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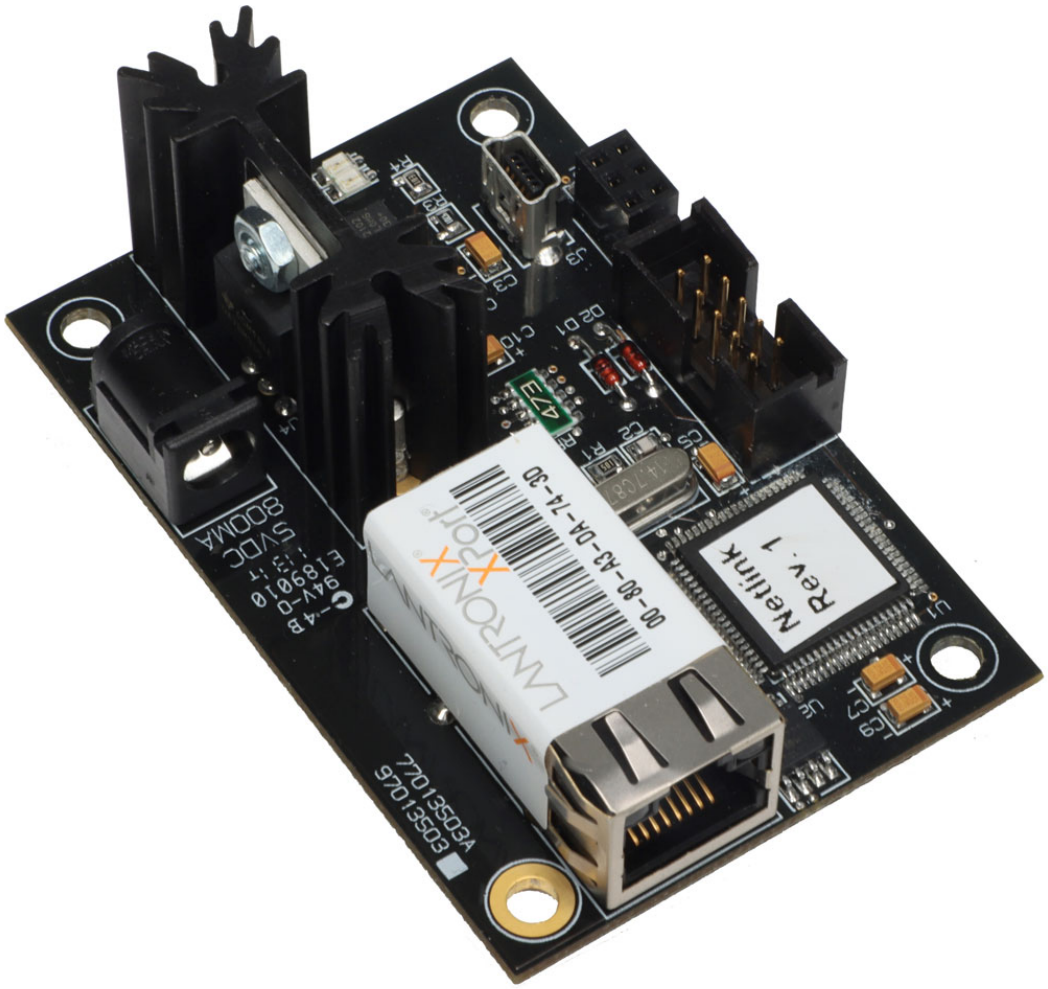
LightLEEDer Netlink

User Guide

Revision B



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Section 1 ILC Netlink Description

1.0 Overview

The ILC Netlink module is an Ethernet communication device designed for linking LightSync inputs and relay status from panels in one ILC network to the LLNC's network LightSync device inputs in a second ILC network over an Ethernet LAN system. This requires a direct Ethernet network path between the ILC Netlink devices installed with each LLNC. This connection uses a UDP Unicast style communication for point-to point operation, or UDP Broadcast for multiple device communication within a dedicated network. ILC recommends using both options within a dedicated LAN network for ILC LightLEEDer panels systems. This is often done in conjunction with the LightLEEDer InSite software that can communicate with up to 32 LightLEEDer network controllers. Consult with the building network provider to determine what configuration is acceptable for your project's IT system.

1.1 Suggested Minimum System Requirements

The following are the minimum system requirements to run the ILC Netlink modules and the ILC Netlink configuration software

1.1.1 Ethernet LAN requirements

Dedicated Ethernet network provided and managed by building network provider.

- Ethernet switches, repeaters, routing hardware and cables may be required.
- Ethernet to Fiber converter and Fiber cable may be required for extended distances between remote buildings.
- V-Lan operation to allow Ethernet communication between Networks.
- All LLNetlink modules are required to be on the same Subnet.

1.1.2 ILC Netlink configuration software minimum requirements

- Personal Computer or Laptop
- 2.4 GHz Celeron
- Windows 7, 8, or 10
- 32 or 64 bit OS
- USB 1.0
- 2 Gb Ram
- SVGA monitor 1024 x 768
- Full Administrator Rights
- Web browser (Microsoft Edge, Google Chrome, Firefox)

Running the ILC Netlink configuration software with less than the minimum hardware requirements or operating systems other than listed may provide unexpected results.

