



KT-LED13T8-48G-8XX-X3

T8 LED LAMPS

INSTALLATION INSTRUCTIONS

PLEASE FIND A QUALIFIED ELECTRICIAN FOR INSTALLATION. Please read the instructions before you install and use the luminaire.

SAFETY AND ELECTRICAL PARAMETERS

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

1. These LED tubes are intended for lighting systems only.
2. These LED tubes are for indoor use only. Maximum ambient temperature must not exceed 45°C/113°F.
3. Avoid use in sunlight, abnormal heat, or moist/condensing environments:
 - Working temperature: -20°C/-4°F to 45°C/113°F
 - Working humidity: 30%–85%
 - Storage temperature: -40°C/-40°F to 65°C/149°F
 - Storage humidity: 10%–90%
4. These LED tubes are not intended to be repaired by the user, manufacturer, or service personnel in any case of failure.
5. These LED tubes are constructed such that they do not rely upon the luminaire enclosure for protection against accidental contact with live parts.
6. These LED tubes are intended to be used in dry or damp locations only.
7. Do not use with dimmers.
8. This device is not intended for use with emergency exits.
9. These tubes are intended to be installed in the same orientation as the fluorescent tubes they are replacing.

Warning: Risk of fire or electric shock. LED retrofit kit installation requires knowledge of luminaire electrical systems. If not qualified, do not attempt installation. Contact a qualified electrician.

Avertissement : Risque d'incendie ou de choc électrique. L'installation d'un système del nécessite une connaissance des système électriques pour luminaires. N'entreprenez aucune installation si vous n'êtes pas qualifié. Contactez un electricien qualifié.

Warning: Risk of fire or electric shock. Install this kit only in luminaires that have construction features and dimensions shown in the photographs and/or drawings and where the input rating of the retrofit does not exceed the input rating of the luminaire.

Avertissement : Risque d'incendie ou de choc électrique. Installer ce kit seulement dans des luminaires qui ayant les caractéristiques de construction et les dimensions mentionnées dans les photographies et/ou les dessins et où la vérification d'entrée du kit retrofit ne déplace pas la valeur d'entrée du luminaire.

Warning: Only those open holes indicated in the photographs and/or drawings may be made or altered as a result of kit installation. Do not leave any other open holes in an enclosure of wiring or electrical components.

Avertissement : Seuls les ouvertures indiquées dans les photos et/ou les dessins peuvent être faits ou modifiés a la suite de l'installation du necessaire. Il est interdit de laisser d'autres ouvertures dans un boîtier de cablage ou de composants électriques.

Warning: To prevent wiring damage or abrasion, do not expose wiring edges of sheet metal or other sharp objects.

Avertissement : Afin d'éveter l'endommagement ou l'abrasion des cables, eviter tout contact entre ces derniers et le bord d'un objet tranchant tel qu'une toile.

TYPE A LAMP - Intended for direct substitution of a fluorescent lamp and operating from the integral ballast without any modifications to the fluorescent luminaire.

Type B LAMP – intended for operation in luminaires with traditional fluorescent-type lampholders wired directly to the branch circuit. This includes both factory-wired luminaires as well as those converted for this purpose under a retrofit program.

CAUTION-RISK OF ELECTRLC SHOCK. Do not use if outer lamp envelope is damaged or broken

Avertissement - risque de choc électrique. Ne pas utiliser si le boîtier de l'ampoule est endommagé ou endommagé

COMPONENTS INCLUDED IN KIT

Part	Quantity (Carton pack)
LED tube	25 pcs.per box
Instruction sheet	1

Caution: Before installing, make certain the AC power to the fixture is off.

Caution: The electrical rating of this products is 120–277V. Installer must confirm that there is 120–277V at the fixture before installation.

Caution: LEDs are extremely bright. Do not look directly at the LSD light source for extended time as over-exposure may cause harm to the eyes.

Caution: Not rated for use in Vapor Tight style fixtures. Do not install in Vapor Tight style fixtures. Doing so will void the warranty.

SAFETY AND ELECTRICAL PARAMETERS (continued)

One-end wiring configuration warning: To avoid potential fire or shock hazard, do not use this retrofit kit in luminaires employing shunted bi-pin lampholders. Note: Shunted lamp holders are found only in fluorescent luminaires 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 luminaire retrofit kit manufacturer.

