

Please read these guidelines completely before installing.

This product operates on low voltage 12V/24V DC power.

IMPORTANT

- Use only with low voltage 12V/24V DC power source
- Do not stare directly into the LED lights when illuminated
- Do not power LED tape while coiled on reel
- Always observe polarity for 12V/24V connections, positive (+) to positive and negative (-) to negative
- Do not install the indoor-rated version of this product in areas that are susceptible to direct exposure to the elements
- Use only insulated staples, plastic ties, or wire support clips to secure cords and wires
- Route and secure wires so they will not be pinched or damaged
- For any wire runs inside of walls, use properly certified CL2 or better cabling
- Do not install Class 2 low voltage wiring in the same runs as AC main power. If AC and low voltage wires cross, keep them at 90-degree angles

All wiring must be in accordance with national and local electrical codes, low voltage Class 2 circuit. If you are unclear as to how to install and wire this product, contact a qualified professional.



Temporarily mounting the LED light strip using painter's tape allows you to experiment with tape light positioning before permanent installation.

Tip: Use painter's tape or masking tape to temporarily place the LED light strip into its intended mounting position. Power on the LEDs to make sure you are achieving the desired lighting effect before final installation.

Before removing the 3M tan colored paper backing, it is important to test the LED strip in the space you intend to light. Once the paper backing is removed and the strip is affixed, repositioning the LED strip light to another location may not be feasible, as the strip may not stick securely to the new surface.

1. Power the LED strip lighting and temporarily hold it in position with painter's tape or masking tape – do not remove the 3M paper backing.
2. Adjust the lighting to various angles and positions to get the desired level of illumination and lighting appearance. If the LEDs create undesirable bright spots or reflections, reposition the light strip farther away from surfaces or at a different mounting angle.
3. Once you have determined your desired mounting position, clean and prep the surface to ensure the 3M self-adhesive backing will adhere properly.

12 VDC / 24 VDC LED Strip Light Installation



Installation considerations

- Where will you locate your power supply?
- How will you switch your LED lighting on and off?
- What is the best layout configuration for your installation?
- How will you run and conceal the wires to your LED tape lighting?



Peel and Stick
Simply remove 3M paper backing from LED tape lighting and stick in place.

IMPORTANT

- Mounting surfaces should be smooth, clean, completely dry, dust-free and above 60°F (15 °C) before installing the LED strip lighting.
- Thoroughly clean all mounting surfaces with a 50:50 mixture of isopropyl alcohol and water. For particularly dirty surfaces, use 100% alcohol or acetone. Avoid household cleaners and polishes that may leave behind residues. Also avoid common rubbing alcohol because it frequently contains oils that can interfere with the performance of the 3M adhesive tape.
- For best adhesion – especially when sticking to the underside of cabinets – lightly sand the surface where you will mount the tape lighting. This includes unfinished woods, plastics/laminates and all painted surfaces. Use a very fine grit sandpaper (150-300 grit) and sand in a circular motion rather than straight-line motion for best results. Be sure to wipe away dust after sanding.
- When installing on painted surfaces, paint should be fully cured based on manufacturer's cure time.
- Be careful not to peel off the 3M adhesive from LED strip. Only remove the tan paper backing. If using Snap Connectors, carefully cut the tan backing where it enters the connector. Leave the 3M backing paper inside the connector, in case the contacts need to be repositioned.
- 3M tape requires pressure to activate the adhesive. Working from one end to the other, firmly press the tape down along the entire length of the strip.

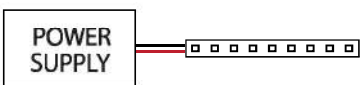
Configuration options

LED strip lights can be installed in series (strips connected end-to-end) or in parallel (multiple legs of LED strips or series of strips wired directly to a single power supply).

LED power requirements are based on several factors, including your configuration (Straight Run, Center Feed/Loop Back or Array), voltage drop, and length of the LED strip lighting.

