NetLink Connect NXB

Network Connectivity Expansion Module

Installation and Operation Manual

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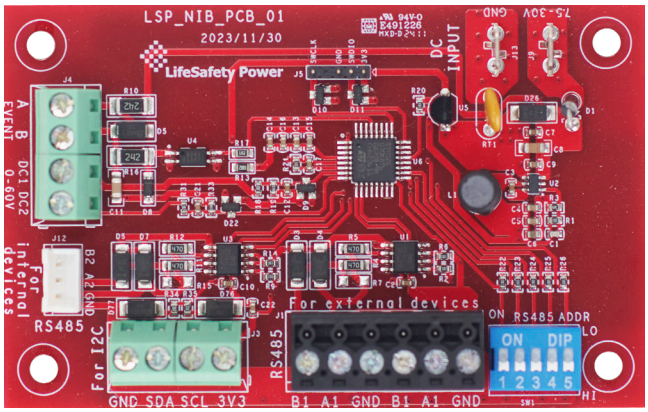

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P03-109 Rev A02

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Notes and Warnings

Symbol Definitions

The following symbols are used throughout this manual

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

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

Warnings

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Regulatory Information

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

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

Conventions Used Within this Manual

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

Introduction

Product Description

The LifeSafety Power NetLink® Connect NXB expansion module allows multiple enclosures to be monitored by a single NLC module through a secure OSDP connection. Up to 31 NXB modules may be connected to a single NLC module, and each NXB can monitor up to 32 local devices through an isolated RS485 connection. **The NXB MUST be used with an NLC network module and will not operate on its own.**

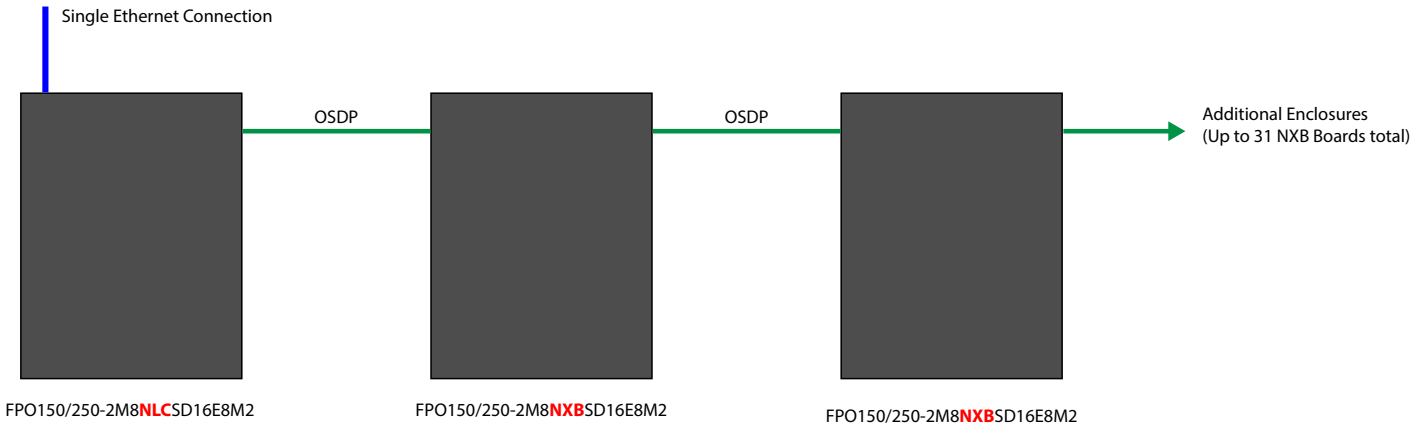

Figure 1 - NLC-NXB Acrhitecture

In addition to expanding a NetLink Connect system, the NXB also has an Event input to monitor the tamper switch, a voltmeter input to monitor a local DC voltage, and an I2C sensor input to monitor the room or rack temperature at the installed location.