Avertissement de configuration de câblage à une extrémité : Pour le câblage asymétrique de type B uniquement. Afin d'éviter tout risque d'incendie ou de décharge, ne pas utiliser ce système pour des luminaires utilisant des douilles de lampe bi-contacts court-circuitées.

Note : Les douilles de lampe bi-contacts court-circuitées se trouvent généralement dans les luminaires fluorescents avec ballasts à allumage instantané. Ces derniers s'identifient par les termes «instant start» ou «I.S.». Ces termes prennent la forme d'un énoncé relatif au ballast même ou peuvent être ajoutés aux indications concernant les lampes avec lesquelles les ballasts doivent être utilisés (par exemple, F40T12/IS). Pour de plus amples renseignements, veuillez communiquer avec le fabricant du système de luminaire DEL.

Warning: Risk of fire or electric shock. Do not alter, relocate, or remove wiring, lamp holders, power supply, or any other electrical component.

Avertissement : Risque d'incendie ou de choc électrique. Ne pas modifier, remplacer ou débrancher les câbles, les douilles d'alimentation, ou toute autre composant électrique.

Installers should not disconnect existing wires from lamp holder terminals to make new connections at lamp holder terminals. Instead, installers should cut existing lamp holder leads away from the lamp holder and make new electrical connections to lamp holder lead wires by employing applicable connectors.

Les installateurs ne devraient pas débrancher le câblage existant des bornes de douilles de lampes en vue d'établir d'autres connexions à ces bornes. Les installateurs devraient plutôt couper les fils de raccordement des douilles de lampes existants à distance de la douille et établir de nouveaux branchements électriques aux fils de raccordement de la douille en utilisant des accords convenant à cette utilisation.

This retrofit kit is accepted as a component of a luminaire where the suitability of the combination shall be determined by authorities having jurisdiction.

Le nécessaire de modernisation est accepté à titre de composant d'un luminaire lorsque la pertinence de la combinaison doit être déterminée par les autorités compétentes.

Product must be installed by a qualified electrician in accordance with the applicable and appropriate electrical codes. The installation guide does not supersede local or national regulations for electrical installations.

Luminaire lorsque la pertinence de la combinaison doit être déterminée par les autorités compétentes. Ce produit doit être mis en place par un électricien qualifié conformément aux codes électriques appropriés applicables. Le guide d'installation ne supprime pas les réglementations locales ou nationales en matière d'installations électriques.

CAUTION: RISK OF FIRE. IF THE LAMP OR LUMINAIRE EXHIBITS UNDESIRABLE OPERATION (BUZZING, FLICKERING, ETC.), IMMEDIATELY TURN OFF POWER, REMOVE LAMP FROM LUMINAIRE, AND CONTACT MANUFACTURER.

ATTENTION : RISQUE D'INCENDIE. SI LA LAMPE OU UN LUMINAIRE PRÉSENTE UN FONCTIONNEMENT INDÉSIRABLE (BOURDONNEMENT, SCINTILLEMENT, ETC.), COUPER IMMÉDIATEMENT L'ALIMENTATION, RETIRER LA LAMPE DU LUMINAIRE ET CONTACTER LE FABRICANT.

DO NOT INSTALL THIS LAMP IN A PRE-HEAT LUMINAIRE.

THIS LAMP ONLY OPERATES ON ELECTRONIC BALLASTS. IF LAMP DOES NOT LIGHT WHEN THE LUMINAIRE IS ENERGIZED, REMOVE LAMP FROM LUMINAIRE AND CONTACT LAMP MANUFACTURER OR QUALIFIED ELECTRICIAN.

Do not make or alter any open holes in an enclosure of wiring or electrical components during kit installation.

ONLY USE THE CONTROL PROVIDED WITH OR SPECIFIED BY THESE INSTRUCTIONS TO CONTROL THIS LAMP
THIS LAMP WILL NOT OPERATE PROPERLY WHEN CONNECTED TO A STANDARD (INCANDESCENT)
DIMMER OR DIMMING CONTROL

SPECIFICATIONS

These LED tubes are intended to retrofit surface-mounted, UL Listed, type IC or non-IC, recessed-mount fluorescent luminaires that use a maximum of (4) straight tubular lamps *with* diffuser or retrofit surface-mounted, UL Listed fluorescent luminaires that use a maximum of (6) straight tubular lamps *without* diffuser. The maximum dimensions of the luminaire are tabulated below:

Model Number	Used with Diffuser	Lamp Compartment Dimensions	Max. Lamps in Luminaire	Min. Lamp-to-Lamp Distance
KT-LED13T8-48G-8XX-X3	Yes	48.03" x 23" x 3.15"	4	4.33" (4-lamp 2' x 4' troffer)
	No	48.03" x 23" x 3.15"	6	2.16"

To comply with the public safety standards, the following must be observed when using this LED tube:

Model Number	Input Voltage	Input Frequency	Input Current	Input Wattage	Tube Length
KT-LED13T8-48G-8XX-X3	120-277V	50-60Hz	0.12 A	13W	48"

INSTALLATION INSTRUCTIONS

DIRECT REPLACEMENT (WITH EXISTING BALLAST)

1. Turn power off.
2. Remove lens or diffuser, if applicable.
3. Remove existing fluorescent lamp(s) from the luminaire.
4. Install the LED replacement lamp(s), one lamp for each fluorescent lamp removed*.
5. Replace lens or diffuser back in place, if applicable.
6. Turn power back on.

* **Warning:** Check Keystone's *Ballast Compatibility List* before installation

BY-PASS REPLACEMENT (WITH BALLAST REMOVED)

- A. Disconnect power from fixture.
- B. Remove fluorescent lamps.
- C. Remove lens and wiring compartment, if applicable.
- D. Cut all wires connected to ballast (see **Figure A: Typical Ballast Configurations**).
- E. Identify what type of lamp holders are in fixture: non-shunted lamp holders or shunted lamp holders (see **Figure B: Lamp Holder Types**). Double-ended wiring installations of Keystone Combo Drive X3 tubes can be used with shunted G13 or non-shunted G13 lamp holders with instructions to externally shunt.

FIGURE A Typical Ballast Configurations

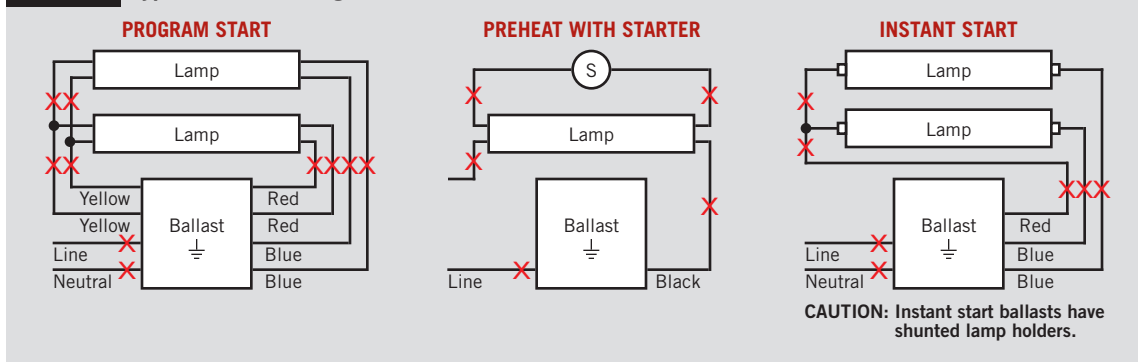
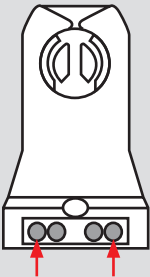


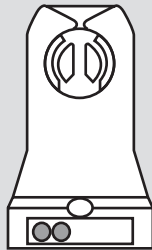
FIGURE B Lamp Holder Types

TYPICAL NON-SHUNTED LAMP HOLDER

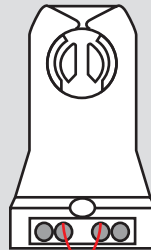


Connect wires directly to these terminals

TYPICAL SHUNTED LAMP HOLDER



Internal shunt



External shunt

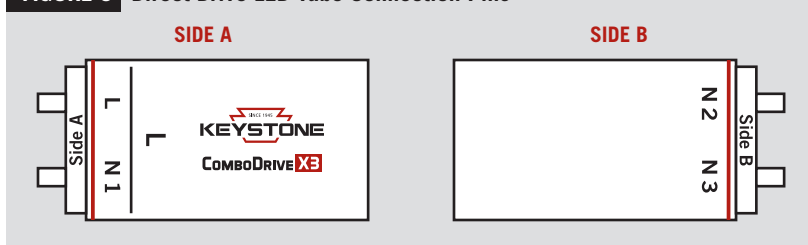
Caution: For single-ended wiring use *only* non-shunted lamp holders.

