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Lighting Control System
Installation Instructions
Please Read Before Installing

LUT-LINK-EXT
Link Extender

Description

The LUT-LINK-EXT is a device which repeats the data on the HomeWorks® Interactive™ Inter-processor and Module Interface links and allows them to be connected over a longer distance. The Link Extender can be powered from a system processor or from a 100-240VAC feed.

Important Notes

1. READ ALL INSTRUCTIONS CAREFULLY BEFORE STARTING INSTALLATION.

2. **Install in accordance with all local and national electric codes.**

   Danger - Locate and lock supply breaker in the OFF position before wiring to power terminal blocks.

   Danger - Power must be OFF at the breaker (MCB) or fuse supplying power to the Link Extender and also at the Processors or Module Interfaces which will be connected to the Link Extender. Do not connect line voltage power to low-voltage terminals. Improper wiring can result in personal injury or damage to the unit and to other equipment.

   Caution - This unit is intended for indoor use only.

Link Extender Wiring Length Limitations

The Link Extender may be installed up to 1000 ft. (305m) from the Processor or Module Interface as shown in Figure 1. Only one Link Extender can be installed per Inter-processor or Module Interface link. An increased distance of up to 4000 ft. (1219m) may be obtained by using approved wire types. See Lutron Application Note #62 for details.

Note: Inter-processor or Module Interface link wiring must NEVER be installed in the same raceway or conduit as line voltage wiring.
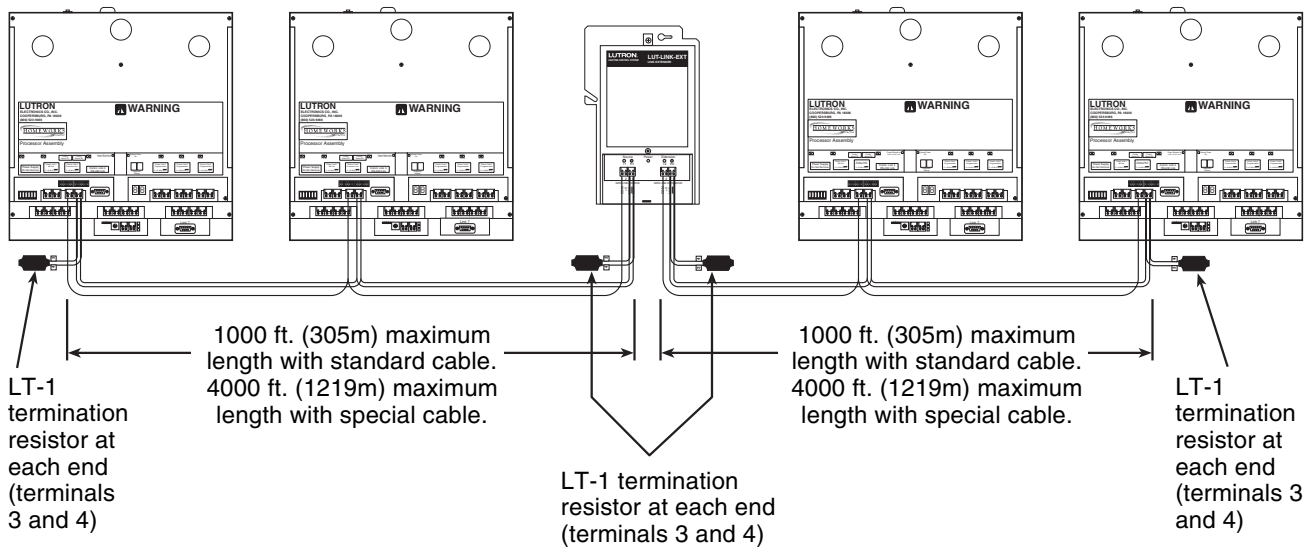
Installation