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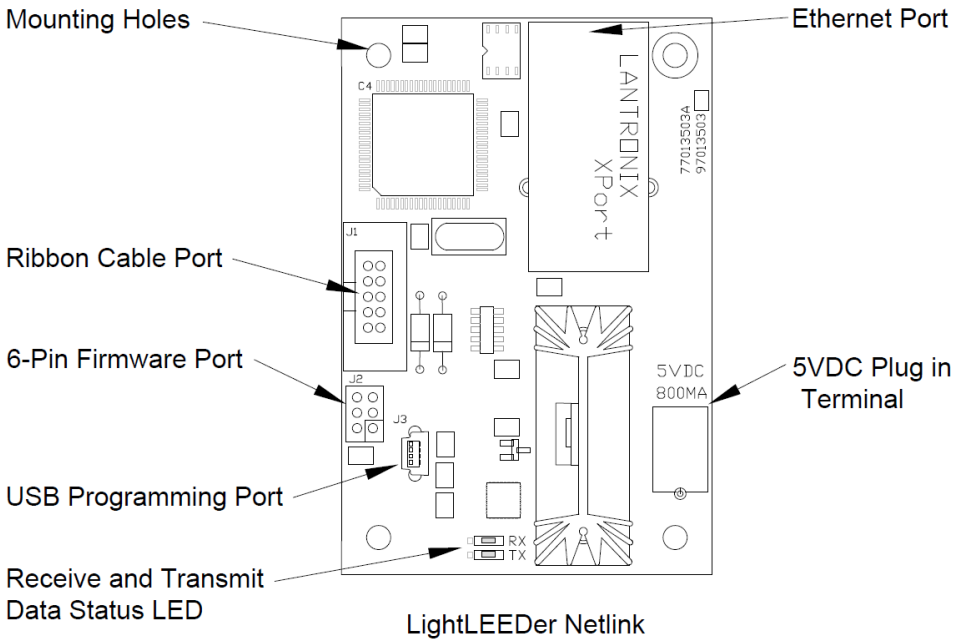
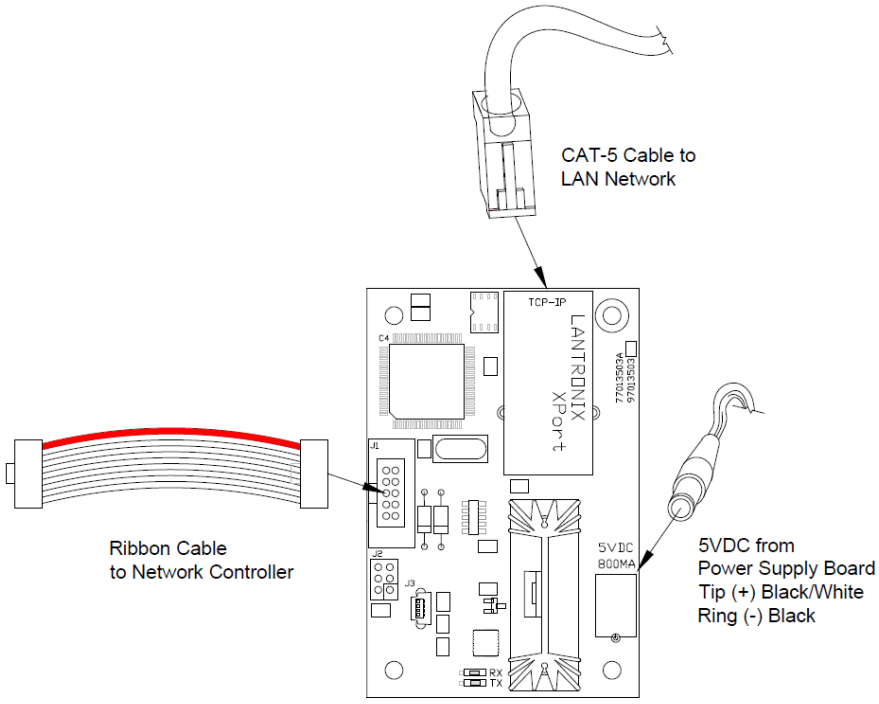
1.1.3 ILC Network Controller firmware compatibility

- LL Netlink supported in LLNC Firmware version 2.50 or later.

1.2 Product and Wiring Details



LightLEEDer Netlink



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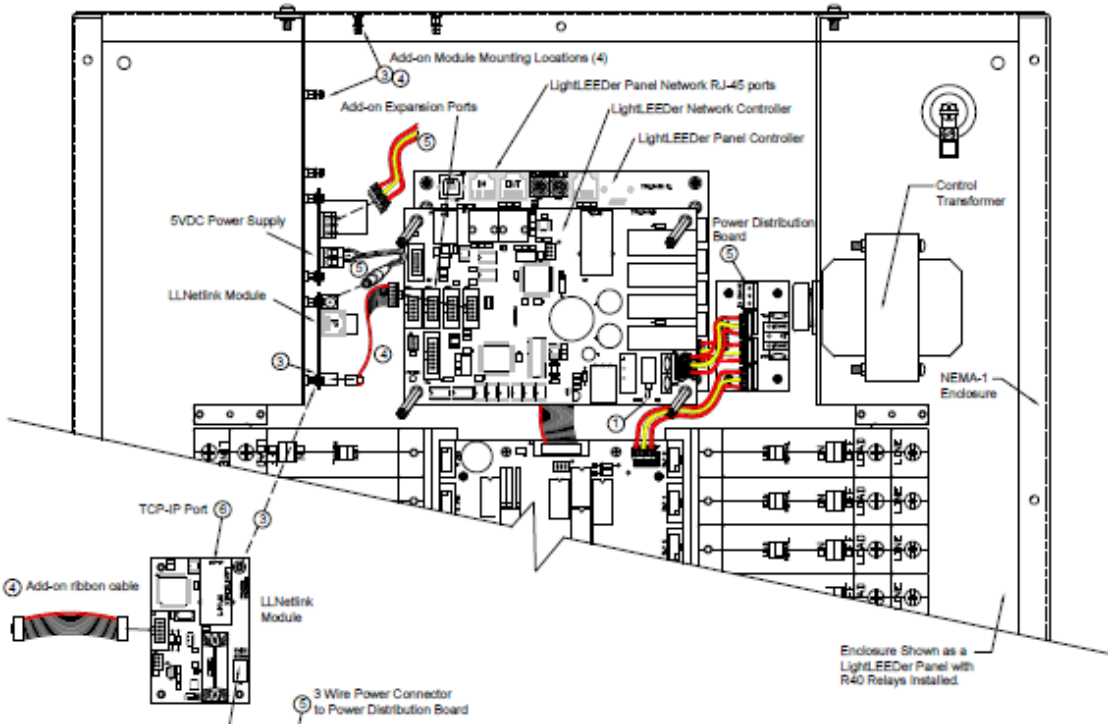
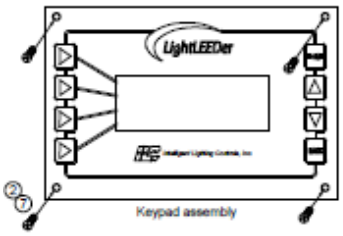
1.3 Installation Details

LightLEEDer Netlink Module Installation Details



1. Turn Off the power switch located under the lower right hand corner of the keypad on the LightLEEDer Controller and Network Controller.
2. Remove the 4 screws from the keypad and remove the keyboard assembly by pulling the ribbon cable from the controller and set aside.
3. Install the LightLEEder Netlink add-on module on the snap-on PEMs by aligning holes on add-on module and carefully snapping into place.
4. Install add-on ribbon cable from add-on module to one of the four expansion ports of the Network Controller.
5. Install a 5VDC Power supply on one of the 4 Add-on module mounting locations. Connect the 3-wire power connector from the Power Distribution Board to the Power Supply and the 5VDC power cable from the power supply to the Netlink module.
6. Connect the CAT-5 cable from the LAN network to the Netlink module RJ-45 port.
7. Plug the keypad assembly ribbon cable into the controller, then replace the screws removed. Be sure both ends of the ribbon cable are seated properly.
8. Verify all connections were installed properly.
9. Turn the power switch on the LightLEEDer Controller and LL Network Controller ON, verify the keypad is working. If not, turn the power OFF and contact ILC.
10. Set the LLNetlink Add-on module port for "Other" and cycle power to the LLNC.



Note: This diagram shows the LLNC installed in a LightLEEDer panel, the LLNC can also be installed as a remote network controller.

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Section 2 Configuring the ILC Netlink Ethernet Port Settings

2.0 Overview

The ILC Netlink module is equipped with a Lantronix XPort port for Ethernet communication. The XPort has an embedded web browser application for configuration of the Ethernet port.