Specifications

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

Use typical wiring material type: UL/CSA recognized insulated wire, Insulation rating 300V or higher, 105C or higher, such as UL AWM Style 1581
Class 2 power limited wiring must be seperated from non-power limited wiring by a minimum of 1/4 inch and must use seperate knockouts
The installation and all wiring methods shall be in accordance with ANSI/NFPA70 and all local codes.
For ULC compliance, installation and all wiring methods shall be in accordance with the Canadian Electrical Code, C22.1, Part I, Section 32.
All input/output wiring to the module shall be located within the same room (3 m. max.).
The remote control features have not been investigated by UL.
The module shall be installed in UL Listed LifeSafety Power enclosures only.
Wiring to Event inputs shall be limited to 10m.

Le câblage à puissance limitée de classe 2 doit être séparé du câblage sans limitation de puissance d'au moins 1/4 de pouce et doit utiliser des débouchures séparées
L'installation et toutes les méthodes de câblage doivent être conformes à la norme ANSI / NFPA70 et à tous les codes locaux.
Pour la conformité ULC, l'installation et toutes les méthodes de câblage doivent être conformes au Code canadien de l'électricité, C22.1, partie I, section 32.
Tous les câbles d'entrée / sortie du module doivent être situés dans la même pièce (3 m. Max.).
Les fonctionnalités de la télécommande n'ont pas été étudiées par UL.

Section 1 – Installation

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

1.1 Mounting the NXB 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.

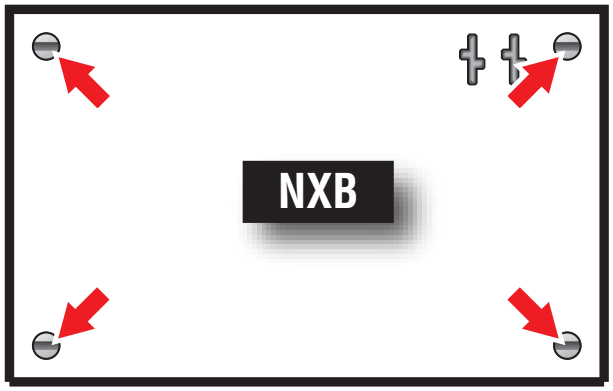

Figure 1.1

1.2 NXB Module Overview

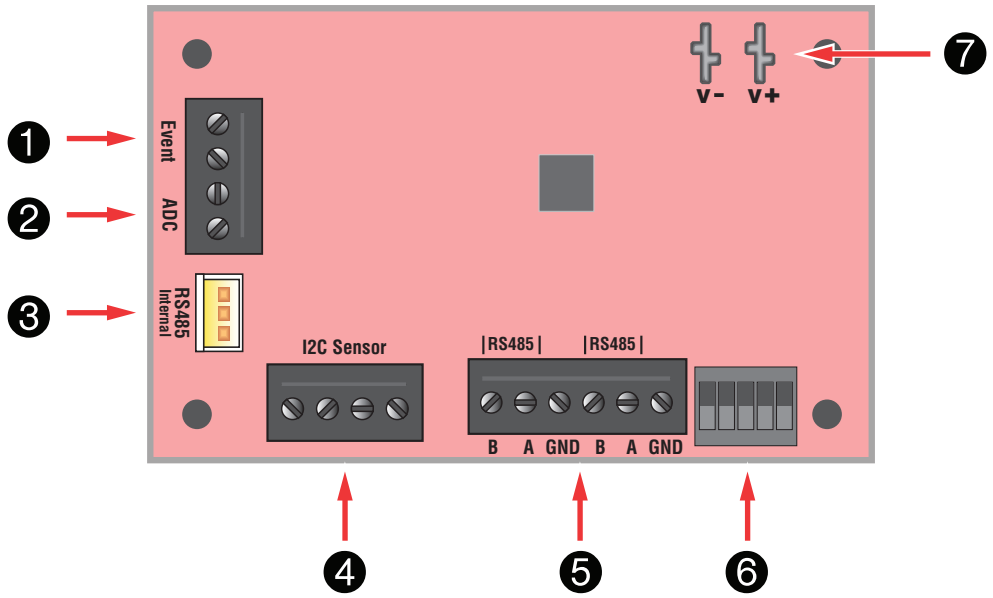

Figure 1.2 - NXB Board Layout

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

1 Event 1 Input

These terminals are for the Event1 input. This input will accept 9-30VDC to initiate an event alert. This input will only indicate an active or inactive condition and will not measure the voltage level. See section 1.3.3.