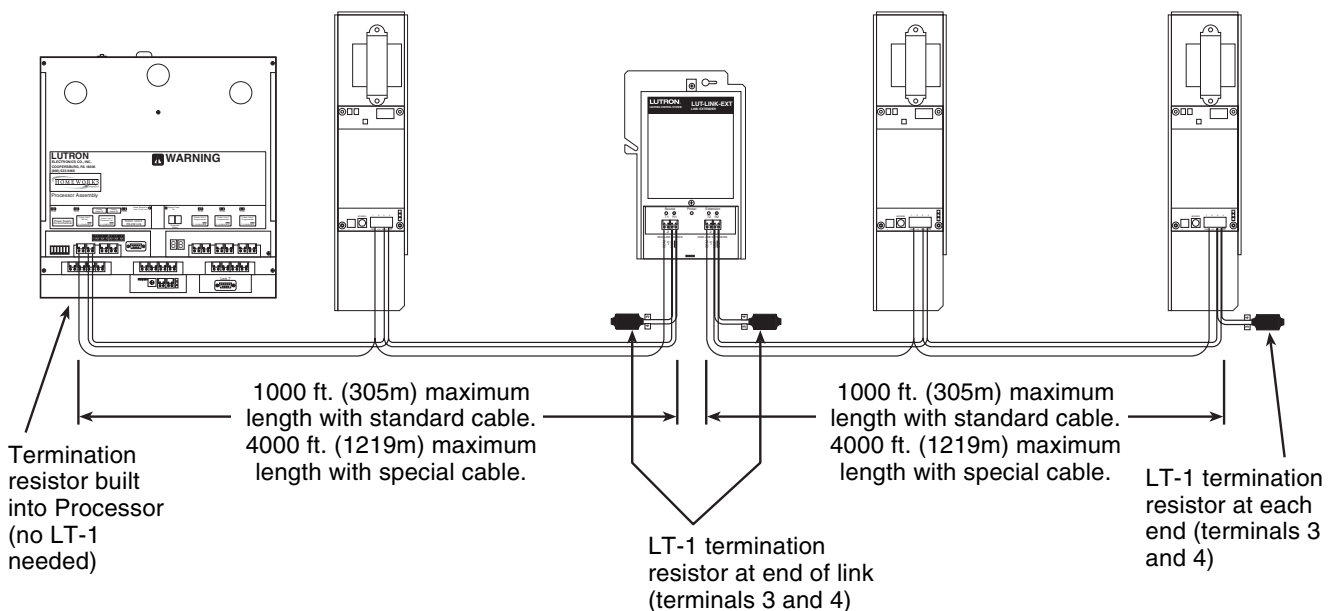1. **The Link Extender can be powered in one of two ways:**

   a) The black and white wires on the back of the unit can be connected to 100-240VAC, 50/60Hz. **Note:** When using this method, a connection to the +V terminal (terminal 2) on the low-voltage communication terminal blocks is not required; however, a connection MUST be made between the COM terminal of either the Processor or Module Interface and the COM terminal (terminal 1) of the Link Extender.

   b) Low-voltage (Class 2/PELV) power from the Processor can be connected to the COM and +V terminals (terminals 1 and 2) on the front of the unit. **Note:** Power can come from either the "Data Link Source", "Data Link Extension", or both sides of the unit. When using this method to power the unit, the line voltage wires on the back of the unit will not have any voltage present and do not pose a safety hazard. These wires should be terminated to an insulating connector to avoid exposing them to any other voltage that may be present in the mounting box. **Note: For European countries, in order to maintain compliance with CE requirements, power to the unit must be supplied through the low-voltage (PELV) wires as outlined in Step b above.**

   Reversing the "Data Link Source" and "Data Link Extension" connections will not affect the operation of the Link Extender.

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Figure 1: Link extension of Inter-processor and Module Interface links

LT-1 termination resistor at each end (terminals 3 and 4)

1000 ft. (305m) maximum length with standard cable. 4000 ft. (1219m) maximum length with special cable.

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NOTE: In all cases, the maximum number of Processors per system is not to exceed 16. Special cable can be used to achieve cabling distances of up to 4000 feet (1219 meters). Only one Link Extender can be used on a link.

Termination resistor built into Processor (no LT-1 needed)

1000 ft. (305m) maximum length with standard cable. 4000 ft. (1219m) maximum length with special cable.

1000 ft. (305m) maximum length with standard cable. 4000 ft. (1219m) maximum length with special cable.

LT-1 termination resistor at end of link (terminals 3 and 4)

LT-1 termination resistor at each end (terminals 3 and 4)

2. **For applications where the unit will be powered from line voltage (skip this step if the unit is to be powered from the Class 2/PELV link):**

a) Pull a power feed to the 4"x4" junction box where the Link Extender will be mounted. A junction box may be wall mounted or ceiling mounted (see Figure 3). Refer to additional local mounting restrictions.

b) Turn power OFF.

⚠ **Warning - Always remove power from the Link Extender and the connected Processors and Module Interfaces before doing any work. Failure to do so can result in serious personal injury and damage to equipment.**

c) Strip wire insulation so that 3/8 inch (9mm) of bare wire is exposed. Connect the power wiring to the wires exiting from the rear of the Link Extender as shown in Figure 2.

Figure 2: Power Wiring (High-voltage)

HOT (LIVE) BLACK (BROWN)
WHITE (BLUE)
GREEN (GREEN/YELLOW)
100-240V 50/60Hz
EARTH
NEUTRAL
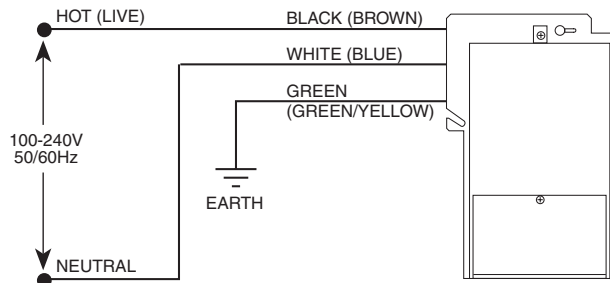
3. Mount the Link Extender to the 4"x4" junction box as shown in Figure 3. Unscrew and remove the front enclosure cover to expose the Class 2/PELV terminals and Status LEDs.