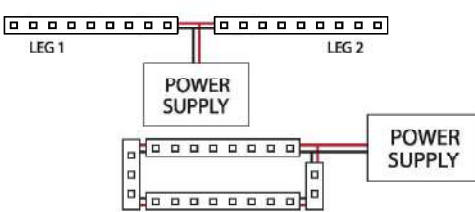
Straight Run

Only one end of the LED strip is powered. Multiple strips can be connected in a series for a continuous run. LEDs farther away from the power supply may appear dimmer due to voltage drop, especially if longer wires are used in between to connect strips.



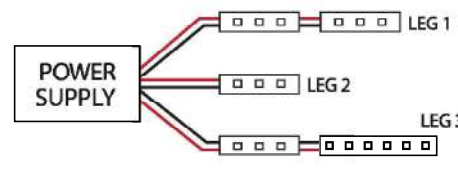
Center Feed / Loop Back

Either power two equal legs of tape lighting from the center or loop back and power both ends of the LED tape. These configurations will produce more consistent brightness and color over the length of the strip. A loop back is excellent for room perimeter tray ceiling or cove lighting.



Array

An array uses two or more legs of various lengths wired to a power supply in a parallel connection. You will need to calculate total wattage used in an array to guard against overloading the power supply.



For power supply options visit ledcityusa.com/product-category/indoor/power-supplies/
ledcityusa.com/product-category/outdoor/power-supplies-outdoor/

TYPICAL CONNECTING AND SWITCHING OPTIONS

A = Toggle switching



B = Line voltage dimming



C = Low voltage dimming



D = Automotive and marine



Power supply location and voltage drop

The power supply that provides 12V/24VDC power to your LED tape lighting operates on 120V AC household current. The shorter the wire lead between the power supply and the LED tape lighting, the brighter the lights will be. If the lights farthest from the power supply appear dim, it is due to voltage drop.

Voltage drop only becomes undesirable if you notice the brightness in one area of your lighting is objectionably different than in another area. As a practical approach, test your lighting prior to final installation. Refer to the chart below for recommended lengths of power feed wires using 22 and 18 AWG wires.

- Excessive voltage drop = reduced brightness and color accuracy
- Shorter and/or thicker wires = higher brightness and color consistency
- Longer LED tape = an increase in voltage drop

Recommended maximum length of 12V/24V power wires from power supply to LED lighting

If your LED tape length is:	Max wire length to tapelighting	If your LED tape length is:	Max wirelength to tapelighting
12 Feet	10 Feet	12 Feet	20 Feet
24 Feet	8 Feet	24 Feet	16 Feet
36 Feet	6 Feet	36 Feet	12 Feet
48 Feet	4 Feet	48 Feet	8 Feet

Switching and dimming options

If you do not have a switched 120V AC outlet for your LED power supply, you may want to use a 12V/24VLED dimmer switch (option C). Several options may be found at ledcityusa.com.

Important: Do not use a standard AC wall dimmer with your power supply unless the power supply clearly states that it is dimmable with 120V AC dimmers.



Choosing a power supply

Refer to the charts below for the recommended maximum lengths of LED tape lighting based on your configuration and choose a power supply rated greater than your needs – you cannot overpower LED tape lighting. The LED power requirements shown below are based on 100% full power brightness levels and do not represent every possible installation scenario.

Do not use a standard 120V AC wall dimmer with your power supply unless the power supply clearly states that it is dimmable with AC dimmers.

WARNING

* SEE LENGTH LIMITATION *

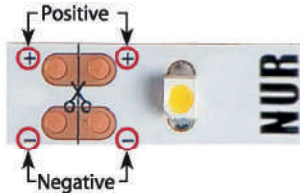
Power supply calculation

Calculate the wattage for each leg by multiplying watts per foot by the length of LED lighting in the leg. Include only the lengths of LED tape in your calculation, not the connecting wires. Add each leg's wattage requirement together to determine the total watts needed to power your array and select a power supply that exceeds the total watts needed.

Cutting, connecting and wiring

Warning: Do not connect LED tape to household 120V AC power. Only connect to low voltage 12V/24V DC power.

