

# ILC LightLEEDer MicroLite 1000P Retrofit Installation

Congratulations on the purchase of your new ILC LightLEEDer Retrofit System.

The ILC LightLEEDer MicroLite Retrofit System is designed for the replacement of the existing MicroLite relays, and control system electronics. This includes 1000P full or half size panels or MicroLite 600P series panels. It also includes previous versions, such as MicroLite 100, 200, 300, 400, and 500.

The design of the ILC LightLEEDer Retrofit System will allow you to use the existing MicroLite enclosure(s), breakers, conduits, connectors, and wiring of your current MicroLite system. Without the need to replace these items, it will greatly reduce the time and cost for the installation.

Before installing your new ILC LightLEEDer Retrofit System, read and understand this entire document. Along with the new lighting controller components, you must understand the components in your existing MicroLite system, which will be removed during this retrofit.

## Existing MicroLite System:

The MicroLite Controllable Breaker and Relay Panel are divided into 2 sections as shown in Figure 1. The upper section contains the circuit breakers, and the lower section contains the controls and lighting relays.

### Upper Breaker Panel Section

- This section of the panel contains the controllable breakers and/or non-controllable breakers as shown in figure 2. If controllable breakers are used, the control wiring would be routed to the bottom relay panel section containing the electronics.

### Lower Relay Panel Section

- The power transformer is located at the top of this relay panel section, contained in its own enclosure as shown in Figure 3. The transformer accepts either 120 or 277 VAC to power the existing MicroLite electronics.
- The electronics section is found on the left side of the enclosure and contains the system controller, hardwire inputs, communications cables, and other optional interfaces. This area contains all of the low-voltage class 2 circuits.
- The relay section is located on the right side of this panel, separated by a high voltage divider and contains the lighting control relays for this panel. This area contains high-voltage lighting circuit connections.

