CabLED®

Outdoor 12V LED Linear Lighting Kit
Installation Manual

IMPORTANT: 12V CabLED black strip uses 12V AC/DC technology. The required 120V AC to 12V AC power pack is NOT Included in this kit. Do NOT attempt to power this product using a 24V power supply or connect it to 24V CabLED white strip.

OPTILED® Lighting Inc. • (855) 535-6268 • customerservicehd@optiled.com

IMPORTANT WARNINGS AND CAUTIONS

WARNING: A WARNING alerts you to the possibility of serious injury or death if you do not follow the instructions.

CAUTION: A CAUTION alerts you to the possibility of damage to or destruction of the equipment if you do not follow the instructions.

WARNING: Do not open, dismantle or attempt to repair the CabLED strip, bottom half of the connectors or any other components or accessories.

There are no user serviceable parts. Products should be installed in accordance with the owner's manual, current electrical codes and/or the current National Electric Code (NEC). Improper installation may cause a possible electrical shock or fire hazard.

Always make sure CabLED strip is disconnected from the power source before cutting, connecting or mounting in any way.

CabLED strip is water resistant, not waterproof. Do not submerge in water.

Safety measures must be observed at all times during the installation of this product.

Use proper safety gear and tools during the installation process to prevent physical injury.

Do not look directly at the LED lights in the CabLED strip when lit.

Do not mount or support the CabLED strip in a manner that can damage the outer jacket or cord insulation.

Uncoil the CabLED strip prior to plugging in to avoid risk of fire and electrical shock.

CAUTION: CabLED black strip uses 12V AC/DC technology. The required 120V AC to 12V AC power pack is NOT included in this kit. Do NOT attempt to power this product using a 24V power supply or connect it to 24V CabLED white strip.

Create a layout plan before installation. Locate power source, determine suitable mounting methods and connectors, measure and calculate the length of CabLED strip required. CabLED strip can be cut only at every 3.5 inches (9cm) and must be cut exactly on the indicated mark. Use only CabLED connectors, mounting options and accessories with this installation.

Do not use acid or alkaline liquid to clean.

To avoid risk of electrical shock do not use with extension cord near water or where water may accumulate. For use only on GFCI protected circuits.

Material may become brittle when cold. Do not install where it may be stepped on or subject to physical damage.

Do not install near flammable liquids.

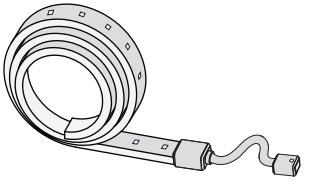
TABLE OF CONTENTS

CAREFULLY READ AND UNDERSTAND THE INSTRUCTIONS IN THIS MANUAL BEFORE BEGINNING INSTALLATION. This CabLED kit includes an assortment of components to cover a variety of outdoor applications. In order to make this installation easy, please follow the instructions in the order presented in this manual. Be sure to observe all warnings and cautions.

IMPORTANT: Connectors consist of two parts, a top and bottom, which are partially assembled at the factory. Do not push connectors together or cut CabLED strip BEFORE beginning installation.

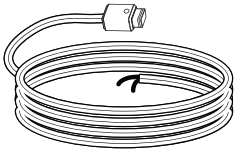
Package Contents

Make certain the following components are included in the package. If any of the parts are missing or damaged please contact OPTILED Technical Support toll free at (855) 535-6268. or by email at customerservicehd@optiled.com. Parts shown are not actual size.



1 x 12 foot 12V AC/DC CabLED strip with attached PS-Link Connector

Outdoor flexible LED lighting strip with attached PS-Link Connector. Plugs into 16-2 AWG extension wire.



1 x 20 foot 16-2 AWG extension wire

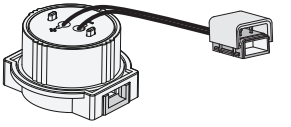
20 feet of 16-2 low voltage wire. Attached connector plugs into CabLED strip.

2 x End Cap

Used in all installations to protect end of CabLED strip.

1 x Cutting Jig

Used as a tool to ensure straight and even cut on CabLED strip.



1 x Quick Connector

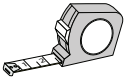
Used to connect second section of CabLED strip to 16-2 AWG extension wire. Place above ground away from moist conditions.

NOTE: The required 120V AC to 12V AC power pack is NOT Included with this kit. Do NOT attempt to power this product using a 24V power supply.

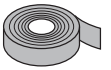
Required Tools

Grease Pencil

Level



Tape Measure



Wet/dry Electrical Tape

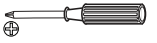
WD-40®
or
Liquid Lubricant

Goggles

Mallet

Linesman Pliers

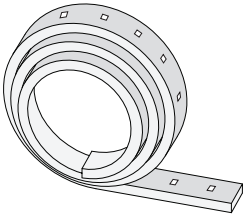
Diagonal Pliers



Phillips Screwdriver

12V AC/DC CabLED Strip Specifications

12V AC/DC CabLED black strip uses CREE LED lights set every inch and can be cut every 3.5 inches (9cm).

