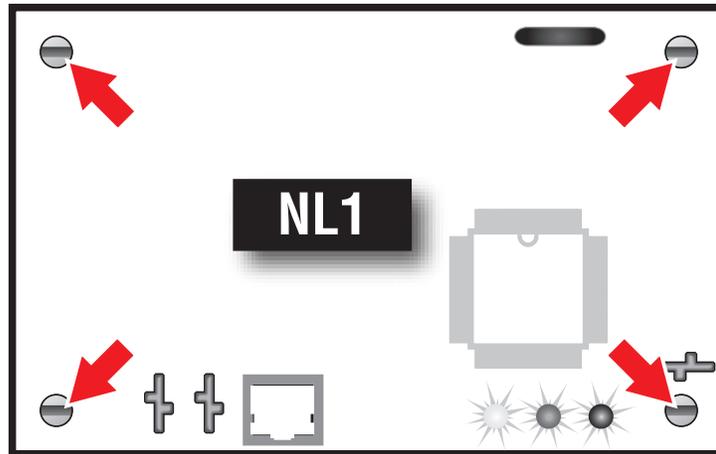

Figure 1.1

1.1.2 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 above) with the standoffs and snap the board onto the standoffs. Be sure the board is properly oriented before snapping the board onto the standoffs.
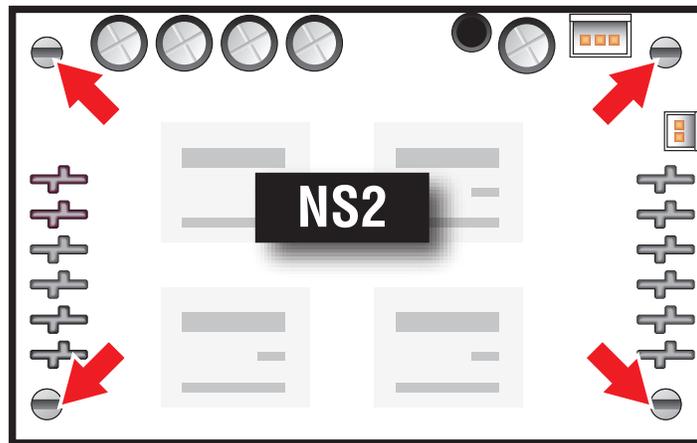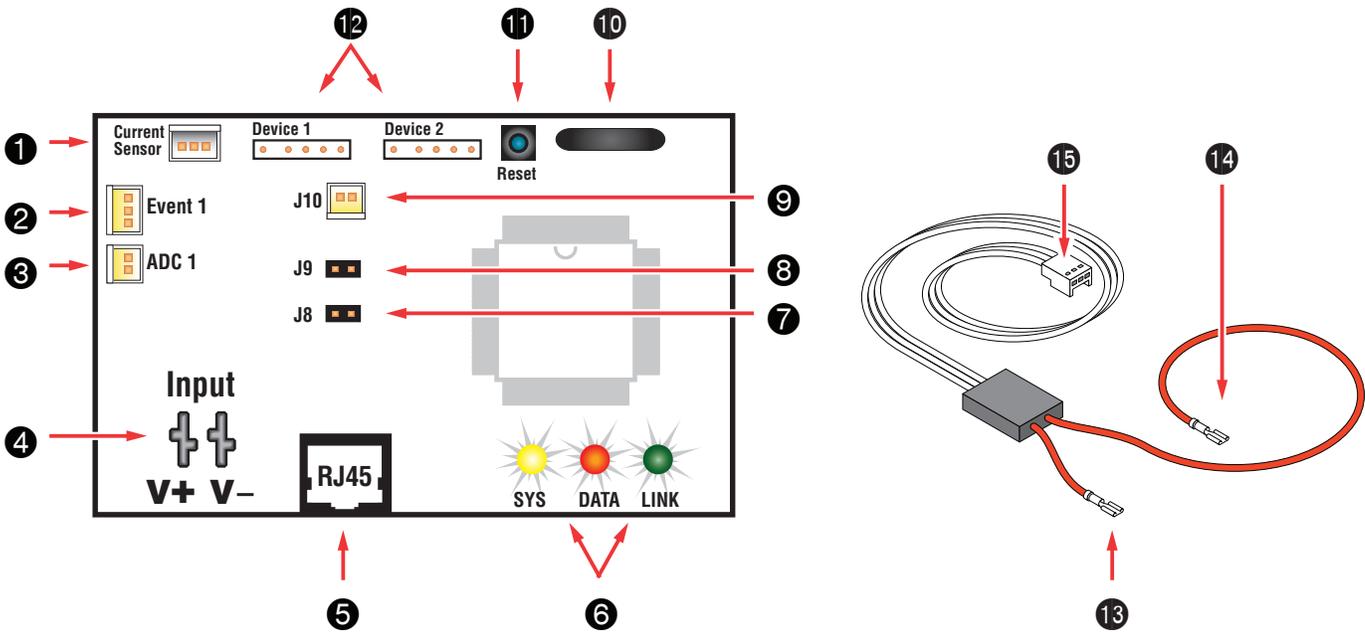

Figure 1.2

1.2 NL1 Network Communication Accessory Overview

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

1 NL1 - Hall Sensor 1 Input (J12)

This is the connector for the current sensor. Only an NL1 current sensor should be plugged into this connector. This sensor has a range of +/-20A and may be used to measure any current or may be used to monitor approximate system battery health for the FPO connected to Device 1. See section 1.3.4

2 NL1 - 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 NL1 - 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 NL1. The ADC cable wiring must be routed away from high voltages. See section 1.3.6

4 NL1 - Input V+ & V- (J1 & J3)

This is the main power input for the NL1 board. This input accepts 8 to 30VDC ONLY (Observe the polarity carefully) from any power supply. Note that if the NL1 is used with a power supply other than an FPO, only the basic NL1 functions such as the current sensor, Event1 Input, and Control Outputs, will be available. If the NL1 is being used in an AC-only system, such as an FPA series system, an NS2 board is required to convert the AC power to DC power. The current draw of the NL1 at the nominal voltage input is 60mA. See section 1.3.1

Note - The voltage input of the NL1 must be connected directly to the DC1 output of the FPO power supply.

5 NL1 - 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

6 NL1 - Status LED Indicators (D2, D3, D4)

These LEDs indicate the status of the Ethernet link to the NL1 board.

LED Indicator:

Green (LINK) Lights when the NL1 is connected to a network

Red (DATA) Flashes during data transfer

Yellow (SYS) Lights when the NL1 is fully booted up and running. During the bootup process, this LED may flash on and off several times. The NL1 will not be able to be accessed until this LED lights steady.

7   NL1 - Event1 Input Invert Jumper (J8)

This jumper inverts the action of the Event 1 Input.
Jumper Position:

    ON   Event 1 active when voltage is applied

    OFF   Event 1 active when voltage is removed

8   NL1 - Dual ADC Jumper (J9)

This jumper enables "Dual ADC Mode" when using the NL1 with an NS2 board. If an NS2 board is not being used, leave this jumper OFF.

9   NL1 - Control Outputs (J10)

This connector is for the two control outputs. These outputs are open collector (transistor) low-current outputs for use with the NS2 board, RB Relay Boards, or other low-current inputs. The Control Output cable wiring must be routed away from high voltages. See Section 1.3.7

10   NL1 - Backup Battery (BT1)

This is the coin cell battery for maintaining the clock when all power is removed from the NL1. The battery type is CR2032.

11   NL1 - Factory Reset Button (SW1)

This button resets the User Name, Password, IP Address, and SNMP Settings back to factory default. Typically used when IP and/or login information has been lost.

