

# INSTALLATION INSTRUCTIONS

## LED RETROFIT KIT

### SAFETY WARNINGS

### IMPORTANT SAFETY INFORMATION

#### DANGER

**Risk of shock.** Disconnect power before installation.  
*DANGER- RISQUE DE CHOC- COUPER L'ALIMENTATION AVANT L'INSTALLATION*

#### WARNING

**Risk of fire or electric shock.** LED Retrofit Kit installation requires knowledge of signs electrical systems. If not qualified, do not attempt installation. Product must be installed in accordance with NEC or your local electrical code. If you are not familiar with these codes and requirements, contact a qualified electrician.

*ATTENTION- Risque d'incendie ou de choc électrique. L'installation du kit upgrade LED exige la connaissance des systèmes électriques pour enseignes. Si non qualifié, ne tentez pas d'installation. Ce produit doit être installé conformément à NEC ou votre code électrique local. Si vous n'êtes pas familier avec ces codes et ces exigences, veuillez contacter un électricien qualifié.*

#### WARNING

**Risk of fire or electric shock.** To prevent wiring damage or abrasion, do not expose wires to the edge of sheet metal or any other sharp objects.

*ATTENTION- Pour éviter les dégâts de câblage par l'abrasion, ne pas mettre en contact les fils électriques avec des bords de tôle ou d'autres objets pointus.*

#### WARNING

**Risk of fire or electric shock.** Check the existing wiring for damage before installing upgrade kit. Do not install if existing wires are damaged.

*ATTENTION- Risque d'incendie ou de choc électrique. Vérifier si le câblage existant n'est pas endommagé avant l'installation du kit upgrade LED. Ne pas installer si des fils sont endommagés.*

#### WARNING

**Risk of fire or electric shock.** Sign wiring and electrical parts may be damaged when drilling for installation of the LED upgrade kit. Check for enclosed wiring and components.

*ATTENTION- Risque d'incendie ou de choc électrique. Câblage électriques peuvent être endommagés lors du perçage pour l'installation du kit upgrade LED. Vérifier les fils et composants.*

#### WARNING

**Risk of fire or electric shock.** Install this kit only in host signs that have been identified in the installation instructions and where the input rating of the retrofit kit does not exceed the input rating of the sign.

*AVERTISSEMENT - Risque d'incendie ou de choc Électrique. Installez cet ensemble seulement dans des enseignes hôtes qui ont été identifiés dans les instructions d'installation et dont la capacité d'entrée de l'ensemble ne dépasse pas la capacité d'entrée de l'enseigne.*



RETROFIT SIGN CONVERSION LED KIT FOR USE  
ONLY IN ACCORDANCE WITH KIT INSTRUCTIONS 4JV4

**SUITABLE FOR WET OR DAMP OR DRY LOCATION.  
POUR EMPLOI MOUILLÉE OU HUMIDE OU ENDROIT SEC**

#### WARNING

**Risk of fire or electric shock.** Install this kit only in signs that have the construction features and dimensions shown in the photographs and/or drawings.

*ATTENTION- Risque d'incendie ou de choc électrique. Installez ce kit seulement dans les enseignes qui ont les caractéristiques de construction et les dimensions dans les photographies ou les dessins de la page suivante.*

**Only the holes indicated in the photographs or drawings may be made or altered as a result of the kit installation. Do not leave any other holes open in a wiring enclosure or electrical component.**

*Seulement les trous indiqués dans les photographies ou les dessins peuvent être faits ou altérés pour l'installation du kit upgrade LED. Ne laissez aucun trou ouvert dans le compartiment électrique.*

**NOTE THE RETROFIT KIT IS ACCEPTED AS A COMPONENT OF A SIGN WHERE THE SUITABILITY OF THE COMBINATION SHALL BE DETERMINED BY UL OR AUTHORITIES HAVING JURISDICTION.**

**LE NÉCESSAIRE DE MODERNISATION EST ACCEPTÉ À TITRE DE COMPOSANT D'UN ENSEIGNE LORSQUE LA PERTINENCE DE LA COMBINAISON DOIT ÊTRE DÉTERMINÉE PAR LA UL OU PAR LES AUTORITÉS COMPÉTENTES.**

#### WARNING

**Risk of fire or electric shock.** Do not use this retrofit kit with existing shunted bi-pin lampholders in the host sign. Note: Shunted lampholders are found only in fluorescent signs with Instant-Start ballasts. Instant-Start ballasts can be identified by the words "Instant Start" or "I.S." marked on the ballast. This designation may be in the form of a statement pertaining to the ballast itself, or may be combined with the marking for the lamps with which the ballast is intended to be used, for example F40T12/IS. For more information, contact the LED retrofit manufacturer.