2 ADC Input

This is the Analog to Digital Converter (ADC) input, which acts as a voltmeter. It accepts 0-30V and is used to measure positive or negative system voltages which are common grounded with the NetLink module. The ADC cable wiring must be routed away from high voltages. See section 1.3.2

3 RS485 Internal Connection

This connector allows for quick connection of accessory modules within the same enclosure as the NXB. See Secion 1.3.5. The RS485 Internal buss utilizes 32 addresses. All boards connected to the internal RS485 buss must have a unique address. See the manual for the board being connected for addressing information.

For RS485 connections external to the enclosure, see #5.

4 I2C Sensor Input

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

5 RS485 External Connection

This terminal strip connects to the RS485 OSDP connection from the NLC and passes it along to the next device on the NLC's OSDP loop. The RS485 buss utilizes 32 addresses, one of which is used by the NLC module. See #6.

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

6 RS485 DIP Switches

These DIP switches set the RS485 address of the NXB board on the External RS485 buss (See #5). This address must be a unique address not used by the NLC board or other devices on the RS485 External connection. See section 1.3.6.

7 Input V+ & V-

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

Note - The voltage input of the NXB must be connected directly to the DC1 output or to the V+/V- fastons (if present) of the power supply. See Section 1.3.1.

1.3 Connecting the NXB Module

1.3.1 Making the Power Connections to the NXB Board

The DC power source for the NXB is connected to the DC INPUT fastons (Page 2, #7). 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 NXB must connect directly to the main output or the V+/V- faston connectors (if present) of the power supply. (Figure 1.3)

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

1.3.2 Connecting the ADC (Voltmeter) Inputs

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

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

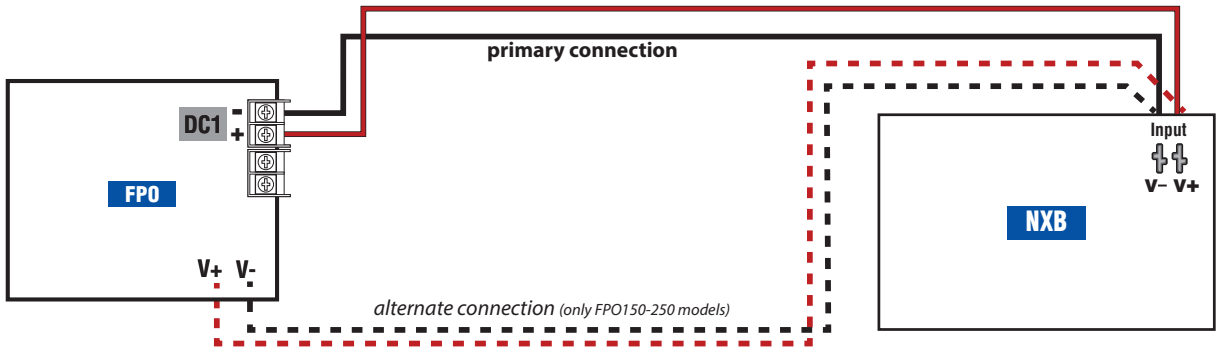

Figure 1.3 - Power the NXB from the V+/V- or DC ouput terminals on the main power supply