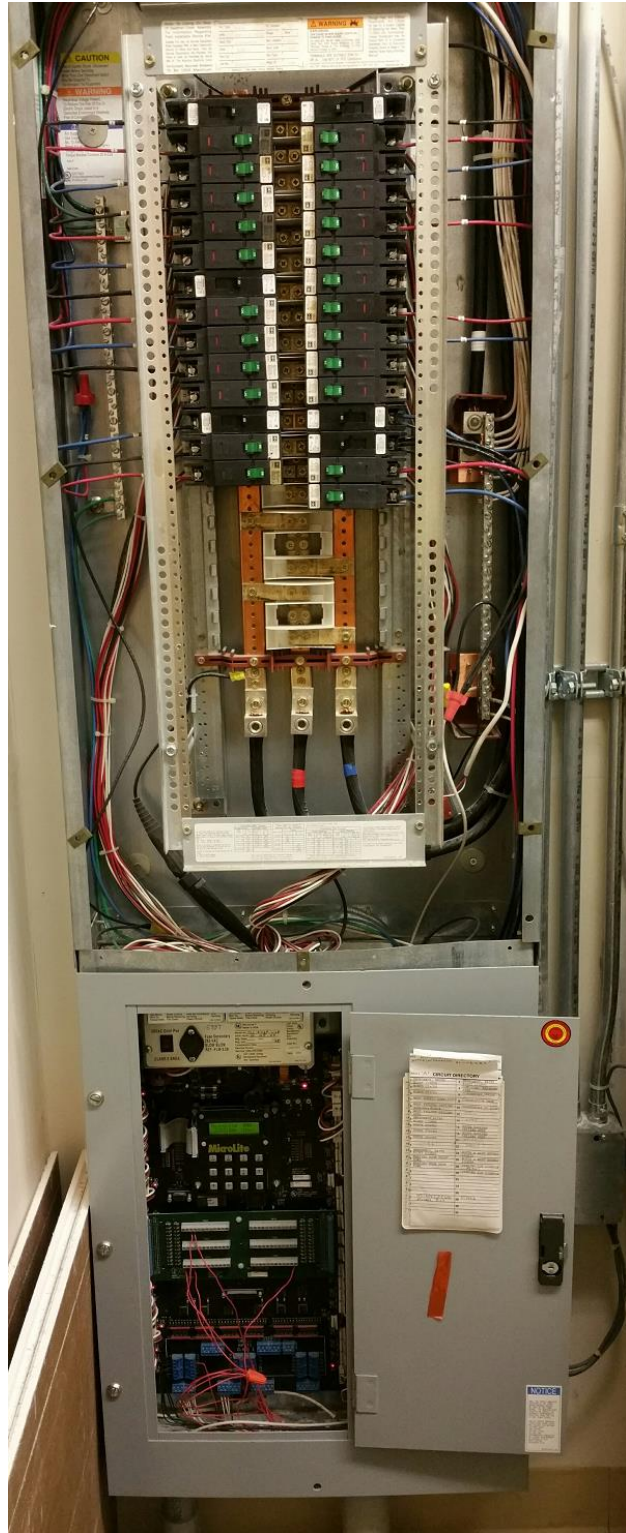


Figure 1 Existing MicroLite System



Figure 2 Standard Breaker(above) GHBS Controllable Breaker(below)



Figure 3 Existing Power Transformer Enclosure

### New ILC LightLEEDer Retrofit System:

This system arrives as a complete package ready to mount in the existing enclosure. The retrofit insert is completely wired and assembled with the controller, keyboard, output boards, transformer, and R40 relays.



Figure 4 New ILC LightLEEDer System



## ILC LightLEEDer Retrofit Installation Procedure

### Removing the MicroLite Relay Controller:

- 1) Turn OFF all power to the existing MicroLite Controllable Breaker and Relay Panel. Verify that the entire panel is OFF prior to any dis-assembly.

**Warning: Be sure to observe all lockout/tagout rules in place.**

- 2) Remove the existing enclosure covers from the upper breaker panel and lower relay panel sections by removing the Philips screws and washers from the cover.

**Note: The upper breaker panel section cover will be used again, so set aside for re-assembly.**

- 3) Label all of the line and load wires (input and output from the relays) that are connected to each relay located in the lower relay panel. The new relays will be in approximately the same location.
- 4) Remove all of the line and load wires from the existing relays. These are held in place by the flat blade screw on each of the relays.
- 5) Remove the transformer line/neutral/ground wires, typically, the connections are covered by a face panel which is accessed by removing the nuts from the covers as shown in Figure 3.
- 6) In the lower relay panel section, unplug the yellow connectors with control wires going to the upper breaker panel section from the low voltage connectors on the left and/or right side of the electronic PCB main board as shown in Figure 5.



Figure 5 Yellow Control Wire Connectors

- 7) Label all of the inputs and status pilot wires that are connected to the boards located in the lower relay panel as shown in Figure 6.
- 8) Remove all inputs and pilot wires, these are terminated with a screw connector.