2.1 Connecting to XPort device

Connection requires a CAT-5 Ethernet cable and PC with auto switching port or an ethernet cross-over cable is required for direct connection. Open a web browser and type in the address of the device. Our default IP address is: **192.168.1.24**, Subnet: **255.255.255.0**
No Username or Password is configured as factory default. Click on "Sign in" to proceed to the application home page shown on Figure 1. This will take you to the XPort Home page shown in Figure 2

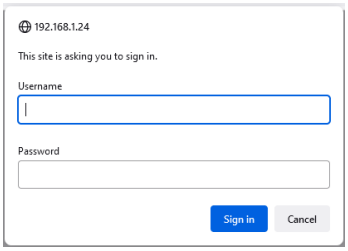

Figure 1 - Web Sign In page

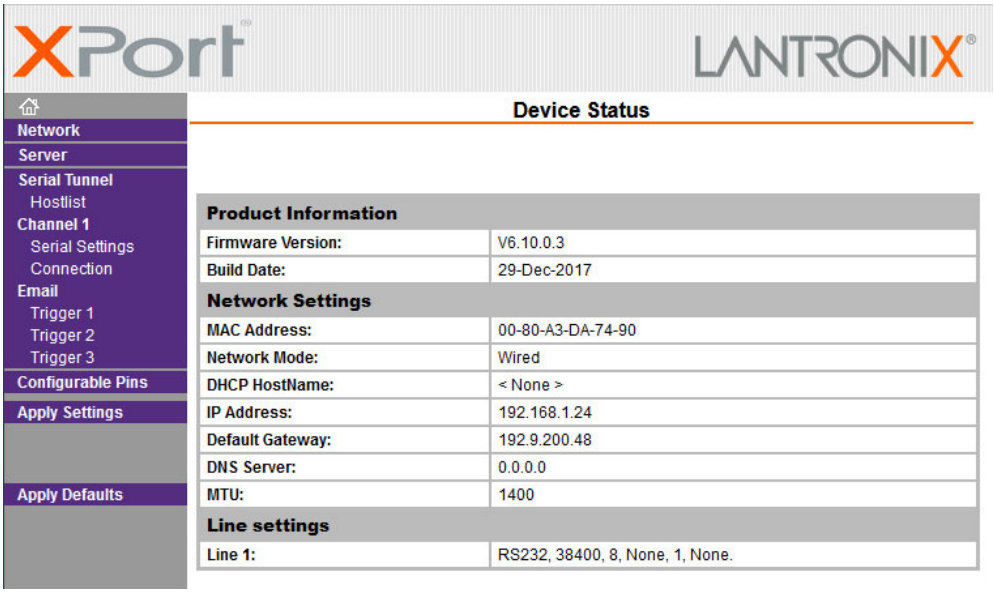

Figure 2 - Network Home Page

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2.2 Setting up the XPort Lantronix Module

Select Network and then set the IP address as needed for you installation. In this example I will change the XPort to 192.9.200.204 as shown in Figure 3, you can also set the Subnet Mask, Default Gateway and DNS Server if needed. Clink “OK” to save it in the application window. You will need to “Apply Setting” before you can proceed as shown in Figure 4, then proceed to configure the UDP operation as shown in Figure 5.

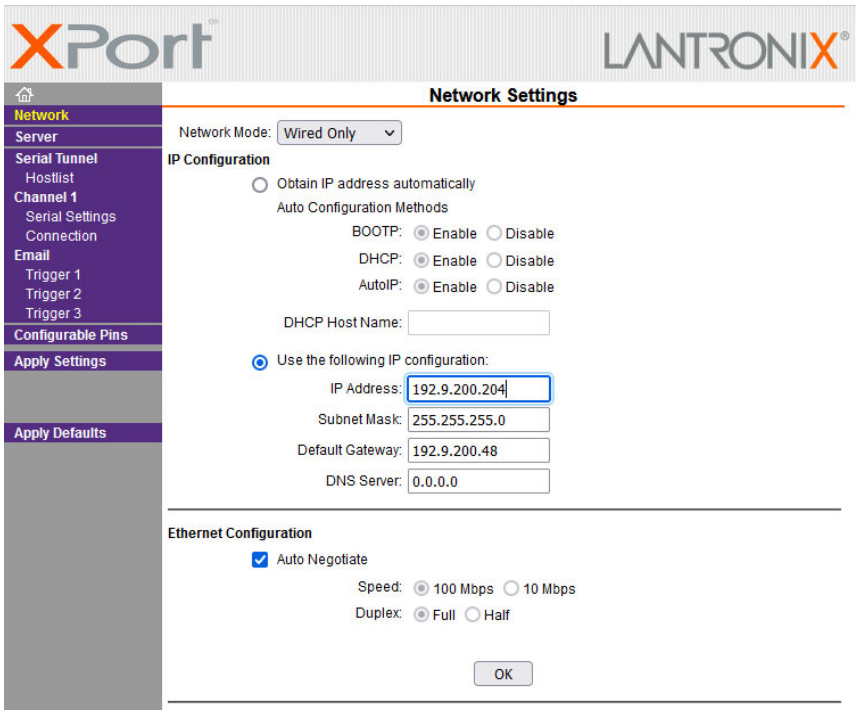

Figure 3 - Network Settings

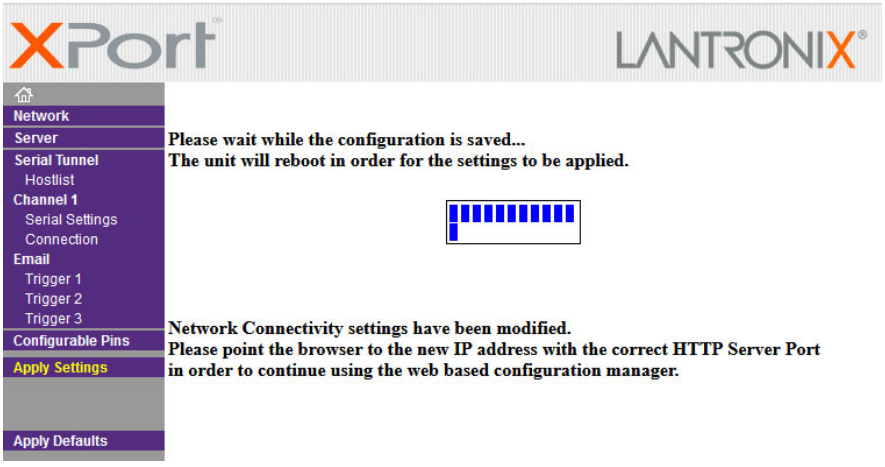

Figure 4 - Apply Settings

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After Applying the settings, you will need to Re-connect to the modules new IP address and Subnet.

This is done for Both XPort modules when using UDP Unicast for direct point to point communication between 2 ILC Netlink modules. If the project requires 3 or mode Netlink modules, you will need to use UDP Broadcast for all of the Netlink devices to communicate in the same LAN subnet.

2.3 UDP Settings

Select Connection and change the Connection protocol from TCP as shown in Figure 5 to UDP, then enter the Remote Host IP number shown in Figure 6 for the Netlink module this unit will communicate directly with. Repeat the process for the second LLNetlink module, each using a different address withing the subnet.

