TX2L Series Retrofit Kit

Installation Instructions

IMPORTANT SAFETY WARNINGS

This product must be installed in accordance with the applicable installation code by a person familiar with the construction and operation of the product and the hazards involved.

Ce produit doit etre installe' selon le code d'installation pertinent, par une personne qui connait bien le produit et son fonctionnement ainsi que les risques inerents.

To prevent death, injury or damage to property this product must be installed in accordance to National Electric Code in the US or Canadian Electrical Code (CSA22.1) in Canada.

Pour empêcher la mort, les blessures ou les dommages matériels, ce produit doit être installé conformément aux normes NEC du Code canadien de l'électricité (CSA22.1) au Canada.

Danger – Risk of shock – Disconnect power before installation

Danger – Risque de choc – Couper l'alimentation avant l'installation.

Suitable for damp locations. *Convient aux emplacements humides.*

REPLACE LED LAMP ONLY WITH MODELS TX2L-X-24-X-X-48-X MANUFACTURED BY US LED. *REMPLACEZ LA LAMPE À LED UNIQUEMENT AVEC LES MODÈLES TX2L-X-24-X-X-48-X FABRIQUÉS PAR US LED.*

Wait until the lamp(s) have cooled down before retrofitting or servicing the fixture. *Attendez que la lampe ait refroidi avant de rééquiper ou d'entretenir le luminaire.*

The retrofit kit is to be installed only in UL listed signs. *Le kit d'adaptation doit être installé uniquement sur les panneaux homologués UL.*

Use only certified UL wires and connectors. *Utilisez uniquement des fils et des connecteurs certifiés UL.*

US LED TDXL2 series modules can be used with the 24VDC power supplies listed in this guide. *US LED TDXL2 peut être utilisée avec 24VDC alimentation electrique répertoriée dans ce guide.*

Warning – Risk of fire or electric shock. Installation of this LED retrofit kit may involve drilling or punching of holes into the structure of the sign. Check for enclosed wiring and components to avoid damage to wiring and electrical parts.

Attention – Risque d'incendie, risqué de choc. L'installation de ce kit de conversion LED peut impliquer le perçage ou le poinçonnage de trous dans la structure du panneau. Vérifiez le câblage et les composants inclus pour éviter d'endommager le câblage et les composants électriques.

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.

Attention – Risque d'incendie, risqué de choc. N'installez ce kit que dans les panneaux d'accueil identifiés dans les instructions d'installation et dans les cas où l'indice d'entrée de la trousse de conversion ne dépasse pas la valeur nominale d'entrée du panneau.

WARNING - Risk of fire or electric shock. LED Retrofit Kit installation requires knowledge of sign electrical systems. If not qualified, do not attempt installation. Contact a qualified electrician.

ATTENTION - Risque d'incendie ou de choc électrique. L'installation du kit de modification de LED nécessite la connaissance des systèmes électriques de signalisation. S'il n'est pas qualifié, ne tentez pas l'installation. Contactez un électricien qualifié.

Installer should examine parts that are not intended to be replaced by the retrofit kit for damage and replace damaged parts prior to installation of the retrofit kit.

L'installateur doit examiner toutes les pièces qui ne sont pas destinées à être remplacées par le kit d'adaptation en cas de dommages et remplacer les pièces endommagées avant l'installation du kit d'adaptation.

WARNING - To prevent wiring damage or abrasion, do not expose wiring to edges of sheet metal or other sharp objects.

ATTENTION - Pour éviter tout dommage au câblage ou toute abrasion, ne pas exposer le câblage aux bords de la tôle ou à d'autres objets pointus.

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

Ne pas faire ou modifier des trous ouverts dans un boîtier de câblage ou de composants électriques lors de l'installation du kit.

Repair and seal any unused openings in the electrical enclosure. Openings greater than 12.7-mm (1/2-in) diameter require a metal patch secured by screws or rivets and caulked with non-hardening caulk. Smaller openings may be sealed with non-hardening caulk."

Réparer et sceller les ouvertures non utilisées dans le boîtier électrique. Les ouvertures de plus de 12,7 mm (1/2 po) de diamètre nécessitent une pièce de métal fixée par des vis ou des rivets et masticée avec du mastic non durcissant. Les plus petites ouvertures peuvent être scellées avec des calfeutrage durci.

