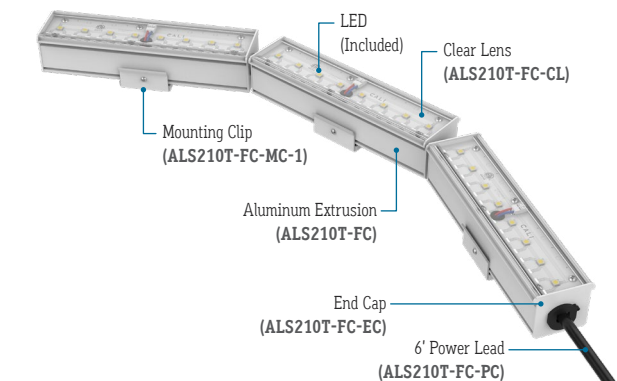
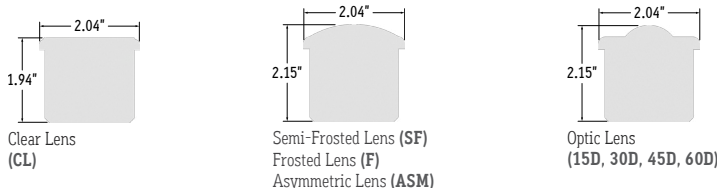


**READ ENTIRE GUIDE BEFORE STARTING INSTALLATION**

**IMPORTANT NOTICE:** VERIFY CORRECT LUMINAIRE WAS RECEIVED WITH CORRECT COLOR TEMPERATURE, VOLTAGE, AND WATTAGE BEFORE CUTTING OR INSTALLING. CALI WILL NOT BE RESPONSIBLE IF INCORRECT LUMINAIRE IS INSTALLED.

**END VIEWS****FEATURES**

|  |   |
|--|---|
| <b>APPLICATIONS</b>                                | Indirect and Direct Lighting  |
| <b>LAMP TYPE</b>                                   | High, Mid, or Standard Output LEDs (No Mercury)   |
| <b>CRI</b>   | >90 (High, Mid, and Standard Output)  |
| <b>LENS</b>  | Clear, Frosted, or Semi-Frosted   |
| <b>OPTICS AND ASYMMETRIC</b>                       | 15°, 30°, 45°, 60° or Asymmetric Optics   |
| <b>LENGTH</b>                                      | Built to Order  |
| <b>CONSTRUCTION</b>                                | Aluminum Extrusion (Shipped in 10-12" Segments)   |
| <b>WEIGHT</b>                                      | 0.80 lbs per foot   |
| <b>MOUNTING</b>                                    | Mounting Clips (Sold Separately)  |
| <b>LISTING</b>                                     | Dry or Wet (IP65 or IP67) Location<br>UL1598, CSA C22.2#250.0<br>UL8750, CSA250<br>UL2108, CSA C22.2 #9 |
| <b>INSTALLATION</b>                                | Link to Installation Instructions   |
| <b>ELECTRICAL</b>                                  |   |
| <b>DIMMING</b>                                     | 0-10V, Forward Phase, DMX, DALI   |
| <b>MAXIMUM RUN (Line Voltage Integral Drivers)</b> | 40' (1.5W, 2W, 3W, 4W, 5W, 6W, 8W)<br>26' (12W)   |
| <b>MAXIMUM RUN (Class 2 Remote Drivers)</b>        | 36' (1.5W, 2W), 28' (3W), 21' (4W),<br>17' (5W), 14' (6W), 10' (8W), 7' (12W)                           |
| <b>PRIMARY VOLTAGE</b>                             | 120V - 277V (UNV) or 120V (Phase Dimming Only)  |
| <b>SECONDARY VOLTAGE</b>                           | 24VDC   |
| <b>TEMPERATURE RATINGS</b>                         | Operating / Startup: -20° to 48°C (-4° to 120°F)<br>Storage: -40° to 76°C (-40° to 170°F)               |

**PRODUCT INFORMATION**

- Lighting for accent, cove, edge, display, or under cabinet
- Line Voltage or Low Voltage (integral or remote transformer drivers)
- Long life, energy efficient LEDs
- Choose from a variety of LED colors and whites
- Can be ordered to specific lengths for when exact dimensions are known  
**Example:** 10 x 10'6"
- Product is shipped in 8' max luminaires
- Four different mounting options available (custom mounting available upon request)

**ELECTRICAL**

- Line voltage fixtures do not require a remote driver
- Low voltage fixtures require a remote driver (transFORMER - TRA or TRA-E)
- To calculate transformer size, determine Watts per Foot.  
**Example:** 1.5W per Foot
- Determine Length in Feet.  
**Example:** 30'
- Calculate Load: Multiply Watts per Foot x Length in Feet  
**Example:** 1.5W x 30' = 45W
- Choose a transFORMER from catalog.  
**Example:** TRA50
- Determine maximum distance using Maximum Wire Length Table on transformer page.  
**Example:** 45 watts is between 40W and 60W. Using #14 wire, maximum distance is 37' from transFORMER to first LED.
- Maximum load per line voltage fixture is 320 watts per circuit
- Maximum load per low voltage fixture depends on size of driver  
**Standard Output:** 100 Watts Driver Maximum  
**Mid Output:** 100 Watts Driver Maximum  
**High Output:** 50 Watts Driver Maximum
- Maximum run for line voltage integral drivers  
40' (1.5W, 2W, 3W, 4W, 5W, 6W, 8W)  
26' (12W)

**INSTALLATION RECOMMENDATIONS**

- AlumLEDs can be mounted to sheetrock, concrete, or wood using proper mounting screws
- All wiring is enclosed inside aluminum housing
- Provide run lengths at time of order

**INSTALLATION TOOLS REQUIRED**

- Electric Hammer Drill
- 14.4 to 28 Volt Cordless Drill
- Phillips Bits
- Utility Knife
- Electrical Cord
- Marker
- Wire Stripper
- Long Nose Pliers
- Drill Bits - Concrete or Wood
- Electrical Three Ways
- Safety Glasses
- Measuring Tape
- Chalk Line

**WARNING**

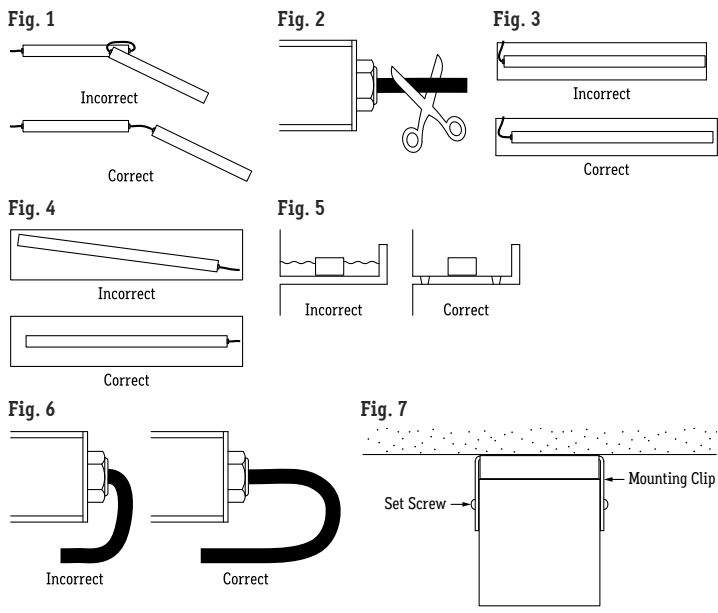
When using alumLEDs for any application, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and personal injuries.

AlumLEDs must be installed in accordance with the NEC or CEC as applicable.

CALI will not be responsible for any damage or malfunction caused by the following:

- Ensure power is off before installation begins, during replacements, additions, or repairs.
- Do not use alumLEDs if damaged, such as broken boards, loose connections, or frayed wire insulation. Inspect before installing.
- Do not install alumLEDs in hazardous locations.
- Do not cover alumLEDs with any material. Covering may cause LEDs to overheat, melt, or ignite.
- Do not paint on or over fixture lens or LEDs.  
Paint or any other substance on lens or LEDs will cause a shift in color temperature.
- Soffit must be evenly painted with a neutral white to avoid color shift.
- Do not modify alumLEDs in the field.
- Do not overlap alumLEDs luminaires in any way. (Fig. 1)
- alumLEDs have line voltage risk of shock. Consult factory for any malfunctions.  
Do not attempt to repair.
- Only use alumLEDs with specified rated voltages. Do not exceed the specified voltage for any alumLEDs luminaire.
- Do not use alumLEDs extrusion as a raceway for additional wire. Non-factory feed through wires inside alumLEDs will void warranty.
- Ground Fault Circuit Interrupter (GFCI) protections should be provided on circuits or outlets when alumLEDs is used for outdoor applications.
- Surge protector must be set up for electrical power system to avoid damaging alumLEDs lighting system.
- Do not connect wires together, follow provided wiring diagrams.
- Do not cut wire while energized. (Fig. 2)
- Do not exceed maximum run lengths.
- Do not secure alumLEDs with nails or like means that might damage the wiring inside.  
Only secure by using mounting clips.
- Do not mount alumLEDs inside tanks or enclosures of any kind.
- Do not install downward facing luminaires without set screws.
- Do not use improper screw head type on mounting clips. It will cause the mounting clip to open up and become dysfunctional.
- Do not modify mounting clips.
- Do not mount fixture with less than the minimum number of mounting clips required.  
See mounting clips section for details.
- Do not force alumLEDs into a space that is too small.
- Do not force alumLEDs with cord grip into soffit. (Fig. 3)
- Do not install alumLEDs at an angle within a cove.  
Only install fixtures straight within a cove. (Fig. 4)
- Do not bend extrusion around radius.
- Do not submerge dry or wet location alumLEDs in any liquid.
- Do not install wet location in outdoor coves without proper drainage. (Fig. 5)
- Do not install alumLEDs in any area that is continuously exposed to flowing or pooling water, such as underneath drain pipes, sprinklers, fountains, misters, etc.
- Do not cut, puncture, or penetrate alumLEDs aluminum housing, end caps, or lens covers.
- Do not drop, bang, or rest weight upon alumLEDs.
- Do not apply excessive pressure to any part of alumLEDs.
- Do not remove end caps from alumLEDs.
- Do not bend alumLEDs power cord or continuous connector past permitted bend radius.  
Bending past permitted bend radius will break the seal of the cordgrip or damage the insulation. (Fig. 6)  
Wet Location: 3.5" minimum bend radius  
Dry Location: 1.5" minimum bend radius
- Do not install alumLEDs in places where the power cord is subject to continuous flexing.
- Do not twist continuous connector or power cord.
- Do not hold, carry, or suspend alumLEDs by the power cord.
- Do not install alumLEDs on ceilings without mounting clips and set screws. (Fig. 7)