Always maintain polarity when connecting LED tape lighting and low voltage power wires.



Be sure to connect positive wires to positive (+ to +), and negative wires to negative (- to -). Polarity is easily identified with + and - markings on LED tape as shown.

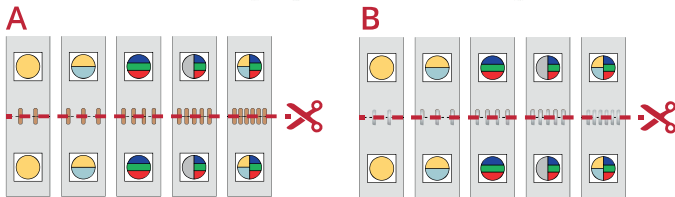
Cut with scissors

Strip lights can be cut every 3 LEDs, as indicated on the strip.

To use solderless LED Snap Connectors, cut the LED tape with scissors directly in the center of the copper pad as shown in position "A" below.

You can also cut the tape at position "B," however, do not use Snap Connectors on these soldered tape light joints..

You can also solder 12V/24V power lead wires at these joints.



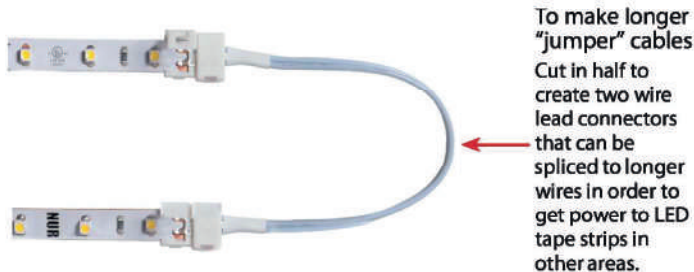
Cut at center of copper pads

OK to cut at solder joints but do not use connector

Extension Connectors

Extension Connectors are used for going around corners or, when cut in half, to create two power leads ("jumper" cables) for linking and extending power wires to LED tape lighting in other areas.

IMPORTANT: Always use the + / - indicators printed on the tape light to maintain polarity.



To make longer "jumper" cables Cut in half to create two wire lead connectors that can be spliced to longer wires in order to get power to LED tape strips in other areas.

Bridging gaps and extending wires

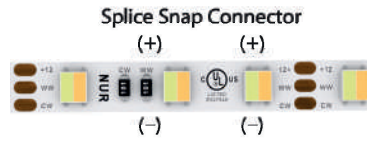
To increase the length of wire between two LED strips, simply splice in the extra length of wire required. 18 AWG is generally recommended. Be sure to match polarity, + to +, - to -. Do not coil wire; shorter lengths and thicker wire will mean less voltage drop and higher brightness.



Be sure all 12V/24V connections are secure and sealed. Options include soldering and heat-shrink tubing, crimp connectors, terminal blocks, wire nuts, etc.

Clip Connectors

Clip Connectors are for joining two strips to create a continuous run of LED lighting.



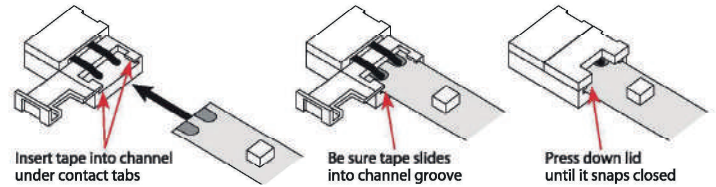
If the + / - marks do not line up, rotate the strip and use the other end for proper alignment.

How to use Snap Connectors

- ▀ Pry open lid on the snap connector (splice connector has two lids).
- ▀ Carefully slide tape strip into the connector channel slot as shown below so the copper contacts on the tape are underneath the connector teeth.
- ▀ Close and snap down lid connector.
- ▀ Perform a power test to be sure connection is secure and LEDs light before final installation.
- ▀ If LEDs do not light, or LEDs flicker, repeat the steps outlined above.