12   NL1 - Device 1 & Device 2 (J4 & J5)

These are the two serial links to the devices to be monitored, such as FPO power supplies or N24 boards. Data is passed between the NL1 and the connected devices through these links. See section 1.3.3

**13   Current Sensor - Current Lead 1 (Short)**

The short red 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

14   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

15   Current Sensor - Data Connector

This connector connects to the NL1's "Hall Sensor 1" input (J12) to provide the current reading to the NL1. See section 1.3.4
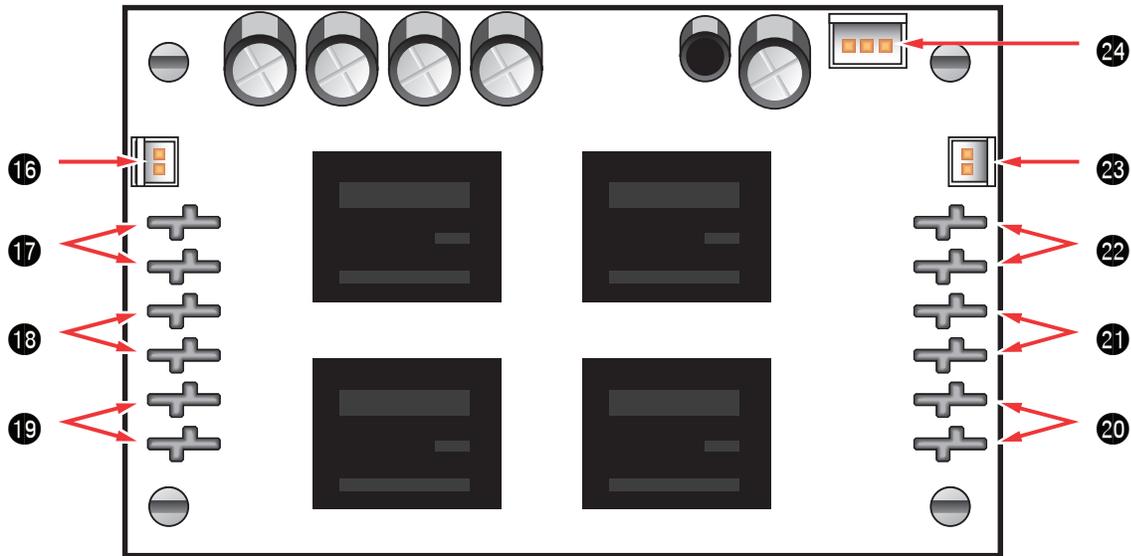
16 NS2 - ADC Output (ADC1 & ADC2)

The NS2 is only included in an NLR kit. This connector provides voltage outputs for measurement by the NL1 board, indicating presence of voltage on SB1-1 and SB1-2. Using the supplied cable, this connects to the ADC Input of the NL1 board (J15). The voltages indicated are not accurate and are only for indication of presence of voltage. Place jumper J9 on the NL1 board ON when using this output.

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

The NS2 is only included in an NLR kit. 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 #19.

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

The NS2 is only included in an NLR kit. 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 #19.

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

The NS2 is only included in an NLR kit. These are the power returns for the Buss Inputs. See #17 and #18. Typically, in a LifeSafety Power FPA system, these would connect to the brown secondary wires of the transformers.

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

The NS2 is only included in an NLR kit. These are the switched power returns out to the BR terminals of the A8 distribution boards in a LifeSafety Power FPA system.

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

The NS2 is only included in an NLR kit. These are the switched B1 and B2 outputs from power source 2. When the control output #2 of the NL1 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 #20.

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

The NS2 is only included in an NLR kit. These are the switched B1 and B2 outputs from power source 1. When the control output #1 of the NL1 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 #20.

23 NS2 - Control Inputs (J9)

The NS2 is only included in an NLR kit. This is the control input from the NL1 board, allowing control of the power to the outputs via the NL1's web interface. Using the cable with two 2-pin plugs, connect between this connector and J10 on the NL1 board - See #9.

24 NS2 - NL1 Power Output (+12V-)

The NS2 is only included in an NLR kit. This is the power output for powering the NL1 board in an AC-only system. The NS2 converts AC power from the buss inputs to regulated DC power for the NL1 board. Using the supplied cable, connect this connector to the V+/V- input of the NL1.

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1.3 Connecting the NL1 Network Communication Accessory

1.3.1 Making the Power Connections to the NL1

DC Systems ONLY

In a DC system, the DC power source for the NL1 is connected to the INPUT (V+ & V-) fastons. 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. If two FPO boards are being monitored by the NL1 through the Device connectors, BOTH must have battery backup or the NL1 will lose communication with BOTH FPOs during a power outage.

The power connections for the NL1 must connect directly to the DC1 output of the FPO power supply. (Figure 1.5)

Do not power the NL1 through another accessory board's output. (Figure 1.6)

AC Systems

WARNING - DO NOT CONNECT AC POWER TO THE NL1 BOARD'S INPUT (V+ & V-) TERMINALS OR DAMAGE TO THE NL1 WILL OCCUR.

In an AC system, power to the NL1 board MUST be supplied by an NS2 board, which is part of the NLR kit. The NS2 board converts the AC power from the low voltage transformer to DC voltage for powering the NL1 board.

Use the cable with the three pin connector at one 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 NL1 board. (Figure 1.7)

1.3.2 Making the Ethernet Connection to the NL1

Plug the Ethernet cable into the RJ45 jack on the NL1 until the locking tab clicks. Connect the other end of the Ethernet cable to the network.

Note that the NL1 board should be configured via a direct connection to a laptop or PC before connecting to the network. See the Initial Configuration Section of this manual for more details.

1.3.3 Connecting Devices to be Monitored to the NL1

Connect one end of the SPI cable to one of the "Device" connectors on the NL1. Connect the other end to the DataLink (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 a second device, repeat this process for the second device. Note that both ends of these cables are keyed and will only plug in one direction.
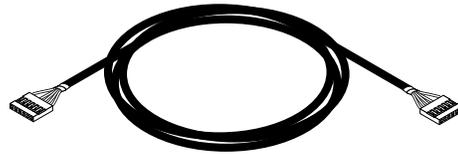

Figure 1.3 - The SPI Cable

If monitoring the battery health of an FPO power supply using the Current Sensor, this FPO must be connected to the "Device 1" connector of the NL1. Battery health cannot be monitored on an FPO connected to "Device 2".

1.3.4 Connecting the Current Sensor

Insert the current sensor in-line with the current to be measured, using the two red leads on the current sensor. To read current in the correct polarity, the positive current should flow from the longer lead to the shorter lead on the current sensor. If current is being displayed in the opposite polarity than expected, swap the short and long red leads.

After connecting the red leads, connect the white cable to the "Hall Sensor 1" connector on the NL1.
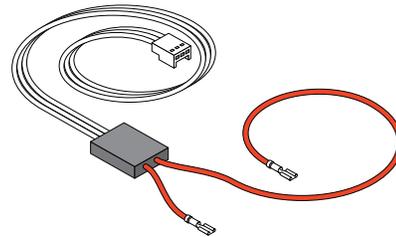

Figure 1.4 - Current Sensor

Note that if you wish to utilize the NL1's Battery Condition bar graph display or battery testing functions, the current sensor must be placed in-line with one of the battery leads. This precludes measuring any other currents with the NL1's current sensor. When using the current sensor for the battery measurement, connect the longer lead to the battery positive terminal and the shorter lead to the power supply positive battery connection so that battery DISCHARGE current measures as POSITIVE.