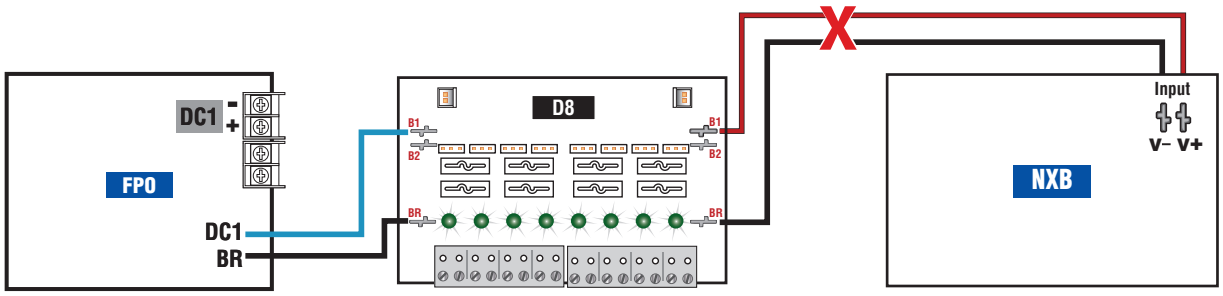

Figure 1.4 - Do not power from another accessory board's output terminals or B1/B2 connection

1.3.3 Connecting the Event Input

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

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

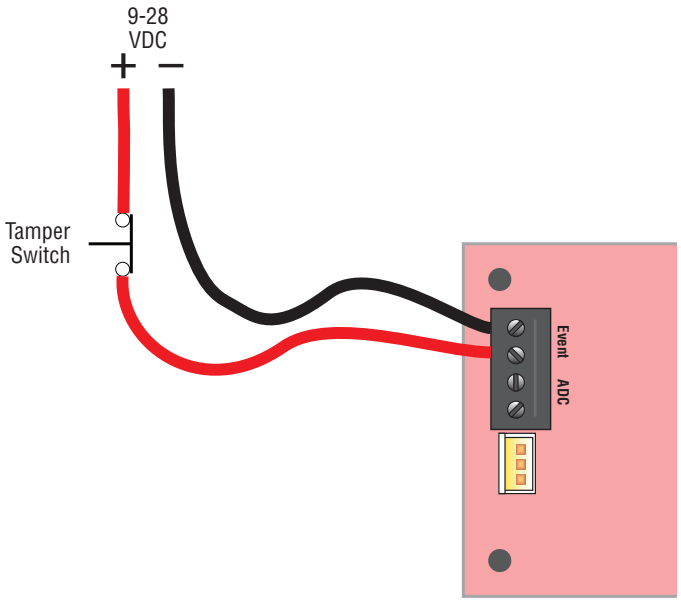

Figure 1.5 - Event Input Tamper Switch Wiring

1.3.4 I2C Remote Temperature Sensor Input

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

1.3.5 Connecting Devices to be Monitored to the NXB

Up to 32 local devices can connect to the NXB via the RS485 Internal connection (Page 2, #3). Each device connected must have a unique address. Plug one end of the RS485 cable into the NXB. Connect the other end to the RS485 connector of the device to be monitored (such as an FPO, B150, M8, or SD board - see the manual for the device being connected for the location of the RS485 connector and addressing information).

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

See Figure 1.6

1.3.6 Setting the NXB Address

Each NXB module must have a unique address on the RS485 External buss. The host NLC module will use one address (typically address 0). Setting the address is via DIP switch on the NXB PCB as follows:

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

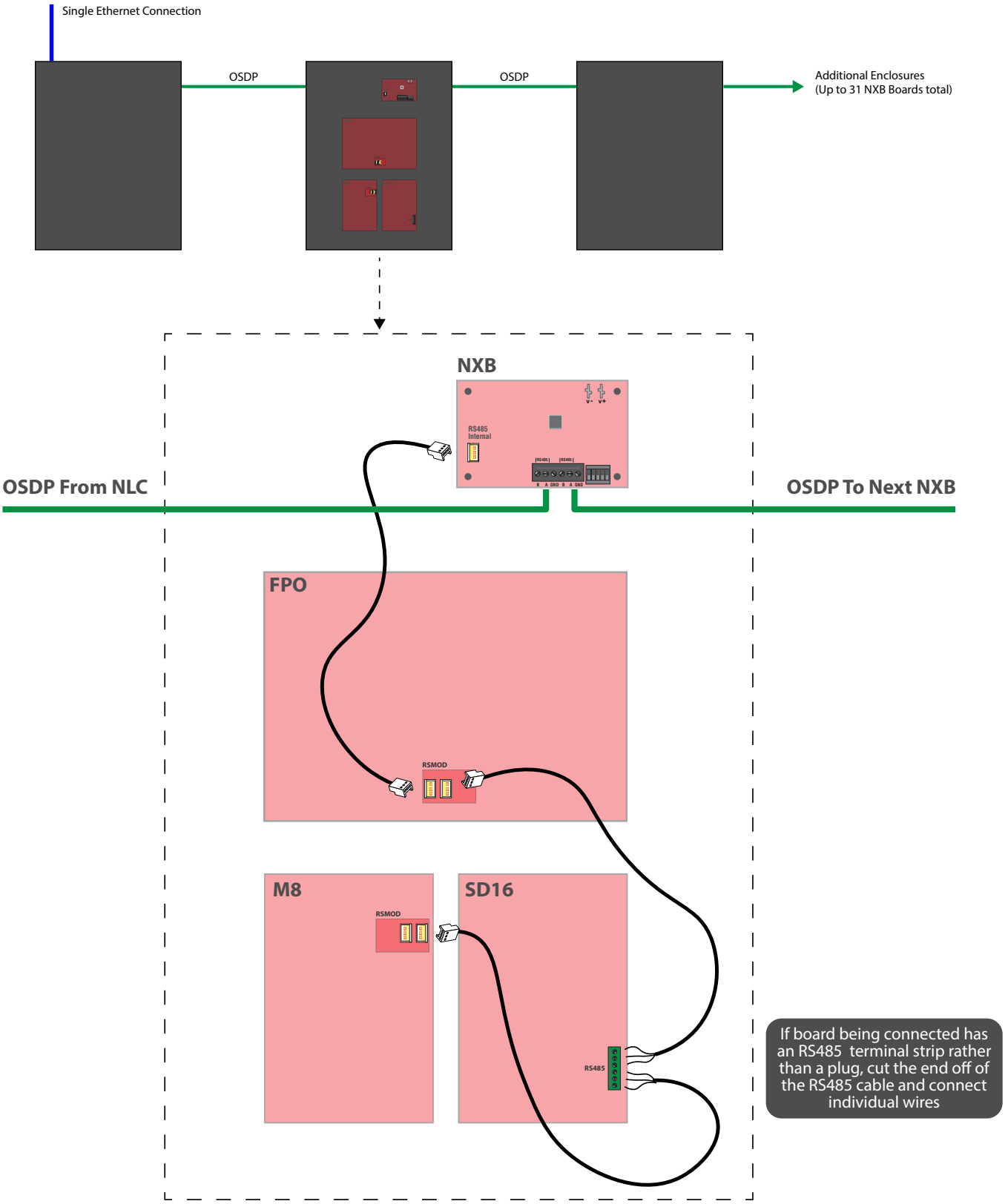

Figure 1.6 - Connecting Local Devices to the NXB

Section 2 – Using the NXB Module

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

2.1 Opening the NXB Status Screen from the NLC Home Page

The NLC Home page contains the NLC and all connected NXB devices at the bottom of the screen. Address 0 (NIB-1) is typically the NLC module. Click the Model column of the desired NXB module to open the status screen of that NXB within the NLC interface.

Figure 2.1 - Typical NLC Home Page

2.2 The NXB Status Page

The NXB Status page displays the NXB parameters, reporting settings, configuration settings, and connected devices. The top of the page shows the basic site information such as the Client ID, Site ID, and Date/Time information as programmed in the host NLC module. See Figure 2.2. Click the Return (left arrow) button at the top to return to the NLC home page. The following sections describe the different areas of the NXB status page.