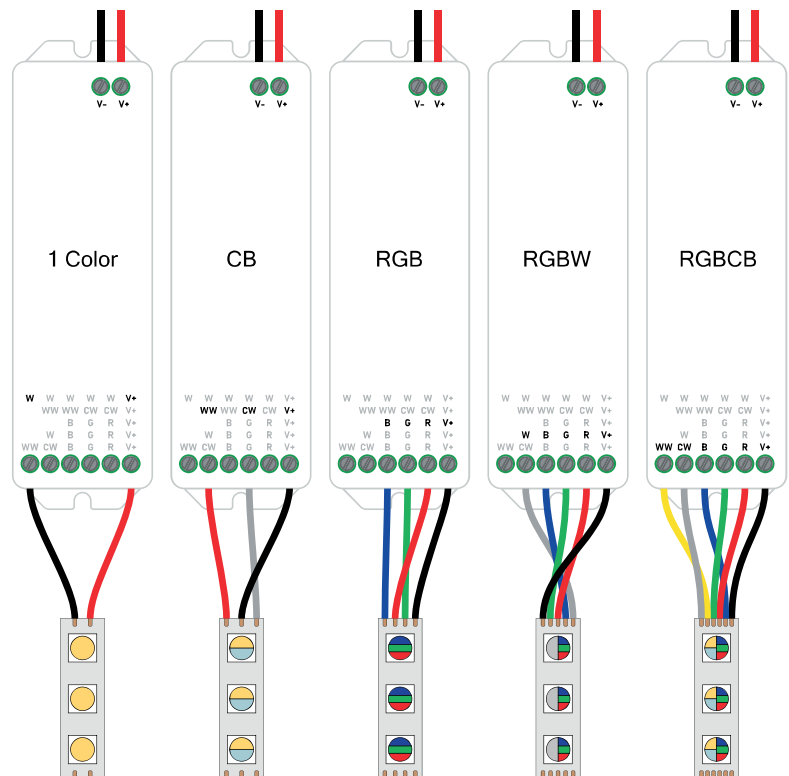
For best results, wrap the closed connector with electrical tape to keep it secure over time.



Connection Guide for Common Types of Strip Lighting

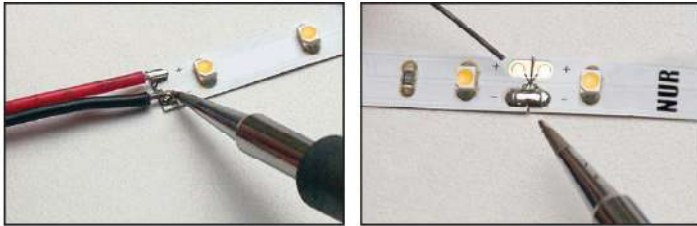
- ORA 2 in 1 Controller and ORA 3 in 1 Controller can be used for connection
- For other controllers, see device or for channel identification

Connect leads to low-volt DC power supply - red to positive, black to negative.



Optional Soldering

Soldering is a fast and easy way to join wires and make splice connections. It is the surest method for making extra-reliable electrical connections.

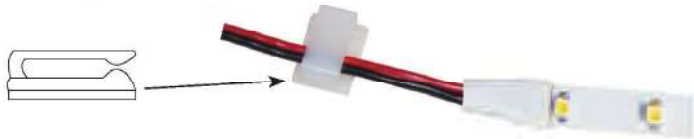


Wire Lead Connection

Splice Connection

Note: Soldering connections is required for marine or automotive applications due to vehicle movement and vibrations.

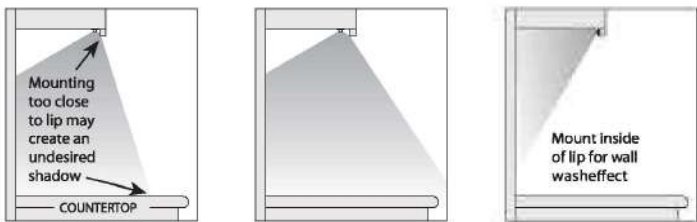
- Be sure to support power wire leads, especially when mounting under cabinets. The weight of a fallen wire lead can pull down the tape lighting, especially on new installations. Note that after 24 hours, 75-80% bond strength is achieved. After 72 hours, 95%+ of the bond strength is achieved. The adhesive bond will continue to build with time.