**FIGURES**



**CLEANING MATERIALS**

The use of solvents and/or cleaners which are not compatible with polycarbonate will result in the softening, crazing, and/or cracking of the plastic part. This is especially true of polycarbonate lamps and mounting bases which may be under stress in their normal applications.

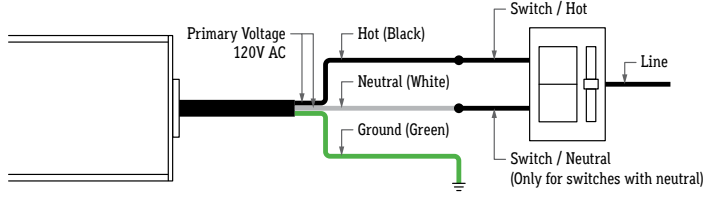
**COMPATIBLE WITH POLYCARBONATE**

- Mild soap and water
- Mineral Spirits
- Isobutyl alcohol
- VM and P Naphtha
- Varsol No.2
- Mexane
- Freone TF and TE-35
- Ethanol
- Dirtex
- 2% Sol. Reg. Joy
- 10% Sol Bon Ami
- White Kerosene
- Methyl alcohol
- Heptane
- Petroleum Ether/65 degrees C
- Isopropyl alcohol
- Lacryl PCL-2035 polycarbonate cleaner

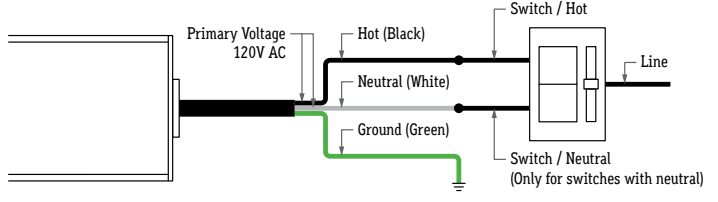
**NOT COMPATIBLE WITH POLYCARBONATE**

- Trichlor
- Gasoline
- Liquid Detergents
- Acetone
- Carbon Tetrachloride
- Pink Lux (Phosphate free)
- Triclene
- Chlorinated Hydrocarbons
- #1 & #3 denatured alcohol
- Methyl Ethyl Keytone (MEK)
- Texize-8006, 8129, 8758
- MIBK
- Liquid Cleaner - 8211
- Toluol
- Agitene
- Benzol
- Ajax
- Kleenol Plastics
- Lysol
- Stanisol Naphtha
- Oils
- Lemon Joy (phosphate free)
- Diversol
- Lestoil

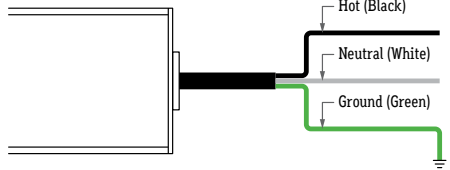
FORWARD PHASE WIRING DIAGRAM



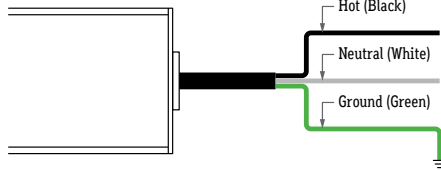
REVERSE PHASE WIRING DIAGRAM



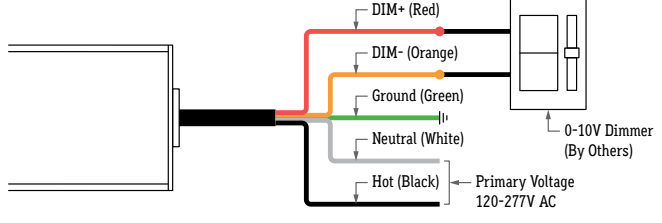
120V WIRING DIAGRAM



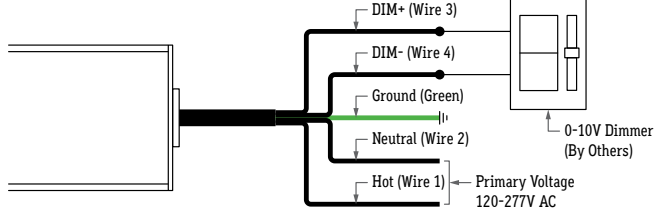
120-277V (UNV) WIRING DIAGRAM



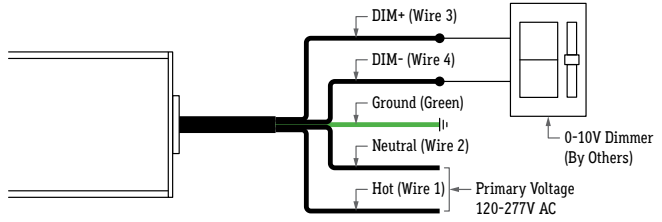
0-10V WIRING DIAGRAM (Dry Location)



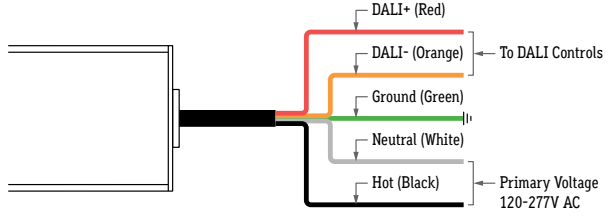
0-10V WIRING DIAGRAM (Dry Location: Side / Bottom Feed)



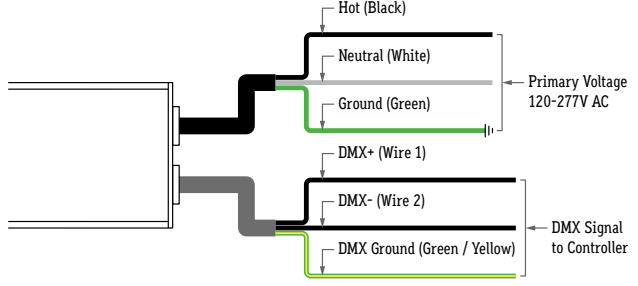
0-10V WIRING DIAGRAM (Wet Location)



DALI WIRING DIAGRAM



DMX WIRING DIAGRAM (Dry or Wet Location)

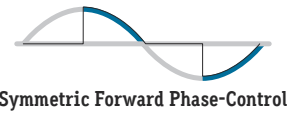


Note: Verify wire colors and wiring diagram from fixture before connecting. If there is a discrepancy, consult factory before connecting.

FORWARD PHASE (FP) DIMMING PROTOCOL

Technical Requirements For Control Equipment (Phase Dimming)

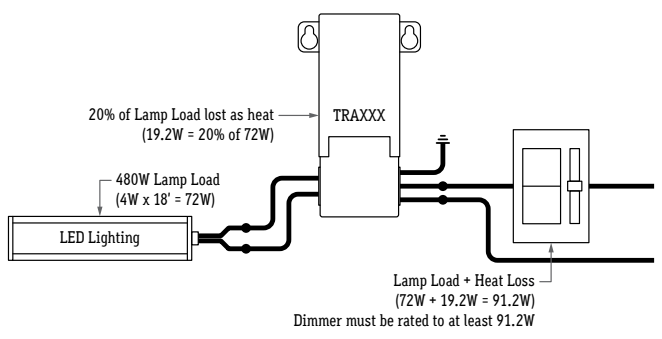
- Magnetic Low Voltage (MLV): Magnetic (core and coil, toroidal) transformer-supplied low voltage lighting.
Electrical Characteristic: Inductive
Special Requirements: Symmetric cycles (VDC <= 2), smooth turn off (positive and negative periods are equal for safe MLV transformer operation)



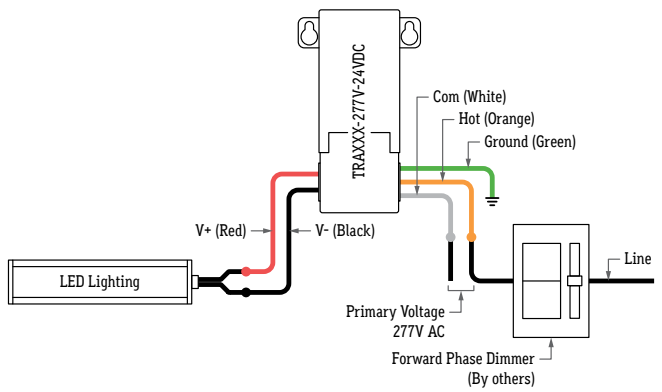
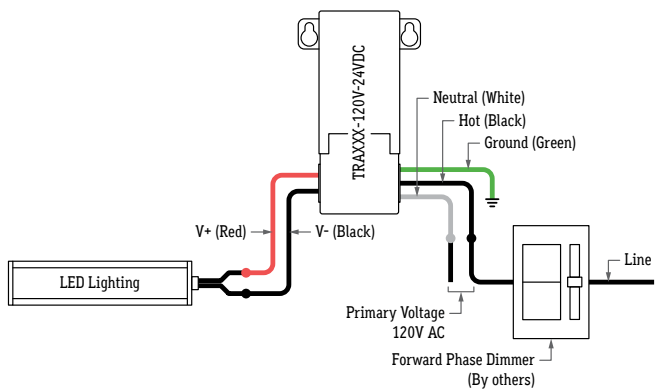
Symmetric Forward Phase-Control

FORWARD PHASE DIMMER RATINGS

The stated VA (volt-ampere) rating is the rated capacity of the dimmer which includes the magnetic transformer heat losses and the lamp load. A transformer dissipates less than 20% of the connected load as heat. The lamp load plus the transformer loss determine the dimmer capacity required. See the example below.