Figure 3: Mounting Diagrams

CEILING
4"x4" JUNCTION BOX
LINK EXTENDER
REMOVABLE FRONT ENCLOSURE COVER
CLASS 2/PELV CONNECTIONS
WALL
LINE VOLTAGE CONNECTIONS
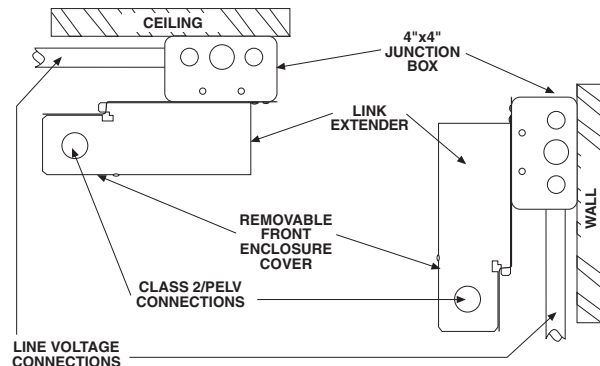
4. **Connect low-voltage (Class 2/PELV) communication wires as shown in Figure 4:**

Strip wire insulation so that 3/16 inch (5mm) of bare wire is exposed.

Remove Class 2/PELV knockout (see Figure 3) from side of enclosure and insert rubber grommet provided. Feed the source and extension Inter-processor or Module Interface links through the knockout.
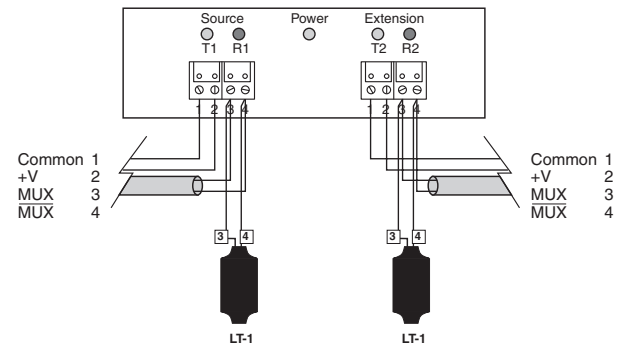
a) Connect the COM and +V terminals (terminals 1 and 2) from the source Inter-processor or Module Interface link to the COM and +V terminals (terminals 1 and 2) of the source terminal block on the Link Extender.

b) Connect the communication wires MUX and $\overline{MUX}$ (terminals 3 and 4) from the source Inter-processor or Module Interface link to the MUX and $\overline{MUX}$ (terminals 3 and 4) of the source terminal block on the Link Extender. Also insert a single link termination resistor (LT-1) in parallel with the communication wires MUX and $\overline{MUX}$ (terminals 3 and 4), as shown in Figure 4.

Repeat steps a and b to connect the extended Inter-processor or Module Interface link to the extension terminal block on the Link Extender.

Notes:
- The +V connection (terminal 2) is not needed on the source or extension links when powered from line voltage via the power wiring on the rear of the Link Extender.
- DO NOT connect the cable shield to earth ground on either end of the cables.

Figure 4: Class 2/PELV Wiring

Source Power Extension
T1 R1 T2 R2
Common 1 +V 2 MUX 3 $\overline{MUX}$ 4
Common 1 +V 2 MUX 3 $\overline{MUX}$ 4
LT-1 LT-1

5. Replace front enclosure cover. Restore power to the Link Extender and to the Processors or Module Interfaces after installation of the unit is complete.

Troubleshooting

Unit is functioning properly when all LEDs are lit. Note that some LEDs will be brighter than others.

Symptom	Cause and Action
Power LED does not light.	Power is not present at unit. If unit is intended to be powered from line voltage: • Check connections at the line voltage wires. If unit is intended to be powered from Class 2/PELV inputs: • Check for 10–23VDC between terminals 1 and 2. • Make sure that a Processor(s) connected to the source or extension link are powered and working properly.
Tx and Rx LEDs do not light. Source Power Extension ○ ◐ ○ ◐ ◐ T1 R1 T2 R2	**T1 and R2 are not lit:** Link Extender is not communicating with the Processor(s) on the source side. • Check connections or wires on terminals 3 and 4 of the source terminal block. • Make sure that the Processor(s) connected on the source side are powered and working properly. **T2 and R1 are not lit:** Link Extender is not communicating with the Processor(s) on the Extension side. • Check connections or wires on terminals 3 and 4 of the extension terminal block . • Make sure that the Processor(s) connected on the extension side are powered and working properly.

Technical Assistance

If you have questions concerning the installation or operation of this product, call the ***Lutron Technical Support Center***. Please provide exact model number when calling.
(800) 523-9466 (U.S.A., Canada, and the Caribbean)
Other countries call (610) 282-3800
Fax (610) 282-3090
Our address on the Web is www.lutron.com

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