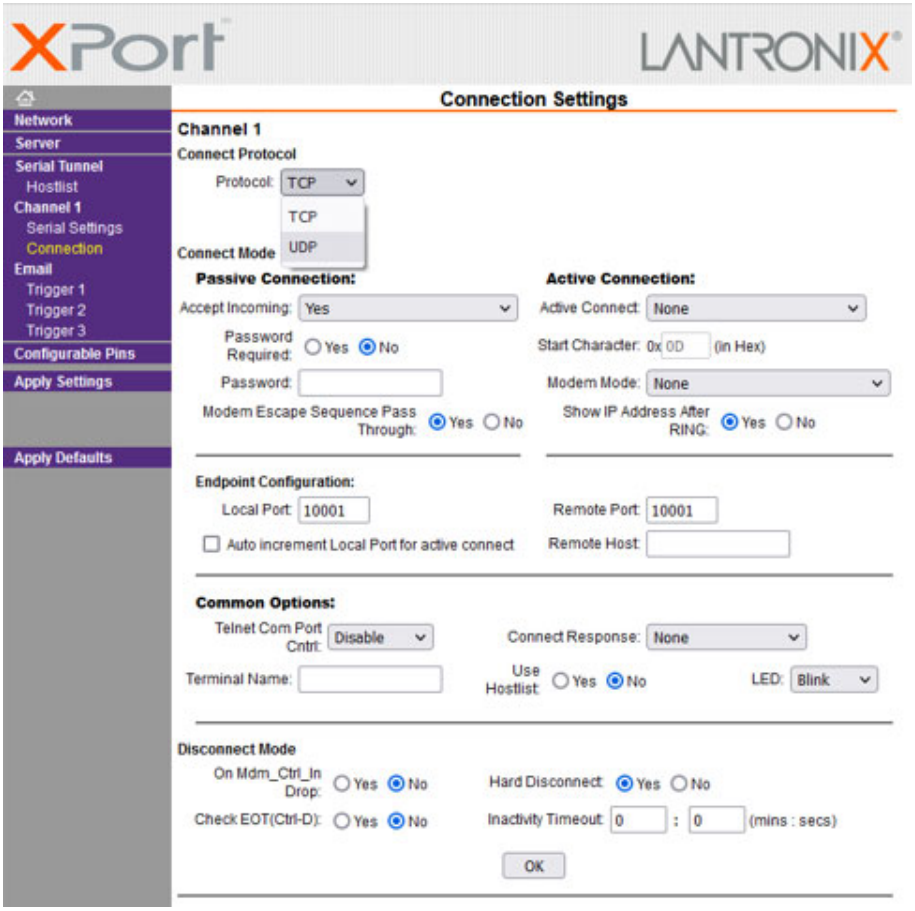

Figure 5 - Default TCP Setting Connection Screen

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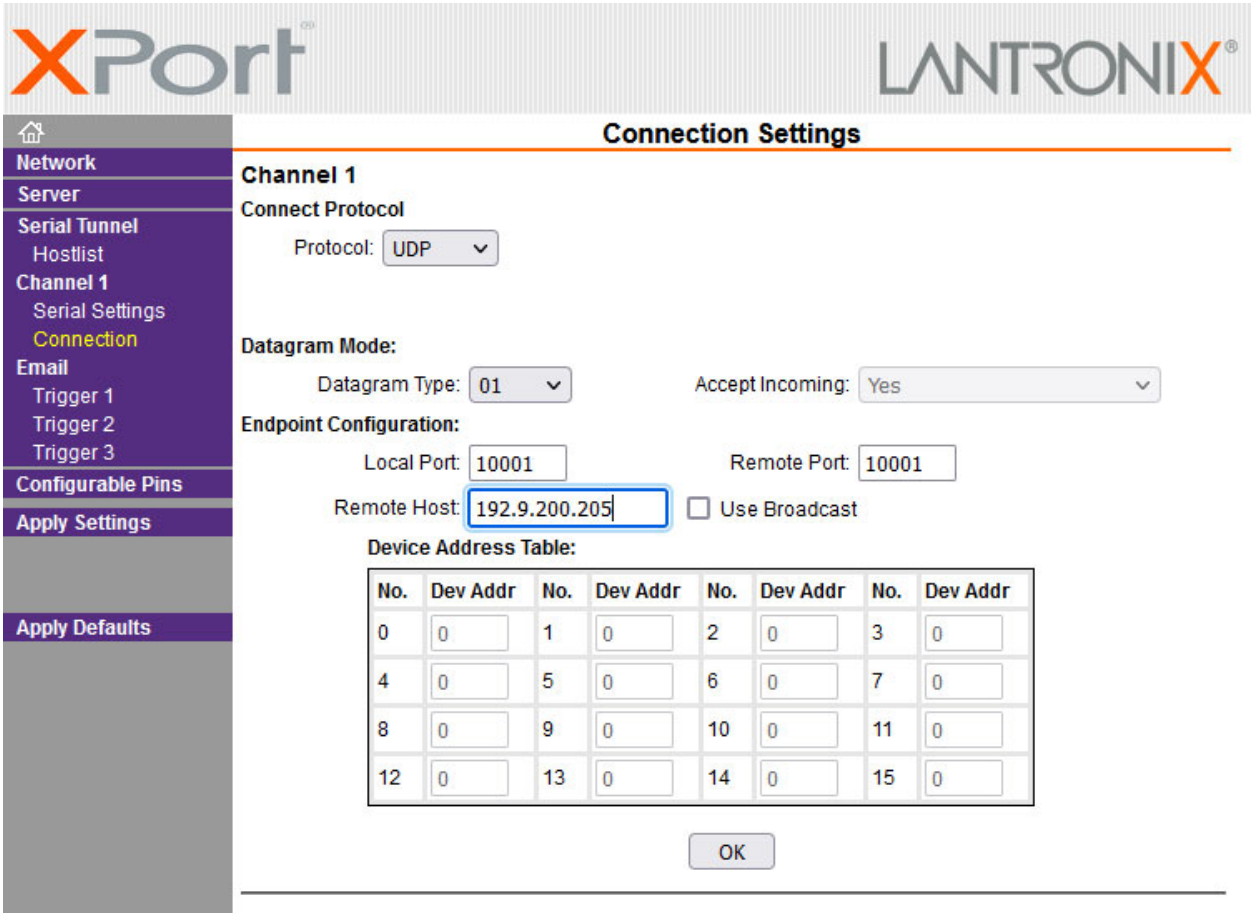

Figure 6 - UDP Unicast Connection Screen

If using 3 or more Netlink devices select “Use Broadcast” on each module. The Remote Host IP adress is not required as each module will broadcast to all devices on the dedicated Subnet.

UDP Unicast direct point to point comunication and UDP Broadcast comunication can exist in the same Subnet as the ILC LightLEEDer Network Controllers and the computer connected to the network using LightLEEDer Pro software and LightLEEDer InSite software.