For Single-ended wiring, do not install product in a fixture with shunted lamp holders (found in all fixtures using instant start ballasts). If the current lamp holders are shunted, remove them and replace them with non-shunted lamp holders. Make new connections directly to terminals as indicated above.

Keystone can provide any style replacement lamp holders.

Call us at 800-464-2680.

FIGURE C Direct Drive LED Tube Connection Pins

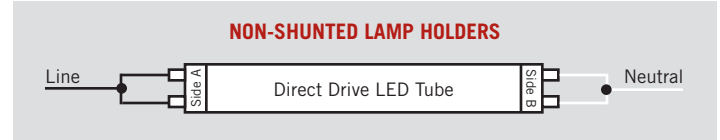
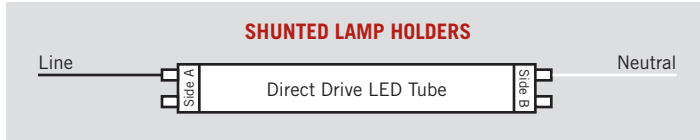


WIRING DIAGRAMS

DOUBLE-ENDED LINE VOLTAGE WIRING

Single lamp

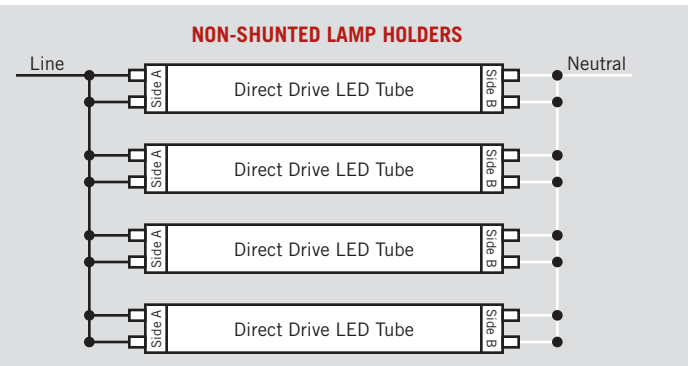
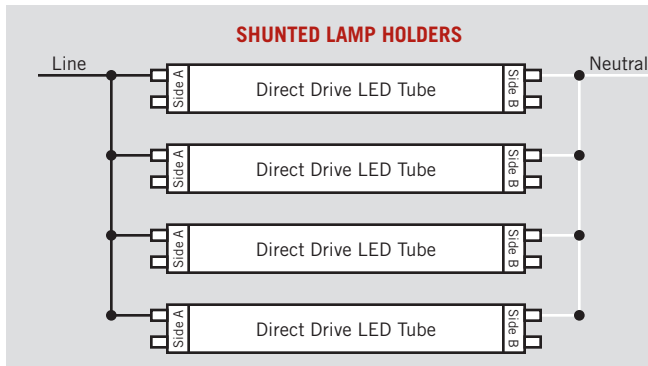
1. Follow steps A–C (see **By-Pass Replacement (with ballast removed)**, on page 3).
2. Cut all existing connections to ballast and remove ballast (see **Figure A**, on page 3, for typical ballast configurations).
3. Connect line voltage AC to both pins on Side A of the lamp (marked L and N1) on the endcap as shown below; on Side B, connect line neutral AC wire to pins marked N2 and N3 on the endcap as shown below (see **Figure C**, on page 3, for direct drive LED tube connection pins).



4. Complete all electrical connections with appropriate connectors/wire nuts as needed, per all local and national electrical codes.
Note: there should not be any exposed wires from sockets left unconnected.
5. Replace wiring compartment cover.
6. Ensure that installed lamp is wired to line and neutral in the lamp holder and that lamp is facing proper direction for illumination.
7. Install lens or diffuser, if applicable.
8. Apply power to fixture and check for illumination.

Multiple lamps

1. Follow steps A–C (see **By-Pass Replacement (with ballast removed)**, on page 3).
2. Cut all existing connections to ballast and remove ballast (see **Figure A**, on page 3, for typical ballast configurations).
3. Connect the terminals of the first lamp to the matching terminals of the second lamp with line and neutral wires. Continue daisy-chain connection for each additional lamp as shown below.