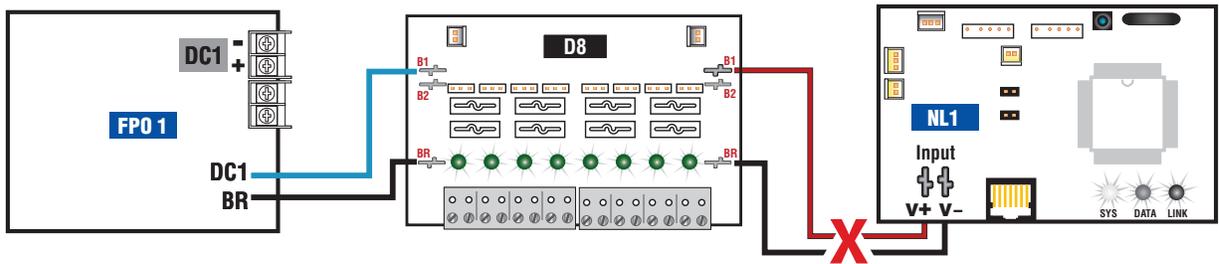*Figure 1.5 - Power the NL1 off the FPO DC1 terminals*

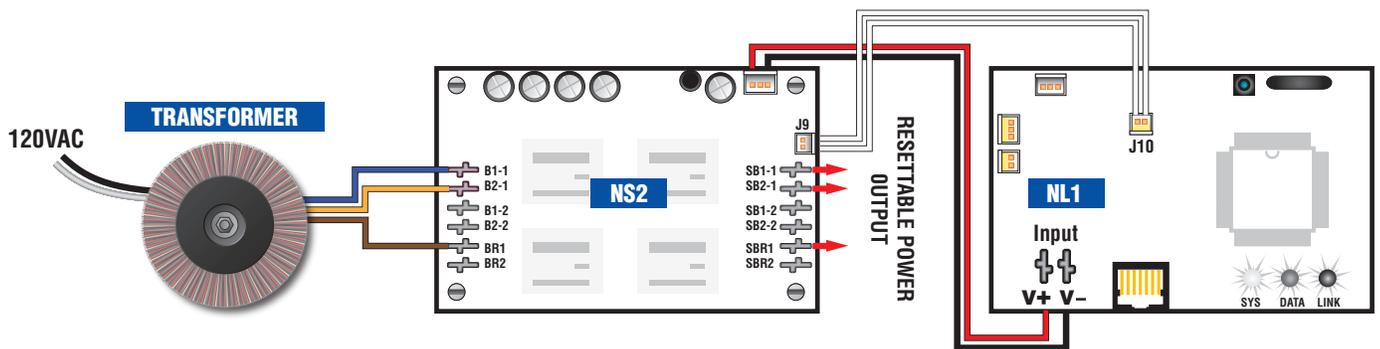*Figure 1.6 - Do not power off another accessory board's output*

Figure 1.7 - Powering an NL1 in an AC System using an NS2 board

1.3.5 Connecting the Event Input

Connect one end of the Event cable to the Event1 connector on the NL1 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 (See the Applications Section of this manual for examples). 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 1.8) Since we want to cause an alert on the removal of voltage, leave the Event1 Input Invert Jumper OFF.
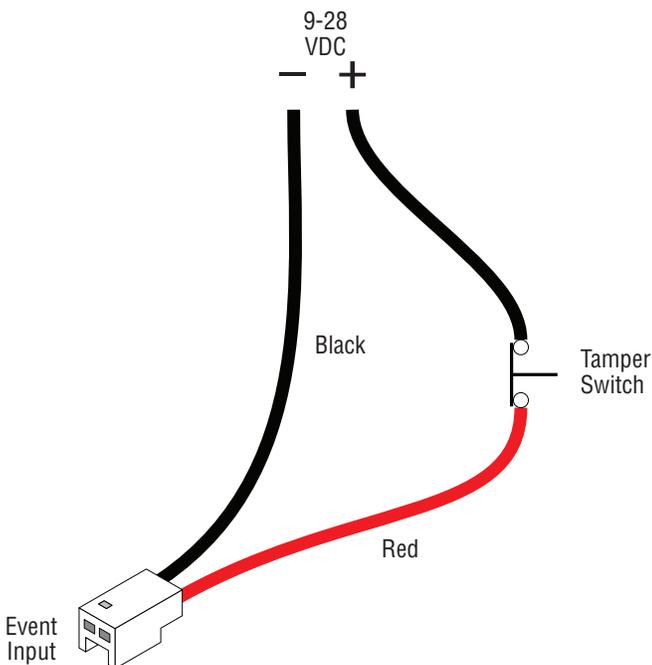
1.3.6 Connecting the ADC (Voltmeter) Input

If using an NS2 board with the NL1, connect one end of the ADC cable to the NL1's ADC input and the other end of the ADC cable to the ADC1/ADC2 connector on the NS2 board.

If not using an NS2 board, connect one end of the ADC cable to the ADC1 input on the NL1 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 NL1 board.

1.3.7 Wiring the Control Outputs

If using an NS2 board with the NL1, connect one end of the Control Output cable to the NL1's control output and the other end of the Control output cable to the NS2's Control Input (J9).

If not using an NS2 board, connect one end of the Control Output cable to the Control Outputs connector on the NL1. 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, supply the ground side to an FAI Input, or other similar uses.

NOTE: Do not connect these outputs directly to a voltage source or damage to the NL1 will occur. Also, ensure the wire used is rated for the voltages and temperatures in the area which it is installed.

Figure 1.8 - Event1 Tamper Switch Wiring

Section 2 – Initial Configuration

Before connecting the NL1 to a network, the initial configuration must be performed in order to set critical items, such as the IP address and login information. If the NL1 has already been preconfigured for your system, this section may be skipped.

2.1 Preparing to configure the NL1

In order to perform the initial configuration of the NL1, 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 setting the NL1 to. See Figure 2.1.

- A web browser installed on the computer.

- An Ethernet cable long enough to reach between the computer and the NL1.

- The NL1 to be configured must be wired into the system and powered. After powering the NL1, wait for the NL1 to initialize - when ready, the yellow SYS LED will be lit steady.
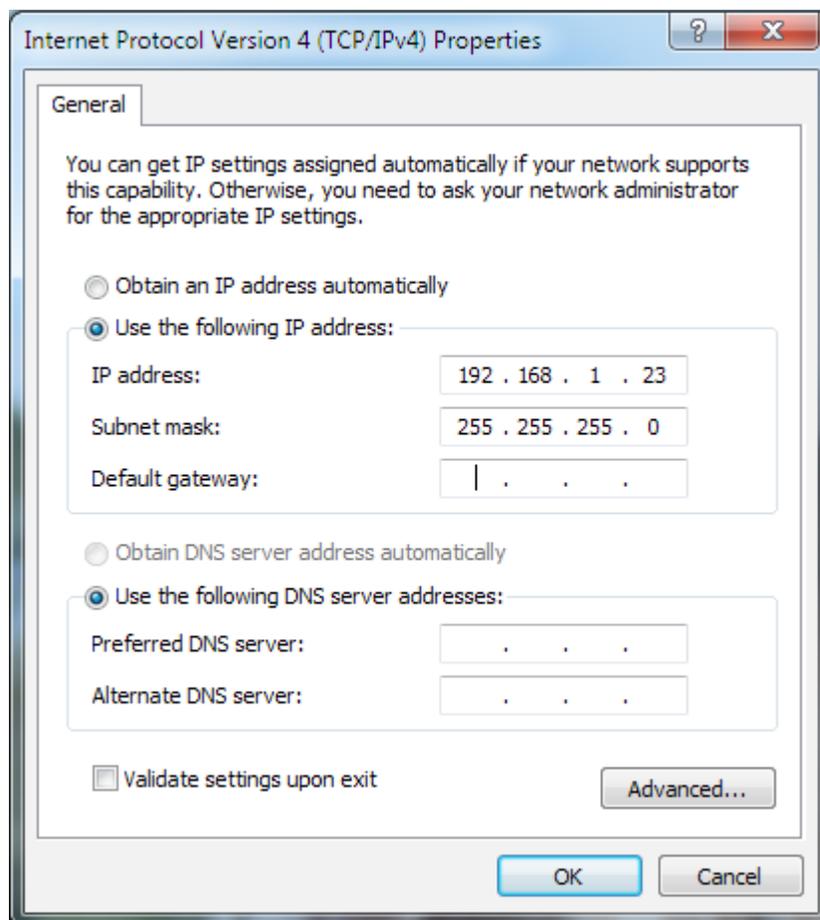

Figure 2.1 - Example of a PC Ethernet Port Settings Window

After the NL1 is powered within the system and initialized, connect the Ethernet cable between the Ethernet ports of the computer and the NL1.