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2.4 Security Settings

The Security Password is Disabled by default for ease of configuration and can be Enabled and a password set as shown in Figure 7

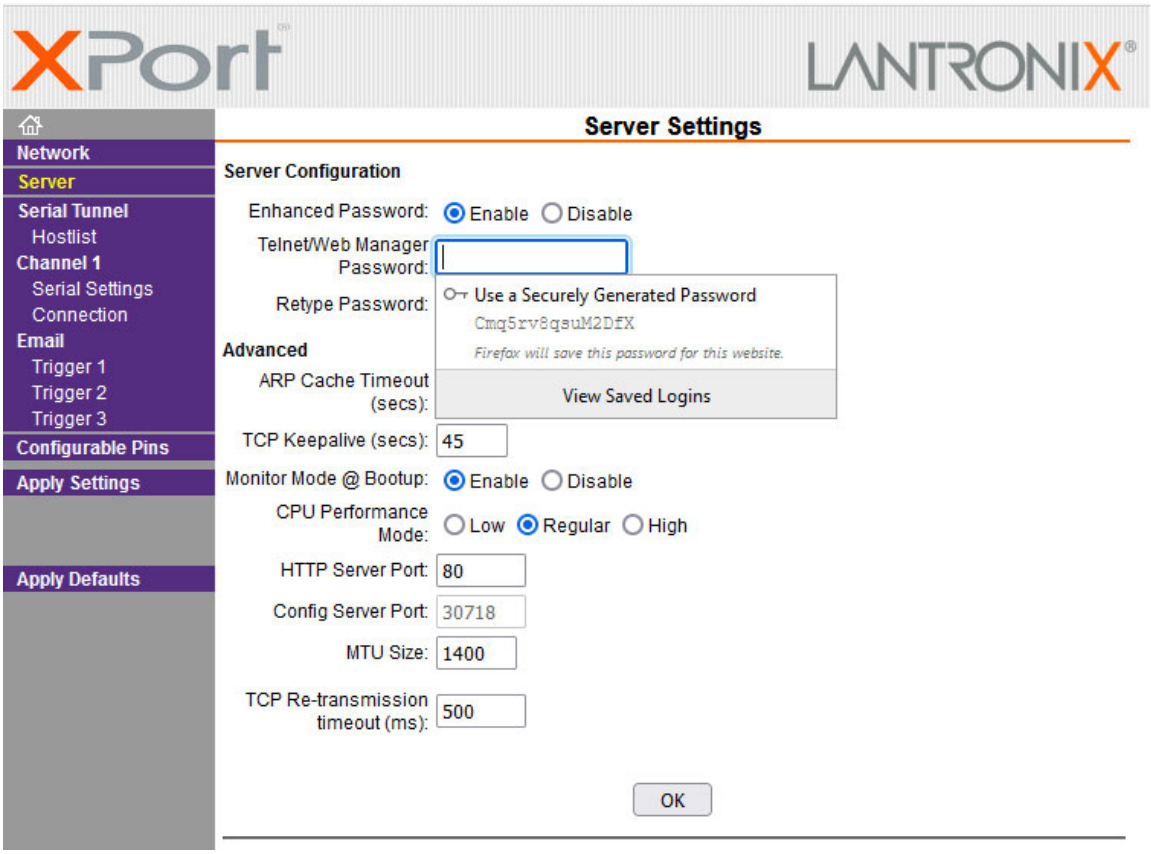

Figure 7 - Security Setting

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Section 3: LightLEEDer Netlink Device Program Configurations

3.0 Overview

The LLNetlink module is support 64 link setting for connecting between networks. The ILC Netlink software allows a user to configure the links for both the outgoing and incoming communication for each module.

3.1 Installing the LLNetlink configuration Software

Download the latest software from the ILC website at ilc-usa.com then navigate to Resource Library/Software Downloads. Once the program has been downloaded, unzip the file into known location like your desktop. This file will appear as ILC Netlink Setup Vxx.exe with xx equal to the version level. To start the installation double click this executable file. If you receive a security message about this program making changes to your system, click “YES” to approve this action.

Click on “NEXT” to begin the process, then “INSTALL,” then “FINISH”.

The Silicon Laboratories Bridge Driver Install window will open. Select “Install” to load the proper driver for communications. Once installed you will be prompted to restart the system to finalize the installation, click on “Yes”.

Once installed double click on the icon installed on your desktop as shown in Figure 8 to run the ILC Netlink program. The opening software window is shown in Figure 9. With Windows-10 systems you will need to right-click on the icon and select “Run as Administrator”. You can also right-click on the icon, open “Properties” and select “Compatibility” then select “Run this program as an administrator”.

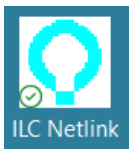

Figure 8 - ILC Netlink Software Icon

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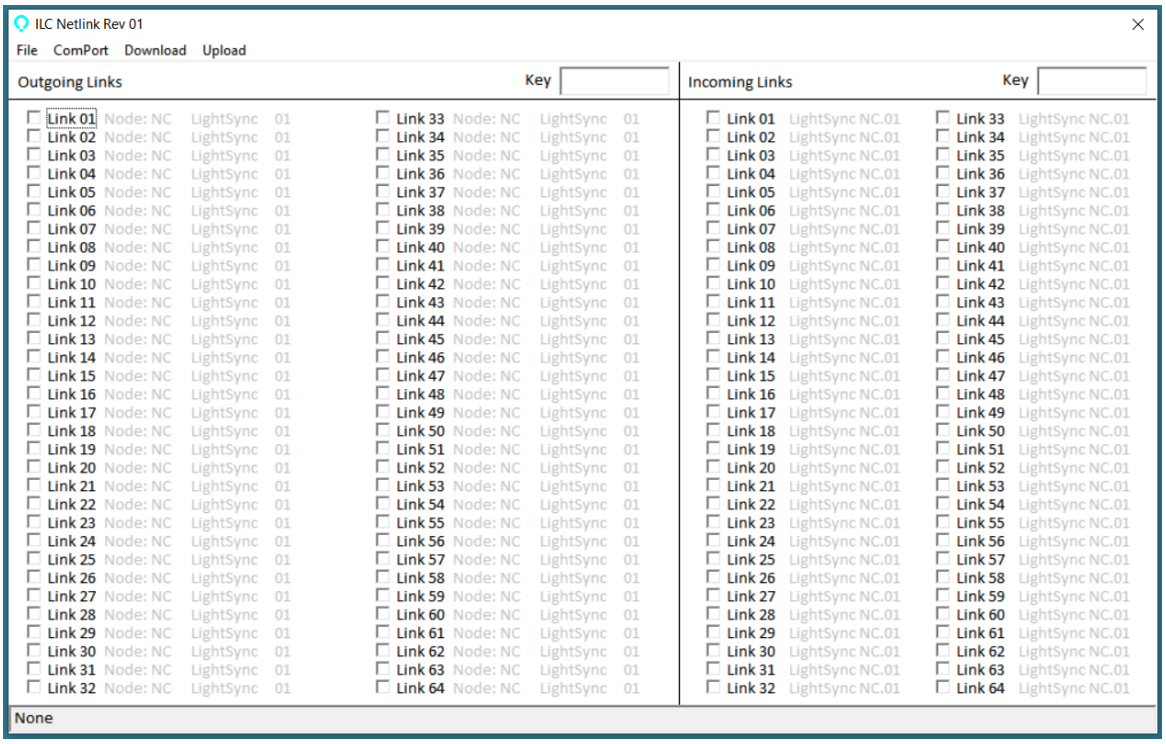

Figure 9 - Opening Software Screen

3.2 Navigating the Program

The following items can be found on the opening software window.

File: This pull-down menu has options for you to create a new program file, open an existing program file, save a program file, save-as, and exit the program.

Comport: In this pull-down menu used to select the USB comport used to connect to the module.

Download: This is used when you are ready to download your configuration to the module.

Upload: This is used for uploading from the module into the software from a previously configured device.

Key: This used to set a security key for the devices.