FORWARD PHASE WIRING DIAGRAMS (Remote Driver)



0-10V (10V) DIMMING PROTOCOL

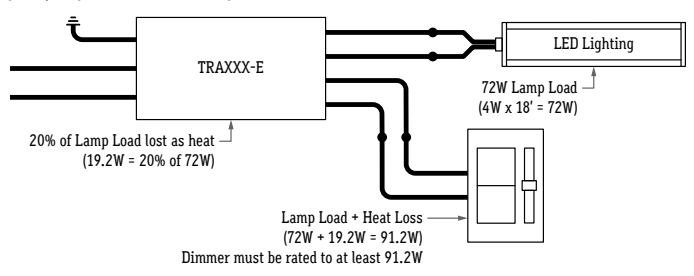
Available in 120 or 277 volts with either a dimmable integral or remote driver. The remote driver is available with 0-10V dimming capabilities. Consult factory for other dimming protocols available. The following applies to 0-10V dimming interfaces. A 0-10V fluorescent dimmer will not dim the LEDs.

Technical Requirements For Control Equipment (0-10V Dimming)

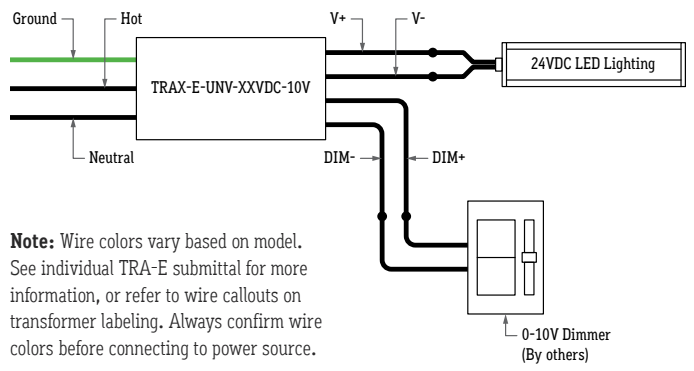
- The light output of the LEDs operated by the controllable LED driver is controlled by DC voltage applied to the control input leads (gray and violet).
The control device must be capable of accepting or sinking the DC current flow from the driver.
If the control bus is opened, or if the control device internally opens the control bus under some conditions, the voltage on the control bus will then be a function of the drivers, which is 10-15V.
If the control bus is shorted either by a mechanical switch in the control or by the circuitry of the control device, or inadvertently in the wiring, the current on the control bus will be less than 1.5mA.
As can be determined from the two items, simple two-level operation of the drivers can be achieved by proper usage and application of a simple open/closed switch on the control bus with maximum light being achieved when the switch is open and minimum light with the switch is closed.
The driver is intended to be used with control voltages between 0-10VDC volts peak maximum on the driver control leads.
Control equipment intended to control more than one driver must be capable of sinking the current supplied to the control bus by the maximum number of drivers specified for the control device.
Driver of various ratings may be mixed on the same control system.

0-10V DIMMER RATINGS

The stated VA (volt-ampere) rating is the rated capacity of the dimmer which includes the electronic transformer heat losses and the lamp load. A transformer dissipates less than 20% of the connected load as heat. The lamp load plus the transformer loss determine the dimmer capacity required. See the example below.



0-10V WIRING DIAGRAM (Remote Driver)

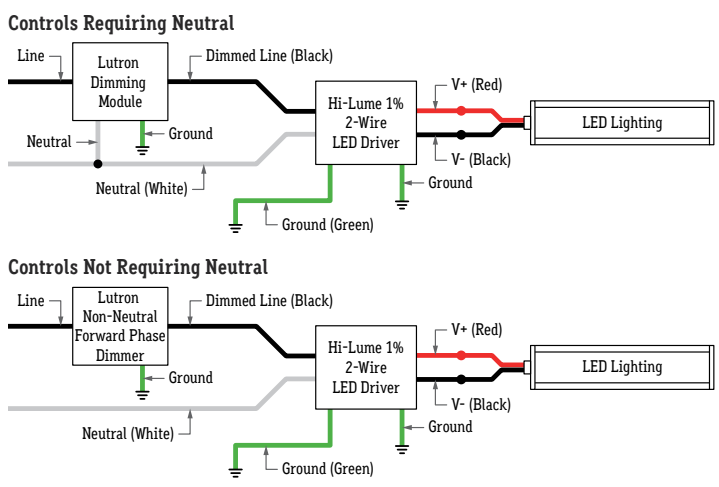


Note: Wire colors vary based on model. See individual TRA-E submittal for more information, or refer to wire callouts on transformer labeling. Always confirm wire colors before connecting to power source.

2-WIRE DIMMING PROTOCOL (Lutron LTEA)

- Technical Requirements For Control Equipment (2-Wire Dimming)
• The Hi-lume 1% 2-Wire LED Driver (LTEA2W) is a high performance LED driver that provides a smooth, continuous, flicker-free 1% dimming for virtually any LED fixture. Primary voltage is 120V and secondary side is 12VDC or 24VDC. A rated life time of 50,000 hours @tc -149°F (65°C). Inrush current: < 2A. Minimum operating temperature ta = 32°F (0°C).
• Continuous, flicker-free dimming from 100% to 1%. Guaranteed compatibility with selected Maestro Wireless, RadioRA 2, HomeWorks QS, GRAFIK Eye QS, GRAFIK Systems, Quantum, and C•L Dimmers.

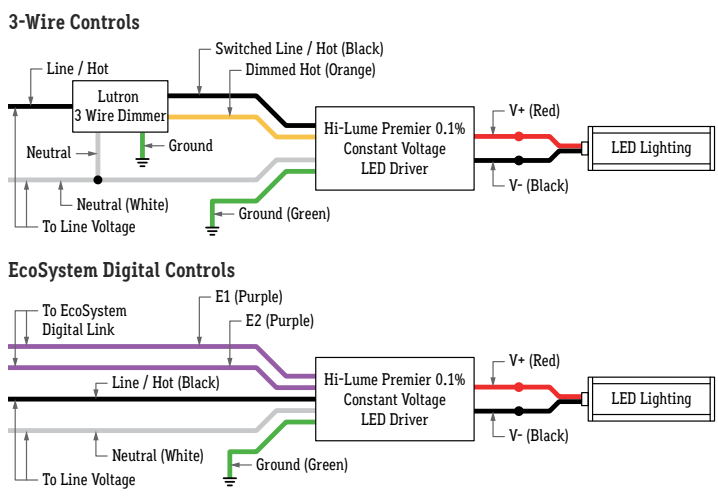
LTEA 2-WIRE WIRING DIAGRAMS (JA8 Compliant)



3-WIRE DIMMING PROTOCOL (Lutron L3D0)

- Technical Requirements For Control Equipment (3-Wire Dimming)
• Hi-lume Premier 0.1% EcoSystem / 3 Wire constant voltage 24V LED driver with Soft-on, Fade-to-Black. The Hi-lume Premier 0.1% Constant Voltage Driver (L3D0E) is a high-performance LED driver capable of controlling up to 96W of 24V constant voltage loads. This driver provides smooth and continuous dimming down to 0.1% low-end. It is ideal for use with strip lighting in applications such as coves, under or over cabinet lighting and pathway lighting. The driver is UL Listed with an integrated wiring compartment and can be mounted up to 150' away from the load.
• Continuous, flicker-free dimming from 100% to 0.1%
• Soft-on, Fade-to-Black operation for EcoSystem controls: fades smoothly between 0% and 0.1% when turned on and off for an incandescent like experience.
• PWM dimming meets IEEE1789 over the entire dimming range.
• UL Listed for United States and Canada (cULus®).
• NOM certified for Mexico.
• Field Adjustment Knob offers customer low-end light output tuning for better fixture-to-fixture matching.
• Guaranteed dimming performance when used with Lutron controls:
- HomeWorks QS, Energi Savr Node units with EcoSystem controls, GRAFIK Eye QS with EcoSystem controls, PowPak with EcoSystem dimming modules, PowPak with EcoSystem wireless fixture controls, and Quantum systems, allowing for integration into a planned or existing EcoSystem lighting control solution.
- Lutron 3-wire controls and interfaces.
• Protected from miswires of input power, up to 277 V~, to EcoSystem control inputs.
• Rated lifetime of 50,000 hours at 40 °C (104 °F) ambient temperature and maximum loading.
• FCC Part 15
- Class A (277 V~)
- Class B (120 V~)