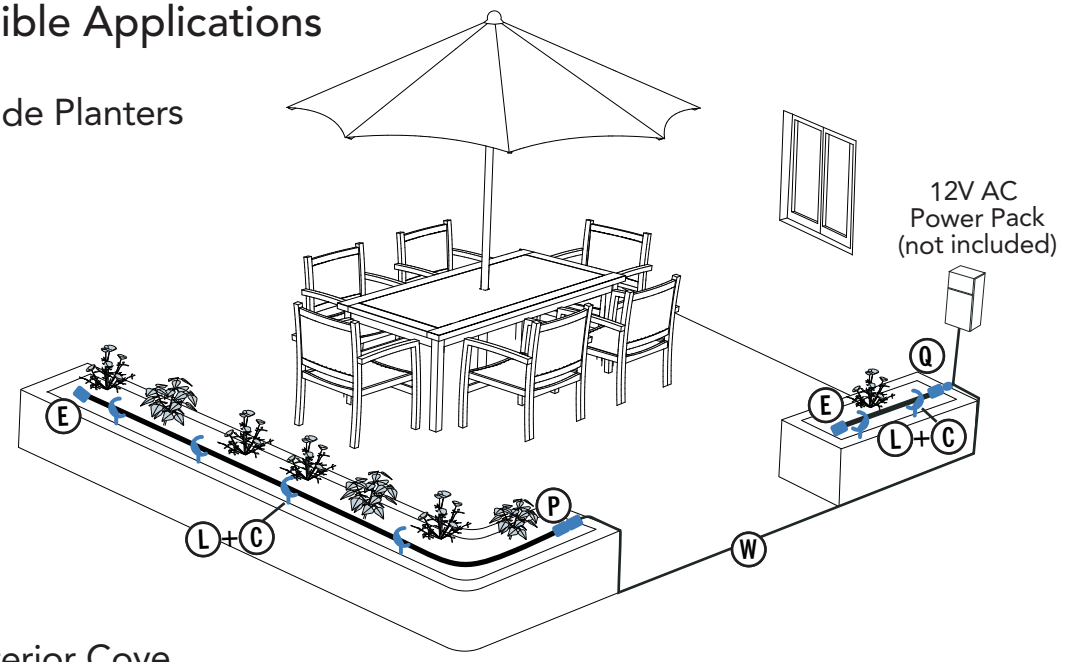


Color Temperature	Warm White (3500K)
Input Voltage	12V AC/DC
Input Current	154 mA
Power/Meter	3.7W DC, 4.5W AC
Weight	100 g/m (3.53 oz/m)
Lifetime*	35,000 hr
Beam Angle	120°
Lumen/Meter (39 inch)	170 lm/m
CRI	80
Number of LEDs/Segment	3 LEDs/3.5 inch (9 cm)
LED Pitch	30 mm
IP Rating	IP65
Operating Temperature	-4°~122°F (-20°~50°C)
Storage Temperature	-13°~140°F (-25°~60°C)
Minimum Bending Radius	3.9 inch (10 cm)
Maximum Continuous Length of 12V CabLED strip	33 ft (10 m)

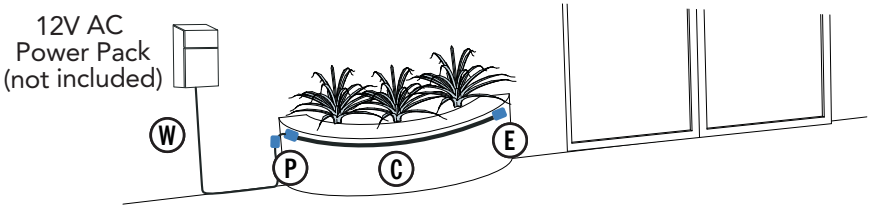
* With 70% lumen maintenance

Possible Applications

Inside Planters

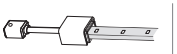
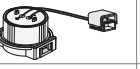
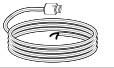