*AVERTISSEMENT - Afin d'éviter tout risque d'incendie ou de choc électrique, ne pas utiliser ce nécessaire de modernisation dans un luminaire qui utilise une douille de lampe à deux broches shuntées. Note : les douilles de lampe shuntées ne se trouvent que dans les luminaires fluorescents munis de ballasts à allumage instantané. Les ballasts à allumage instantané peuvent être identifiés par les mots « Allumage instantané » ou « A.I. » (ou en anglais "InstantStart" ou "I.S.") Inscrits sur le ballast. Cette désignation peut être sous forme d'un énoncé concernant le ballast lui-même ou peut être combinée au marquage des lampes avec lesquelles le ballast est destiné à être utilisé (p. ex., F40T12/ AI ou en anglais F40T12/IS) Pour plus d'information, communiquer avec le fabricant du néces de modernisation du luminaire à del.*

### INSTALLATION

FOR WET, DAMP AND DRY LOCATIONS

### WARNING

**To avoid electric shock or fire:** Disconnect power at service panel prior to installation, troubleshooting or maintenance. Always follow NEC and local wiring requirements. Properly ground power supply and fixture. Do not connect output of power supplies in series or parallel.

All LED module wire connections are white to white and red to red. Power supply to LED module connections are red to red and black to white. Operating temperature -25°C to 55°C

#### EQUIPMENT NEEDED

- Wire stripper
- Manual screwdriver, rivet gun or powered screwdriver and bit
- Tape measure
- Pliers and/or Wrenches

**Note:** For most even illumination, ULT recommends installing LSI653933CU-EV1 using continuous runs of 25 modules maximum. For longer length applications, ULT recommends wiring two separate runs wired in parallel.

#### COMPONENTS NEEDED

- Cleaning cloth
- Non-petroleum-based cleaner
- For LSA-25: #6 pan head sheet metal screws or 1/8" rivets
- For LSI653933CU-EV1: #4 pan head sheet metal screws
- Non-water-based silicone
- EVERLINE LED strip
- IDC or butt splice connectors that accept 20 AWG wire
- EVERLINE 12 Volt, Class 2 Power Supply
- Wire nuts that accept 18-20 AWG wire
- Metal patch material
- UL recognized 18 AWG supply wire
- Disconnect Switch, if required

#### Step 1:

Before proceeding, ensure that the sign is not and cannot be energized – by following the appropriate lock out/tag out procedures.

#### Step 2:

Determine if the sign can be retrofitted.

- The sign must be a listed sign.
- The sign must use a fluorescent or neon light source.
- The sign must be a channel letter sign of the self-contained type, channel letters with remote neon supply or fluorescent ballast, or channel letters mounted on a raceway.

#### Step 3:

Identify which parts to remove.

- Existing fluorescent
  - Lamps
  - Ballasts
  - Sockets/lampholders
- Existing neon
  - Tubes
  - Power Supplies
  - Standoffs
- Reuse
  - Existing electrical enclosure for remote mounted neon power supply
  - Existing electrical conduit for remote mounted neon power supplies

#### Step 4:

Prepare the sign by cleaning it with non-petroleum-based cleaner and let it dry.

#### Step 5:

Layout the design by arranging the LED modules in the sign.

#### Step 6:

Peel the backing tape off the modules and place them in the desired location. (Apply pressure to the module, but not directly on the LED).

#### Step 7:

Secure the modules as needed with pan head screws or rivets

#### Step 8:

Make connections between LED chains using IDC connectors, butt slices or wire nuts. Wires can be cut or connected between any LED modules. Modules can be wired in series or parallel.

#### Step 9:

Cover open wire ends using wire nuts and non-water-based silicone to prevent the connections from touching the sign.

#### Step 10:

Determine whether the power supply is to be mounted in the sign or remote to it. For signs equipped with self contained neon supplies (field wiring compartment integral to the neon supply case), install the LED supply in a suitable electrical enclosure. For all other signs install the LED supply in the existing electrical enclosure. If it is to be mounted within the sign, determine a suitable location for it. On metal signs, it is recommended to fasten the power supply securely with self-tapping screws and star washers.

Driver Model	Installation
L12V60UNV-Q L12V60UNV-A L12V60UNV-R	Remote mount using listed junction box.
L12V60UNV-A L12V60UNV-Q L12V60UNV-R	Install in existing wiring compartment of the electrical enclosure of the sign.

#### Step 11:

Determine if a disconnect switch needs to be installed.

#### NOTES:

- Disconnect switches may be remotely mounted in signs installed in the U.S.
- Signs installed in Canada are required to have a disconnect switch as part of the sign.
- Existing neon power supplies may have an integral switch, which will be removed with the power supply.
- Whether existing or new, any disconnect switch must be suitably rated for the driver (0.6A @ 120v; 0.3A @ 277v), plus a safety margin.

#### Step 12:

Establish a suitable location for disconnect switch, if one is required, and mount it securely, in a similar fashion to the mounting of the power supply.