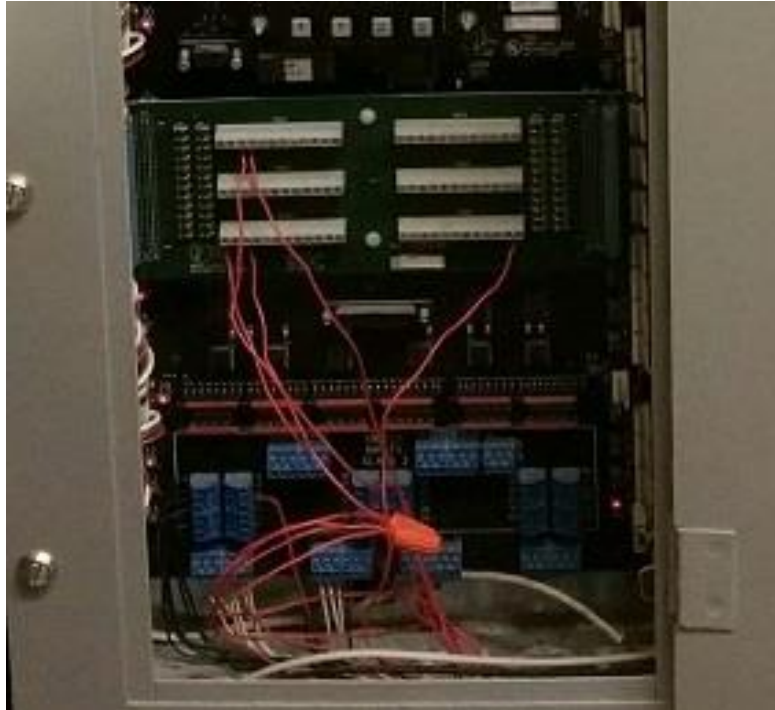


Figure 6 Input and Status Pilot Wiring

- 9) In the lower relay panel section, remove the four (4) nuts retaining the back plate and remove the entire insert. This contains all of the electronics, relays, and power transformer.

#### **Installing the New ILC LightLEEDer Retrofit:**

- 1) Install the new ILC LightLEEDer MicroLite Retrofit Insert into the exact same location where the existing controller was located. The existing studs can be used as guides to hold the new insert in place, but depending on the age of the system, the studs can be in different locations. If the studs don't line up with the new retrofit insert, they can be snapped or cut off. The studs are not used to fasten the new insert.
- 2) Fasten the insert in the enclosure using the #8 x .375" TEK self-drilling screws provided. There are 4 - 6 pre-drilled holes in the insert, located in the relay area on each side.
- 3) Terminate the line and load wires onto the new R40 relays, connected to the same relay number used in the old system. The line wire terminates to the connection towards the back of the insert, and the load wire should be terminated to the connection towards the top of the relay as shown in Figure 7. Torque all relay termination screws to 20 lbs./in.

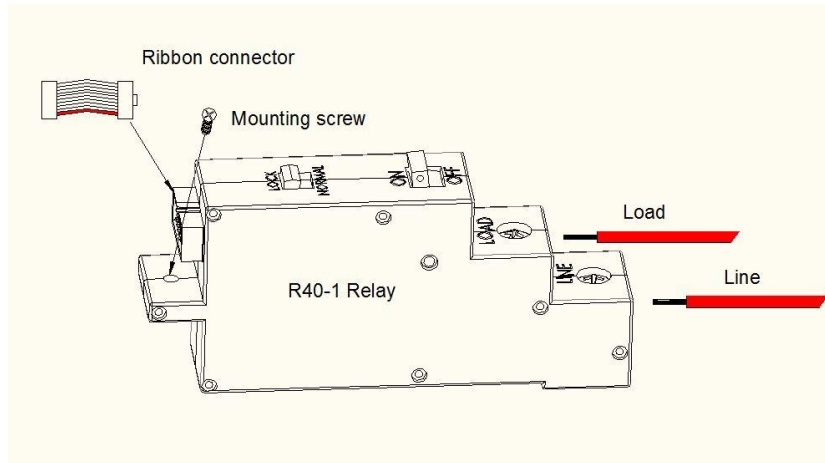


Figure 7 R40-1 Relay Termination

- 4) In the top section of the breaker panel are controllable breakers as shown in Figure 2, which will stay as breakers, but we will remove their controllable function and use the relays in the lower relay section panel to control these circuits.
- 5) From the upper panel, remove the control wire connectors that are connected to each of the controllable breakers. These control wires will not be used in the new system, and can be removed from the panel.
- 6) Label all load wire connections to the existing controllable breakers.
- 7) Remove the load wires from the controllable breakers.
- 8) A new high voltage wire will then need to be installed and terminated from the load output of the controllable breaker to the line connection of a new relay. Terminate as shown in Figure 7. Note: Typically, the odd relays are on the left, and even relays on the right, numbered from the top down. This must be done for every single controllable breaker that is being converted to relay control.