2.2 Configuring the NL1

2.2.1 Logging into the NL1 for the first time

From the factory, the NL1 is preset with the following settings:

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

Open a browser on the computer and enter "192.168.1.9" into the address bar. A window will appear asking for Authentication (See Figure 2.2). Enter "admin" for both the User Name and Password. The LifeSafety Power NL1 License Agreement screen will appear. Read this agreement and if you agree, click "Accept" (See Figure 2.3). The home page for the NL1 should appear in the browser window (See Figure 2.4).
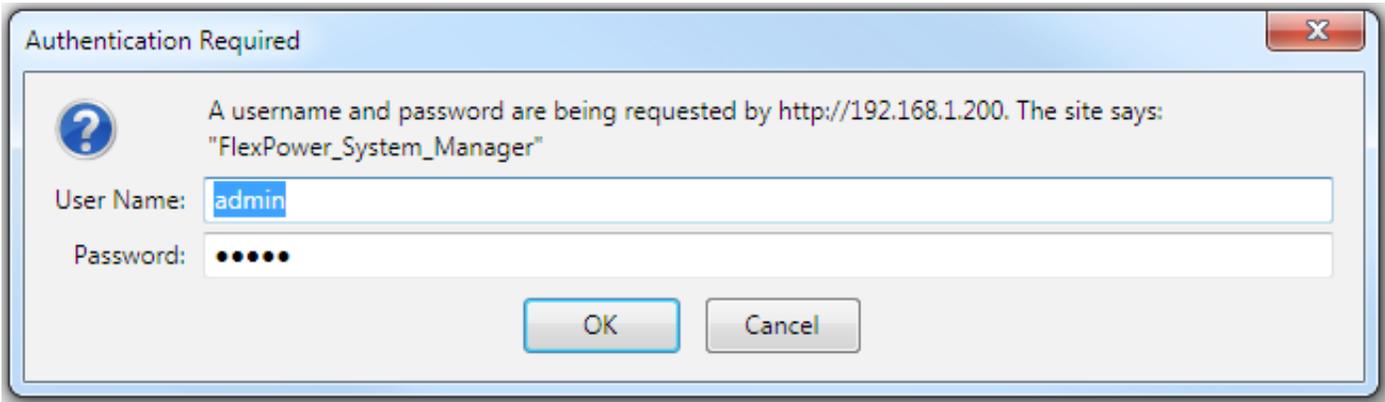
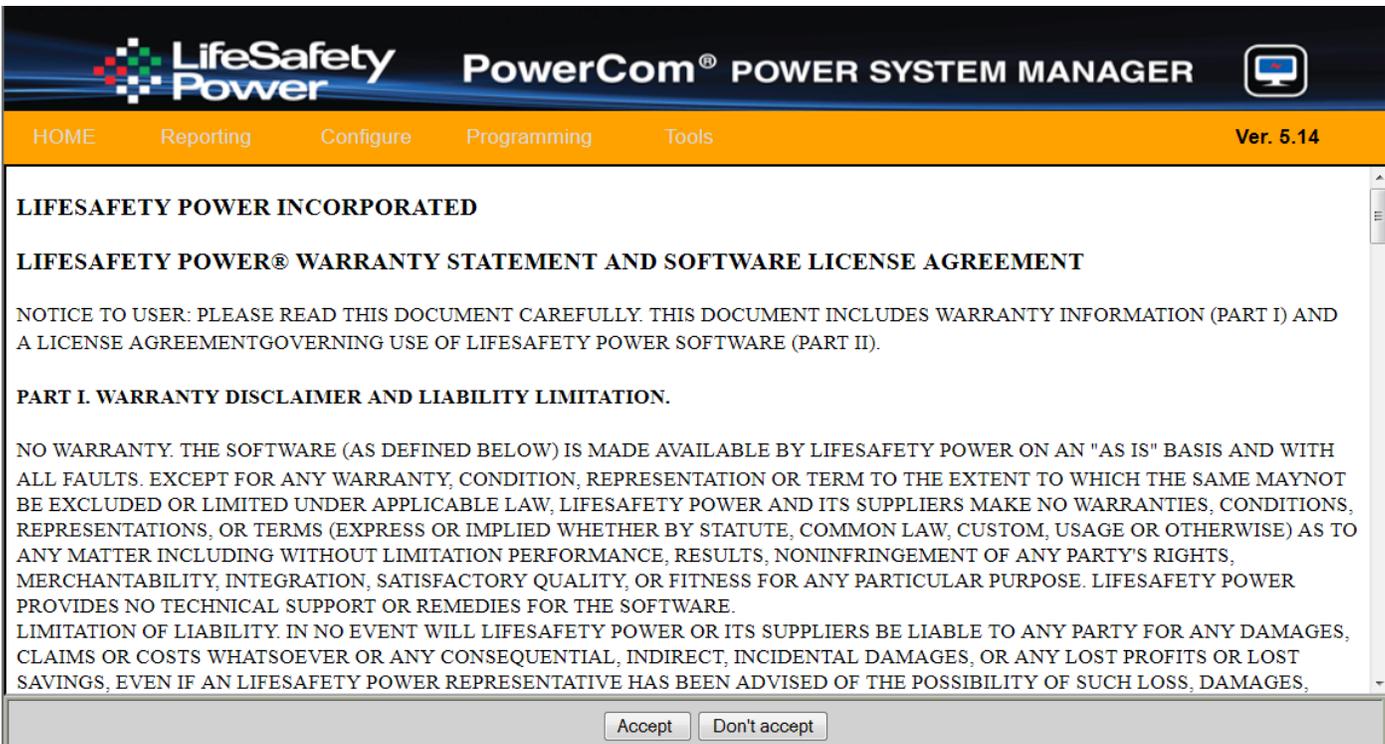*Figure 2.2 The NL1 Login Window (May appear different, depending on browser)*

Figure 2.3 The NL1 License Agreement Window

Figure 2.4 - The NL1 Home Page

2.2.2 Configuring the TCP/IP Settings

⚠ *After configuring the TCP/IP Settings, you **MUST** reboot the NL1 for the settings to take effect. The NL1 may be rebooted by either removing power or by following the "**Rebooting the NL1 Board**" instructions in **section 3.2** of this manual.*

In the orange menu bar at the top of the browser screen, click the "Configure" link. In the TCP/IP Setting block of the Configuration screen (See Figure 2.5), set the name to any meaningful name of your choice and set the first three numbers of the IP address to match the subnet of the network the NL1 will be connected to. Set the fourth value of the IP address to a number between 0 and 255 which is not being used by any other device on the subnet. Follow the example below to complete the remainder of the TCP/IP settings. Consult your IT department for information on these settings.

Note on DHCP: At the bottom of the TCP/IP Setting window, there is a checkbox for DHCP. Normally, this option is left unchecked, however in some cases you may want to allow the network to assign an IP address to the NL1. However, please note that **once you select this option, you will need a network scanning tool to find the NL1's IP address before you can log into the NL1 board and that the IP address of the NL1 may change periodically.**

The port number used by the NL1 can also be set in the Port# field. By default the NL1 is set to use port 80.

After completing the TCP/IP settings, click the "Submit" button in the bottom right corner of the TCP/IP Setting box. Note that the new TCP/IP settings will not take effect until the NL1 is rebooted or power to the NL1 is cycled.

To access the NL1 board from outside the installation site's firewall, the firewall must have the ports used by the NL1 for http/https, and SNMP (if used) open. See your IT department for firewall port opening details.

Figure 2.5 - The top portion of the Configure Page

2.2.3 Configuring the Administration Settings

In the Administration Setting block of the Configure screen (See Figure 2.5), you may set the password for the administrator login (default password is admin). The new password must be entered into both spaces before clicking the "Submit" button. The new password will take effect immediately without rebooting the NL1.

The Administration Setting block is also where the time and date are programmed into the NL1. Select the correct time zone from the drop down list and click Submit. After the time zone is set, enter the correct time. Enter the correct time and date in the format shown and click the "Submit" button. The new date and time will take effect immediately. You can view the date and time on the Home page of the interface.

