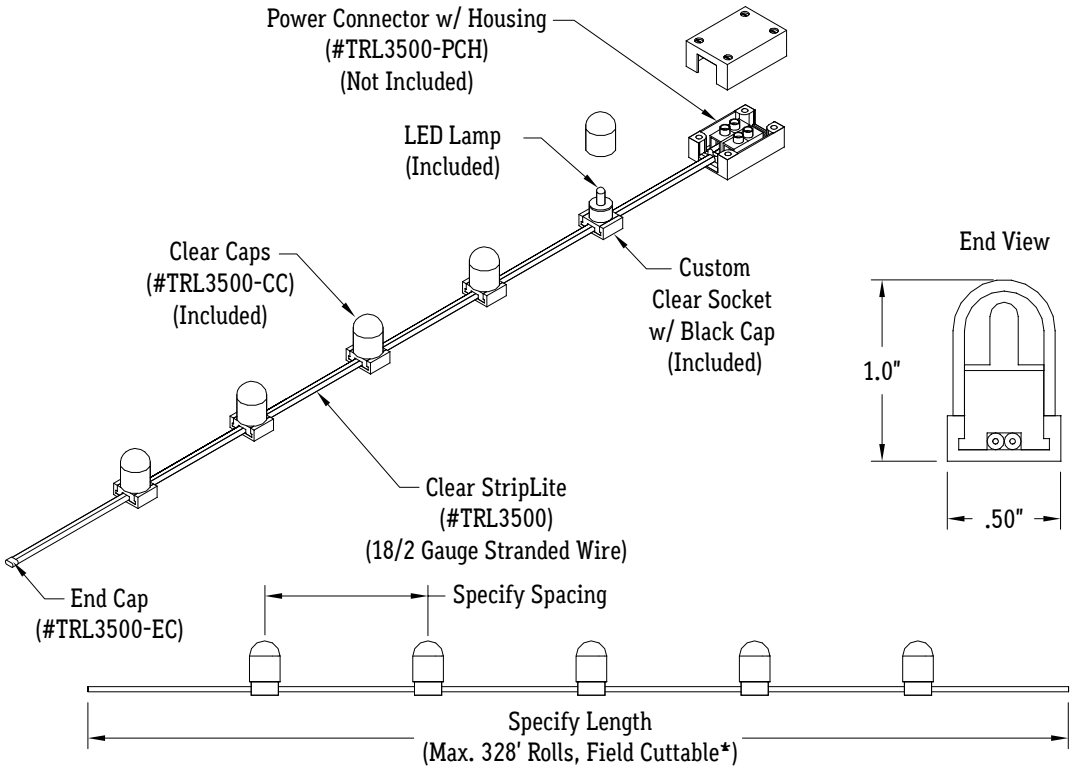
treeLITE™

Installation Instructions

TRL3500

Overview



IMPORTANT NOTICE: Verify correct luminaire was received with correct color temperature and voltage before cutting or installing. CALI will not be responsible if incorrect luminaire is installed.

PRODUCT INFORMATION

- For accent, cove, edge, under cabinet lighting
- 24 volts DC for easy and safe installation
- Long life, energy efficient LEDs
- Can be ordered to specific lengths for easier installation when exact dimensions are known (Example: 10x10' 6")
- Plug and light system

INSTALLATION RECOMMENDATIONS

- TRL3500 LED tape must be mechanically attached directly to mounting surface using mounting clips or channels
- Conduit raceway should be sleeved at one end for low voltage wires going to *trans*FORMER

ELECTRICAL

- TRL3500 requires a 24 volt DC remote *trans*FORMER
- To calculate transformers size find 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 *trans*FORMER from catalog (Example: TRA50)
- Determine maximum distance using Maximum Wire Length Table (Example: 45 watts is between 40W and 80W. Using #14 wire, maximum distance is 37' from *trans*FORMER to first LED)

INSTALLATION TOOLS REQUIRED

- Electric compound miter saw
- 14.4 to 28 volt cordless drill
- Drill bits - concrete or wood
- Electrical cords
- Safety glasses
- Marker
- Electric hammer drill (optional)
- Phillips bits - sufficient quantity
- Electrical three ways
- Measuring tape
- Chalk line
- Sharp scissors
- Soldering iron with kit

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FEATURES	
APPLICATIONS	Accent, Tree Lighting
VOLTAGE	24VDC
LAMP TYPE	LEDs
SOCKET	Custom
LENGTH	Built to Order
CONSTRUCTION	Polycarbonate Lens
WIRING	Parallel
MOUNTING	Tie Wraps
LISTING	Dry or Wet Location
DIMMING	Forward Phase (TRA)

WARNING

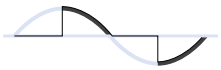
When using TRL3500 for any application, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and personal injury. TRL3500 must be installed in accordance with the NEC or CEC as applicable.