**Note: Use the appropriate size and type of wire as specified in the NEC code.**

- 9) A new high voltage wire needs to be installed from the load output of the relay and terminated as shown in Figure 7 to the original load wire. This will terminate to the wire that was disconnected from the controllable breaker in step 7.

**Note: Use the appropriate size and type of wire as specified in the NEC code.**

- 10) Terminate the transformer line/neutral wires removed from the old system to the new transformer at the top of the lower section of the relay panel. Refer to Figure 8 for transformer terminations.

**Note: Cap the unused connection to prevent electrical shock.**

**Note: Branch circuit protection and disconnect switch to be provided by the installer**

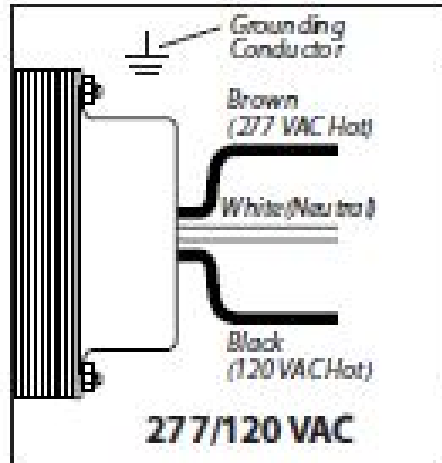


Figure 8 Transformer Termination

- 11) Install the original enclosure cover on the upper section of the enclosure with the screws and washers previously removed, and then install the new cover provided by ILC for the lower section.
- 12) Verify everything is terminated correctly, there are no open wires, and verify there is no metal debris on the electronics.
- 13) Turn the power ON to the breakers and system. Breakers and relays can be manually turned ON with the levers provided if needed.
- 14) If this is a stand-alone relay panel, then at this point, you have completed the retrofit of the lighting control system. You are ready to program the system using the ILC LightLEEDer Pro Software. If the system has more than one relay panel or hardwired inputs, please continue to read the additional instructions listed below.



## Networking Multiple New ILC LightLEEDer Retrofit Controllers:

If the MicroLite lighting system had more than one panel, and they were networked together, the existing data cable would need to be replaced. Typically, the MicroLite panels were networked together using a twisted pair cable from panel to panel. This existing cable can be used to pull the new cable required for this new system.

The ILC LightLEEDer Retrofit System uses standard CAT5, CAT5e, or CAT6 cable. The cable will need to be terminated with the proper RJ45 crimp-on connectors for the cable being used. Cables should be terminated to the EIA/TIA 568B standard as shown in figure 9.

Test all cables prior to installation for shorts, opens, and induced voltages. We suggest the use of a LandRover Pro tester manufactured by Test-Um, Inc.

Panels are daisy chain wired from the Data Out from one panel to the next panels Data In connector as shown in Figure 10.

