

Linearray Retrofit and Installation Instructions

1. Scope

All Installations should be performed by qualified personnel and all electrical work should be performed in accordance to NEC and local code. These kits should be installed only in UL Listed signs. This kit is intended for dry or damp locations and must be protected from direct contact with water. It is not intended to replace existing weatherproof ballasts.

2. Tools

Wire strippers and appropriate tools to mount drivers.

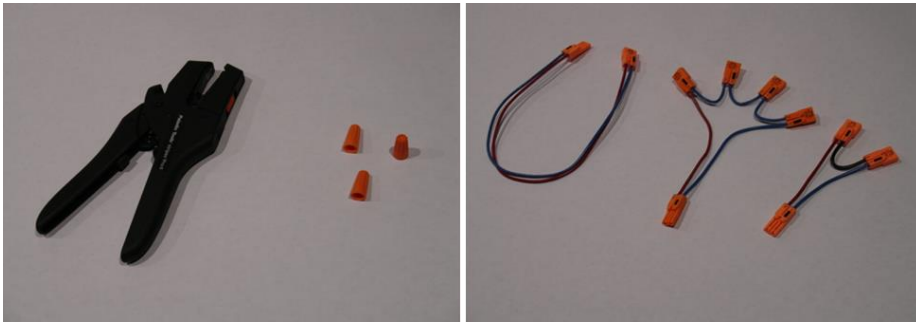
3. Hardware

Wire harness extensions (available in various lengths, consult factory).

Wire harness splitters/connectors (see chart of available splitters).

Wire Nuts (UL Listed) suitable for outdoor use.

Cable-ties and cable tie mounts (UL Listed-not shown) - Provided for wire-securement and to secure LED wires every 4 inches.



4. Fluorescent to Linearray™ replacement matrix.

Legacy Fluorescent	Linearray™ Replacement
F24HO	PF24HO2S
F30HO	PF30HO2S
F36HO	PF36HO2S
F42HO	PF42HO2S
F48HO	PF48HO2S
F60HO	PF60HO2S
F64HO	PF64HO2S
F72HO	PF72HO2S
F80HO	PF80HO2S
F84HO	PF84HO2S
F96HO	PF96HO2S
F108HO	PF108HO2S
F117HO	PF117HO2S
F120HO	PF120HO2S

5. Drivers

Datasheets can be found at permlighttechnologies.tech.

Model Number	Description	Input Voltage (VAC)	Max Input Current (IAC)
PSI50-350C-DIM-120277	150 Watt with 0-10V Dimming	120-277	1.4-0.6
PSI20-350C-UNV	120 Watt	120-277	1.2-0.5
GLED150-350LC	150 Watt	120-277	1.4-0.6

6. Optional AC input conduit boxes

Driver Model Number	Conduit Box Part Number
PSI50-350C-DIM-120277 & GLED150-350LC	PD64-0063
PSI20-350C-UNV	PD64-127

7. Linearray and UL Sign Enclosures

The Linearray Series of LED tubes are UL recognized for both new and retrofit sign enclosures provided all wiring complies with the National Electrical Code and NFPA 70 Standard. There are however minor differences in the method of installation.

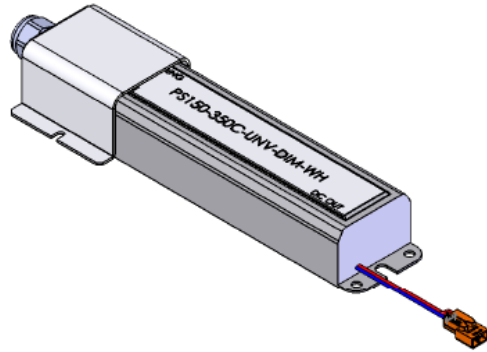
A. UL Rated Enclosures

The PFXXXH02S LED tubes, wiring harnesses and drivers are approved for installation inside of any UL Rated Enclosure with no additional isolation.

B. UL Non-Rated Enclosures

- i. LED tubes are recognized using V-O material and as long as the sign face is HB material the two materials provide the necessary protection/isolation required by UL.
- ii. The wiring provided on the LED tubes as well as the interconnect harnesses are recognized under UL category ZNPA2 and are not required to be additionally enclosed in any sign.
- iii. The LED driver AC input wires are required to have additional insulation or be enclosed.

All Non-Rated enclosure signs must provide protection for the AC input wires. Many signs have the driver enclosed in a box and the input wires feed in through a conduit or raceway. If the sign does not have a method of enclosing the AC input, use the optional conduit casing available from Permlight that goes over input side of the driver.



- 8. Replacing fluorescent lamps with Linearray™ tubes
 - a. Disconnect power from mains.



- b. Cut the power line to the ballast.



Caution:

If driver is being installed in a Non-Rated Enclosure, be sure to use any existing box or raceways to isolate the driver AC input wires per UL and NEC requirements or use the optional Permlight Conduit box.

c. Strip the power leads.



d. Connect power to the Linearray™ Driver (Black to Black, White to White, Green to ground), using waterproof wire nuts.

e. Mount the Linearray™ Driver using provided mounting tabs.



f. Remove fluorescent lamps by depressing plunger in spring-loaded lamp holder.

g. Also remove any aluminum straps running behind the lamps.