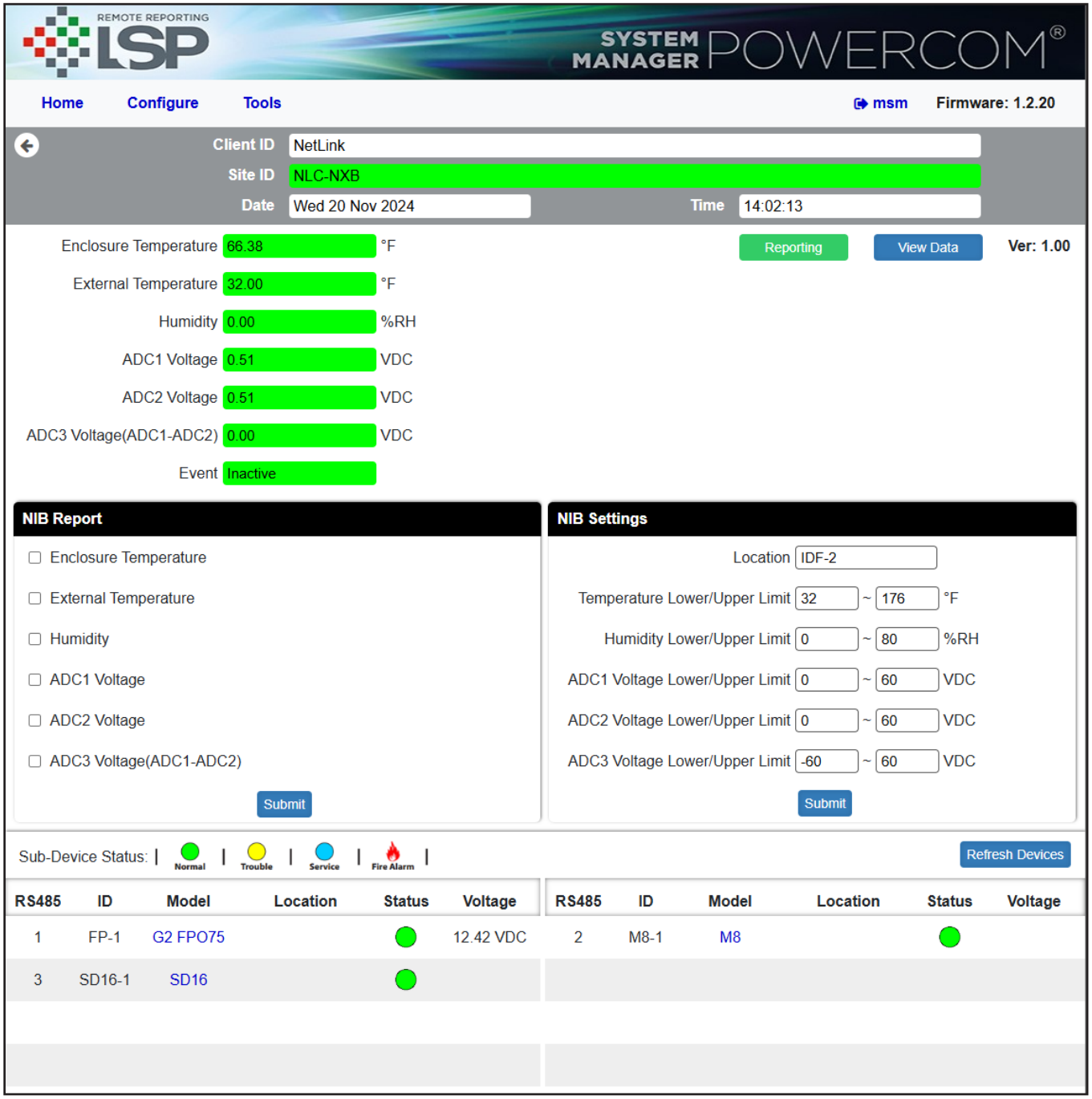

Figure 2.2 - Typical NXB Status Page

2.2.1 NXB Parameters

Below the basic site information are the parameters collected directly by the NXB module, reporting settings, and data viewing (See Figure 2.3).