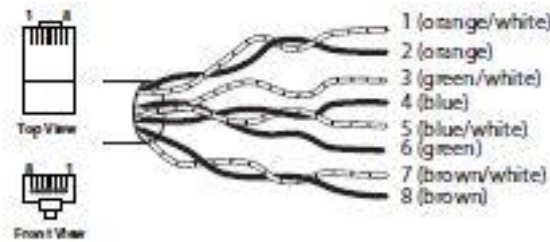


Figure 9 Data Cable Termination Pin-out

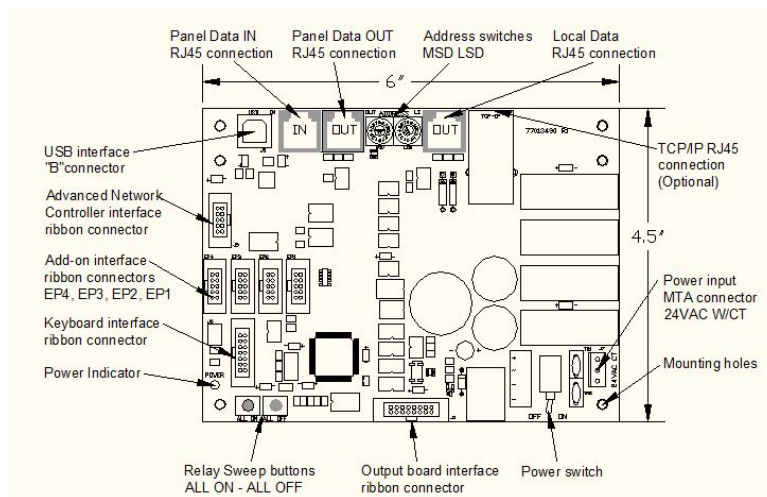


Figure 10 Controller Details

## Terminating Inputs in the New ILC LightLEEDer Retrofit Controllers:

If the MicroLite lighting System had any low voltage inputs used, they will need to be terminated on the ILC LightLEEDer Input Module(s). The MicroLite panel had the possibility for up to 48 low voltage inputs, which are labeled switch inputs 1-24, switch grounds, and switch inputs 25-48. These are the horizontal rows of screw terminals that are located at the bottom of the electronics section.

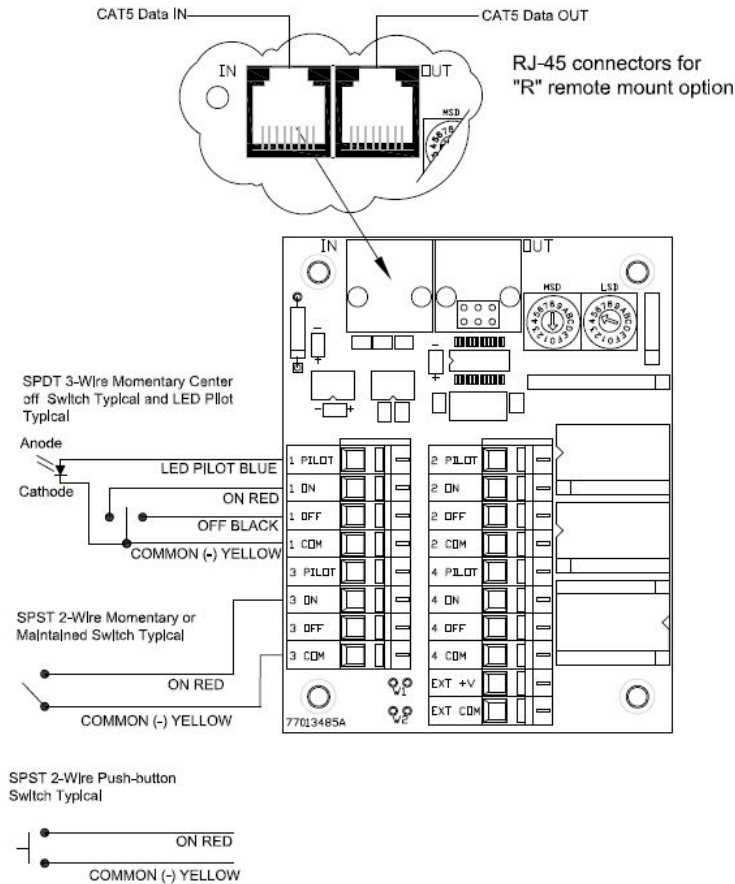


Figure 11 Input Termination Details

The ILC LightSync Input Module is designed to accept 4 hardwired switch inputs. Each input accepts a 2 or 3 wire dry contact switch closure. Each input has an associated pilot status LED output for a true status indication of any relay, group, or preset.

These panel mount modules are installed on top of the output modules in the center of the lighting controller, interfacing the ILC electronics through a header on the module. If needed, additional remote mount modules can be provided which are interfaced using CAT5 data cable. The remote mount modules would need CAT5 cable terminated from the local port on the controller, as shown in Figure 10, to the IN connector on the module.

Terminate the switch input and status wires to the push-to-connect connectors as shown in Figure 11.