WARNING - Do not connect output circuits from multiple sources in series or parallel.

AVERTISSEMENT - Ne connectez pas les circuits de sortie de plusierus sources en série ou en parallèle.

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TX2L Series Retrofit Kit

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RETROFIT COMPONENTS

Extrusion *(Figure 1a)*

LED Modules:

TDXL2 Single-Sided Modules (Figure 1b)

TDXL2 Double-Sided Modules (Figure1c)

Class 2 Power Supply:

PSB-1-24-96 (Figure 2)

Wire Nuts *(Figure 3)*

Z-Bracket *(Figure 4)*

L-Bracket *(Figure 5)*

Sheet Metal Screws *(Figure 6)*

Extrusions *(Figure 7)*

Sign Box Label *(Figure 8)*

Figure 1a

Figure 1b

Figure 1c

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

WARNING: RISK OF FIRE OR ELECTRIC SHOCK.

THIS SIGN HAS BEEN MODIFIED
TO OPERATE LED LAMPS.

DO NOT ATTEMPT TO OPERATE FLUORESCENT
LAMPS IN THIS SIGN.

Figure 8

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THE FIELD INSTALLATION OF THIS LED RETROFIT KIT INTO A SIGN IS SUBJECT TO THE ACCEPTANCE OF THE AUTHORITY HAVING JURISDICTION.

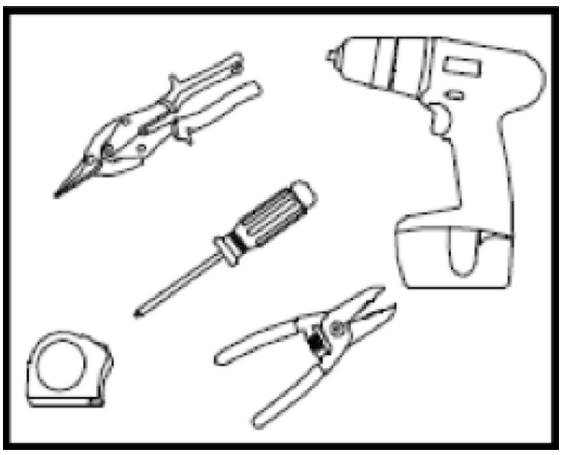
CAUTION: TURN OFF POWER TO THE SIGN BEFORE INSPECTING OR REMOVING EXISTING LIGHT SOURCE. THE POWER MUST REMAIN OFF WHILE INSTALLING THE LED RETROFIT KIT.

THE UL CLASSIFICATION MARK ON THIS LED RETROFIT KIT REQUIRES THE KIT TO BE INSTALLED IN A UL LISTED SIGN ONLY.

This procedure is for the installation or retrofit of the channel letter family of products and power supply. Licensed electricians should provide all installation and hook-up of both the primary and secondary input/outputs of the power supply. All installation and hookup should be done in accordance with all National and Local codes and permits.

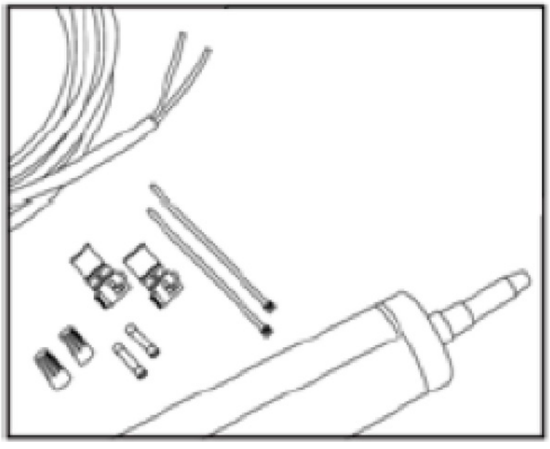
Tools Required:

- *Drill*
- *Screwdriver*
- *Wire Strippers*
- *Wire Cutters*
- *Tape Measure*
- *Sheet Metal Scissors*
- *Metal Saw*



Materials Required (Not Supplied):

- *Solid 18 AWG NEC Class 2 Cable*
- *Cable Tie Downs or Zip Ties*
- *Wirenuts Sized For Wire Used*
- *#6 Sheet Metal Screws or Rivets*
- *Outdoor Caulk Silicone*
- *Conduit and conduit connectors sized appropriately.*
- *Isopropyl Alcohol*



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TX2L EXTRUSION ASSEMBLY RETROFIT INSTRUCTIONS

Into Recessed Double Contact Connectors of 5' or 6' Length

This section describes how to retrofit an existing sign cabinet with fluorescent tubes. For new sign cabinets, see the next section.