- Do not exceed maximum length per circuit. Each maximum run requires additional power feed from the transformer
- Do not cover TRL3500 as the covering may cause it to overheat, melt, or ignite.
- Do not install TRL3500 in hazardous locations or closer than 6 inches from any curtain or similar combustible material.
- Do not use TRL3500 if damaged, such as broken outer jacket, loose connections, or frayed wire insulation. Inspect periodically.
- Do not submerge TRL3500 in liquid.
- Do not mount TRL3500 with staples, nails, or like means that might damage the insulation. Mount with double stick tape and mounting clips.
- Do not install TRL3500 in places where it is subject to continuous flexing.
- Do not mount TRL3500 inside tanks or enclosures of any kind without sufficient ventilation.
- Ground Fault Circuit Interrupter (GFCI) protections are required on circuits or outlets.
- Surge protector must be set up for electrical power system to avoid damaging TRL3500 lighting system.
- Do not install in an environment where excessive heat may exist. Ambient temperature -40°F - 122°F (-20°C - 50°C).
- Only wet location models are intended for outdoors. See package label for environmental details.
- Do not install wet location model in areas where water will collect.

DIMMING PROTOCOL (FORWARD PHASE DIMMING)

Technical Requirements For Control Equipment (Forward Phase Dimming)

- Magnetic Low Voltage (MLV) - Magnetic (core and coil, toroidal) transformer-supplied low voltage lighting.
- Electrical Characteristics - Inductive
- Special Requirements - Symmetric cycles (VDC≤2), smooth turn off (positive and negative periods are equal for safe MLV transformer operation)
- Order transformer with TRA prefix.



Symmetric Forward Phase-Control

Click here for list of magnetic transformers

(TRA) Forward Phase Dimming

DIMMING PROTOCOL (0-10V)

TRL3500 is available in 24 volts with a dimmable remote driver. The remote driver is available with 0-10V dimming capabilities.
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 Protocol)

- The output current level of the dimmable driver is controlled by DC voltage (0-10V) applied to the control terminals (blue and white). The light output of LEDs is controlled by the amount of output current from the dimmable driver.
- The control device must be capable of sinking a DC current flow from the driver. The maximum amount under any condition is 500 microamps (uA) per driver.
- The control terminals of the dimmable driver are isolated from the power lines and are suitable for use as Class 2 wiring. Multiple drivers are desired for use with same control device, the control terminals may be connected in parallel in a bus configuration.
- Since the control bus is Class 2 wiring, all control devices that are connected to the power line must have proper isolation between the power line and the control terminals/bus.
- The control device, which intends to control more than one dimmable driver, must be capable of sinking the total current supplied to control bus by the drivers.
- If the control terminals/bus is shorted in any case, the current on the control terminals/bus will be 500 microamps (uA) per driver maximum.
- If the control terminals are opened, the voltage on the control terminals will them be 10V ± 0.5 volt. As a result, dimmable driver supplies maximum output current to LEDs under this condition.
- The driver is intended for use with control voltages between 0 and 10 VDC. The control equipment must not impose a voltage greater than 11 V peak maximum on the driver control terminals.
- Order transformer with TRA-E prefix.

Click here for list of electronic transformers

(TRA-E) 0-10V Dimming

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Do not cover LED globe with any material

Do not mount inside tanks or enclosures of any kind

Do not mount with nails, staples, or other means that might cause damage to wire insulation. Use only mounting clips or channels