L3D0 3-WIRE WIRING DIAGRAMS

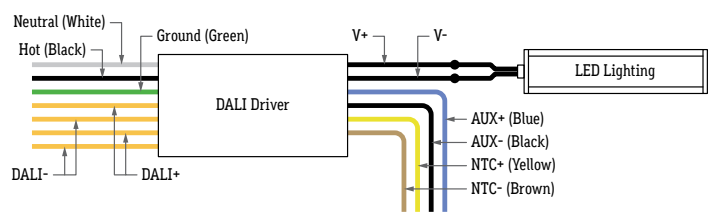


Note: Colors shown on diagrams correspond to terminals on driver

**DALI DIMMING PROTOCOL**

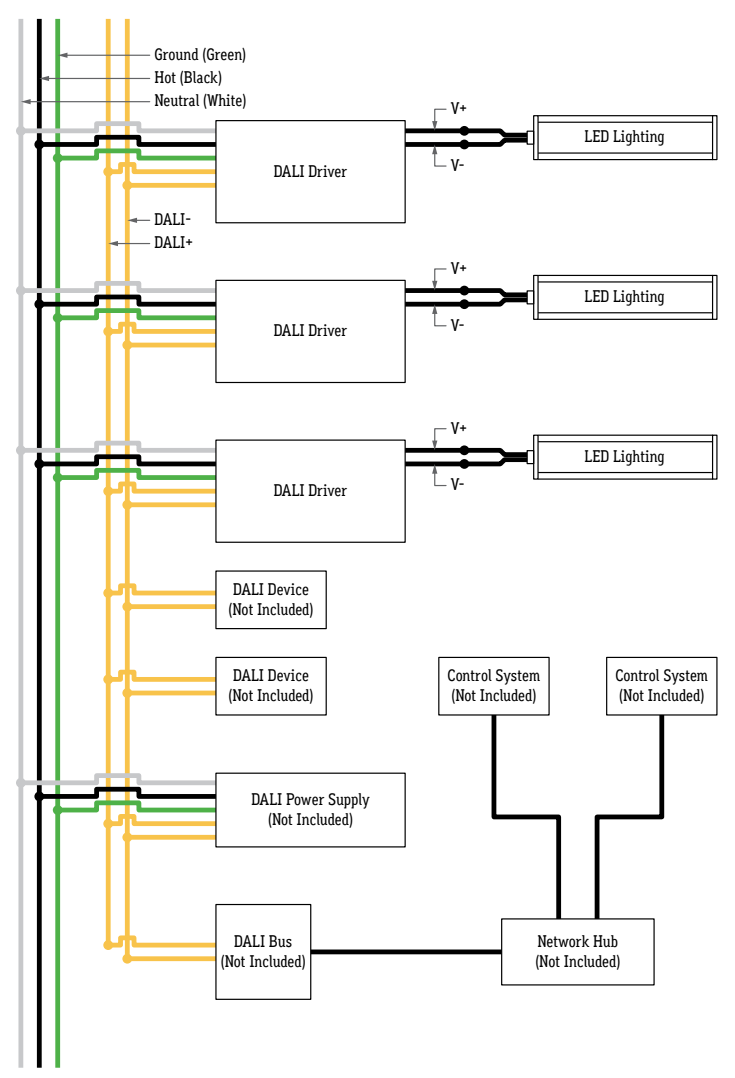
- Up to 64 devices can be supported on a single DALI network without using a DALI gateway
- DALI commissioning not included

**DALI WIRING DIAGRAM**



**Note:** Colors shown on diagrams correspond to terminals on driver

**TYPICAL DALI BUS CONFIGURATION**



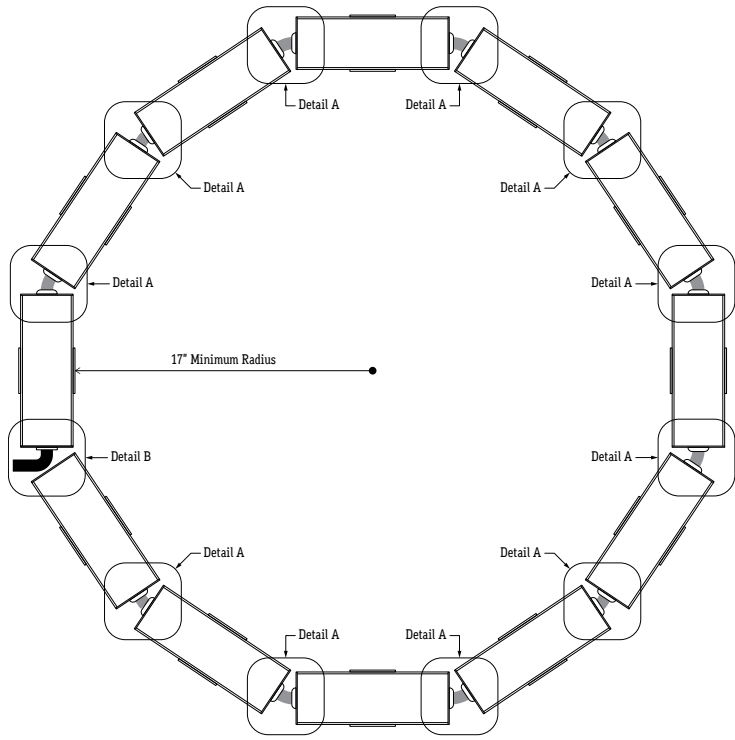


CALIFORNIA  
ACCENT  
LIGHTING  
INC

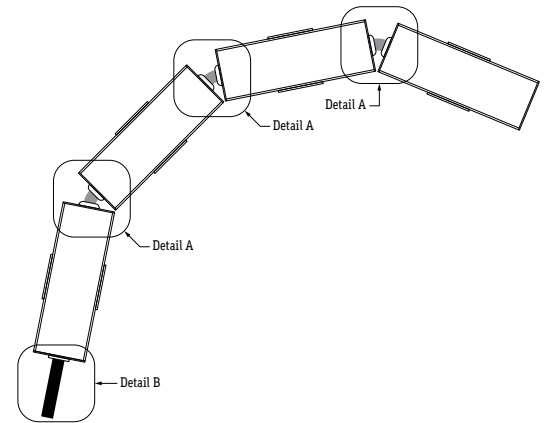
# ALS210T-FC | INSTALLATION

Design Guidelines

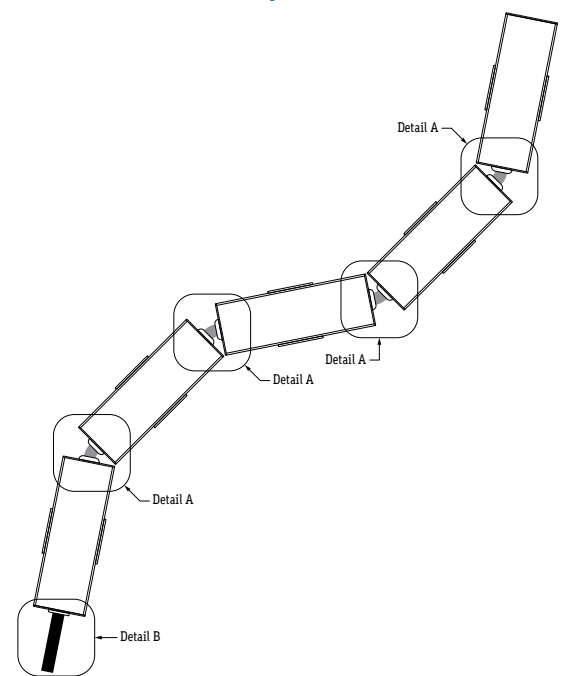
## CIRCULAR RUNS (Dry or Wet Location)



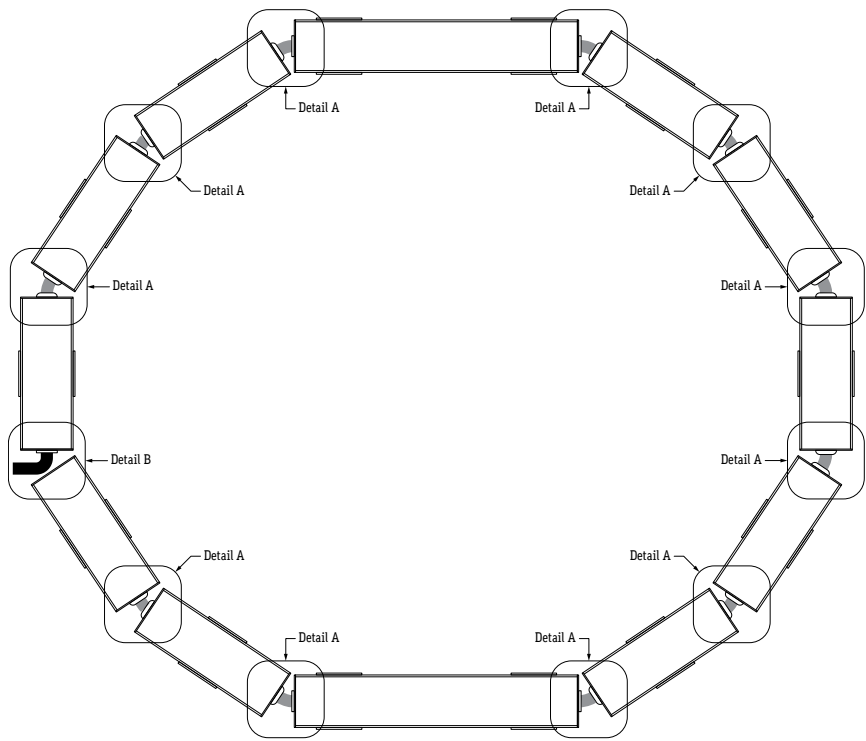
## CURVED RUNS (Dry or Wet Location)