The following requirements must be met for a successful retrofit:

1. The stroke spacing of the fluorescent tubes to be retrofitted must be between 10 to 18 inches.
2. Fluorescent tubes to be retrofitted must be located at least 7 inches from the face of the sign.
3. Fluorescent tubes to be retrofitted must have Recessed Double Contact type contacts. The Z-Brackets provided are designed to mechanically connect to this type of contact.

Follow the instructions below to retrofit a sign with TX2L Extrusion Assemblies:

1. Disable power.
2. Remove all ballasts and fluorescent tubes to be retrofitted. All materials must be disposed of in accordance with applicable laws.
3. Clean the interior and exterior of sign.
4. Verify that the TX2L Extrusion Assembly is of appropriate length. This is accomplished by test placing a TX2L Extrusion Assembly in the location of a fluorescent tube in the sign. The TX2L Extrusion Assembly should be roughly ½ inch shorter than the distance between two opposing uncompressed fluorescent sockets. Certain model numbers are designed to be shortened in the field if required. See step 5 for details else go to step 6.
5. Model TX2L-X-24-X-5-60x72-X is designed to replace 5-foot and 6-foot fluorescent tubes. In its supplied state it is suitable for replacement of 6-foot fluorescent tubes. For 5-foot tube replacement applications the extrusion's length must be adjusted. This is accomplished by cutting 6.0" off both ends of the extrusion. To aid in cutting the extrusion black marker lines are located 6.0" from each end on the extrusion.
6. Attach the Z-Bracket to both ends of the TX2L Extrusion Assembly. The Z-brackets adds approximately 1 inch to the length of the Extrusion Assembly.
7. Place the TX2L Extrusion Assembly in the fluorescent sockets. If the TX2L Extrusion Assembly is of the single sided type (TX2L-X-24-S series) then verify that the LED lenses point towards the face of the sign. If it is of the double sided type (TX2L-X-24-D series) then verify that the LED lenses are pointing to both opposing faces of the sign. Note that it might be required to twist the fluorescent sockets 90 degrees if the LED lenses are pointing to the sidewalls of the sign.
8. Wire 24VDC to the TX2L Extrusion Assembly as described later in this document. Note that power can be supplied to either end of the TX2L Extrusion Assembly. Both wires of the unwired end must be capped with wire nuts.

TX2L Series Retrofit Kit

Installation Instructions

RETROFIT INSTRUCTIONS FOR FIELD CUSTOMIZABLE LENGTHS

The following requirements must be met for a successful retrofit:

1. Disable power.
2. Remove all ballasts, fluorescent tubes, and connectors to be retrofitted. All materials must be disposed of in accordance with applicable laws.
3. Clean the interior and exterior of sign.
4. Cut the aluminum extrusion to length or connect two sticks together with the connector bracket to fit in the sign.
5. Secure the L-bracket with a screw to both ends of the TX2L Extrusion Assembly's extrusion. See Figure 12.
6. Remove the release liner from the tape on the TDXLs modules.
7. Snap into the aluminum extrusion using the "Spacing Module to Module" as described in the TDXLs Spacing Chart below.
8. Screw the extrusions with the TDXLs modules to the sign using the "Multiple Row Spacing" as described in the TDXL Spacing Chart below.
9. Wire 24VDC to the TX2L Extrusion Assembly as described later in this document. Note that power can be supplied to either end of the TX2L Extrusion Assembly. Both wires of the unwired end must be capped with wire nuts so they do not make contact with the other.

Double Face Sign Cabinet Spacing Chart

Distance From Face	22"-36"	20"	18"	16"	14"	12"	10"	8"	6"
Multiple Row Spacing	24"	22"	20"	18"	16"	14"	12"	8"	6"
Module-To-Module Spacing	15"	15"	15"	15"	15"	15"	15"	15"	12"

Single Face Sign Cabinet Spacing Chart

Distance From Face	11"-18"	10"	9"	8"	7"	6"	5"	4"	3"
Multiple Row Spacing	24"	22"	20"	18"	16"	14"	12"	8"	6"
Module-To-Module Spacing	15"	15"	15"	15"	15"	12"	12"	10"	7"

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POWER SUPPLY AND WIRING INSTRUCTIONS

This section applies to retrofit and new sign installations. For retrofits it is assumed that the fluorescent ballasts have already been removed as described earlier in this document.