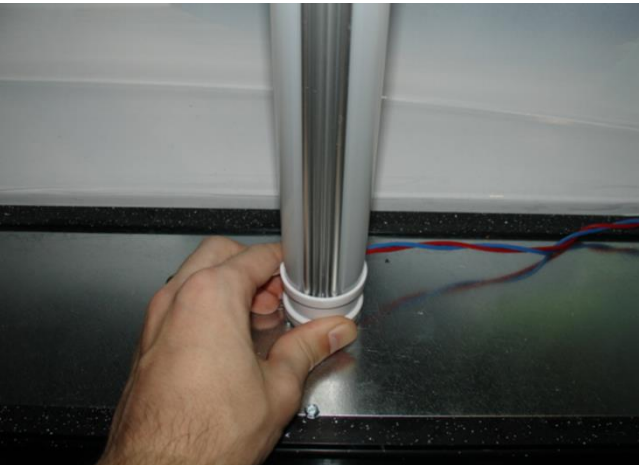
h. Dispose of fluorescent lamps properly.

i. Align Linearray™ bases by lifting RDC center and rotating into position so Linearray™ heat sinks will face the sign face.



j. Insert Linearray™ by aligning RDC bases into RDC lamp holders and depress the plunger in the lamp holder until both RDC bases click into position with plunger fully back in its extended position*.

k. If Linearray™ is not properly aligned with heat sinks facing the sign face, repeat steps i and j.



***Note: For 8ft and 10ft Linearray™ units, please ensure that the lamp holder plungers are spring-loaded only at the top**

l. When all fluorescent lamps are replaced with Linearray™ tubes, connect polarized connectors to polarized splitters and extensions as required.



m. If all the Linearray™ tubes are the same size/part number then use Chart A to determine how many are permitted per driver type.

Chart A		PS150-350C-DIM-120277 & GLED-350LC	PS120-350C-UNV
Linearray™ Part number	Nominal Length in"	Tubes/ Lamps per Driver	Tubes/ Lamps per Driver
PF24HO2S	24	11	8
PF30HO2S	30	8	6
PF36HO2S	36	6	5
PF42HO2S	42	5	4
PF48HO2S	48	4	3
PF60HO2S	60	3	2
PF64HO2S	64	3	2
PF72HO2S	72	3	2
PF80HO2S	80	2	2
PF84HO2S	84	2	2
PF96HO2S	96	2	1
PF108HO2S	108	1	1
PF117HO2S	117	1	1
PF120HO2S	120	1	1

n. If the tubes are of mixed sizes then the maximum power of the driver must not be exceeded. To insure that this limit is maintained, the total sum of all the tubes' lengths must not exceed those listed in Chart B. Add up the nominal length from the tube's part number (PF24 is 24 inches, PF72 is 72 inches) and insure that the total length does not exceed the length listed for the driver being used..

Chart B

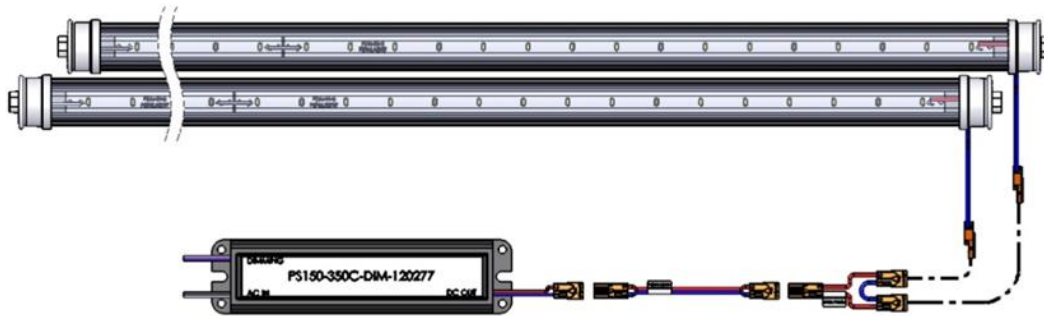
Driver Being Used	Maximum Inches/Feet of Tubes
PS150-350C-DIM-120277 & GLED150-350LC	198"/16.5'
PS120-350C-UNV	158"/13.2'

o. Once the amount of tubes per driver has been determined, select the appropriate splitters from Chart C.

Chart C

Tubes per Driver	Splitter #
11	PD60-6100 (2X)
8	PD60-8100
6	PD60-6100
5	PD60-5100
4	PD60-4100
3	PD60-3100
2	PD60-2100
1	NONE

p. Connect polarized connectors to the Linearray™ driver.



q. Re-energize sign mains power.

**Do not plug in or exchange lamps while the driver is powered.
"Hot swapping" may damage the lamps and void warranty!!!**

9. If there are no fluorescent lamps already installed
Proceed with retrofit procedure, skipping steps b, c, f, g and h.

10. Troubleshooting

Below are some scenarios and answers for some common problems that happen in the field. If you are experiencing trouble in the field that is not listed below please contact customer service at Permlight directly for assistance.

- Sign not lighting up
 - Check power.
 - Check power connection to driver.
 - Check polarity match: Black to black and white to white.
 - Check and tighten cable connections from driver to each tube.
 - Ensure all extender/splitter cable connectors are used. No unused connectors are permitted.

11. Replacement and Maintenance Assistance

phone: 714.508.0729

email: customerservice@permlighttechnologies.tech