2.2.4 Configuring the SNMP settings

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

Figure 2.6 - The Middle Portion of the Configure Page

In the SNMP Setting block, under the "Basic" heading, set Community to "public" and set Location to a meaningful name of your choice. This entry will help you identify the specific NL1 board when multiple NL1 boards are installed on the same subnet. In the example, "WNH_1" is entered. 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. The default port for SNMP is port 161. Be sure to open the SNMP port if accessing SNMP outside your firewall. 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 NL1.

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.

The example sets up computers connected to three subnets to gain SNMP v1 and v2 access.

- The first subnet is named "mynetwork", the source network is 192.168.1.xxx. Note that the last part of the IP address needs to be replaced with "0/24" to allow all computers in the 192.168.1.xxx subnet to access the NL1 with SNMP v1 and v2.
- The second subnet is called "ABCcompany" and allows all computers with a WAN address of 220.243.139.xxx to access the NL1 through SNMP v1 and v2.
- The third subnet is called myVPN is set to "192.168.3.0/24" which allows SNMP v1 and v2 access for a VPN network with the local address of 192.168.3.xxx.

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 NL1.

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 NL1 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 NL1.

2.2.5 Configuring the Email Settings

The NL1 can be configured to send email alerts on user-specified conditions and periodic status reports. Underneath the SNMP Setting block on the Configure page is the Email Setting 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 NL1 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".
Send Period	Selects how often the NL1 sends a regular email status report. The period can vary from 1 hour to 6 months or, if you do not want the NL1 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 NL1'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.

Click the "Submit" button to save the settings, which will take effect after rebooting the NL1.

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 NL1, so that the CSV file will still be available via regular email.

2.2.6 Configuring the NL1 Network module Settings

Below the Email Setting block is the NL1 Network Module Setting block, where application-specific parameters of the NL1 can be set (See Figure 2.7).

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.
Hall Sensor 1	Enter a name indicating the current being measured by the current sensor connected to the NL1. In the example, the label is "Battery Current".
ADC1 Reading	Enter a name indicating the voltage being measured by the ADC input of the NL1. This reading is the voltage between the two ADC input pins. In the example, the label is "B100 Voltage (5.00V)". Note that if the Dual ADC jumper is in place (ONLY when using an NS2 board with the NL1), a second setting, labeled ADC2 Reading, will appear under the ADC1 Reading setting.
Event 1	Enter a name related to the usage of the Event1 input. In the example, this setting is labeled "Tamper Switch".
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.

After entering the above information into the NL1 Network Module Setting block, click the "Submit" button to save the settings. These settings will take effect immediately without rebooting the NL1 board.

2.2.7 Configuring the Battery Settings

The Battery Setting block is under the NL1 Network Module Setting block on the Configure page (See Figure 2.7). The available settings are as follows:

Rated Battery Life	Enter the rated battery life or desired replacement period in years. This is used by the NL1 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 FPO on the Device 1 connector. This rating is used by the NL1 to approximate how much capacity is remaining in the battery (if using the current sensor to monitor battery health).

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

Figure 2.7 - The Bottom Portion of the Configure Page

2.2.8 Current Sensor Calibration

The Current Sensor Calibration block is at the bottom of the Configure page (See Figure 2.7). This section allows the current sensor to be calibrated to allow the most accurate current readings.

To perform the calibration, first ensure both red leads of the current sensor are disconnected and that the white cable on the current sensor is connected to the NL1 board. After the red leads are disconnected, click the "Zeroing" button. A warning message will appear, reminding you to make sure the current through the sensor is zero (by disconnecting both red leads on the current sensor). Click "OK", and the NL1 will self-calibrate itself to the current sensor. Ensure the current reading on the home page is zero (or very close to zero) before reconnecting the current sensor's red leads. If the reading is not zero, repeat the calibration procedure.

2.2.9 Setting up the Parameters for the Email Reports

The NL1 can send email alerts based on selectable conditions. If enabled, when the selected conditions are met, the NL1 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 2.8).

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.
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.

Figure 2.8 - The Reporting Page

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 Home page).
Service Due	An email alert will be sent when the "Next Service Due" date and time on the Configure page are reached.

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 which will be included in the report file attached to the alert email (See Figure 2.8). The NL1 records a snapshot of device parameters every hour on the hour. Up to 100 history events can be recorded. The user can select from the latest event only, up to a maximum of the last 100 events. After selecting 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 2.8). Any connected devices will show here, along with a section for the NL1 itself. To include these devices in the email alert report, check the box to the right of the device name in the heading for the device.

The NL1 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 NL1 parameters include: temperature, the current sensor reading (will appear as the label set for "Hall Sensor 1" on the Configure page), the ADC1 reading (will appear as the label set for "ADC1 Reading" on the Configure page), and the Event1 Status (will appear as the label set for "Event 1" on the Configure page).

Available FPO parameters include: Model Number, System Fault Status, AC Fault Status, FAI Status, FPO Output Voltage, Battery Voltage, Battery Charge Current, FPO Runtime, Battery Runtime, AC Fault Count, and System Fault Count.

Available N24 parameters include: Model Number, System Fault Status, FAI Status, Alm/Spv Mode

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

2.2.10 Programming Devices Connected to the NL1

When certain devices are connected to the NL1, various parameters of these devices can be programmed through the NL1's interface. Note that programming these parameters changes the operation of the device itself. To program these options, click on the "Programming" link in the top menu bar. When the Programming page appears, check the option you want to program, select the value (if appropriate), and click the "Apply" button for the device (See Figure 2.9).

Currently, only FPO power supplies have programming options available.

FPO Programming Options:

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 NL1 uses this counter along with the user-entered "Battery Rated Life" to calculate the next battery replacement date.
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 NL1.
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.

After entering the values or selecting the appropriate options, click the "Apply" button at the bottom of the Device Area. The settings will take effect immediately without rebooting the NL1.
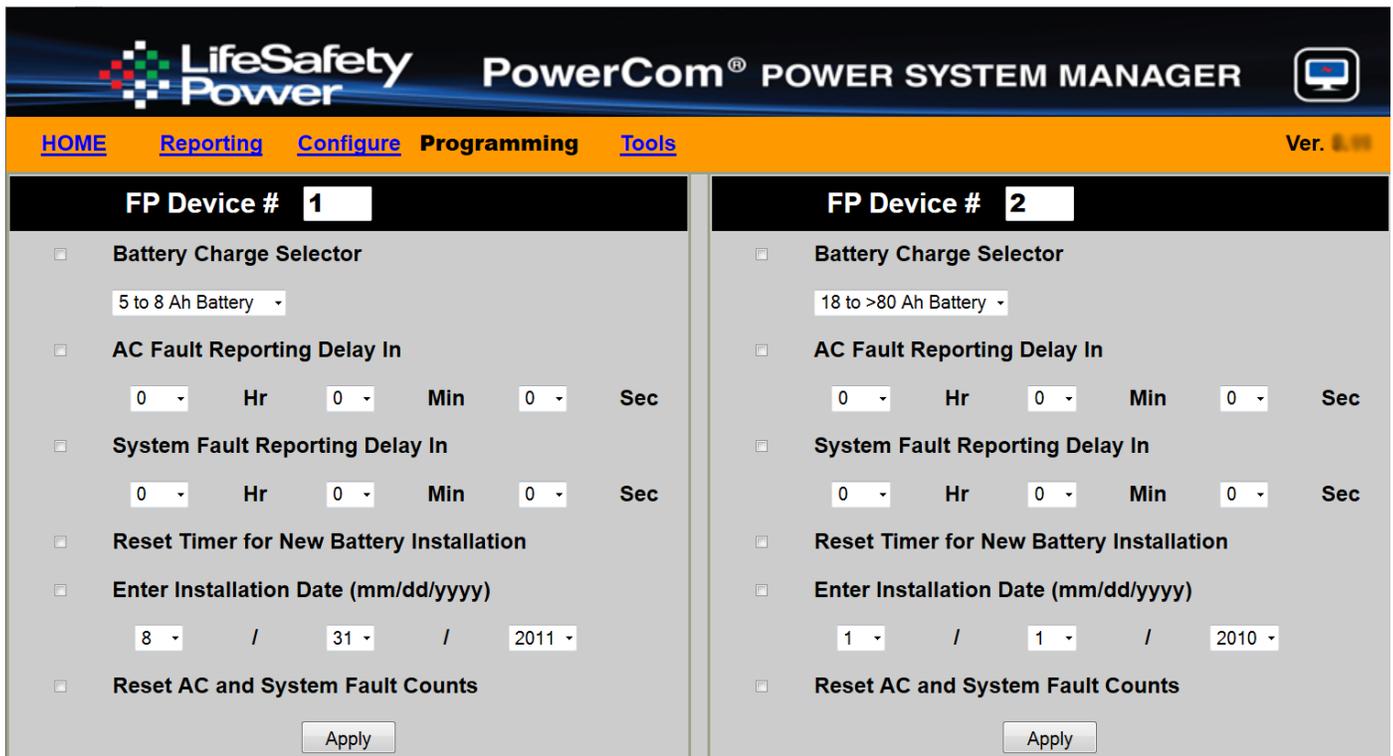
Figure 2.9 - The Programming Page

Section 3 – Using the NL1

Before system parameters can be viewed, you must be logged into the NL1 board using the proper IP address, user name, and password for the NL1 to be viewed, as selected in Section 2 of this manual.

