

**HERE'S  
HOW...**

**Integral®**  
LIGHTING

# OUR TOP 5 FAQs

Read more frequently asked questions at [integral-lighting.com](http://integral-lighting.com).

**Q:** What size transformer do I need?

**A:** Calculate the transformer required by determining the total wattage of all lighting fixtures. The total wattage is the minimum required output by the transformer. Choose a transformer that supplies no more than 30% more.

**Q:** Should I glue the fixture in place?

**A:** While a small amount of glue will help retain the fixture, it is not necessary. The insert is self-leveling in your wall and the weight of the top cap stone will hold it in place.

**Q:** What range of voltage does your LED operate on?

**A:** Our LED packages are engineered on a 12 volt AC platform. The operating range is 8.0 volts to 12.5 volts AC. Optimum performance and long life expectancy is achieved when operated at 11.5 volts AC.

**Q:** How do I make sure the voltage is correct?

**A:** Electronic power supplies require an analog voltmeter for correct voltage measurement. Digital voltmeters are recommended when measuring voltage from magnetic transformers. In either case, 12 volts or less is advised.

**Q:** How do I obtain support and service?

**A:** Our experienced support staff has assisted thousands of homeowners and installers with issues in the field. We recognize that every job has unique requirements, and we will do our best to resolve any issues that may arise. Call 800.861.1364 for design assistance, installation help or troubleshooting.

# HOW TO INSTALL

**1** Use a trusted source for your power supply. Integral Lighting LED fixtures are designed to operate with both magnetic and electronic 12vAC transformers.

**2** Insert your fixture in the wall allowing a few inches of the connected 18/2 wire inside the wall for future service. A small amount of glue will help retain the fixture but is not necessary. Spacing is recommended between 6' to 8'.

**3** Waterproof splices are required for proper LED or lamp function and life. Do not use insulation displacement or pierce point connectors as moisture will enter the cable and compromise your lighting system.

**4** Confirm your voltage with a voltmeter to ensure the proper voltage is present at the first fixture upon installation... 12 volts or less.

For accurate voltmeter readings...

Test electronic power supplies with an analog voltmeter.

Test magnetic power supplies with a digital voltmeter.

# TRANSFORMERS

Add the total wattage of the lamps you are using. This determines the output required.

When sizing a transformer for an LED installation, use the wattage consumed, not the output or brightness equivalent.

Quantity of fixtures		_____
Wattage per fixture	x	_____
Total wattage	=	_____
(This is the transformer size required)		

Magnetic transformers are not voltage regulators. They do not restrict electric or deliver a constant 12 volts.

Magnetic transformers reduce standard house voltage at an approximate ratio of 10 to 1. Consider house current at 128 volts... your transformer reduces the power to 12.8 volts. In the case of a home powered by 120 volts, the result is 12.0 volts. When using a multi-tap transformer, this would be on the 12 volt tap.

Your LED installation may benefit from our Electronic LED Transformer, which automatically adjusts the load and delivers consistent voltage. Voltage consistency is key to long life expectancy.

# CABLE & WIRING

## Size / Gauge

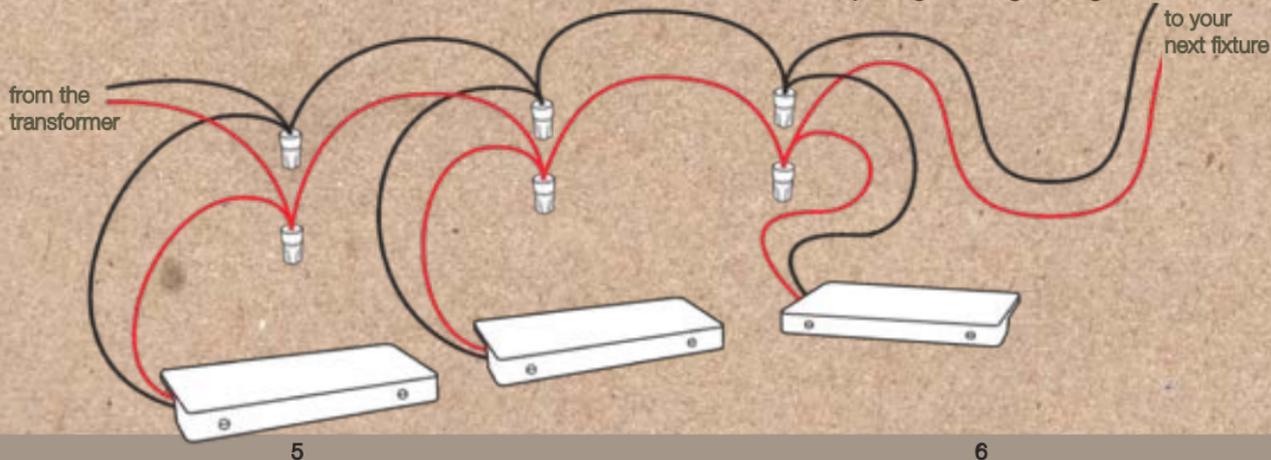
As a general rule, use a minimum gauge of 12/2 when your total run of cable is within 100' of the transformer.

## Polarity

Our fixtures are 12vAC and have no polarity.

## Parallel Run

This type of run is recommended as it allows all fixtures to draw current independent of the other fixtures.



# SPLICING

## How to Make a Splice

1. Strip wires 5/8" (15.9mm).
2. Align frayed strands or conductors.
3. Place stripped wires together with ends of insulation even. Pre-twisting is unnecessary.
4. Twist waterproof connector onto wires, pushing firmly until hand-tight. Do not over torque.
5. Wipe sealant in and around conductors and connector opening while tightening.