Avoid sharp bends or bending on the solder joints as you could damage the LED tape light. If an LED is inadvertently damaged and fails to light, the remaining LEDs will continue to operate. This light strip is made with 3 LEDs connected as one series. If you experience a failure, you can cut out and remove the damaged 3-LED series and splice together new and/or remaining LED tape.

Under Cabinet

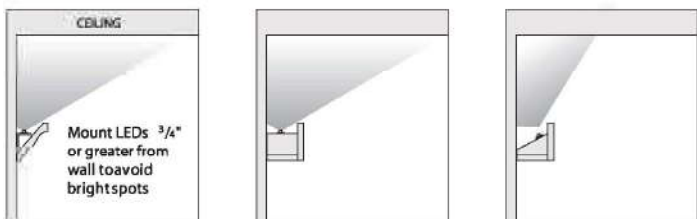
To surface mount LED tape lighting under a set of cabinets in one continuous run, you may need to drill a 1/2" hole through any cabinet side lip that may be present. Install LED tape lighting through the hole and surface mount as a continuous run.



When mounting under a cabinet or a shelf with no lip to hide the LED tape light strip, create a visual barrier by using trim strip molding mounted in front of the LED tape light.

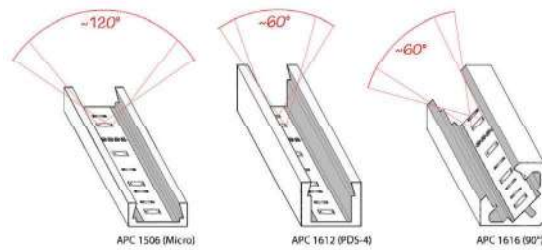


Cove Lighting



Above Cabinet Uplighting

For a seamless glow and to avoid bright light spots, keep LED strip light at least 3/4" away from walls.



Troubleshooting

Tape light strip does not light

- Make sure your LED power supply is turned on and receiving power.
- Confirm you have maintained correct polarity (+ to + and - to -) when joining LED strips as well as when connecting to the 12V/24V power supply.
- Check all tape light connections and any switch or dimmer connections from the power supply to the LED tape light. Consider testing with a multimeter to ensure light strip is receiving 12V/24V power.

Only part of the LED tape light strip is lit

- Check connections to the part of the strip that is not lit.
- Confirm that you have maintained correct polarity to the unlit section.
- If only 1 LED series is out, cut out and remove the damaged 3-LED group and splice together LED tape strips or replace with new 3-LED section. Please inform your supplier if this is necessary.

LED tape lights blink on, then go off

- Your power supply is not adequate for the length of LED tape light you are powering. Install a higher wattage power supply or reduce watts used by shortening the lengths of your LED tape lighting.

LEDs farthest from the power supply are noticeably dimmer

- This is the result of voltage drop. Decrease the length of the 12V/24V power feed wires or use thicker power feed wires between the 12V/24V power supply and the tape lighting.
- Reconfigure your layout to use shorter lengths of LED strip lighting.

SPECIFICATIONS

Input Voltage	12V/24V DC
LED Count	60 LEDs/m
LED Module	SMD 3040/5050
Chip Size	50 x 50 mm
Beam Angle	120° wide
Tape Height	1.5 mm
Tape Width	8mm (LD,SD)/10 mm (HD,2HD)/12mm (RGBW)
Cuttible Segments	~ 4" for SD, ~2" for HD
Lumens Per LED	~17-22 lm
Color Accuracy (CRI)	~ 90
Listings	CE, RoHS, ETL
Country of Origin	China

Refer to specifications for more details.

Limited 5-year warranty

Improper installation, improper powering, abuse, or failure to use this LED tape light for its intended purpose will void warranty. LED tape light cannot be returned or exchanged once cut unless under warranty replacement. Proof of purchase is required for all returns. Questions? Email support@nurmanufacturing.com.