#### Step 13:

Drill access holes where required for the power supply 12-volt wires (power supply remote to

sign) or circuit breaker-to-disconnect switch wires (power supply mounted in sign). Use existing conduit or wireway for wire or use UL Listed Class 2 Cable. Connect the red wire from the power supply to the red wire on the LED chain. Connect the black (12 v) wire from the power supply to the white wire on the LED chain. Connect the incoming wiring through the disconnect switch to the power supply such that the line wire is attached to the black (line side) wire of the power supply. Conversely, connect the incoming neutral wire to the white (neutral side) wire of the power supply. Make 12v connections using IDC connectors, butt slices or wire nuts. Make wire-wire AC connections with wire nuts.

#### Step 14:

Again ensuring that the circuit cannot be energized, install wiring from the circuit breaker to disconnect switch.

- Installation by a qualified electrician must be in accordance with local and national codes.

#### Step 15:

Patch and/or seal any unused openings in the rain enclosure that are not intended to be drain holes.

- Openings greater than 1/2 inch in diameter require a metal
- patch secured by screws or rivets and caulked with non-hardening caulk.
- Smaller openings may be sealed with a non-hardening caulk.

#### Step 16:

Clear work area and test sign operation.

Chart 1

Maximum Number of LED Modules

Power Supply	Product	Description	Feet/Power Supply	Modules/Power Supply
L12V60UNV-R L12V60UNV-A	White	LSA-25WH	60	120
	Warm WhitR	LSA-25WW	60	120
L12V60UNV-Q	White	LSI653933CU-EV1	27	54

Chart 2

Mounting Distance from Power Supply to LED Chain

AWG	Feet	Meters
18	30	9.1
16	50	15.2
14	80	24.3
12	120	36.5

#### SAFETY WARNINGS IMPORTANT SAFETY INFORMATION



#### Before you begin.

Read these instructions completely & carefully.



#### WARNING To avoid electrical shock or fire:

- Disconnect power at service panel prior to installation, troubleshooting or maintenance.
- Always follow NEC and local wiring requirements.
- Properly ground power supply and fixture. Do not connect output of power supplies in series or parallel.
- Power supply to LED module connections are black to negative and red to positive. Operating temperature -30°C to 55°C

#### INSTALLATION

##### SPECIFICATIONS

Input Voltage	120-277V AC 50-60Hz
Input Current	0.58A/120V 0.26A/277V
Output Voltage	12V DC
Output Current	5.0 Amps

##### COMPONENTS NEEDED

- Wire stripper
- Manual screwdriver, rivet gun or powered screwdriver and bit
- UL recognized 18 AWG supply wire
- UL LISTED Junction Box or
- UL LISTED Junction Box for WET Locations
- Wire nuts that accept 18-20 AWG wire
- ½" NPT Conduit nipple
- ½" NPT Conduit Nuts
- 15/16" Wrench

#### Step 1:

Pull the three (3) primary wires (line, neutral, and ground) through a ½" NPT pipe NIPPLE.

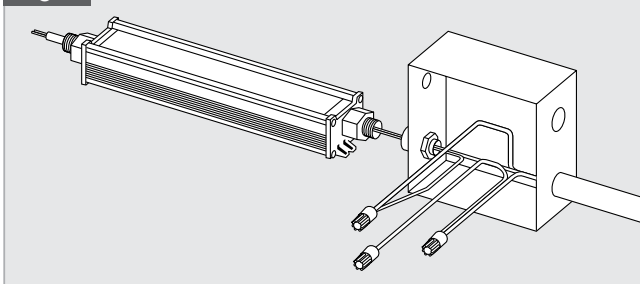
#### Step 2:

Secure conduit hub on power supply with 15/16" wrench while tightening nipple.

#### Step 3:

Thread a ½" NPT nut sufficiently to allow the desired positioning of the power supply with respect to the junction box. **(For wet locations use junction box that is UL Listed for wet locations.)**

Fig. 1



#### Step 4:

Pull the three (3) primary wires into the junction box and through a second ½" NPT nut.

#### Step 5:

Thread both ½" NPT nuts firmly against the junction box.

#### Step 6:

**(Have a licensed electrician)** Connect the three (3) primary wires to the respective wires coming from the sign's service with wire nuts. Connections are black to black; white to white; and green to green.

**NOTE:** Multiple LED Drivers may be mounted to a single outlet box for connection to the mains supply. Repeat steps 1-6 for each additional driver. Follow all applicable installation and electrical codes when configuring multiple drivers to a single outlet box.

#### Step 7:

Plug all unused ports/knockouts on the junction box with suitable plugs.

#### Step 8:

Install junction box cover and ensure that the mounting seam has sufficient sealer to waterproof junction box.

#### Step 9:

Connect the red (+) wire on the secondary (output) of the LED Driver to the positive (+) lead of the LED module. Connect the black (-) wire of the secondary of the LED Driver output cable to the negative lead (-) of the LED module.

**NOTE:** The LED Driver output is designated Class 2 and the driver connects to sign modules with an integral class 2 cable. Class 2 cables do not require conduit per NEC (NFPA70) article 725. When routing the LED driver Class 2 output Cable through a wall to reach the sign modules (in accordance with NFPA 70), seal all wall penetrations with silicone to avoid water damage.