Outgoing Links: The 64 outgoing links can be configured as 3 types for input's, PC Level and relay status and will assign the selected type to the link to transmit.

Incoming Links: The 64 incoming links are to be matched up to the remote networks outgoing links and assigned to one of the LightLEEDer Network Controllers LightSync inputs as a virtual device occupying that LS Address.

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3.3 Outgoing Link Configuration

Select an Outgoing link number and assign the type. LightSync switches can come from the LLNC or any of the possible 255 LightLEEder panels in the network, a popup up selection chart will appear listing all the panel addresses to choose from for easy selection as shown in Figure 10.

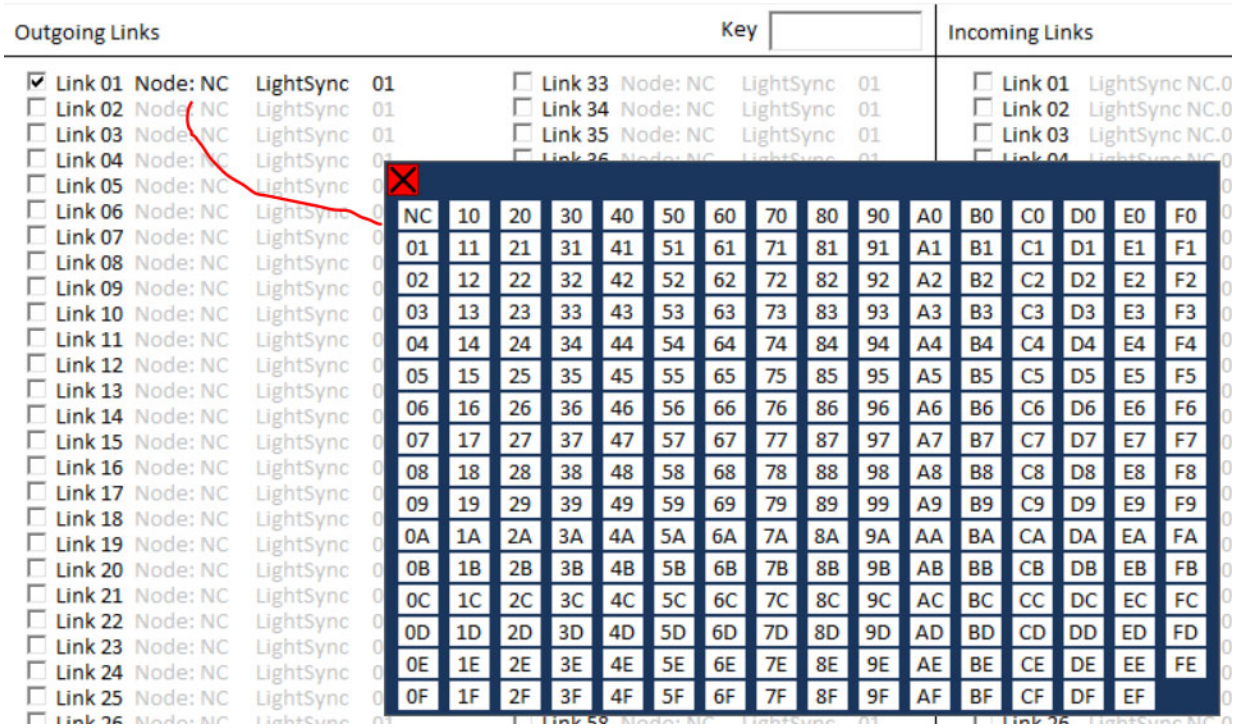

Figure 10 - Network Panel Address

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Click on the LightSync Address to choose the device to be used from the popup chart shown in Figure 11

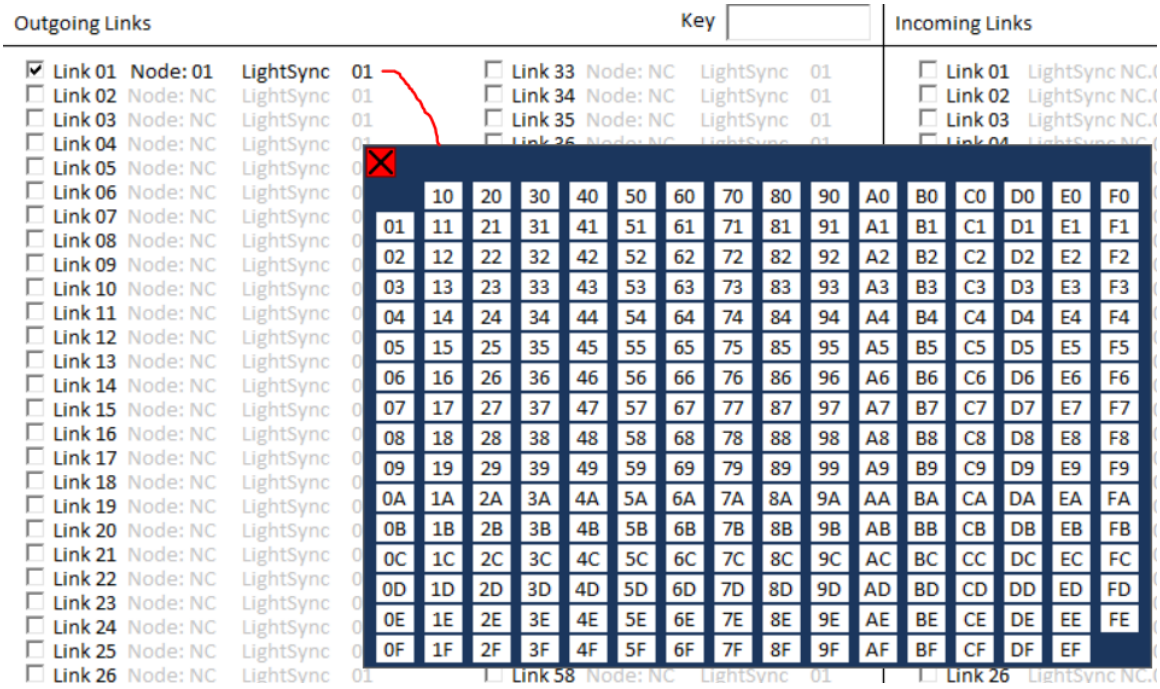

Figure 11 - LightSync Address

You can also change the Input type from a LightSync device to a LS PC for a Photo Controller or to set the Link as a set of 8 relays in a panel as shown in Figure 12

Figure 12 – PC and Relay Link Options

If you are choosing a LS PC the LLNetlink module will transmit the full 8-Bit digital range data (0 to 255) The local device needs to be set for “Global” and a dead band level selected. Alternately a user could set the 8 PC level setpoints to transmit the control as 8 ON/Off maintained commands (refer to 4.1) making the device in the link a LightSync type reducing data traffic.
With a LightSync device it transmits the 8 possible maintained closures of a LS device like a LSOSM supporting occupancy sensors or other Maintained closures, or the 8 setpoints of a PC.