Do not submerge in any liquid

Do not install in places where it is subject to continuous flexing

Do not puncture LED globe with any object

Do not fold, crease, or twist light string

Do not connect light string to power source while spooled or coiled

Do not apply excessive pressure to bulbs

Do not apply excessive pressure to bulbs

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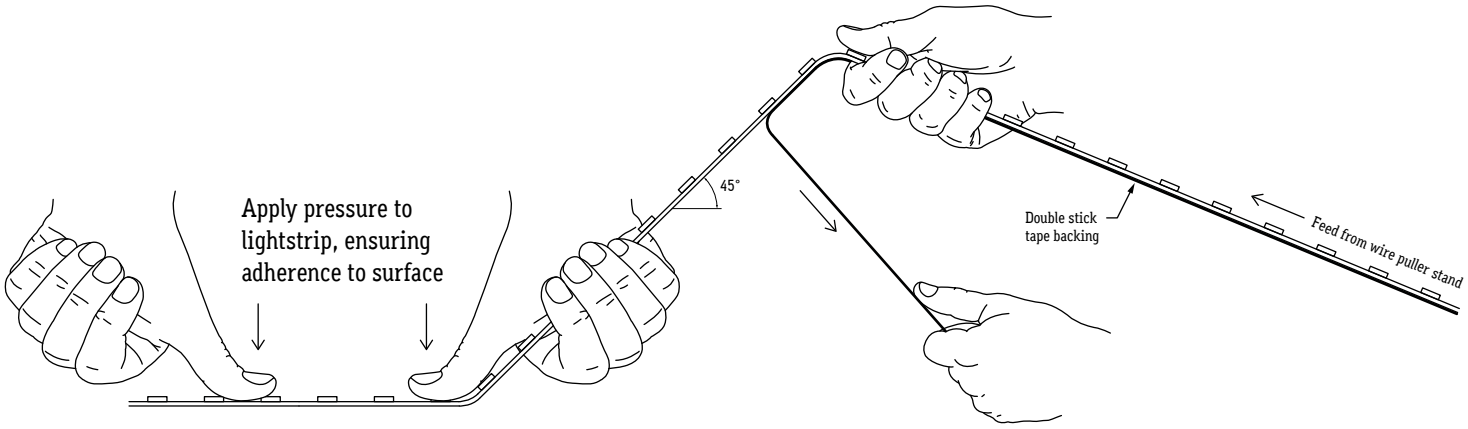
TRL3500 REQUIRES A TEAM EFFORT TO ENSURE SECURE AND CORRECT INSTALLATION



One person on one end applies pressure to TRL3500, securing it to surface

Another person unreels TRL3500 from spool, holding lightstrip at 45° angle

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Installation Instructions

TRL3500

Step by Step

1. Measure area where TRL3500 will be installed.

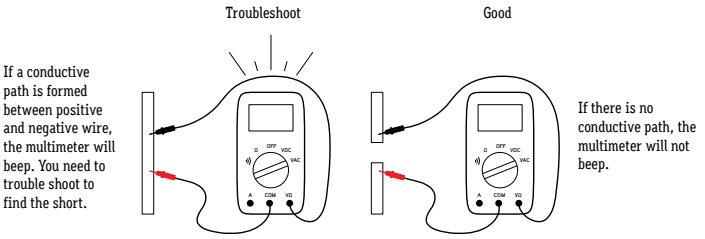
2. Cut TRL3500 to desired length.

3. Install treeLITE using mounting clips or tie wraps.

4. Install end cap at end of run.

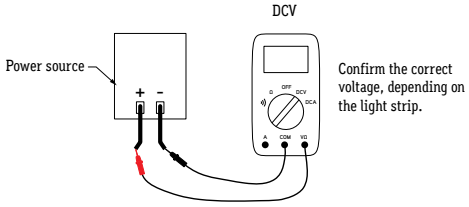
5. Connect beginning of run to junction box or power connector.

8. Conduct continuity test.



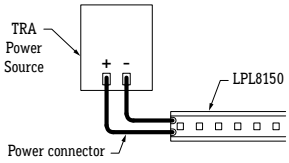
See page 11 for troubleshooting guide

9. Set voltmeter to DC voltage, then test power source before connecting.



10. Connect power source to power connector.

TIP: If LEDs do not turn on, flip polarity (+,-) or power source connection to power connector.