# CONNECTIONS

Specify professional grade, waterproof, moisture resistant wire nuts for your connections.

Protect your electrical connections against the harsh, damaging effects of moisture and corrosion. Landscape lighting connections need to withstand damp, wet and sometimes submersible outdoor environments.



Waterproof  
Moisture Resistant  
Wire Nuts

Poor connections will allow moisture to enter the cable and compromise the system.



Insulation  
Displacement



Standard ROMEX  
Wire Nut



Pierce Point  
Connector



Pierce Point  
Wire Tap

# VOLTAGE

LED and lamp life expectancy are directly related to the voltage supplied to the fixture. Excessive voltage generates excess temperature and will shorten the life of your fixture.

Correctly sizing the transformer and taking voltmeter readings are imperative to ensure your fixtures operate as warranted.

## Voltage Effects on LED & Lamp Life

13.0 volts	only 2/3 rated life
12.5 volts	only 3/4 rated life
12.0 volts	as rated
11.5 volts	up to 2x rated life
11.0 volts	up to 3x rated life

(approximate values; actual life varies on many factors)

Common issues regarding voltage variations...

- Input voltage to transformer
- Length of wire or run
- Gauge of wire used
- Amount of load to transformer

# MORTAR APPLICATIONS

For ease of installation in 1/2" mortar beds or veneer stone walls, pre-install our stainless steel Integrator. It is installed prior to the cap stone with the supplied fasteners. A flexible conduit is attached to make an easy connection behind the wall.



The fixture inserts easily after the mortared cap is installed and can be removed in the future for service or cleaning.

# CONTROLS & DIMMING

Generally, low voltage (12vAC) landscape lighting transformers are equipped with built-in timer and/or photocell controls. Many power supplies can be controlled by the following devices when the on-board controls are bypassed or disabled.

Controller	Wifi	Dimmer	Timer	Amazon Alexa Compatible	Hub Required	Magnetic Transformer Compatible	Electronic Transformer Compatible
Lutron Caseta Wireless Dimmer App: Lutron	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GE InWall Smart Dimmer App: SmartThings	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WEMO Wifi Smart Dimmer App: WEMO	Yes	Yes	Yes	Yes	No	Yes	Yes
TP-Link Wifi Light Switch App: Kasa	Yes	No	Yes	Yes	No	Yes	Yes

All trade names are registered trademarks of respected manufacturers listed.

Many controllers have minimum and maximum load requirements to maintain safety and operate properly. The controls listed above require 20 to 30 watts minimum but vary depending on manufacturer specifications.

The home control and LED industries are advancing at a rapid pace of innovation. This information is subject to change. When controls are desired, consult your equipment manufacturer for compatibility between power supplies, load requirements and fixture brands.

# PAVELUX®

Our LED paver lighting is designed to insert quickly and discreetly into your hardscape accent border.

- 1 Insert Pavelux® fixture into your paver border, routing wire to edge of paving for future service. Spacing is recommended between 8' to 12'.
- 2 Polymeric sand is swept into hardscape joints to retain the fixture.
- 3 Waterproof splices are required for proper LED function and life. Refer to “Connections” (page 7) in this guide for more information.
- 4 Confirm your voltage with a voltmeter to ensure the proper voltage is present at the first fixture upon installation... 12 volts or less.

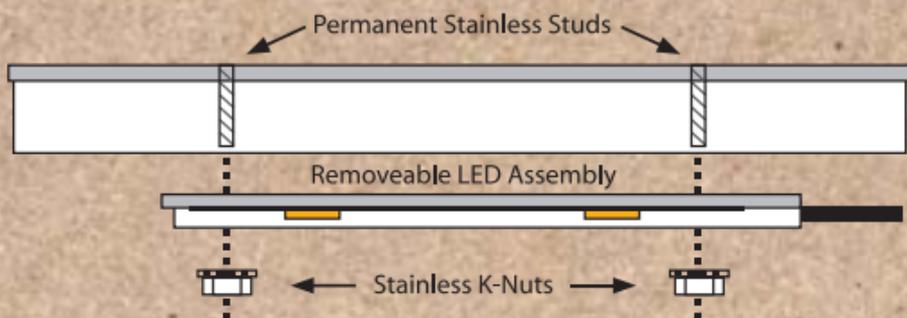


# SERVICING

Always turn your power off and make sure the fixture has cooled before performing any maintenance, including cleaning, servicing or replacing lamps.

## LED Assembly Service

Remove the stainless nuts and entire LED assembly. Cut the 18/2 fixture wire and splice a connection to the new LED assembly and 18/2 lead. Fit new assembly over the fixture studs and replace the stainless nuts. Do not overtighten.



## Lamp or Bulb Service

Lamps push in and pull out. Do not turn or twist. Pull straight out of socket and push straight into socket. Remove faceplate for easier replacement.

# SUPPORT

We offer superior technical support to homeowners, contractors and distributors alike. We're here to answer your lighting questions.

Our regular business hours are Monday through Friday from 8am - 4pm EST.



call 800.861.1364



text 610.223.6038



email [info@integral-lighting.com](mailto:info@integral-lighting.com)



visit [integral-lighting.com](http://integral-lighting.com)



51 North Elm Street Wernersville, PA 19565  
Phone: 800.861.1364 Fax: 800.388.2898  
[integral-lighting.com](http://integral-lighting.com)

Copyright 2018 Hartman Design Inc. All Rights Reserved.