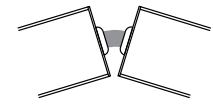
## S-SHAPED RUNS (Dry or Wet Location)



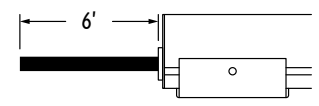
## COMBINATION RUNS (Dry or Wet Location)



### DETAILS



**Detail A**  
Field Curvable Connection

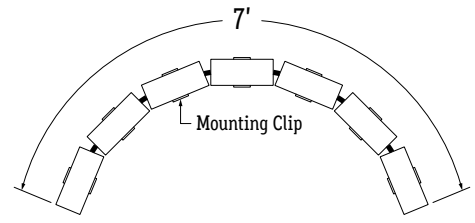


**Detail B**  
Standard 6' power feed

**Note:** Product appearance may differ from examples shown.

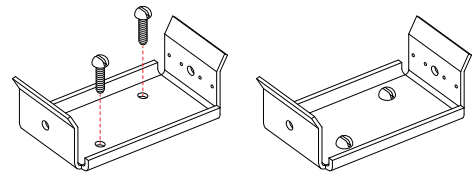
DRY OR WET LOCATION

- 1. Measure area where luminaire will be installed. Use a chalk line to ensure a straight installation.
- 2. Mark location where mounting clips will be installed along chalk line.
- 3. Use 1 mounting clip per segment.  
Example: 7' Run

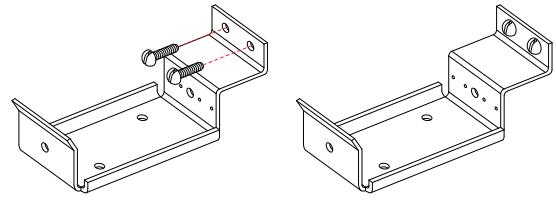


- 4. Lay mounting clips and pre-drill using proper drill bit for surface and screw size.  
**Recommendation:** 8/32 x 1" screw.  
**Note:** Allow 0.25" clearance for lateral expansion of assembled mounting clips. Only install mounting clips on flat, even surfaces.

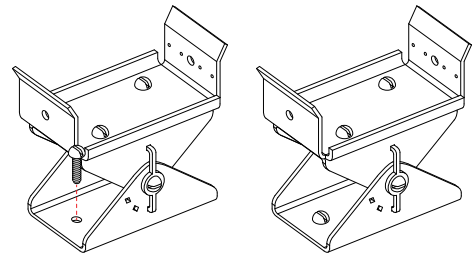
- 4a. Screw ALS50T-MC-1 mounting clips to surface, then snap fixture into mounting clips.



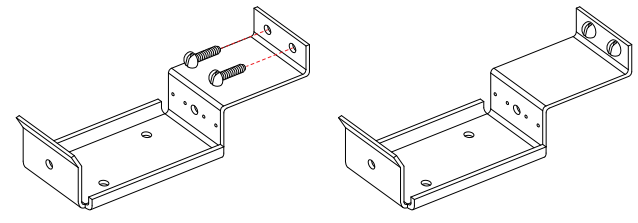
- 4b. Screw MC-2 mounting clips to surface, then snap fixture into mounting clips.



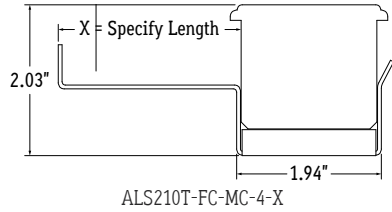
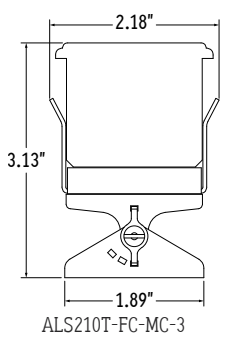
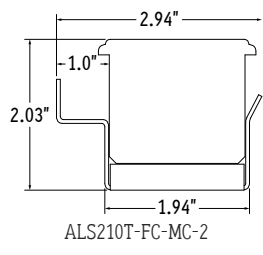
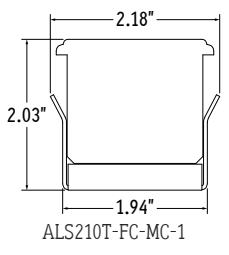
- 4c. Screw MC-3 mounting clips to surface, then snap fixture into mounting clips.



- 4d. Screw MC-4 mounting clips to surface, then snap fixture into mounting clips.



ASSEMBLED END VIEWS

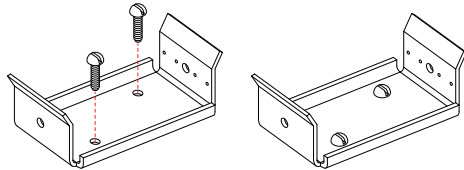


Note: Add 0.21" to overall height for Semi-Frosted, Frosted, Optic, and Asymmetric Lenses.

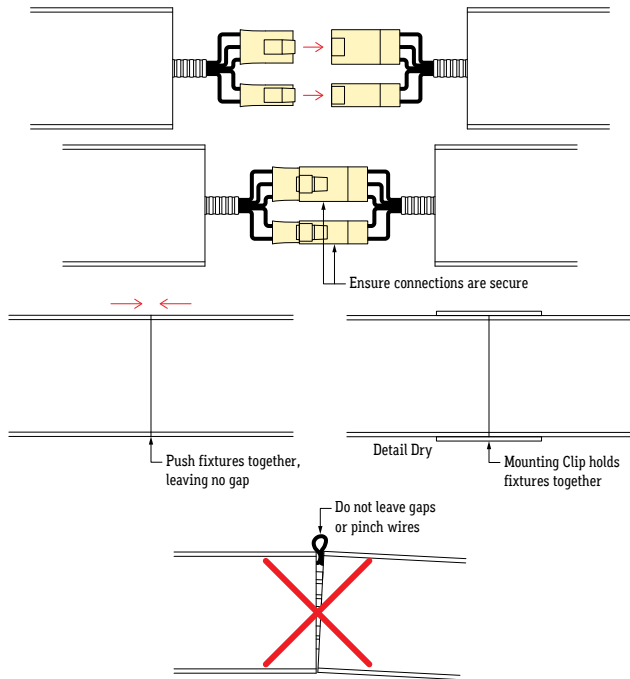
1. Measure area where fixtures will be installed. Use a chalk line to ensure a straight installation.

2. Mark location where mounting clips will be installed. Note: The number of required mounting clips differs for dry and wet location products. Verify number of mounting clips is appropriate for installation environment before installing. Do not install fixtures with inadequate number of mounting clips.

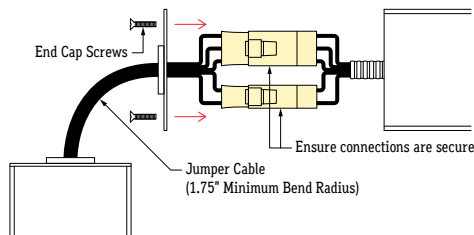
3. Lay mounting clips and pre-drill using proper drill bit for surface and screw size. Recommendation: 8/32 x 1" screw. Note: Allow 0.25" clearance for lateral expansion of assembled mounting clips. Only install mounting clips on flat, even surfaces.



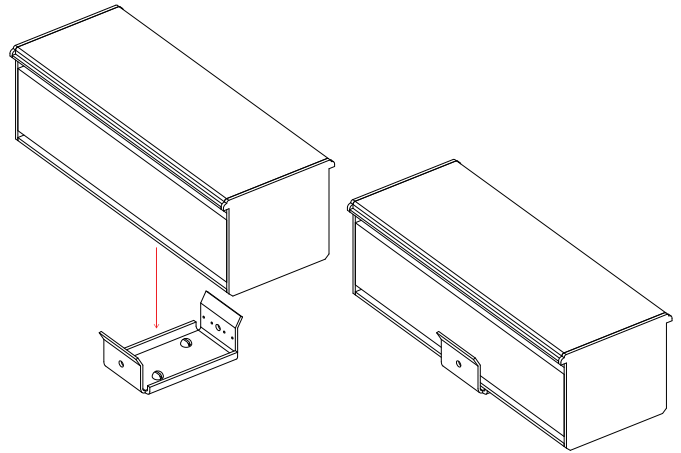
4. If applicable, connect disconnects between fixtures and push together, leaving no gap. Use a mounting clip at the joint between two fixtures.



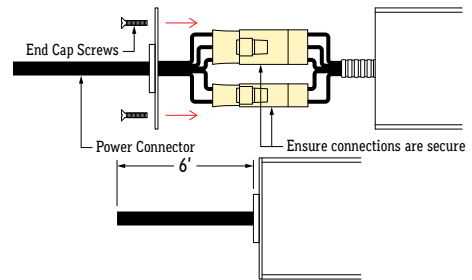
5. If applicable, connect jumper cable disconnects between fixtures. Install end cap screws to connect end cap to fixture.



