OVERVIEW

Traditionally, network managed power systems have required one network drop for each enclosure being monitored.
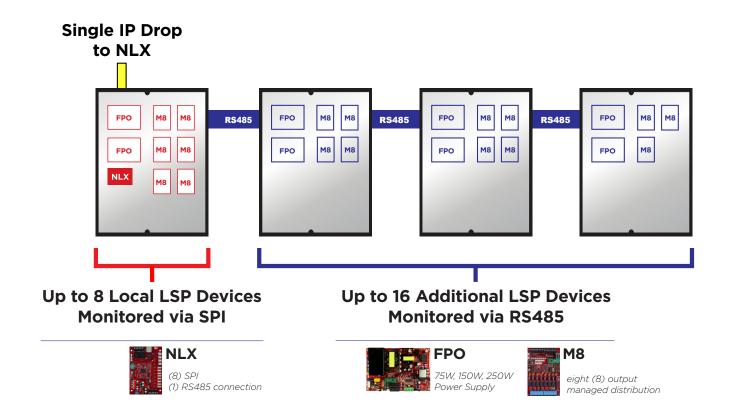
Now, LifeSafety Power managed systems using an NLX network management board are capable of Distributed Power Monitoring (DPM), greatly reducing the number of network drops needed in an installation while also reducing the cost per door.

Installations using DPM can monitor multiple power systems of 64 or more doors from a single network drop.

WHAT IS DISTRIBUTED POWER MONITORING?

The NLX network module introduced an RS485 port for communicating with Generation2 red FPO and M8 modules.

Using RS485 for communication to the modules allows up to 16 LifeSafety Power boards to be located remotely from the NLX module within multiple enclosures up to 2000 feet (610m) away. Combining the NLX SPI ports with the RS485 connection allows for up to 24 total boards to be monitored by the NLX.

Single IP Drop to NLX

Up to 8 Local LSP Devices Monitored via SPI

Up to 16 Additional LSP Devices Monitored via RS485

NLX
(8) SPI
(1) RS485 connection

FPO
75W, 150W, 250W Power Supply

M8
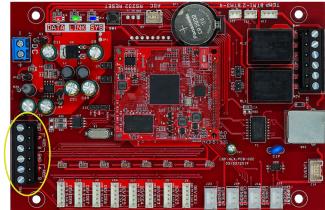eight (8) output managed distribution

ABOUT THE RS485 CONNECTIONS

The NLX and Generation 2 FPO and M8 boards all have the ability to use an RS485 connection as detailed below. Generation 1 FPO and M8 boards do not have provisions for an RS485 connection.
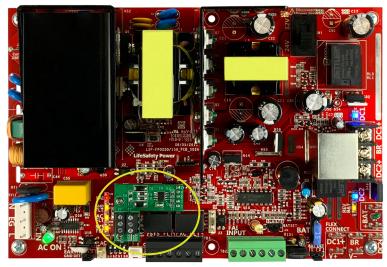
NLX

The NLX has an on-board RS485 connection terminal strip from the factory. The terminal strip has two RS485 connections allowing one or two RS485 branches from the NLX module. Each RS485 buss daisy-chains from one module to the next. Maximum length of the RS485 connection is up to 2000 feet (610 m) from the NLX. See the NLX manual for RS485 connection details.

RS485 Connection

FPO Generation 2

Generation 2 FPO boards have the ability to connect to RS485 using the optional RSMOD interface board. The RSMOD plugs into a header near the bottom edge of the FPO board. See the FPO manual for more information.
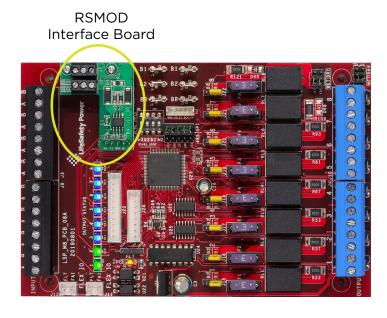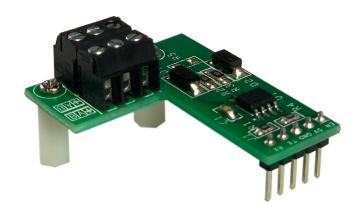

RSMOD
Interface Board

M8 Generation 2

Generation 2 M8 boards also have the ability to connect to RS485 using the same optional RSMOD interface board. The RSMOD plugs into a header near the power connections on the M8 board. When using RS485 on an M8, a jumper block must be moved from the SPI position to the RS485 position.

RSMOD
Interface Board

RSMOD

The RSMOD interface board may be installed on the M8 or FPO power supply. The 5-pin header plugs into the socket on the FPO or M8 and the board is secured with two screws. The RSMOD has two 3-pin terminal strips for the RS485 connection to be used as in and out to the next board in the daisy-chain. Both sets of terminals are interchangable. Note the markings for A, B, and Ground - all connections must match up between the NLX and all RSMODs. Each M8 and FPO contains four DIP switches for configuring an RS485 address. Each board connected to an NLX through RS485 must be configured for a uniqie address.

Eight RSMOD boards are included with each NLX module, and can also be ordered separately in single or 8 piece quantities.

DESIGNING A DISTRIBUTED POWER MONITORING APPLICATION

When designing power enclosures for a DPM application, the count of RS485 devices per NLX must be kept below 16. Additionally, each NLX can monitor a maximum of twelve power supply boards (combined SPI and RS485).