Exterior Cove



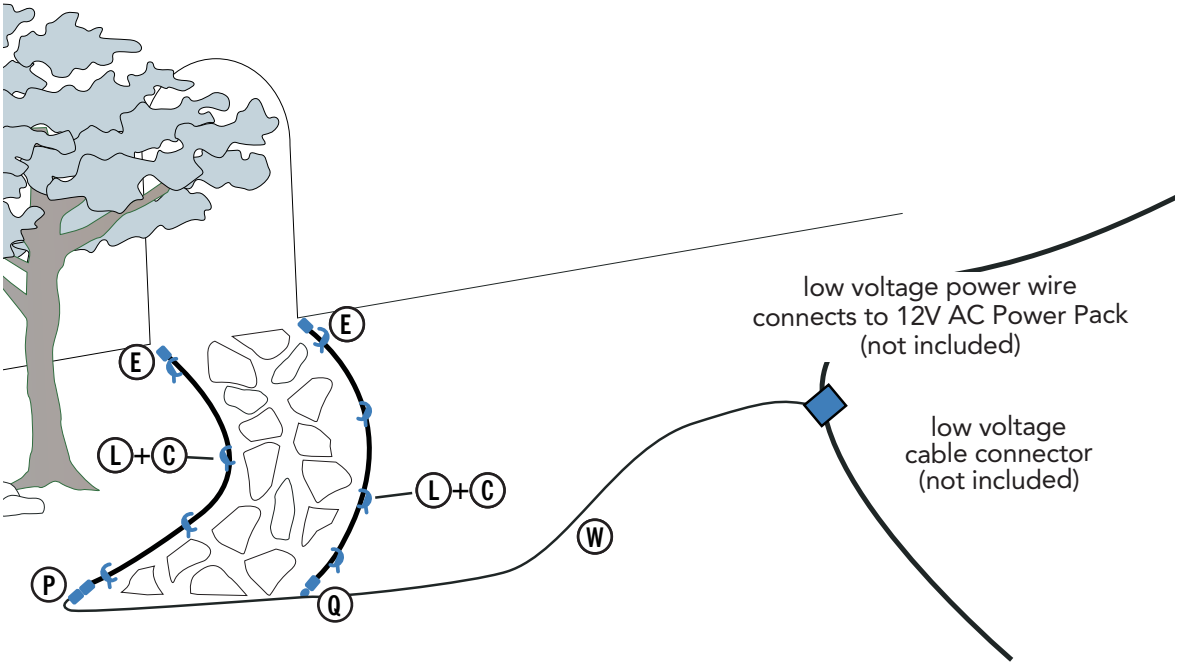
Components

C		PVC Channeling (not included)
E		End Cap
L		Landscape Spike (not included)

P		12V AC/DC CabLED with attached PS-Link Connector
Q		Quick Connector
W		16-2 AWG extension wire

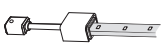
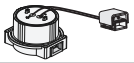
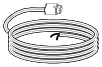
Possible Applications

Walkway



Components

C		PVC Channeling (not included)
E		End Cap
L		Landscape Spike (not included)

P		12V AC/DC CabLED with attached PS-Link Connector
Q		Quick Connector
W		16-2 AWG extension wire

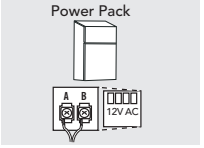
Step 1: Plan Installation

IMPORTANT: CabLED black strip uses 12V AC/DC technology. The required 120V AC to 12V AC power pack is NOT Included in this kit.

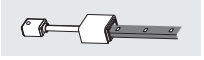
This kit is packaged to provide options for a variety of installations. The flexible CabLED strip easily follows the curves of paths and walkways. Use it as one long section or cut and install it in two sections or combine two kits for a larger project. Use this section to determine the components needed for each installation.

Note: Not all components will be used. Additional connectors are packaged in the Landscape Lighting Accessory Kit. Landscape Spikes and PVC Channeling are packaged and available separately.

Required Components

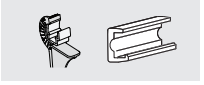


12V AC Low Voltage Power Pack (Not Included): converts 120 volt household current to 12 volt. Calculate the total wattage your system requires. Include the 30 watts required for this kit plus the total wattage needed for any other lamps connected to the system. Make sure the power pack is sufficiently powerful to support everything connected to it and still have extra capacity.



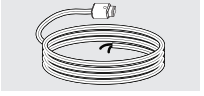
PS-Link Connector: is attached to the 12 foot CabLED strip. Plug into 16-2 AWG 20 foot extension wire.

End Cap: MUST be used in every installation to protect exposed end of CabLED strip.

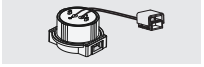


Mounting Options (Not Included): are used to achieve a professional and easy installation. For landscaping projects use PVC Channeling with or without Landscape Spikes.

Optional Components



16-2 AWG Extension Wire: 20 foot extension wire is included to easily connect CabLED to an existing 12V AC wiring system or directly to a 12V AC power pack.



Quick Connector: connects a second section of CabLED strip to the extension wire. Place above ground away from moist conditions.

Determine Layout

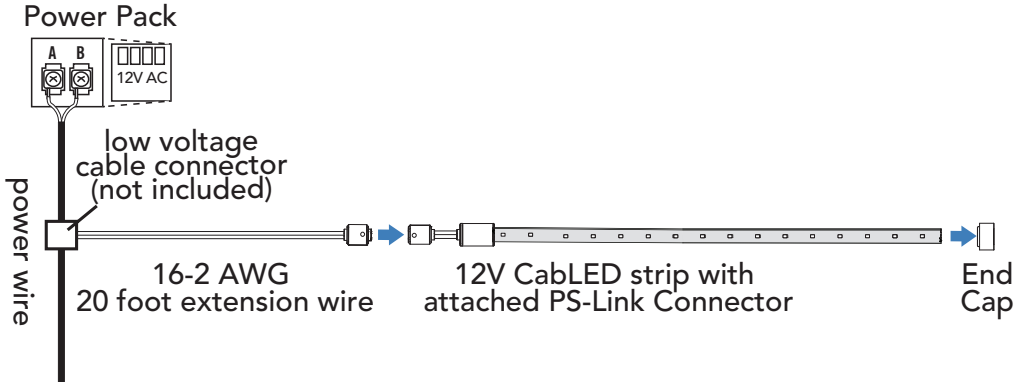
Determine an appropriate layout using the four examples in this section. The installation layout options show how the components can be connected. For example:

- Either connect this product to an existing 12V AC wiring system or directly to a 12V AC power pack.
- Either use CabLED strip as one section or cut into two sections. Connect second section to extension wire using the Quick Connector.