The following requirements must be met for a successful installation:

1. All Power Supplies must be installed at least 1" above the bottom of the sign. This is to prevent the Power Supplies from being submerged in water in case of water accumulation in the bottom of the sign.
2. All Power Supplies must be grounded.
3. Recommended low voltage cable between the Power Supplies and LED modules is solid 18 AWG NEC Class 2 plenum rated cable.
4. All runs through a wall must either be in a conduit or "pass-thru" to be made with Class 2 wire.

Follow the instructions below to install the Power Supplies:

1. Determine the Power Supply loading for a given TX2L Extrusion Assembly. Each TX2L Extrusion Assembly has one or more LED modules mounted to its extrusion. The maximum number of LED modules that can be powered by a single 96W/24V Power Supply is:

- *TX2L-x-S series (single sided, 8 LEDs per module): maximum load of 36 LED modules.*
- *TX2L-x-D series (double sided, 16 LEDs per module): maximum load of 18 LED modules*

Follow the procedure below to determine the max number of TX2L Extrusion Assemblies to be powered by a Power Supply:

Power Supply load calculation procedure	Example
i. Determine the module type (single or double sided) and module count per TX2L Extrusion Assembly	Model TX2L-x-24-D-5-60x72-x has 5 double sided modules
ii. Determine the maximum number of modules per 96W/24V Power Supply per (1a) and (1b) above.	Up to 18 double sided LED modules can be powered per 96W/24 Power Supply
iii. Divide the TX2L Extrusion Assembly module count (Step 1i) into the maximum Power Supply load count of Step (1ii).	18 / 5 = 3.6
iv. Round the answer in Step (1iii) down to the nearest whole number. The result is the maximum number of TX2L Extrusion Assembly per Power Supply	3.6 rounded down is 3 TX2L Extrusion Assemblies per driver