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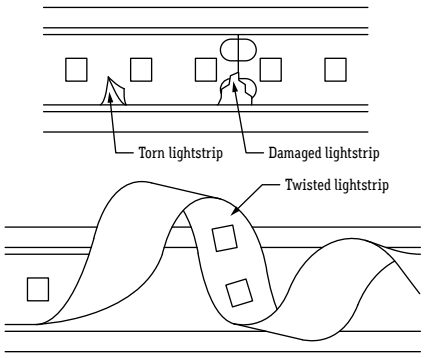
TRL3500

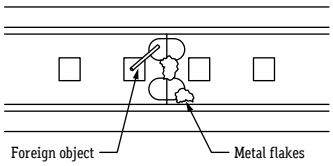
TROUBLESHOOT

- Do not reset 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 (example: 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 and/ or short circuit in line which will not allow the breaker to reset
  - Damage the lighting

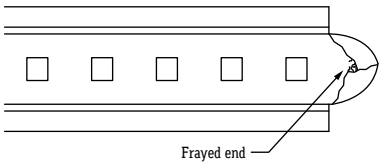
1. Turn off power before beginning. Check for any twisting or damage to the circuit in the LED lightstrip. If there is excessive damage and circuit is broken, the lightstrip must be replaced.



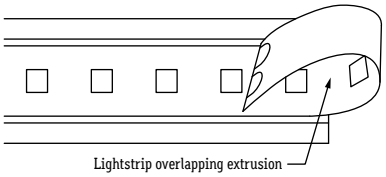
2. Check for metal particles or other foreign objects causing the short.



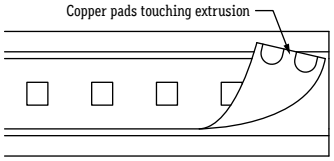
3. Check if cut is clean and not frayed, causing positive and negative copper pads to touch.



4. Ensure the run is not too long and overlapping.



5. Ensure copper pads are not making contact with aluminum extrusion.



6. Check wiring diagram.

7. Reset power to controller.

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Installation Instructions

TRL3500

Transformer

WATTS (VA) PER CIRCUIT MAXIMUM WIRE LENGTH TABLE TO PREVENT VOLTAGE DROP

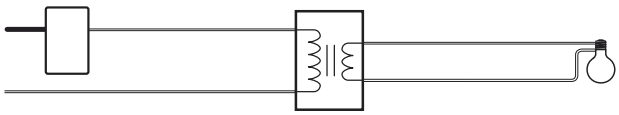
SECONDARY VOLTAGE	WIRE SIZE	40 VA	80 VA	120 VA	160 VA	200 VA	240 VA	260 VA	280 VA	300 VA	320 VA	340 VA	360 VA	380 VA	400 VA	440 VA	460 VA	480 VA	500 VA
12V 24V	14GA	75'	37'	25'	19'	15'	12'	12'	11'	10'	9'	9'	8'						
	12GA	118'	59'	39'	30'	24'	18'	18'	17'	16'	15'	14'	13'	12'	12'	11'	10'	10'	
	10GA	188'	94'	63'	47'	38'	29'	29'	27'	25'	24'	22'	21'	20'	19'	18'	16'	16'	15'
	8GA	299'	149'	100'	75'	60'	46'	46'	43'	40'	37'	35'	33'	31'	30'	28'	26'	25'	24'

ONLY LOAD TRANSFORMERS TO 80%

PERCENT LIGHT OUTPUT TABLE							
WIRE SIZE	DIST. FROM TRANS.	50 VA	100 VA	150 VA	200 VA	250 VA	300 VA
12GA	20'	99	98	97	95	94	89
	40'	98	95	89	83	80	79
	60'	97	89	82	82	72	70
	80'	95	83	79	71	63	56
	100	90	80	73	63	54	52
	160'	83	71	56	45	35	26
10GA	20'	99	99	98	97	96	92
	40'	99	97	92	91	88	84
	60'	98	92	89	84	81	80
	80'	98	91	84	80	78	73
	100'	97	88	81	78	72	65
	160'	90	80	73	63	55	51
	200'	88	78	65	55	45	40
8GA	20'	99	99	99	99	98	98
	40'	99	98	98	98	97	97
	60'	99	98	98	97	89	88
	80'	99	99	97	97	88	83
	100'	98	97	89	83	81	79
	160'	97	88	81	78	72	65
	200'	92	83	80	72	64	56
	400'	83	72	57	45	39	27

Magnetic Low-Voltage Dimmer Ratings

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



1000VA
Power to transformer and
Power through dimmer

=

200W Heat
Transformer Losses
(UL limit: ≥ 80% efficient)

+

800W
Lamp Load

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CLEANING MATERIALS FOR LENSES AND EXTRUSIONS

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 COMPATIABLE WITH POLYCARBONATE

- Trichlor
- Gasoline
- ll 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

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