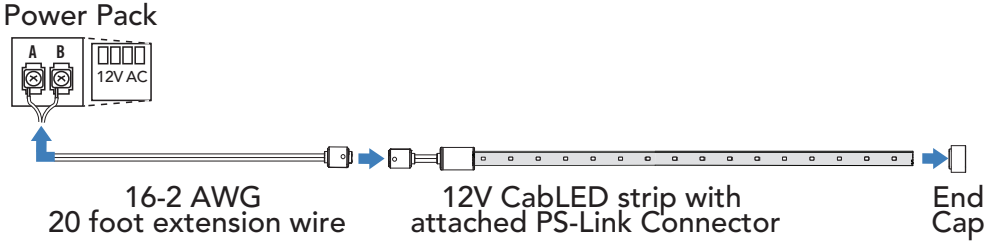
Note: Refer to section 6 for mounting options.

Installation Layout Options

Connect to existing 12V AC wiring system as one section.

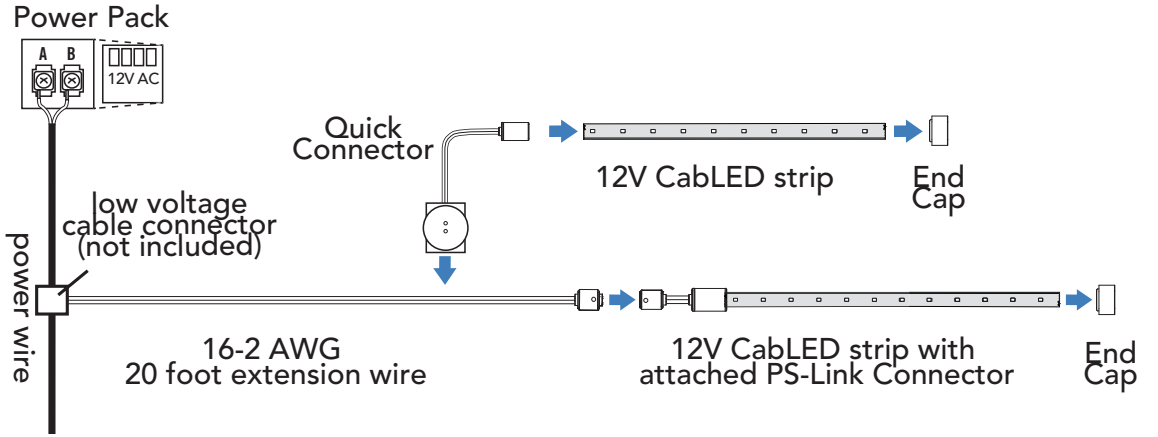


Connect directly to 12V AC power pack as one section.

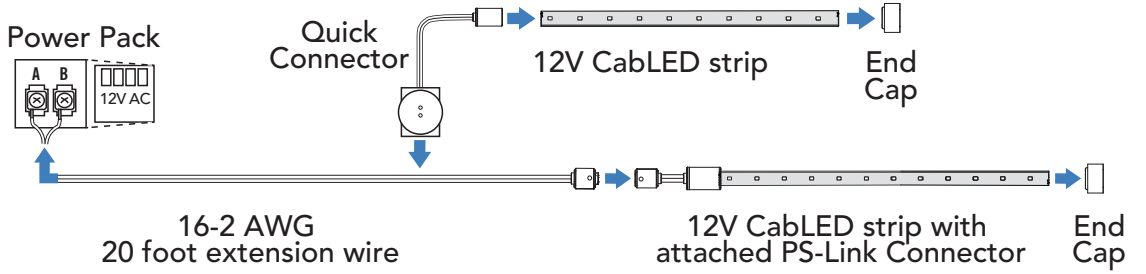


Installation Layout Options (Continued)

Connect to existing 12V AC wiring system as two sections



Connect directly to 12V AC power pack as two sections



Step 2: Prepare for Installation

Locate Power Supply

After determining the basic layout, locate nearest 12V AC power supply. Make sure the power pack will support the additional 30 watts needed to power this system.

Power Supply Location and Voltage Drop

To ensure a proper installation and avoid voltage drop, pay attention to the length of 16-2 AWG low voltage wire connecting the 12V AC power supply to CabLED strip. Voltage drop is the decrease in electrical current that occurs as electricity travels through low voltage wire. As voltage drops, light output can decrease, causing fixtures furthest from the power pack to be dimmer than those nearer the power pack. The amount of voltage drop depends on the length and thickness of the wire, and the total wattage used by the fixtures connected to it. To avoid excessive voltage drop refer to chart below:

Length 12V CabLED Strip	Maximum Length of 16-2 AWG Wire Connecting Power Supply to CabLED Strip
12 feet	82 feet (25 meters)
25 feet	39.3 feet (12 meters)
Maximum 33 feet	32.8 feet (10 meters)

Measure and Record Components

Record measurements for components to be used in installation. Include in measurement length of 16-2 AWG extension wire needed to connect to power source.

NOTE: CabLED strip can only be cut after every third LED at intervals of 3.5 inches (9cm), EXACTLY on cut line marked on top of strip. Pay attention to that measurement before cutting CabLED strip. When measuring for installation, allow 1/2 inch (1.27cm) of length to ends of CabLED strip for connectors.