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3.4 Incoming Link Configuration

On the Incoming Link side for the same unit, you choose the selected outgoing links from the other network. To reduce confusion we suggest using a separate link number for Outgoing and Incoming links in each network. In this example I have used Links 04 and 05 as shown in Figure 13, because I am sending Links 01, 02 and 03 from this network and receiving Links 04 and 05 from another network. We suggest using each Link point once. The Incoming links are assigned to a LightSync device in the LLNC main data run. These inputs become a Virtual Input and will transfer the other networks outgoing LSPC 8-Bit data, LSOM 8 input's or 8 relay status set to the selected LLNC virtual device's 8 inputs.

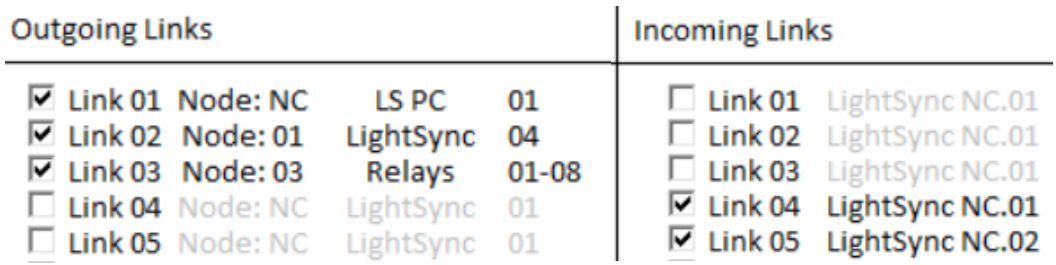

Figure 13 - First Network Outgoing/Incoming Links

In the other network LLNetlink module you would set up the links in the opposite direction as shown in Figure 14. This way the first Network Photocell link is assigned to a LLNC Photosensor input type or 6/8 input device as maintained closures at the LightSync device address 01 of the LLNC in the receiving network.

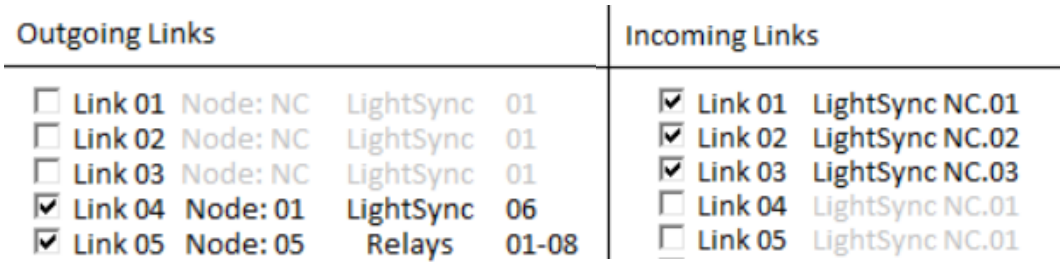

Figure 14 - Second Network Outgoing/Incoming Links

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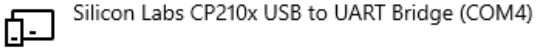
3.5 Saving setting to Both Systems

Once you have created a configuration for Each LLNetlink device you can “Save” or “Save As” the configuration and name it for the Network it is intended to be used on. Then connect to the LLNetlink module using a USB Mini cable, select the comport to be used by the software and “Download” the configuration to the module.
Note: the comport for the LLNetlink module can be located by connecting to the module and searching for the USB device Silicon Laboratories.



Section 4: LightLEEDer Network Panel Settings

4.0 Overview

In both LightLEEder Networks the Inputs to be transmitted and received need to be configured for proper operation. All LightSync device that are in a LL Panel node will need to have the input set for “Global” to have the maintained closure or Photocell shared with the LLNetlink module. All Incoming Links will be assigned to a LightSync type input supervised by the LLNC as a virtual device in the panel network.

4.1 LightLEEDer Network Controller and Panel LightSync Input Settings

LightSync Input devices currently on main panel bus like a photo sensor module can be directly shared, this will allow transmitting the 8-Bit 0-255 data of the sensor range. A Dead-Band level is also needed to determine how often a change in state is transmitted. Dead-Band options for a 2-, 4- or 8-point change in the sensor level can be selected, as shown in Figure 15.

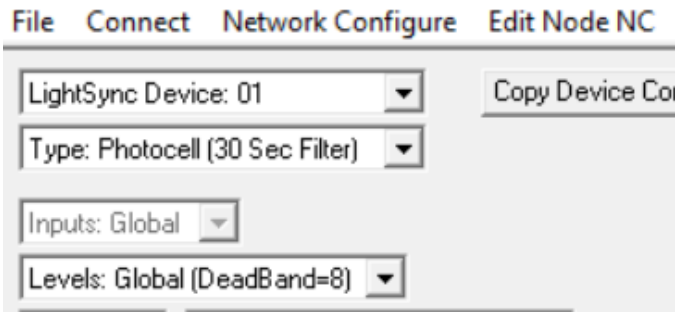


Figure 15 - Outgoing LLNC Photo Sensor Dead-Band

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Another option is to set the 8 control points on the network that the photo sensor controller is located and only transmit the 8 inputs as closures. The Output would be a LS device address and not a PC in the LLNetlink configuration. At the LLNC the levels would still be set for “Local” and then the 8 On/Off control levels are set as shown in Figure 16. This would allow all Photosensor setting to be managed from the first network and provides for 8 independent control points that are received as maintained closures at the Incoming LLNetlink device of the second network.

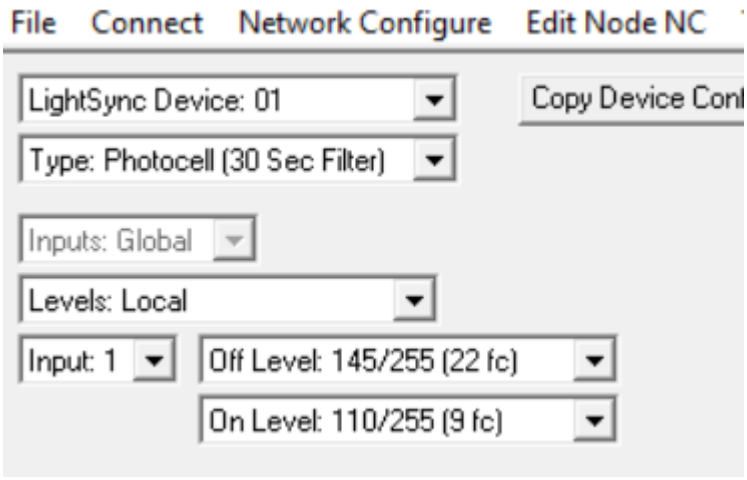

Figure 16 - Outgoing LLNC Photo Sensor On/Off control

Inputs that are in other node panels also need to be set for “Global” operation for the LLNetlink module to sense a change in the device. For example, I had used Link 02 as a LS device in Node 01, LS 04. This device could be a LSOSM module sharing the state of a maintained closure from an occupancy sensor, or other maintained closure as shown in Figure 17. Only a maintained closure can be transmitted by the LLNetlink module, LSG3 push button momentary closures are not supported.