Enclosure Temperature	This is the temperature of the NXB module. This temperature sensor is installed on the NXB PC board.
External Temperature	If an external temperature sensor is connected to the I2C sensor input, this parameter will display the external sensor's temperature.
Humidity	If a temperature/humidity sensor is connected to the I2C sensor input, this parameter will display the external sensor's humidity measurement.
ADC1 and ADC2 Voltage	These are the voltages measured by the on-board Analog-to-Digital converters (ADC). This measurement is shown as a positive or negative voltage in Volts DC.
ADC3 Voltage (ADC1-ADC2)	This field shows the difference between the ADC1 and ADC2 readings.
Event	This field shows the status of the Event 1 input. This field will show "Active" on a yellow background or "Inactive" on a green background to indicate the status of the Event1 input.
Reporting	Clicking the Reporting button brings the user to the Reporting page for the NXB. On this page, the user can select the parameters which cause alerts and appear in the CSV report for any connected modules, such as power supplies and output modules. Click the Return (left arrow) button at the top to return to the home page.
View Data	The NXB saves a snapshot of data at the interval programmed on the NLC. These snapshots can be reviewed by clicking the View Data button. There are up to 1000 events available for review. To save the data, click the Export Data button. Click the Return (left arrow) button at the top to return to the home page.

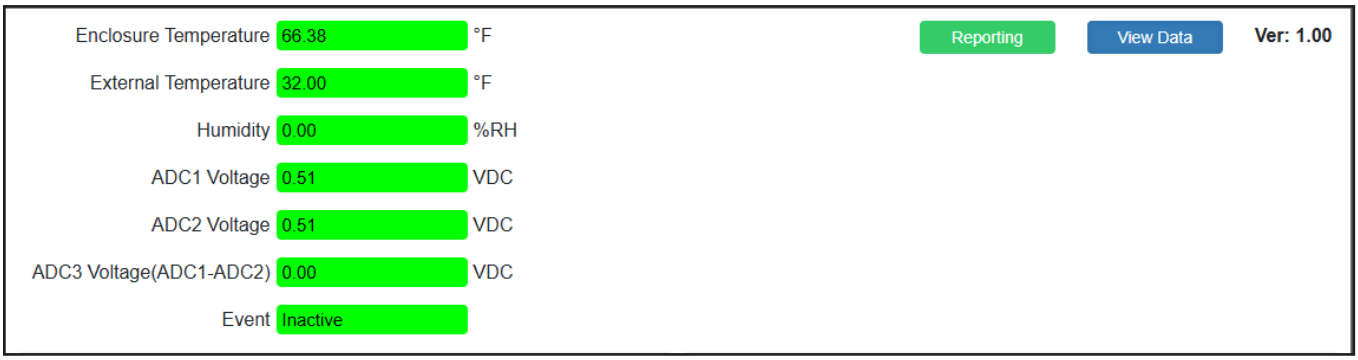

Figure 2.3 - NXB Parameters Section

2.2.2 NIB Reporting Section

The middle left section of the NXB status page allows the selection of the NXB parameters (See Section 2.2.1) which may cause alerts and appear on the CSV report. Reporting data for connected modules is set with the green "Reporting" button in the top section of the NXB status page (See Section 2.2.1). After selecting the parameters, click the "Submit" button to save the changes. See Figure 2.4.

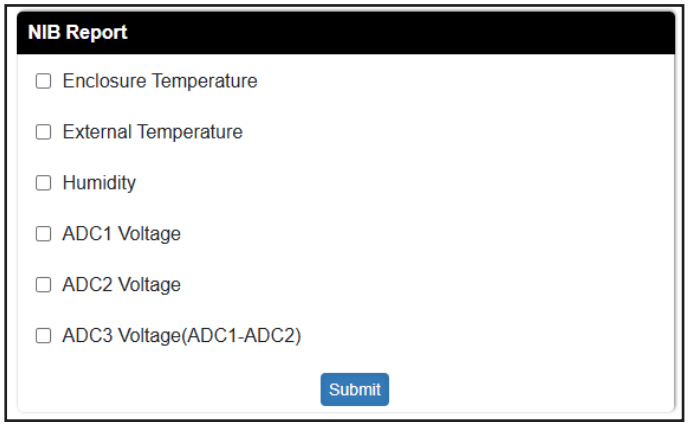

Figure 2.4 - NXB Reporting Section

2.2.3 NIB Settings Section

To the right of the NIB Reporting section is the NIB Settings section. These fields allow the user to set upper and lower limits for the NXB parameters, including temperature, humidity, and ADC voltage. After setting the values, click the "Submit" button. See Figure 2.5.