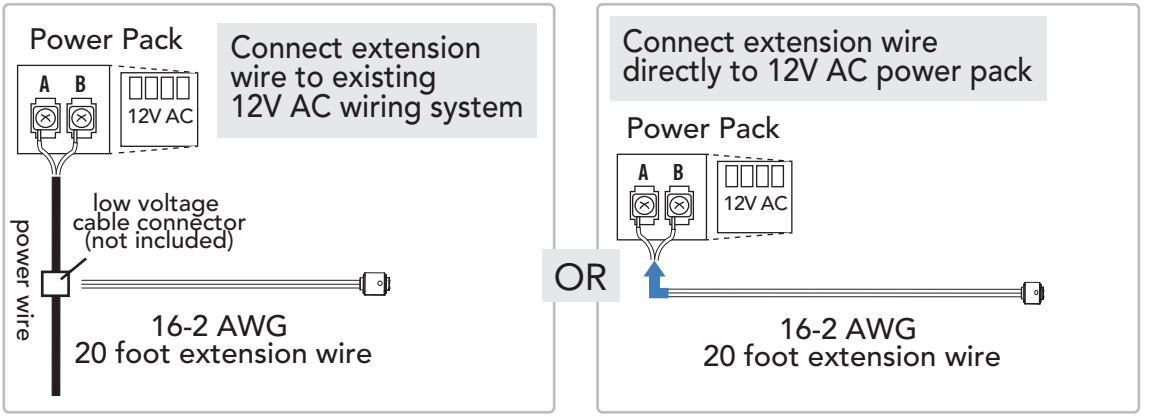
CabLED components are rated IP65, water resistant, not waterproof. Plan to install so connectors are mounted far enough above ground to eliminate chance of being submerged in water.

Step 3: Connect to 12V AC Power Source

IMPORTANT: Connect and test CabLED strip before cutting. Turn off power to power source before connecting extension wire. Do not connect CabLED strip until after this connection is completed.

3.1 Connect

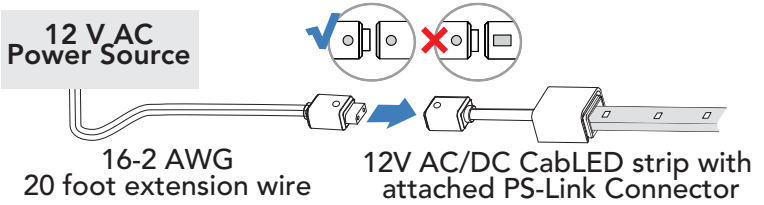
Connect stripped end of 16-2 AWG 20 foot extension wire either to an existing 12V AC wiring system or directly to a 12V AC power pack.



3.2 Test

IMPORTANT: Turn OFF power to 12V AC power source before making connections. Match icons to properly connect components.

Connect 16-2 AWG extension wire to CabLED strip using attached PS-Link Connector. Turn on power to test. If it works properly, continue. If not, see Troubleshooting section.



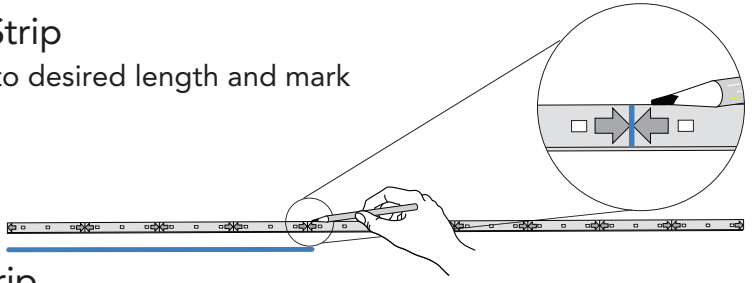
Step 4: Begin Installation

NOTE: When using CabLED strip as one section skip to step 5.3

IMPORTANT: CabLED strip may ONLY be cut after every third LED at intervals of 3.5 inches (9cm), indicated by a cut line on LED side of strip. When measuring for installation, if the total length is not a multiple of 3.5 inches, then adjust the layout plan.

4.1 Mark CabLED Strip

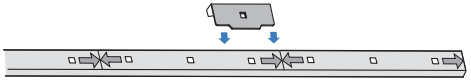
Locate cut line nearest to desired length and mark CabLED strip.



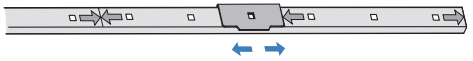
4.2 Cut CabLED Strip

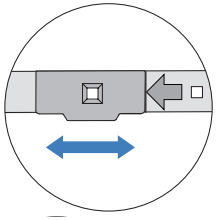
Use Linesman or Diagonal pliers to cut CabLED strip EXACTLY on cut lines marked.

A Use included jig to ensure a straight and even cut.

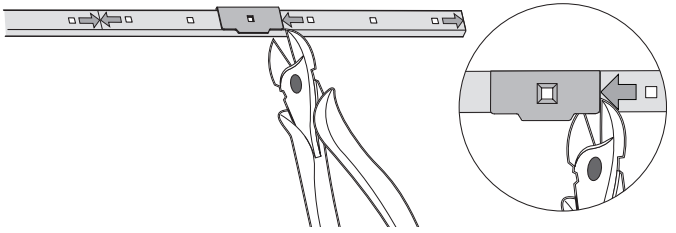


B Line up hole in center of jig with LED closest to cut line marked.