3.1 Viewing System Parameters on the NL1 Home Page

The Home page contains all of the real-time parameters monitored by the NL1. The Home page is broken into several sections as follows.

3.1.1 Basic Site Information

The top portion of the NL1 Home page lists the Site ID (as programmed on the Configure page) as well as the system time and date (See Figure 3.1).

Figure 3.1 - The Top Portion of the Home Page

3.1.2 Device Parameters

The next section will show the available parameters of any connected devices (See Figure 3.1). If no devices are connected to the "Device" inputs, this section will be blank.

Available Parameters of an FPO Power Supply (Device FP1 or FP2)

Any FPO power supply connected to a device input will provide the following parameters:

Device	This is the identifying label for the FPO device. This label is given by the NL1 and is not user settable. The first FPO connected to a device input is labeled FP1 and the second is labeled FP2.
Model	This is the model family of the FPO connected to the NL1 as reported by the FPO. There are currently three FPO model families: FPO25-75, FPO100-150, and FPO200-250.
Output Voltage	This is the measured system output voltage (in Volts DC) of the FPO, as measured directly out of the power supply engine within the FPO power supply board. This voltage is distributed to the DC1 and DC2 output terminals and fastons.
AC Fault Status	Indicates whether the FPO 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 FPO manual to troubleshoot.
System Fault Status	Indicates whether the FPO 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 FPO 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 rate of charge the FPO is applying to the battery set (in Amps DC). This field only represents charge into the battery and does not show battery discharge current. Use the current sensor to measure both charge and discharge current.
FAI Status	This field indicates the status of the FAI Input of the FPO. "Inactive" on a green background indicates that the FAI input is not activated. "Active" on a red background indicates that the FAI input is receiving a valid activation signal.
FAI Latch	This field indicates the status of the FAI Latch Input of the FPO. 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.
AC Fault Count	This field shows the number of AC Fault detections since the last fault counter reset. When new, an FPO may contain a random number in this field and the counter should be reset (on the Programming page) before being used.
System Fault Count	This field shows the number of System Fault detections since the last reset of the fault counter. An FPO may contain random data in this field when new and the counter should be reset (on the Programming page) 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 FPO and should be reset on the Programming page before use. This Runtime is independent of the Battery End-of-Life / Bat. Replacement Date calculation.
System Installed Time	This field displays the total power-up time in hours for the FPO. This value cannot be reset. It is normal for several hours to show in this field on a new FPO, due to burn-in testing at the factory.

Available Parameters of an N24 NAC Expander (Device NAC1 or NAC2)

Any N24 NAC Expander connected to a device input will provide the following parameters (See Figure 3.2):

Device	This is the identifying label for the N24 Device. This label is given by the NL1 and is not user settable. The first N24 connected to a device input is labeled NAC1 and the second is labeled NAC2.
Model	This is the model number, which is N24.
System Fault Status	Indicates whether the N24 is detecting a System Fault condition. "No" on a green background indicates that no problem is detected. "Yes" on a yellow background indicates a System Fault condition. See the N24 and FPO manuals to troubleshoot.
FAI Status	"Active" on a red background Indicates that a valid alarm input has been received by the N24. "Inactive" on a green background indicates that no alarm input has been received.
Mode Status	"Supervisory" on a green background indicates that the N24 is in Standby mode and is supervising the output wiring. "Alarm" on a red background indicates that the N24 has responded to an alarm input.
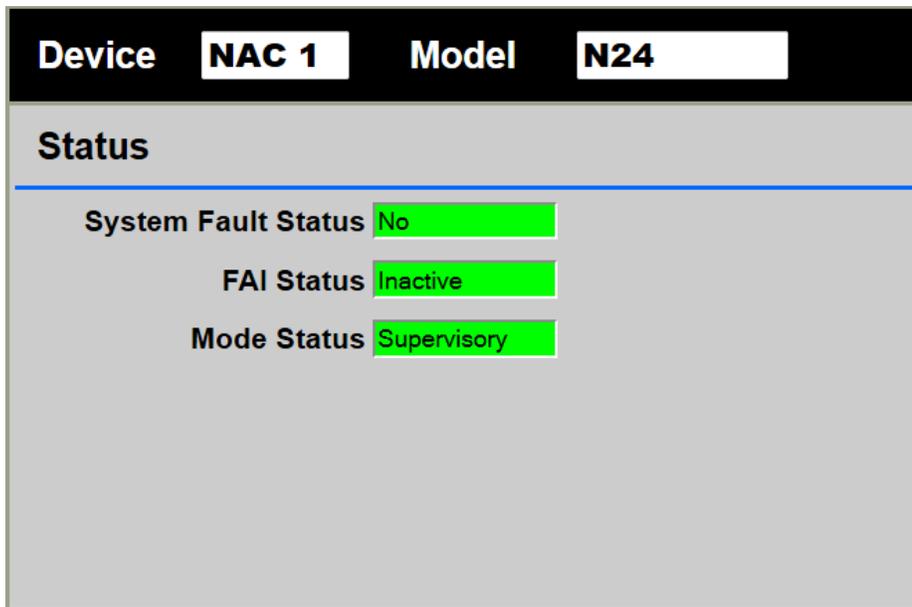
Figure 3.2 - The N24 Parameters Window

3.1.3 Network Module Status, Web Interface Settings, and Remote/Scheduled Battery Test

The bottom of the Home page shows parameters and settings related to the NL1 board and the Web Interface itself as well as the Remote/Scheduled Battery Test section (See Figure 3.3).

Temperature	This is the temperature of the NL1 board. The temperature sensor is installed on the NL1's PC board. The temperature may be set to be displayed in either Fahrenheit or Celsius, based on the setting of the "Temperature" radio buttons on the bottom right of the Home page.
Current Sensor Measurement	This will appear as the label you set for the Current Sensor on the Configure page. In the example shown, this is "Battery Current". This measurement is 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 red lead of the current sensor. If current is being displayed in the opposite polarity than expected, swap the short and long red 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. In the example shown, this is "B100 Voltage (5.00V)". This measurement is shown as a positive or negative voltage in Volts DC. If using an NS2 board with the NL1 and J9 is installed, two measurements will appear here.
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. In the example shown, this is "Tamper Switch". This field will show "Active" or "Inactive" 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 on the home page will change colors based on the status. If service is due, the field will be yellow, if service is not due the field will be green.