The first enclosure will contain the NLX module and the power system required for that location. Typically, all of the devices within this first enclosure are connected by SPI connection. If more than eight FPO/M8 devices are within the first enclosure, RS485 may be used for these additional devices (be sure to subtract this number from the 16 total RS485 devices).

Additional enclosures can be designed without NetLink modules and the FPO and M8 boards connected to the first enclosure through RS485. Once sixteen RS485 devices are reached, another NLX must be used.
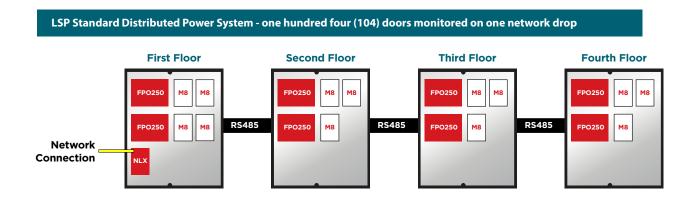
Example 1 - Standard Power System

In this example, the lock power system for an existing access control panel in a 4 floor building is being replaced with a managed power system. The first floor has 32 controlled openings and the other three floors have 24. Each door is specified at 0.5A for a total of 16A per floor.

First Floor

The first floor power system will include two FPO250 boards and four M8 modules. This enclosure will include the NLX for the power system. The model number would be FPO250/250-4M8NLXE4. The FPO250 boards and M8 boards in this enclosure will all connect to the NLX via SPI port. No RSMOD boards are required for this enclosure.

Second, Third, and Fourth Floors

The power systems for the remaining floors will include two FPO250 boards and three M8 modules. These enclosures do not require NLX modules, so the model number for these floors would be FPO250/250-3M8E4. The FPO250 boards and M8 boards in these enclosures will all connect to the NLX on the first floor via RS485 using RSMOD interface boards. Since these systems contain M8's and no NetLink module, the M8 and FPO boards will have RSMOD boards installed at the factory. Each enclosure will require five RS485 addresses for a total of 15, leaving one additional RS485 address available.

With this configuration, the entire building (a total of 104 doors) is able to be remotely monitored from a single network connection.
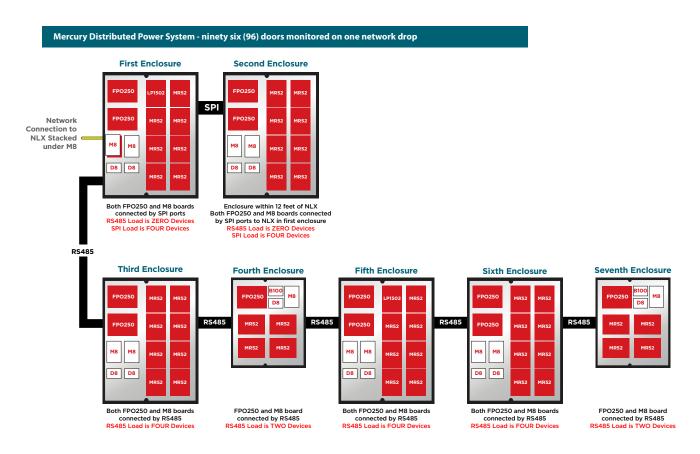
Example 2 - Unified Power System

This example is for a manufacturing facility with 96 doors, using Mercury-based controllers. Each door is specified at 0.250A. Due to the layout of the building, multiple 8 and 16 door enclosures will be distributed throughout the building.

System Construction

As in the first example, the first enclosure will include an NLX module and several other enclosures without network modules will connect to it through RS485. In the office area of this example, 32 doors are in close proximity to each other, so two 16 door systems are installed side-by-side in the nearest IDF. Since these are installed side-by-side, SPI connections may be extended from the first enclosure to the second enclosure (note that the maximum length for the SPI cable is 12 feet). The remaining enclosures are distributed throughout the building's other IDF closets and are all connected via RS485.

Note: In Mercury-based systems, the NLX can connect directly to the LP1502 controller's USB port using the OneDrop SDU cable, reducing the number of physical IP drops required for the power system to ZERO.

Mercury Distributed Power System - ninety six (96) doors monitored on one network drop

First Enclosure

Network Connection to NLX Stacked under M8

Both FPO250 and M8 boards connected by SPI ports
RS485 Load is ZERO Devices
SPI Load is FOUR Devices

Second Enclosure

SPI

Enclosure within 12 feet of NLX
Both FPO250 and M8 boards connected by SPI ports to NLX in first enclosure
RS485 Load is ZERO Devices
SPI Load is FOUR Devices

RS485

Third Enclosure

Both FPO250 and M8 boards connected by RS485
RS485 Load is FOUR Devices

Fourth Enclosure

RS485

FPO250 and M8 board connected by RS485
RS485 Load is TWO Devices

Fifth Enclosure

RS485

Both FPO250 and M8 boards connected by RS485
RS485 Load is FOUR Devices

Sixth Enclosure

RS485

Both FPO250 and M8 boards connected by RS485
RS485 Load is FOUR Devices

Seventh Enclosure

RS485

FPO250 and M8 board connected by RS485
RS485 Load is TWO Devices

This configuration monitors a total of 96 doors from a single network connection.