4. Complete all electrical connections with appropriate connectors/wire nuts as needed, per all local and national electrical codes.
Note: there should not be any exposed wires from sockets left unconnected.
5. Replace wiring compartment cover.
6. Ensure that installed lamp is wired to line and neutral in the lamp holder and that lamp is facing proper direction for illumination.
7. Install lens or diffuser, if applicable.
8. Apply power to fixture and check for illumination.

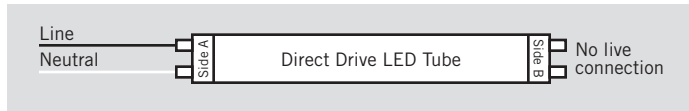
WIRING DIAGRAMS (continued)

SINGLE-ENDED LINE VOLTAGE WIRING*

Note: For single-ended wiring installations, power is applied *only* to endcap labeled Side A.
Do NOT apply power to Side B.

Single lamp

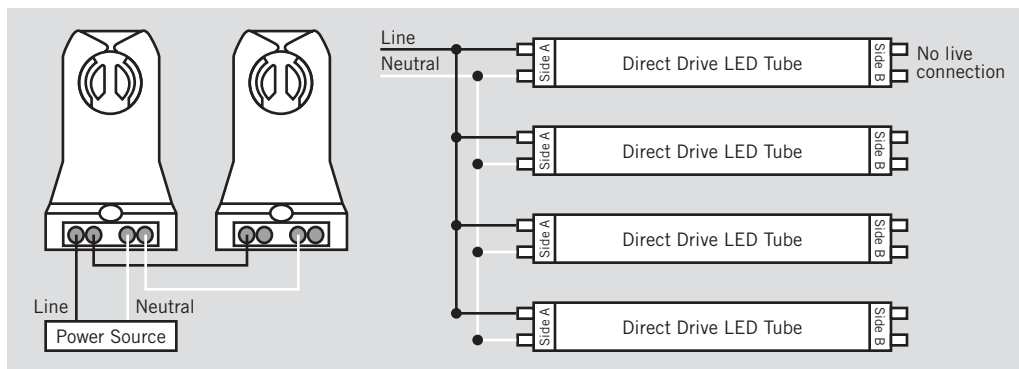
1. Follow steps A–C (see **By-Pass Replacement (with ballast removed)**, on page 3).
2. Cut all existing connections to ballast and remove ballast (see **Figure A**, on page 3, for typical ballast configurations).
Note: Single-ended wiring requires non-shunted lamp holders (see **Figure B**, on page 3, for lamp holder types).
3. On Side A of lamp holder, connect line voltage AC wire to pin marked L and connect line neutral AC wire to pin marked N1 on the endcap as shown below (see **Figure C**, on page 3, for direct drive LED tube connection pins). Do not connect AC wires to Side B.



4. Complete all electrical connections with appropriate connectors/wire nuts as needed, per all local and national electrical codes.
Note: there should not be any exposed wires from sockets left unconnected.
5. Replace wiring compartment cover.
6. Ensure that installed lamp is wired to line and neutral in the lamp holder and that lamp is facing proper direction for illumination.
7. Install lens or diffuser, if applicable.
8. Apply power to fixture and check for illumination.

Multiple lamps

1. Follow steps A–C (see **By-Pass Replacement (with ballast removed)**, on page 3).
2. Cut all existing connections to ballast and remove ballast (see **Figure A**, on page 3, for typical ballast configurations).
Note: Single-ended wiring requires non-shunted lamp holders.
3. Connect the terminals of the first lamp to the matching terminals of the second lamp with line and neutral wires. Continue daisy-chain connection for each additional lamp as shown below. **Note:** Do not connect any wires to Side B of lamp holder.



4. Complete all electrical connections with appropriate connectors/wire nuts as needed, per all local and national electrical codes.
Note: there should not be any exposed wires from sockets left unconnected.
5. Replace wiring compartment cover.
6. Ensure that installed lamp is wired to line and neutral in the lamp holder and that lamp is facing proper direction for illumination.
7. Install lens or diffuser, if applicable.
8. Apply power to fixture and check for illumination.

***Caution:** Use only non-shunted lamp holders for single-ended wiring installations. Do not perform single-ended wiring installation of product in a fixture with shunted lamp holders (found in all fixtures using instant-start ballasts). If the existing lamp holders are shunted and single-ended wiring is desired, remove and replace them with non-shunted lamp holders (or remove the external shunt, if applicable). Make new connections directly to lamp holder terminals as shown above).