C Cut CabLED strip on edge of jig.



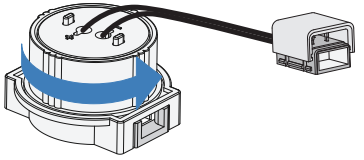
Step 5: Install Connectors

NOTE: When using CabLED strip as one section skip to step 5.2

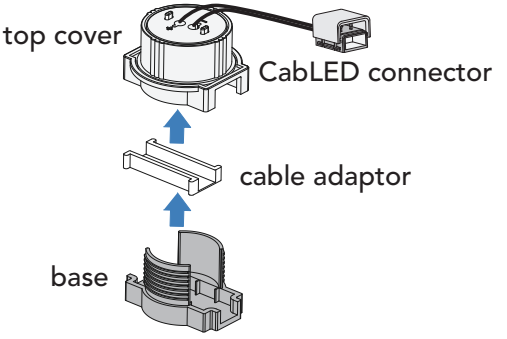
IMPORTANT: CabLED connectors consist of two parts, a top and bottom, which are partially assembled at the factory. DO NOT push connectors together BEFORE installation. Turn OFF power to 12V AC power source before making connections.

5.1 Install Quick Connector

A Remove top cover from base.

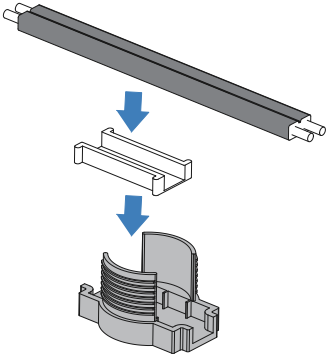


twist to unscrew top cover from base

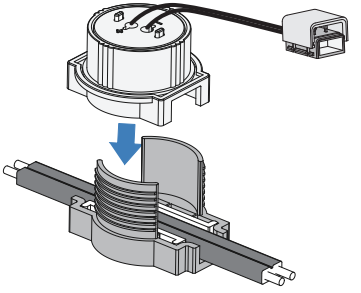


B Connect to 16-2 AWG extension wire

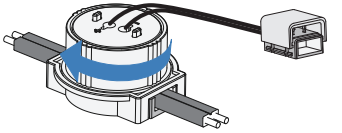
1. Place 16-2 AWG extension wire inside cable adaptor and place inside base.



2. Place cover over base.



3. Screw top onto base.

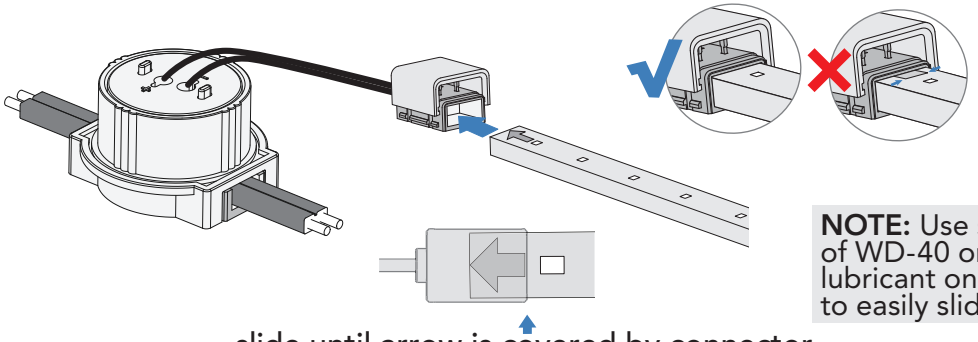


Step 5: Install Connectors (Continued)

NOTE: When using CabLED strip as one section skip to step 5.2

5.1 Install Quick Connector (Continued)

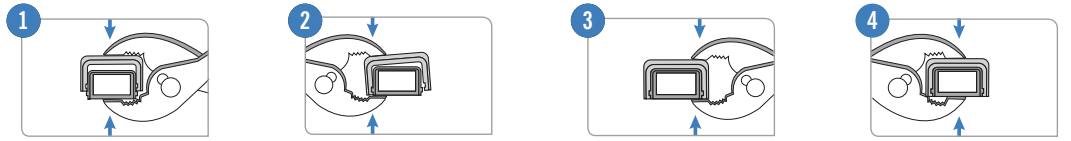
C With LED side facing up, push CabLED strip into opening in bottom half of CabLED Connector until it reaches the end. Arrow on top of strip must be completely covered by connector.



slide until arrow is covered by connector

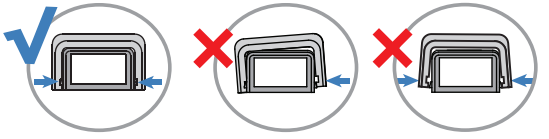
NOTE: Use small amount of WD-40 or liquid lubricant on end of strip to easily slide connector.

D Using pliers, apply pressure evenly to bottom and top halves of connector to push connector together. Follow sequence below to secure CabLED strip inside.