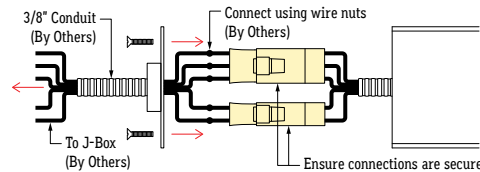
6. Screw mounting clips to surface, then snap fixtures into mounting clips. Note: Set Screws required for downward and outward facing applications.



7. If applicable, connect power cord disconnects between fixtures. Install end cap screws to connect end cap to fixture. Note: Standard luminaire provided with 1 factory installed 6' power cord and 1 end cap at the end of each run. Power cord is easily relocated by unscrewing end cap and undoing disconnects.



8. If applicable, connect power disconnects to J-Box. Use power conduit for hardwiring. Connect wires using wire nuts and cap off any unused wires. Ensure connections are secure, then install end cap screws to connect end cap to fixture. Note: Wires, conduit, and conduit fitting for hardwiring supplied by others. Wires to be determined by installer in order to identify line voltage and 0-10V signal wires.



9. Perform continuity test steps on page 11 before connecting fixture to power source.

1. Measure area where fixtures will be installed. Use a chalk line to ensure a straight installation.

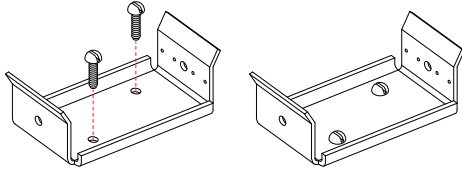
2. Mark location where mounting clips will be installed.

**Note:** The number of required mounting clips differs for dry and wet location products. Verify number of mounting clips is appropriate for installation environment before installing. Do not install fixtures with inadequate number of mounting clips.

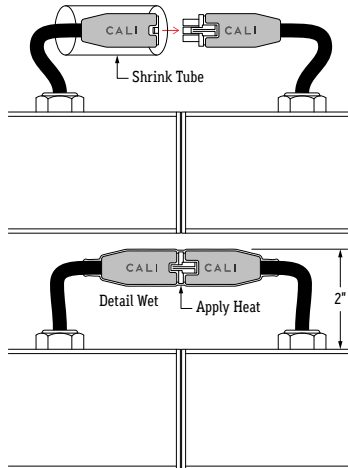
3. Lay mounting clips and pre-drill using proper drill bit for surface and screw size.

**Recommendation:** 8/32 x 1" screw.

**Note:** Allow 0.25" clearance for lateral expansion of assembled mounting clips. Only install mounting clips on flat, even surfaces.

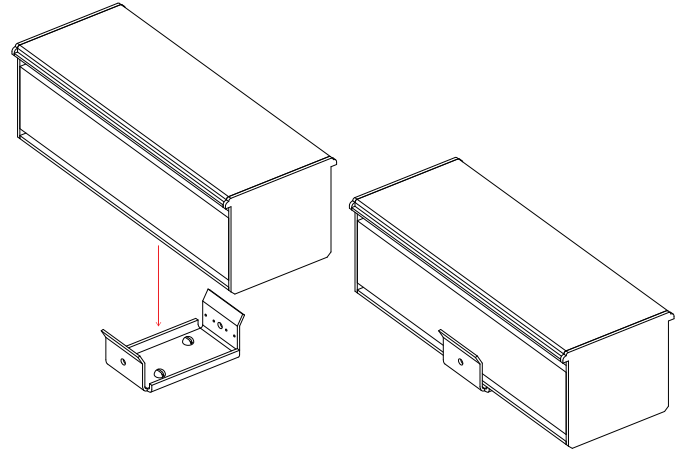


4. Slide shrink tube over connectors and apply heat. The shrink tube will shrink down and seal the connectors. Apply silicone around sealed connectors for a stronger seal.



5. Screw mounting clips to surface, then snap fixtures into mounting clips.

**Note:** Set Screws required for downward and outward facing applications.

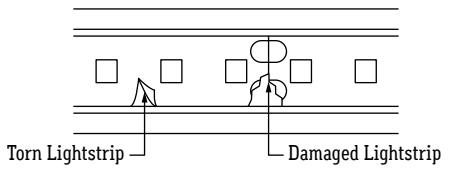


6. Perform continuity test steps on page 11 before connecting fixture to power source.

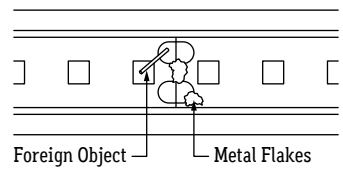
TROUBLESHOOTING TIPS

- Do not reset the breaker multiple times
- If the unit is overloaded, the breaker will trip, shutting off the transformer and lights
- If the breaker reset button has been held down by hand or any type of pressure, such as duct tape, or if the breaker has been reset multiple times without troubleshooting, the unit will:
  - Burn the transformer bobbin
  - Burn the thermal or magnetic breaker
  - Burn the primary or secondary wires due to high amperage caused by overload
  - Short circuit in line which will not allow the breaker to reset
  - Damage the lighting

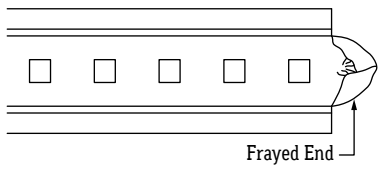
1. Turn off power before beginning. Check for any twisting or damage to the circuit in the LED lightstrip. If there is excessive damage and the circuit is broken, the lightstrip must be replaced.



2. Check for metal particles or other foreign objects causing the short.



3. Check to make sure cuts in the lightstrip are clean and not frayed, causing positive and negative copper pads to touch.



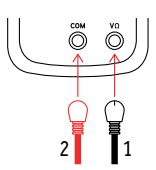
CONTINUITY TEST

A continuity test is performed to determine if electricity can pass through two points on an electrical circuit. This helps identify shorts or malfunctions in the line or fixture. Use a multimeter or continuity tester to perform the steps below.

- Always perform a continuity test before connecting lighting to power source.
- Malfunctions are not always as obvious as the lights not turning on.
- A short or malfunction in the line or fixture will cause damage over time, ultimately damaging the lighting and voiding warranty.

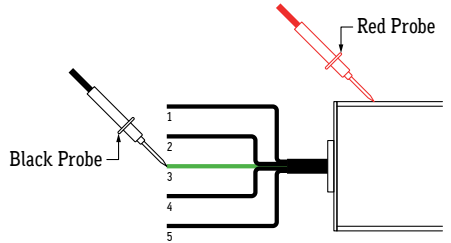
1. Turn power off before beginning. Verify power is turned off by using a non-contact circuit tester. Touch the probe of the tester to positive wire of the power source. The tester will light up if an electrical current is detected.

2. Setup your tester. First insert the black probe lead into the COM jack, then insert the red probe lead into the VΩ jack.



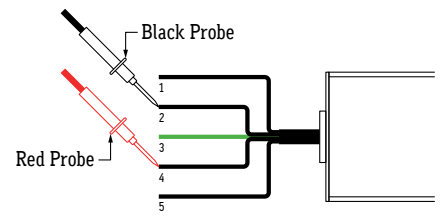
3. Verify that your tester is functional by touching probes together. The tester should light up, beep, or read 0Ω (ohms) of resistance.

4. Touch the red probe to the fixture extrusion and the black probe to the ground wire (green). If the fixture is properly grounded, the multimeter will beep, flash, or read 0Ω (ohms). If there is no conductive path, the multimeter will not show any feedback. Troubleshoot to identify the malfunction in the ground wire.

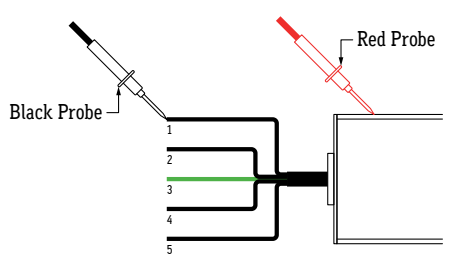


5. Touch the red probe to a wire and the black probe to each other wire. Repeat for each wire. If a conductive path is formed between any of the wires, the multimeter will beep, flash, or read 0Ω (ohms). Troubleshoot to identify the malfunction in the line. If there is no conductive path, the multimeter will not show any feedback.

Example: Check for continuity between Wire 2 and Wire 4



6. Touch the red probe to the fixture extrusion and the black probe to each wire except ground. If a conductive path is formed between the extrusion and any of the wires, the multimeter will beep, flash, or read 0Ω (ohms). Troubleshoot to identify the malfunction in the line. If there is no conductive path, the multimeter will not show any feedback.



7. Set voltmeter to AC voltage and test power source. Confirm the correct voltage before connecting lighting to power source. If voltage reading is more than 1 volt higher than the marked output voltage, there is a problem with the power source or driver.

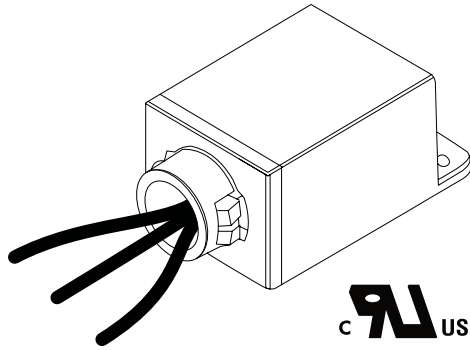
8. Connect power connector to power source. If LEDs do not turn on, troubleshoot to find the problem in the line.