Figure 3.3 - The Bottom Portion of the Home Page

Control 1 and Control 2	These fields indicate the state of the two control outputs of the NL1. These control ouputs can be manipulated with the Output Control radio buttons on the bottom right of the home page. The Control 1 and Control 2 fields will display "Off" with a yellow background or "On" with a green background.
Bat Condition	If enabled, this will display a bar graph indicating the estimated battery condition of the battery connected to an FPO connected to the Device 1 input of the NL1. This function WILL NOT work on an FPO connected to the Device 2 input of the NL1. In order for this function to work, the NL1's Current Sensor must be placed in line with one of the battery leads (See Section 1.3.4 for more information). Once the battery is connected and the NL1 detects current flow, an enable/disable button will appear to the right of the Bat Condition label. If the button is enabled, a four segment bar graph display will appear with one end labeled "Full" and the other end labeled "Low". Note that it can take several minutes for an accurate indication of battery condition. Current Sensor calibration should be performed upon initial installation for accurate results. 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 the current sensor is being used for another function other than monitoring battery current, the Battery Condition display will show invalid data and MUST be disabled to prevent confusion in the future. ONLY enable the Battery Condition display if the current sensor is in line with one of the battery leads.
Battery Replacement Date	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 yellow and an email alert will be sent if enabled on the Reporting page.
Screen Refresh	Changing this to "On" will enable an automatic refresh of the Home page approximately every 5 seconds (this may take longer, depending on network speed). The "Go" button must be clicked for this setting to take effect. If "Off" is selected, the screen will remain static and will only refresh when the browser window is manually reloaded. Note that if screen refresh is ON, any change of settings on the home page (including setting screen refresh back to OFF) must be completed (including clicking the "Go" button) before the browser window auto-refreshes or the changes will be lost.
Temperature	This changes the display of the NL1 temperature between Celsius and Fahrenheit on the browser display. The "Go" button must be clicked for this setting to take effect. Note that the emailed reports only display the temperature in Celsius.
Output Control	These two pairs of radio buttons select the state of the two Control Outputs of the NL1 board. After changing the radio button, the "Go" button must be clicked for the setting to take effect.
Buffer Navigation	The NL1 saves a snapshot of data every hour, on the hour. These snapshots can be reviewed by changing the Buffer Page number. Page 0 is the current data and is refreshed approximately every 3 seconds. Page 1 holds the data from one hour ago. Page 2 holds the data from 2 hours ago. There are up to 100 buffer pages available for review. The buffer page may be selected either via the drop down list labeled "Select Buffer Page#" or via the "Forward" and "Back" buttons. When using the drop down list, the "Go" button must be clicked after selecting the page number.

Battery Run Time Test	The Battery Run Time Test section allows the user to test the actual run-time of a system with the installed battery set. This test may be run manually or may be scheduled for a one-time automated test. If email is configured on the NL1, 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 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 FP1 device and that the Current Sensor is properly connected in line with the battery set. See Section 1.3.4 for more information on the Current Sensor. The "Bat Condition" button on the NL1 home screen 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 Run Time Test" header on the NL1's Home page. Email parameters must be properly set up on the Configure page of the NL1, or this selection will be unavailable.

- Click the "Start Manual Test" button. A warning message will appear (See Figure 3.4). Click OK to begin the test.
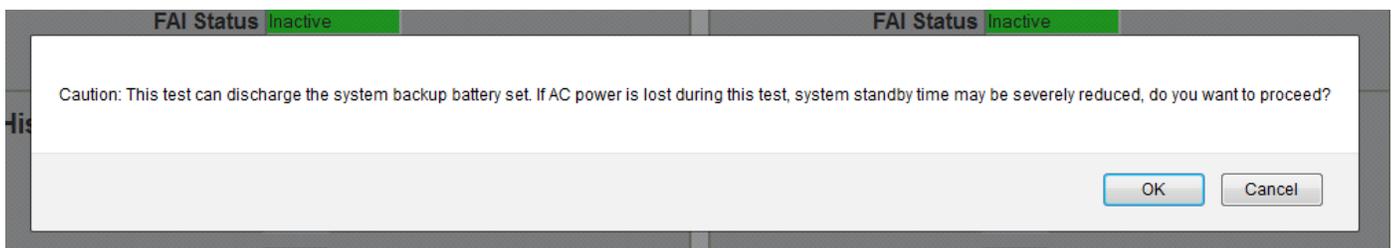
Figure 3.4 - Battery Run Time Test Warning

- While the test is in progress, there will be two messages on the NL1 Home screen - one indicating "Battery discharging..." at the bottom of the screen, and one indicating "Caution Battery test in progress. System powered by battery." (See Figure 3.5)

Figure 3.5 - Battery Run Time Test In Progress

- At the conclusion of the test, the measured battery runtime and last test date will be displayed in the Battery Runtime Test section on the Home page (See Figure 3.6). The results will also be emailed if emailing is enabled.

To Schedule a One-Time Test

- Ensure a battery set is connected to the FP1 device and that the Current Sensor is properly connected in line with the battery set. See Section 1.3.4 for more information on the Current Sensor. The "Bat Condition" button on the NL1 home screen 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 Run Time Test" header on the NL1's Home page. Email parameters must be properly set up on the Configure page of the NL1, or this selection will be unavailable.
- Enter the Year, Month, Day, Hour, Minute, and am/pm for when you want the test to begin.
- 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 Runtime Test section on the Home page (See Figure 3.6). The results will also be emailed if emailing is enabled.

Figure 3.6 - Battery Run Time Test Results

3.2 Using the Tools Page

Clicking the Tools link at the top of the display will bring up the Tools page (See Figure 3.7). This page allows upgrading of the firmware, rebooting the NL1 board, and viewing or printing the NL1's system log.

LifeSafety Power   PowerCom® POWER SYSTEM MANAGER

HOME   Reporting   Configure   Programming   **Tools**   Ver.

Upgrade Firmware   **Reboot**

[Upgrade]   Reboot Netlink [Submit]

Confirm [OK]

Message: [   ]

System Log

[PRINT]   **System Log**

0	Jan 1 00:00:08 (none) syslog.info syslogd started: BusyBox v1.9.1
1	Jan 1 00:00:08 (none) user.warn kernel: CPU NUC950 (id 0x02900910 system clock:200MHZ)
2	Jan 1 00:00:08 (none) user.warn kernel: CPU0: D VIVT write-back cache
3	Jan 1 00:00:08 (none) user.warn kernel: CPU0: I cache: 8192 bytes, associativity 4, 32 byte lines, 64 sets
4	Jan 1 00:00:08 (none) user.warn kernel: CPU0: D cache: 8192 bytes, associativity 4, 32 byte lines, 64 sets
5	Jan 1 00:00:08 (none) user.warn kernel: Built 1 zonelists
6	Jan 1 00:00:08 (none) user.notice kernel: Kernel command line: root=/dev/ram0 console=ttyS0,115200n8 initrd=0xa00000,5120000 mem=32M
7	Jan 1 00:00:08 (none) user.warn kernel: PID hash table entries: 256 (order: 8, 1024 bytes)
8	Jan 1 00:00:08 (none) user.warn kernel: Console: colour dummy device 80x30
9	Jan 1 00:00:08 (none) user.debug kernel: selected clock e4e1c0 quot 7
10	Jan 1 00:00:08 (none) user.warn kernel: Dentry cache hash table entries: 4096 (order: 2, 16384 bytes)
11	Jan 1 00:00:08 (none) user.warn kernel: Inode-cache hash table entries: 2048 (order: 1, 8192 bytes)
12	Jan 1 00:00:08 (none) user.info kernel: Memory: 32MB = 32MB total
13	Jan 1 00:00:08 (none) user.notice kernel: Memory: 25292KB available (1728K code, 310K data, 84K init)
14	Jan 1 00:00:08 (none) user.debug kernel: Calibrating delay loop... 99.73 BogoMIPS (lpj=498688)
15	Jan 1 00:00:08 (none) user.warn kernel: Mount-cache hash table entries: 512
16	Jan 1 00:00:08 (none) user.info kernel: CPU: Testing write buffer coherency: ok
17	Jan 1 00:00:08 (none) user.info kernel: checking if image is initramfs...it isn't (no cpio magic); looks like an initrd

Figure 3.7 - The Tools Page

Upgrading Firmware

The Upgrade Firmware section is at the top left of the Tools page (See Figure 3.7). 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 NL1 board. This process will take from 30 seconds to one minute, depending on network speed and traffic and the message box will display "Download...". Once the firmware is loaded into the NL1's RAM, it can then be burned to the processor in the NL1. 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 NL1's processor. This process may take up to 12 minutes - DO NOT REMOVE POWER TO THE NL1 DURING THIS PROCESS or the NL1 will be rendered nonfunctional.