2. Follow the procedure below to determine the number of Power Supplies needed for the sign:

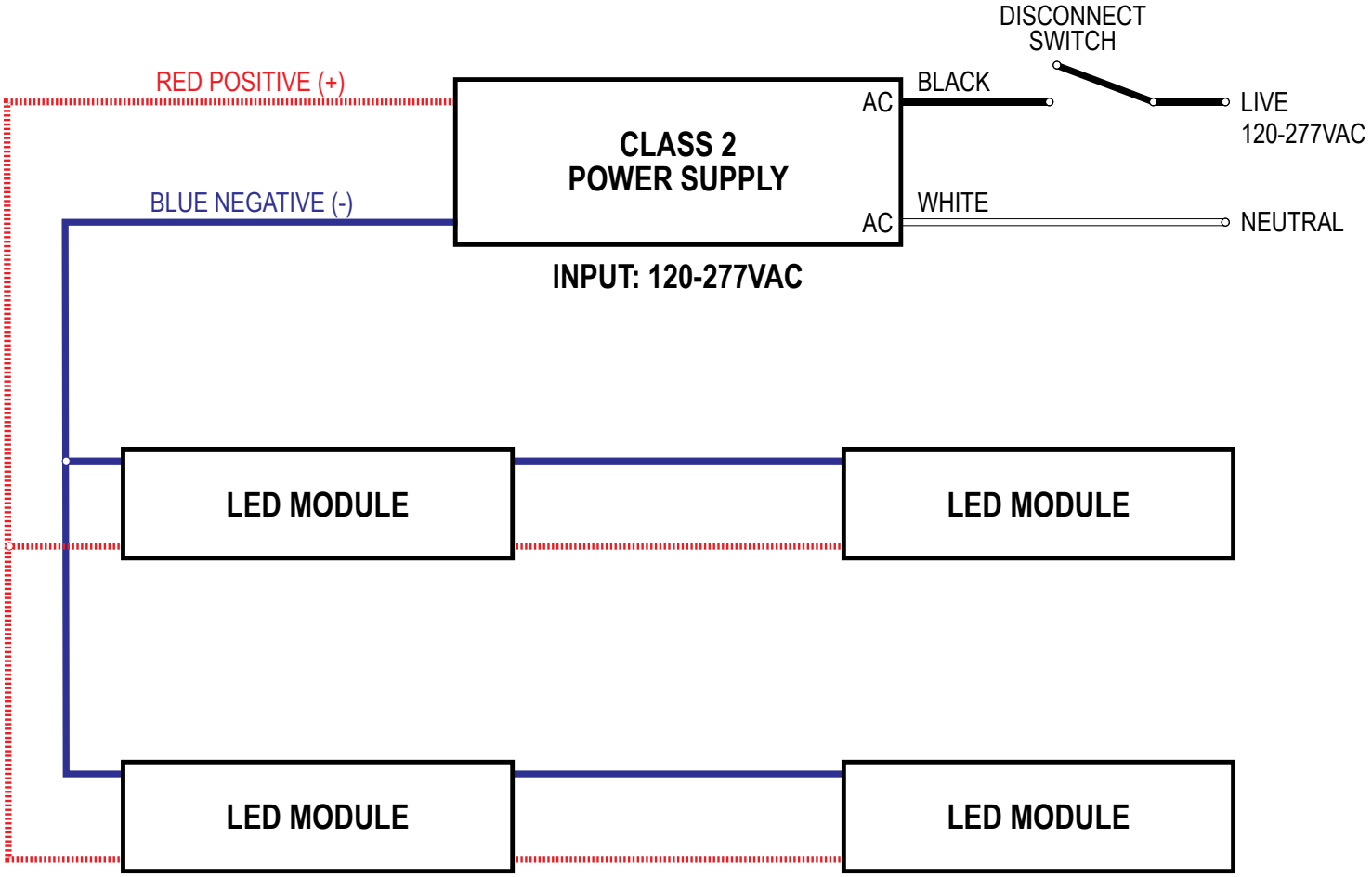
Power Supply quantity calculation	Example
i. Determine the number of TX2L Extrusion Assemblies needed for the sign as calculated in the Retrofit or New Installation instruction procedure.	The retrofit sign requires 16 units of TX2L-x-24-D-5-60x72-x
ii. Divide the Power Supply loading value determined in Step (1iv) into the number of TX2L Extrusion Assemblies of Step (2i)	16 / 3 = 5.33
iii. Round the number determined in Step (2ii) up to the nearest whole number. This is the number of Power Supplies needed for the sign.	5.33 rounded up is 6 Power Supplies for the sign

3. Secure Power Supplies in a suitable location inside the sign. Connect secondary wiring between the Power Supply and its TX2L Extrusion Assemblies per local code. See the wiring diagram in Figure 13 for wiring details.
4. Connect branch wiring per local code to all Power Supplies. Minimum primary wire size is 16AWG 300 Volt.
5. Attached Sign Box Label I (see Figure 9) and Sign Box Label II (see Figure 10) to the inside of the sign. Place the labels at a location that is visible during future servicing and not likely to get wet.

TX2L Series Retrofit Kit

Installation Instructions

POWER SUPPLY AND WIRING GUIDE



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TDXL2 SINGLE SIDED

Module Qty.	Amps	Watts
2	0.21	5
3	0.31	7.5
4	0.42	10
5	0.52	12.5
6	0.63	15
7	0.73	17.5
8	0.83	20
9	0.94	22.5
10	1.04	25
11	1.15	27.5
12	1.25	30
13	1.35	32.5
14	1.46	35
15	1.56	37.5
16	1.67	40
17	1.77	42.5
18	1.88	45
19	1.98	47.5
20	2.08	50
21	2.19	52.5
22	2.29	55
23	2.40	57.5
24	2.50	60
25	2.60	62.5
26	2.71	65
27	2.81	67.5
28	2.92	70
29	3.02	72.5
30	3.13	75
31	3.23	77.5
32	3.33	80
33	3.44	82.5
34	3.54	85
35	3.65	87.5
36	3.75	90

TDXL2 DOUBLE SIDED

Module Qty.	Amps	Watts
2	0.41	10
3	0.62	15
4	0.83	20
5	1.041	25
6	1.25	30
7	1.45	35
8	1.66	40
9	1.87	45
10	2.08	50
11	2.29	55
12	2.50	60
13	2.70	65
14	2.91	70
15	3.12	75
16	3.33	80
17	3.54	85
18	3.75	90

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