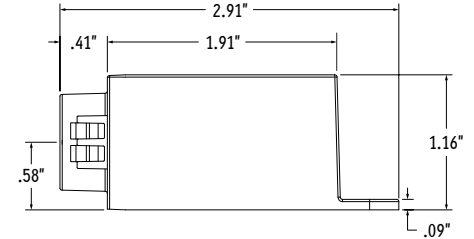
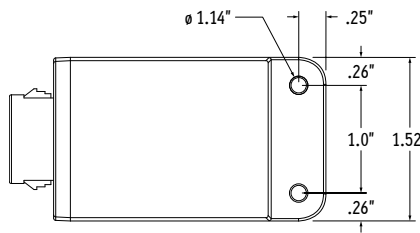
CALIFORNIA  
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# ALS210T-FC | INSTALLATION

Surge Protector



## CASE DIMENSIONS



## SURGE PROTECTOR SPECIFICATIONS

| MODEL  | INPUT VOLTAGE | SURGE PROTECTION LEVEL             | MOUNTING          | ENCLOSURE MATERIAL | INPUT LEADS                                     | INPUT FREQUENCY |
|--------|---------------|------------------------------------|-------------------|--------------------|---|-----------------|
| ALS-SP | 120V - 277V   | 10kV, 10kA, ANSI C62.41 Category C | SnapLOCK / Footed | Polycarbonate      | 6", 18AWG stranded, 105°C stripped, 3/8" tinned | 60Hz            |

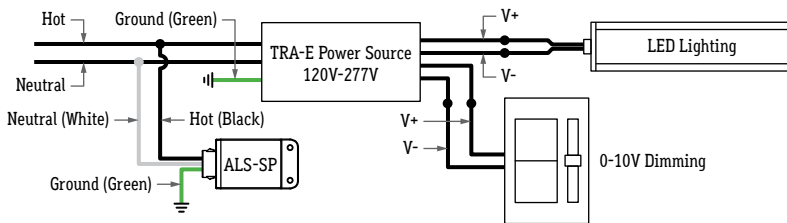
## PRODUCT FEATURES

The Surge Series are 3-leaded devices that protect Line-Ground, Line-Neutral, and Neutral-Ground in accordance with IEEE / ANSI C62.41.2 guidelines. Protects against surges according to IEEE C62.41.2 C High (10kA and 10kV). Surge current rating = 10,000 Amps using industry standard 8/20 μSec wave. Surge Location Rated Category C3. UL Recognized Component in the United States and Canada (UL1449). Type 4 Surge Protection Device. High temperature, flame retardant plastic enclosure, 85°C maximum surface temperature rating. Thermally Protected Transient Over-voltage Circuit.

## PRODUCT SPECIFICATIONS

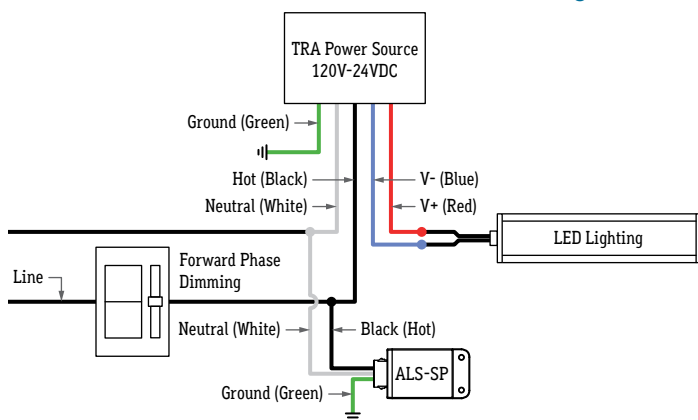
The Surge series of products are designed to be used in conjunction with LED Drivers and fixtures to provide an additional level of protection against powerline disturbances in industrial, commercial and residential applications where surge protection to IEEE C62.41.2 is required.

## 0-10V WIRING DIAGRAM (10V Dimming)

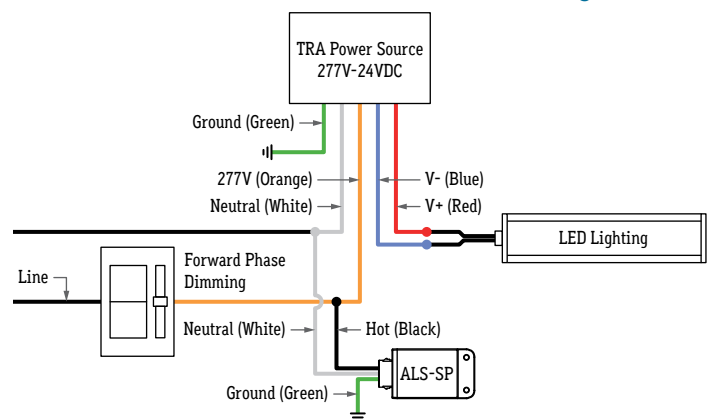


**Note:** Wire colors vary based on model. See individual TRA-E submittal for more information, or refer to wire callouts on transformer labeling. Always confirm wire colors before connecting to power source.

## 120V WIRING DIAGRAM (Forward Phase Dimming)



## 277V WIRING DIAGRAM (Forward Phase Dimming)



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# ALS210T-FC | INSTALLATION

Electronic Transformer Remote Driver (TRA-E)

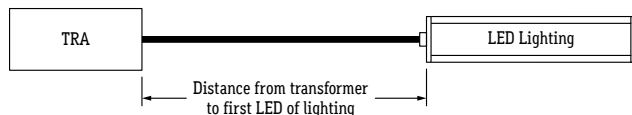
## MAXIMUM RUN BASED ON 80% LOAD OF ELECTRONIC TRANSFORMER (TRA-E) MAXIMUM WATTAGE

| TRANSFORMER WATTAGE | 80% LOAD | 1.5W MAX RUN | 2W MAX RUN | 2.5W MAX RUN | 3W MAX RUN | 3.6W MAX RUN | 4W MAX RUN | 4.5W MAX RUN | 5W MAX RUN | 5.5W MAX RUN | 6W MAX RUN | 6.5W MAX RUN |
|---------------------|----------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|
| 16                  | 12.8W    | 8.5'         | 6.4'       | 5.1'         | 4.2'       | 3.5'         | 3.2'       | 2.8'         | 2.5'       | 2.3'         | 2.1'       | 1.9'         |
| 25                  | 20W      | 13.3'        | 10'        | 8'           | 6.6'       | 5.5'         | 5'         | 4.4'         | 4'         | 3.6'         | 3.3'       | 3.1'         |
| 40                  | 32W      | 21.3'        | 16'        | 12.8'        | 10.6'      | 8.8'         | 8'         | 7.1'         | 6.4'       | 5.8'         | 5.3'       | 4.9'         |
| 60                  | 48W      | 32'          | 24'        | 19.2'        | 16'        | 13.3'        | 12'        | 10.6'        | 9.6'       | 8.7'         | 8'         | 7.3'         |
| 80                  | 64W      | 42.6'        | 32'        | 25.6'        | 21.3'      | 17.7'        | 16'        | 14.2'        | 12.8'      | 11.6'        | 10.6'      | 9.8'         |
| 90                  | 72W      | 48'          | 36'        | 28.8'        | 24'        | 20'          | 18'        | 16'          | 14.4'      | 13.1'        | 12'        | 11.1'        |
| 96                  | 76.8W    | 51.2'        | 38.4'      | 30.7'        | 25.6'      | 21.3'        | 19.2'      | 17.1'        | 15.36'     | 13.9'        | 12.8'      | 11.8'        |
| 120                 | 96W      | 64'          | 48'        | 38.4'        | 32'        | 26.6'        | 24'        | 21.3'        | 19.2'      | 17.4'        | 16'        | 14.7'        |
| 150                 | 120W     | 80'          | 60'        | 48'          | 40'        | 33.3'        | 30'        | 26.6'        | 24'        | 21.8'        | 20'        | 18.4'        |
| 185                 | 148W     | 98.6'        | 74'        | 59.2'        | 49.3'      | 41.1'        | 37'        | 32.8'        | 29.6'      | 26.9'        | 24.6'      | 22.7'        |
| 240                 | 192W     | 128'         | 96'        | 76.8'        | 64'        | 53.3'        | 48'        | 42.6'        | 38.4'      | 34.9'        | 32'        | 29.5'        |
| 320                 | 256W     | 170.6'       | 128'       | 102.4'       | 85.3'      | 85.3'        | 64'        | 56.8'        | 51.2'      | 46.5'        | 42.6'      | 39.3'        |

## PREVENTING VOLTAGE DROP

The maximum wire length to prevent voltage drop refers to the wire that is used between the transformer and 1st LED of the lighting fixture. If the gauge wire is too small, the fixture will not receive correct voltage.

**Example:** LED luminaire requires 24VDC to operate effectively. If the wire gauge is too small to carry the 24VDC current from the transformer, the voltage can shrink to 16VDC, which is insufficient to power the lighting.