Partially Compress Center | Fully Compress Left Side | Fully Compress Right Side | Fully Compress Center

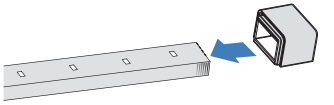
E Make sure both sides of bottom half of connector snap into top half. Gently pull CabLED strip to ensure it is properly installed.



5.2 Install End Cap

The End Cap MUST be used in every installation to protect exposed end of CabLED strip. Slide End Cap onto side of strip not protected by a connector. Note: End Cap is not compressed.

NOTE: Use small amount of WD-40 or liquid lubricant on end of strip to easily slide End Cap.



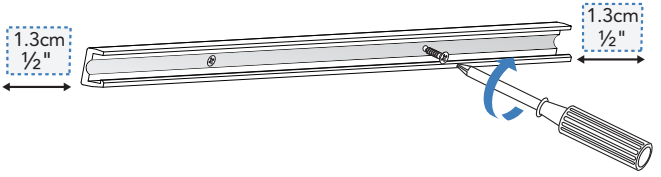
Step 6: Mount CabLED Strip

To achieve an easy and professional installation use CabLED PVC Channeling with or without CabLED Landscape Spikes. Both are available at Home Depot stores or at HomeDepot.com

6.1 Install PVC Channeling (Not Included)

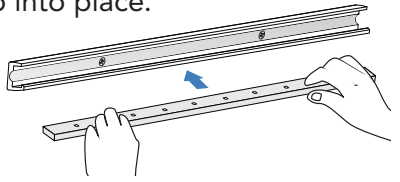
CabLED PVC Channeling provides a straight, secure and professional mounting option for CabLED strip. Note: PVC Channeling is not included in this kit.

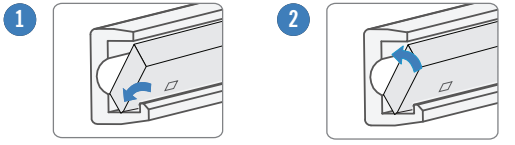
A Position PVC Channeling so lip is at bottom when installed. Hold channeling against surface. Secure with screw in predrilled holes.



IMPORTANT: Allow a half inch on each side to clear connector.

B Slide CabLED strip straight into bottom of PVC Channeling, and then push to snap strip into place.





Slide into bottom Snap into place

NOTE: Use small amount of WD-40 or liquid lubricant to snap easily into place.

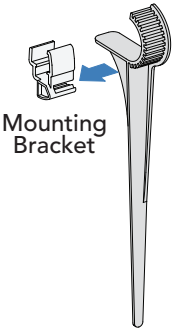
Step 6: Mount CabLED Strip (Continued)

6.2 Install Landscape Spikes (Not Included)

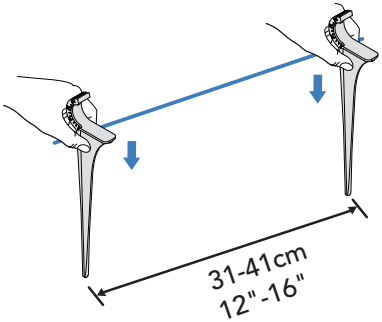
Landscape Spikes are two-piece mounts designed to hold CabLED strip along walkways. They can be set so the light is directed at an angle between 0 and 135 degrees at 11.25 degree intervals. The mounting bracket is designed with two openings to either hold CabLED strip alone, or for added support, with PVC Channeling. Landscape Spikes are not included in this kit. Note: For hard clay or rocky soil, presoak areas where spikes are to be installed.

A Install Landscape Spike

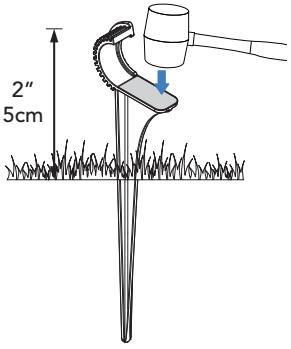
1. Remove mounting bracket from Landscape Spike to install.



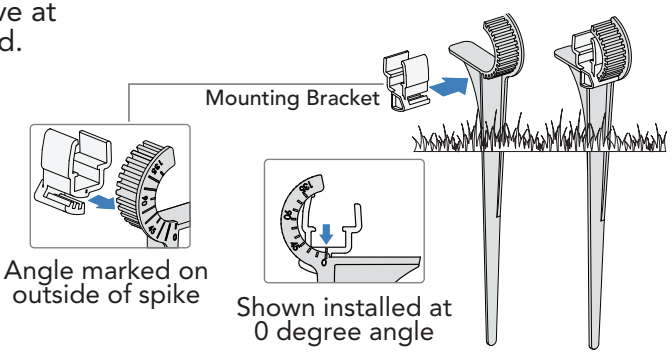
2. Push spikes firmly into ground spaced from 12 to 16 inches (31-41cm) apart.



3. Using a mallet, hammer ONLY SHADED AREA of spike into soil. Measuring from top of spike, leave at least 2 inches (5cm) above ground.