Once the update is complete, a message will appear in the message box indicating "Update Finished". The NL1 must be rebooted in order to start the new firmware.

Rebooting the NL1 Board

The "Reboot" section is on the top right of the Tools page (See Figure 3.7). To reboot the NL1, 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 minute, during which you will lose communication with the NL1. Communication will be restored once the yellow LED lights steady.

System Log

The bottom section of the Tools page is the System Log (See Figure 3.7). To view the log scroll the window down. The System Log can be printed by clicking the "Print" button to the left of the Log window. There is no valuable user information in the System Log, however LSP Tech Support may ask for information from the log if technical support is required.

3.3 Understanding The Email Report

The report file sent by email by the NL1 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 3.8).

The example in Figure 3.8 has been reformatted for better readability in Excel. The top three rows of data give the following basic information:

Site ID	WNH Site #02 - This is set in the "Site ID" setting on the Configure Page of the NL1
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 NL1 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 NL1, FP1, and FP2.
Device Parameter	This column shows the available parameters which are being monitored. These parameters vary depending on the device(s) connected to the NL1.
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
1	Site ID	WNH Site #02			
2					
3	Report trigger: report period				
4					
5	Service due	no			
6					
7	Device name	Device parameter	Mon Oct 03 2011 19:00:00	Mon Oct 03 2011 18:00:00	Mon Oct 03 2011 17:00:00
8					
9	Netlink	Cabinet internal temperature	33.58 Deg.C	33.58 Deg.C	33.58 Deg.C
10	Netlink	Battery Discharge Current	-0.05 Amps	-0.05 Amps	0.00 Amps
11	Netlink	DC2_OUT voltage	0.00 Volts	0.00 Volts	0.00 Volts
12	Netlink	Tamper switch	Inactive	Inactive	Inactive
13					
14	FP1	Model number	FPO75-25	FPO75-25	FPO75-25
15	FP1	System fault status	No	No	No
16	FP1	AC fault status	No	No	No
17	FP1	FAI status	Inactive	Inactive	Inactive
18	FP1	Output latching on FAI	Inactive	Inactive	Inactive
19	FP1	Output voltage	12.40 Volts	12.43 Volts	12.40 Volts
20	FP1	Battery voltage	14.11 Volts	13.96 Volts	13.81 Volts
21	FP1	Battery charger current	0.00 Amps	0.00 Amps	0.00 Amps
22	FP1	Total power-up time	2403 Hours	2402 Hours	2401 Hours
23	FP1	Battery installed time	1552 Hours	1551 Hours	1550 Hours
24	FP1	# of AC faults detected	107	107	107
25	FP1	# of system faults detected	25	25	25
26					
27	FP2	Model number	FPO150-100	FPO150-100	FPO150-100
28	FP2	System fault status	No	No	No
29	FP2	AC fault status	No	No	No
30	FP2	FAI status	Inactive	Inactive	Inactive
31	FP2	Output latching on FAI	Inactive	Inactive	Inactive
32	FP2	Output voltage	12.55 Volts	12.55 Volts	12.55 Volts
33	FP2	Battery voltage	0.35 Volts	0.35 Volts	0.35 Volts
34	FP2	Battery charger current	0.00 Amps	0.00 Amps	0.00 Amps

Figure 3.8 - A Reformatted Email Report .CSV File

Appendix 1 – Software Agreement

LIFESAFETY POWER INCORPORATED

LIFESAFETY POWER® WARRANTY STATEMENT AND SOFTWARE LICENSE AGREEMENT

NOTICE TO USER: PLEASE READ THIS DOCUMENT CAREFULLY. THIS DOCUMENT INCLUDES WARRANTY INFORMATION (PART I) AND A LICENSE AGREEMENT GOVERNING USE OF LIFESAFETY POWER SOFTWARE (PART II).

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Appendix 2 – Terms and Conditions, Warranty

A2.1 TERMS AND CONDITIONS

Order Acceptance Orders will become effective only when accepted by LifeSafety Power.

Invoicing All orders will be billed at time of shipment in US dollars.

Shipping All orders are subject to shipping and handling charges. All shipments are F.O.B. LifeSafety Power and are uninsured, unless specified otherwise by the customer.

Claims All claims, including claims for damage incurred in shipment, must be made to LifeSafety Power within 10 days of delivery.

Changes, Misprints All prices, terms, discounts and specifications are subject to change without notice. LifeSafety Power is not responsible for misprints.

A2.2 PAYMENT TERMS

New Accounts Orders to new customers will be shipped prepaid or C.O.D. until a line of credit has been established.

C.O.D. Customer to pay transport company for order and shipping.

Credit Card LifeSafety Power accepts MasterCard, VISA and AMERICAN EXPRESS. Terms for orders placed with a Credit Card are order total plus shipping charged to card at time of shipment. Terms for using a Credit Card as payment for open invoices are net invoice charged to your credit card upon receipt of Credit Card information.

Open Account Terms for customers who have been accepted for an open account credit are net 30 days. Past due payment may result in an immediate suspension of the credit line.

A2.3 REPAIRS

All products returned to LifeSafety Power for repair will require a Return Material Authorization (RMA) number issued by LifeSafety Power Customer Service. Products under warranty, as determined by LifeSafety Power's Technical Repair Department, will be repaired and returned at no charge. Any product that is not under warranty may be repaired for a fee if replacement components are available. Prior acceptance of repair charges is required. The Return Material Authorization Number (RMA) must appear on the package and shipping charges must be prepaid.

A2.4 ADVANCE REPLACEMENTS

An advance replacement of product that has been installed will require proof of purchase and a Return Material Authorization (RMA) number issued by LifeSafety Power Customer Support. All advance replacement orders will be invoiced to customer. Credit for merchandise only will be issued once returned product is determined by LifeSafety Power to be under warranty. The Return Material Authorization Number (RMA) must appear on the package and shipping charges must be prepaid.

A2.5 EXCHANGES

All equipment returned for exchange will require proof of purchase and a Return Material Authorization (RMA) number issued by LifeSafety Power Customer Support. The Return Material Authorization Number (RMA) must appear on the package and shipping charges must be prepaid.

A2.6 CREDITS

All equipment being returned for credit must be returned within 30 days from date of purchase in original unopened packaging. A proof of purchase and a Return Material Authorization (RMA) number issued by LifeSafety Power Customer Support are required. The Return Material Authorization Number (RMA) must appear on the package and shipping charges must be prepaid. All returns for credit are subject to a 20% restocking charge.

A2.7 LIFESAFETY POWER Ten Year Limited Warranty

LifeSafety Power Inc. (LifeSafety Power) warrants this equipment, when properly applied and operated within specified conditions, against faulty materials or workmanship for a period of ten years from the date of original purchase by the end user. For equipment sites within the United States and Canada, this warranty covers repair or replacement of defective equipment at the discretion of LifeSafety Power. Repair will be from the nearest authorized service center. Replacement parts and warranty labor will be borne by LifeSafety Power. For equipment located outside of the United States and Canada, LifeSafety Power only covers faulty parts. LifeSafety Power products repaired or replaced pursuant to this warranty shall be warranted for the unexpired portion of the warranty applying to the original product. This warranty applies only to the original purchaser who can validate product purchase through LifeSafety Power or one of LifeSafety Power's authorized distributors.

The warranty shall be void if (a) the equipment is damaged by the customer, is improperly used, is subjected to an adverse operating environment, or is operated outside the limits of its electrical specifications; (b) the equipment is repaired or modified by anyone other than LifeSafety Power or LifeSafety Power-approved personnel; or (c) has been used in a manner contrary to the product's operating manual or other written instructions. Any technical advice furnished before or after delivery in regard to use or application of LifeSafety Power's equipment is furnished without charge and on the basis that it represents LifeSafety Power's best judgment under the circumstances, but it is used at the recipient's sole risk.

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