## WATTS (VA) PER CIRCUIT (Maximum wire length to prevent voltage drop)

| WIRE SIZE | VOLTAGE | 16 VA | 25 VA | 40 VA | 60 VA | 80 VA | 90 VA | 96 VA | 120 VA | 150 VA | 185 VA | 240 VA | 320 VA |
|-----------|---------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
| 14GA      | 12V     | 46'   | 42'   | 37'   | 32'   | 28'   | 25'   | 23'   | 21'    | 18'    | 16'    | 11'    | 4'     |
| 14GA      | 24V     | 93'   | 84'   | 75'   | 66'   | 56'   | 51'   | 47'   | 42'    | 37'    | 33'    | 23'    | 9'     |
| 12GA      | 12V     | 74'   | 66'   | 59'   | 52'   | 44'   | 40'   | 37'   | 33'    | 29'    | 26'    | 18'    | 7'     |
| 12GA      | 24V     | 147'  | 132'  | 118'  | 103'  | 89'   | 81'   | 74'   | 67'    | 59'    | 52'    | 37'    | 15'    |
| 10GA      | 12V     | 117'  | 106'  | 94'   | 82'   | 71'   | 65'   | 59'   | 53'    | 47'    | 41'    | 30'    | 12'    |
| 10GA      | 24V     | 235'  | 211'  | 188'  | 165'  | 141'  | 129'  | 118'  | 106'   | 94'    | 83'    | 59'    | 24'    |
| 8GA       | 12V     | 186'  | 168'  | 149'  | 130'  | 112'  | 102'  | 93'   | 84'    | 74'    | 65'    | 46'    | 18'    |
| 8GA       | 24V     | 374'  | 336'  | 299'  | 262'  | 224'  | 205'  | 187'  | 168'   | 149'   | 131'   | 93'    | 37'    |

## TRANSFORMER CARE

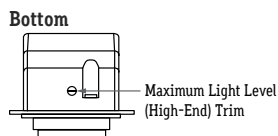
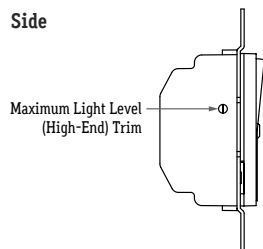
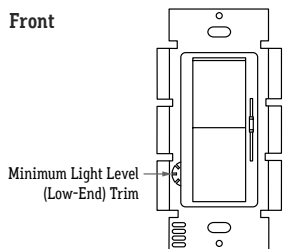
- Do not submerge transformers in any liquid
- Do not leave any exposed wires
- Do not cover transformer without proper ventilation
- Do not install damaged transformer
- Do not exceed maximum load

## MOUNTING INSIDE AN ENCLOSURE

- Only mount drivers inside enclosures rated for your application
- Always ground drivers to enclosure
- Do not mount drivers without an enclosure
- Use enclosure knockouts and water-tight cordgrips when applicable

## DIMMER TRIM VALUES

- Set dimmer trim value as needed to prevent flickering and irregular dimming
- **Note:** Review dimmer specs for trim value adjustment



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Manufactured in the U.S.A.



CALIFORNIA  
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INC

# ALS210T-FC | INSTALLATION

Magnetic Transformer Remote Driver (TRA)

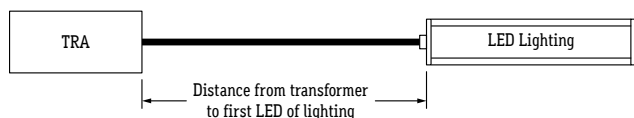
### MAXIMUM RUN BASED ON 80% LOAD OF MAGNETIC TRANSFORMER (TRA) MAXIMUM WATTAGE

| TRANSFORMER WATTAGE | 80% LOAD | 1.5W MAX RUN | 2W MAX RUN | 2.5W MAX RUN | 3W MAX RUN | 3.6W MAX RUN | 4W MAX RUN | 4.5W MAX RUN | 5W MAX RUN | 5.5W MAX RUN | 6W MAX RUN | 6.5W MAX RUN |
|---------------------|----------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|
| 5                   | 4W       | 2.6'         | 2'         | 1.6'         | 1.3'       | 1.1'         | 1'         | 0.8'         | 0.8'       | 0.7'         | 0.6'       | 0.6'         |
| 10                  | 8W       | 5.3'         | 4'         | 3.2'         | 2.6'       | 2.2'         | 2'         | 1.7'         | 1.6'       | 1.4'         | 1.3'       | 1.2'         |
| 20                  | 16W      | 10.6'        | 8'         | 6.4'         | 5.3'       | 4.4'         | 4'         | 3.5'         | 3.2'       | 2.9'         | 2.6'       | 2.4'         |
| 35                  | 28W      | 18.6'        | 14'        | 11.2'        | 9.3'       | 7.7'         | 7'         | 6.2'         | 5.6'       | 5.1'         | 4.6'       | 4.3'         |
| 40                  | 32W      | 21.3'        | 16'        | 12.8'        | 10.6'      | 8.8'         | 8'         | 7.1'         | 6.4'       | 5.8'         | 5.3'       | 4.9'         |
| 50                  | 40W      | 26.6'        | 20'        | 16'          | 13.3'      | 11.1'        | 10'        | 8.8'         | 8'         | 7.2'         | 6.6'       | 6.1'         |
| 60                  | 48W      | 32'          | 24'        | 19.2'        | 16'        | 13.3'        | 12'        | 10.6'        | 9.6'       | 8.7'         | 8'         | 7.3'         |
| 75                  | 60W      | 40'          | 30'        | 24'          | 20'        | 16.6'        | 15'        | 13.3'        | 12'        | 10.9'        | 10'        | 9.2'         |
| 90                  | 72W      | 48'          | 36'        | 28.8'        | 24'        | 20'          | 18'        | 16'          | 14.4'      | 13.1'        | 12'        | 11.1'        |
| 150                 | 120W     | 80'          | 60'        | 48'          | 40'        | 33.3'        | 30'        | 26.6'        | 24'        | 21.8'        | 20'        | 18.4'        |
| 200                 | 160W     | 106.6'       | 80'        | 64'          | 53.3'      | 44.4'        | 40'        | 35.5'        | 32'        | 29.1'        | 26.6'      | 24.6'        |
| 250                 | 200W     | 133.3'       | 100'       | 80'          | 66.6'      | 55.5'        | 50'        | 44.4'        | 40'        | 36.3'        | 33.3'      | 30.7'        |
| 300                 | 240W     | 160'         | 120'       | 96'          | 80'        | 66.6'        | 60'        | 53.3'        | 48'        | 43.6'        | 40'        | 36.9'        |

### PREVENTING VOLTAGE DROP

The maximum wire length to prevent voltage drop refers to the wire that is used between the transformer and 1st LED of the lighting fixture. If the gauge wire is too small, the fixture will not receive correct voltage.

**Example:** LED luminaire requires 24VDC to operate effectively. If the wire gauge is too small to carry the 24VDC current from the transformer, the voltage can shrink to 16VDC, which is insufficient to power the lighting.



### WATTS (VA) PER CIRCUIT (Maximum wire length to prevent voltage drop)

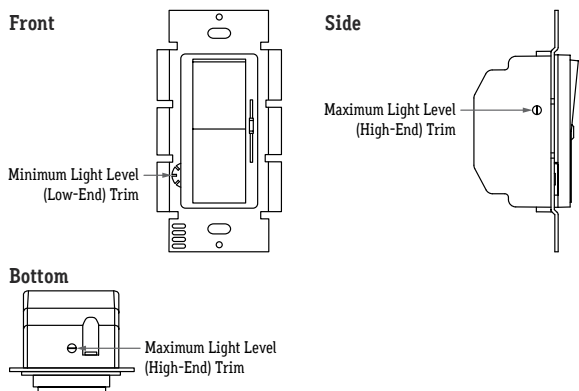
| WIRE SIZE | VOLTAGE | 5 VA | 10 VA | 20 VA | 35 VA | 40 VA | 50 VA | 60 VA | 75 VA | 90 VA | 150 VA | 200 VA | 250 VA | 300 VA | 500 VA | 600 VA |
|-----------|---------|------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| 14GA      | 12V     | 51'  | 49'   | 44'   | 39'   | 37'   | 35'   | 32'   | 30'   | 25'   | 18'    | 14'    | 9'     | 7'     |        |        |
| 14GA      | 24V     | 103' | 98'   | 89'   | 80'   | 75'   | 70'   | 66'   | 61'   | 51'   | 37'    | 28'    | 18'    | 14'    |        |        |
| 12GA      | 12V     | 81'  | 76'   | 70'   | 63'   | 59'   | 55'   | 52'   | 48'   | 40'   | 29'    | 22'    | 14'    | 11'    |        |        |
| 12GA      | 24V     | 162' | 155'  | 140'  | 125'  | 118'  | 111'  | 103'  | 96'   | 81'   | 59'    | 44'    | 29'    | 22'    |        |        |
| 10GA      | 12V     | 129' | 123'  | 112'  | 100'  | 94'   | 88'   | 82'   | 76'   | 65'   | 47'    | 35'    | 24'    | 18'    | 7'     | 4'     |
| 10GA      | 24V     | 258' | 247'  | 223'  | 200'  | 188'  | 176'  | 165'  | 153'  | 129'  | 94'    | 71'    | 48'    | 36'    | 15'    | 9'     |
| 8GA       | 12V     | 205' | 196'  | 177'  | 158'  | 149'  | 140'  | 130'  | 121'  | 102'  | 74'    | 55'    | 37'    | 27'    | 12'    | 7'     |
| 8GA       | 24V     | 411' | 392'  | 355'  | 318'  | 299'  | 280'  | 262'  | 243'  | 205'  | 149'   | 112'   | 75'    | 55'    | 24'    | 14'    |

### TRANSFORMER CARE

- Do not submerge transformers in any liquid
- Do not leave any exposed wires
- Do not cover transformer without proper ventilation
- Do not install damaged transformer
- Do not exceed maximum load

### DIMMER TRIM VALUES

- Set dimmer trim value as needed to prevent flickering and irregular dimming
- **Note:** Review dimmer specs for trim value adjustment



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