4. Set angle by fitting mounting bracket into stand at desired angle.



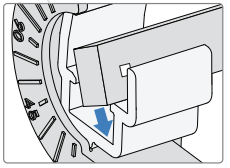
Step 6: Mount CabLED Strip (Continued)

6.2 Install Landscape Spikes (Continued)

B Mount CabLED Strip to Landscape Spikes

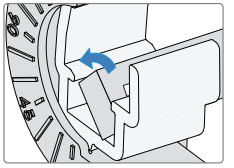
The mounting bracket is designed with two openings to either hold CabLED strip alone, or for added support, with PVC Channeling. Insert CabLED strip into one side of bottom opening and snap into place.

1

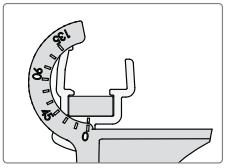


Slide strip into bottom opening

2



Snap into place



Shown installed at 0 degree angle

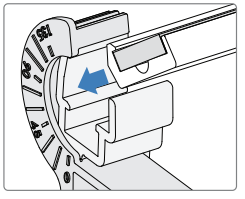
Position so strip lays flat and LEDs are NOT covered when strip is installed. Reposition spike if necessary.

6.3 Mount CabLED Strip with PVC Channeling to Landscape Spikes

First follow directions in step 6.1A to install CabLED strip into PVC Channeling. Then follow directions in step 6.2A to install Landscape Spikes.

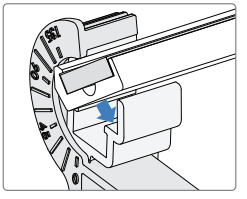
PVC Channeling with CabLED strip is installed into top opening of mounting clip. Slide in at an angle with lip into tall side of mounting bracket until it sits on ledge and then snap other end into place. Note: PVC Channeling is not included in this kit.

1

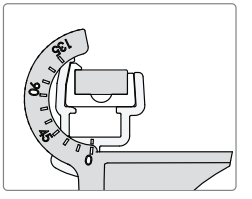


Slide lip side up into top opening

2



Snap into place



Shown installed at 0 degree angle

Position so strip lays flat and LEDs are NOT covered when strip is installed. Reposition spike if necessary.

IMPORTANT: Make sure CabLED strip and connectors will NOT be submerged in water.

TROUBLESHOOTING

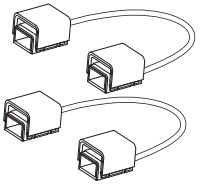
Most of the problems you may encounter will be caused by improper assembly. For questions or additional parts, please contact OPTILED Technical Support toll free at (855) 535-6268 or by email at customerservicehd@optiled.com.

ISSUE	Go Through the Solutions:
None of CabLED strip is lit	• Check specifications for power pack to ensure it has at least 30 watts to power this kit. • Make sure 16-2 AWG extension wire is properly connected and power source is getting power. • Check connection from PS-Link Connector attached to the CabLED strip.
Only part of CabLED strip is lit	• Check all connectors attached to the part of CabLED strip that is not lit. Pull CabLED strip. If it comes out of connector, follow instructions for 'Connectors pushed together before installation' listed below to try to save connector or replace with new connector.
CabLED strip is flashing ON and OFF	• Check specifications for power pack to ensure it has at least 30 watts to power this kit. When using additional CabLED strip, check power pack specifications to ensure it supports the total length of installation. Make sure 16-2 AWG extension wire is properly connected.
CabLED strip not cut exactly on cut line	• If the initial cut is straight and within the cutting tolerance, the section may still work. The cutting tolerance is approximately +/-3 mm (+/-1/8 inch) on either side of the cut line. Make sure CabLED strip is cut straight and is pushed to end of connector. • Go to cut line before the incorrect cut and make section shorter. Use a new connector and if necessary, adjust layout by repositioning the sections. • Purchase additional CabLED kits, connectors and mounting accessories.
Connectors pushed together before installation	• If the connector top was pushed into the bottom before installation or if CabLED strip was not pushed completely to end of connector and did not secure the strip, the connector may be damaged. First try to fix the connector. Use a flat screw driver to gently widen the sides of the top connector and push the bottom connector apart. If this does not work, use a new connector. • Purchase additional connectors.

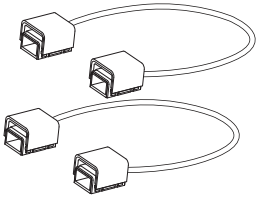
Additional CabLED Products

Kits

Landscape Lighting Accessory Kit



2 x 6 Inch Jumper Cable



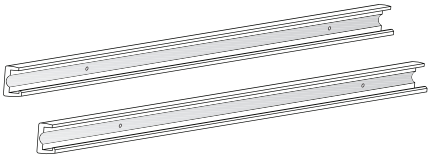
2 x 12 Inch Jumper Cable

1 x I Connector

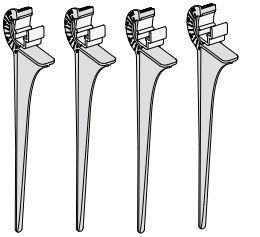
1 x End Cap

Mounting Options

2 x PVC Channeling 36.25 Inch (92cm)

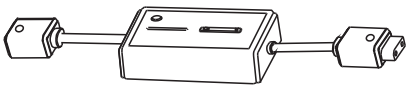


4 x Landscape Spikes



Accessory

1 x Inline On/Off Dimmer



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