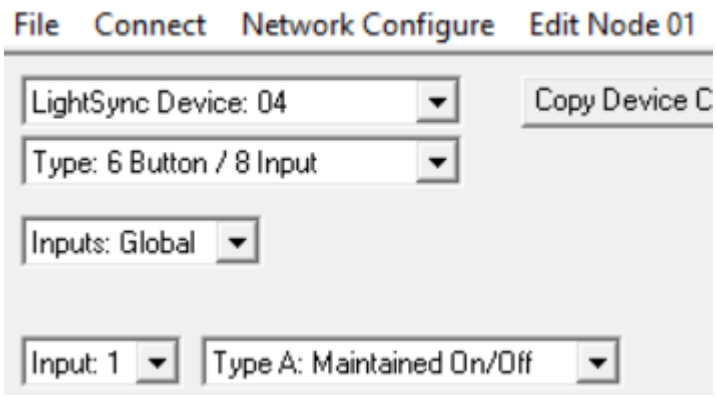

Figure 17 - Outgoing Global Setting for On/Off Control

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When a set of 8 relays are selected as a outgoing LS Link the On/Off state of the 8 relays is always a global status to the LLNC and LLNetlink module and will be transmitted as a set of 8 maintained on/off closures. A user can use the status of existing panel relays or use a LLRSR module on a network panel to create virtual relay status points that can be driven On/Off from any operation such as Timers, Groups, Presets, or Push Buttons on a LSG3 switch.

4.2 LightLEEDer Network Local Panel Control Settings

On the receiving end, the Control Link is assigned to a LightSync address managed by the LLNC as one of its Network LightSync devices. In my example I transmitted a Photosensor on Link 1 and assigned it to LS:01 of the LLNC as a PC in the second network. Now you can set the device like a local photo sensor and set the 8 On/Off levels in the LLNC of the second network as shown in Figure 18.

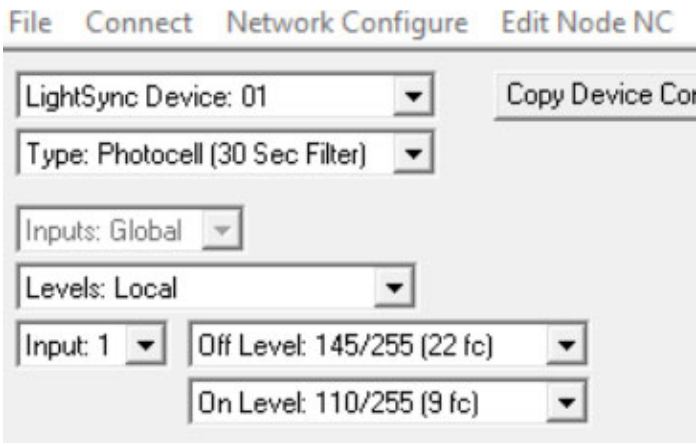

Figure 18 – Photo Sensor Settings

The Control points can be mapped in the LLNC directly to relay Groups in the network shown in Figure 19, or the control point can be mapped at the relay panels using the “Network Input to Relay Control” option in each panel with relays to be controlled, and set for On, Off or On/Off commands as shown in Figure 20.

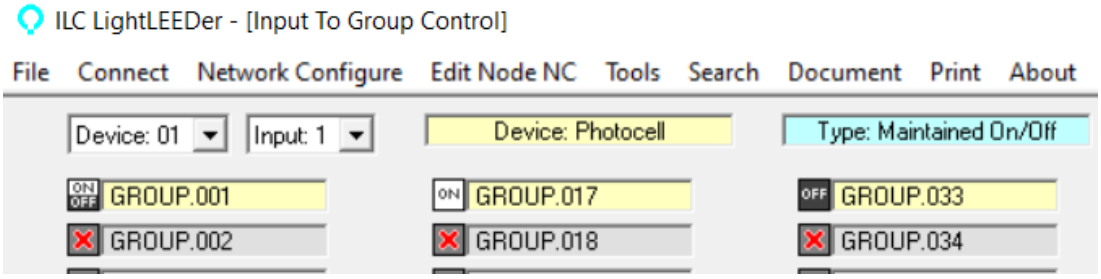

Figure 19 - NC LS device to Group Control

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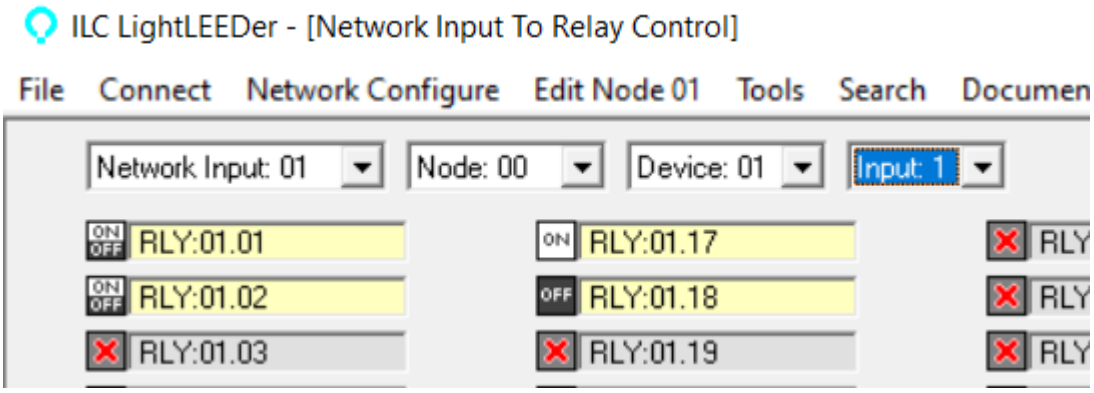

Figure 20 - LL Panel Network Input Mapping

Link points set for Relay status, LS device with a maintained closure or a Photo sensor set for "Local" operation with its 8 Setpoints configured are all brought into the second network. The Receiving Link is set for "6 button / 8 Input" type and the inputs are set to watch for a Maintained ON/Off closure as shown in Figure 21. Mapping to Groups or Relays is done in the same manner as Figures 19 and 20 above.

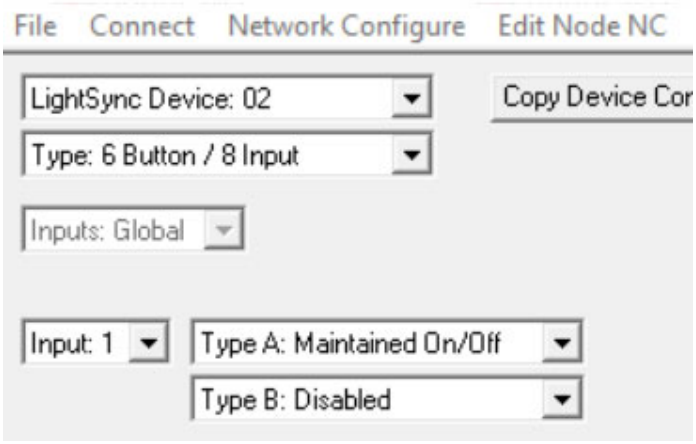

Figure 21 - Network Link LS Input Settings

5.0 Notes

ILC does suggest using each of the 64 Link points as an Outgoing or Incoming Link, avoiding transmitting and receiving over the same Link point from both networks. If Broadcast operation is used for multiple networks the Incoming Link point can be used in multiple panels to accomplish the same task such as transmitting a closure or photo sensor data and switching groups or relays at each remote networks using the same Incoming Link for outdoor lighting.