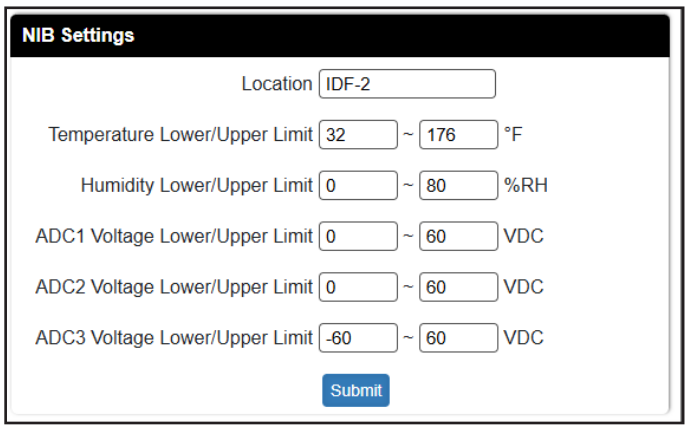

Figure 2.5 - NXB Settings Section

2.2.4 Connected Devices Section

The bottom of the home page shows the devices connected to the RS485 Internal Buss of the NXB (See Figure 2.6). The device table displays the following parameters:

RS485	This is RS485 address set by DIP switches for the connected module. This is the address for the module on the NXB's internal RS485 buss. See the manual for the connected module for RS485 addressing information for that device.
Device ID	This is a unique ID given by the NXB to each device connected to its internal RS485 buss.
Model	The model number of the connected module.
Location	This is the location programmed into the connected module. This allows the user to identify the location where this module is installed. Note that this is separate from the NIB Location field.
Status	This indicator shows the current status of the connected module. 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.
Voltage	Power supplies connected to the NXB will display the measured voltage of its output.
Refresh Devices	This button forces the NXB to immediately refresh the connected devices list.

Clicking the model number of the connected device opens the status page for that device. Consult the manual for the connected device for more information.

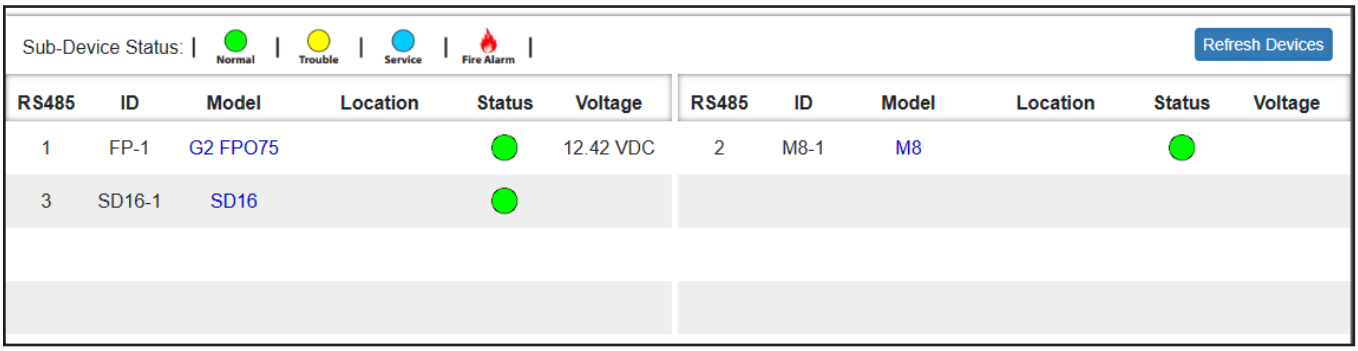

Figure 2.6 - NXB Connected Devices Section

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