

LED strip: cut, solder and install

Methods and best practices for a reliable, long-lasting installation, with or without aluminum extrusion.

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1. Before you start

A good installation starts with preparation: the right tools, a checked product and a power plan in place before the first cut.

Tools and materials

CUTTING AND MEASURING

- Sharp, fine-tipped scissors
- Tape measure, pencil, square
- Miter saw with aluminum blade (extrusions)
- File or deburring tool

MOUNTING

- Isopropyl alcohol (IPA) and lint-free cloth
- Mounting clips and screws suited to the surface
- Drill and bits

SOLDERING AND WIRING

- Temperature-controlled 40–60 W iron, 1.5–2 mm chisel tip
- 0.6–0.8 mm flux-core solder and flux pen
- Stranded wire of suitable gauge (see p. 6)
- Wire stripper, heat-shrink tubing, heat gun
- Alligator clips or “helping hands”

TESTING

- Multimeter
- Test power supply of the correct voltage

Safety

IMPORTANT

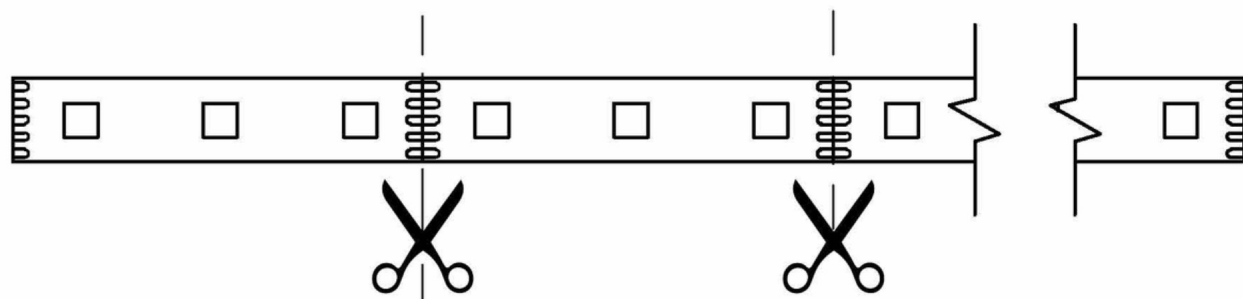
- Always disconnect power before cutting, soldering or connecting a strip.
- Solder in a ventilated area; wear eye protection; always return the iron to its stand.

Check the product

- **Voltage and color:** compare the reel label (12 V or 24 V; 3000 K, RGB...) with the order and the power supply.
- **Operation:** test the reel for a few seconds before cutting — never for long while coiled, as heat builds up.
- **Lengths:** measure each run on the plan and allow for offcuts at the cut marks.

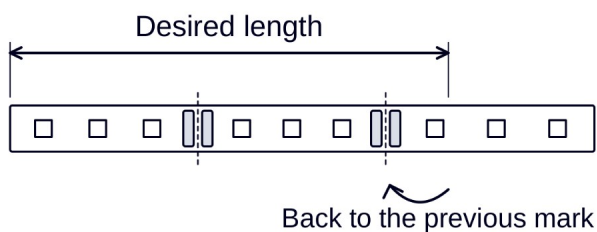
2. Cutting the strip

Cut the strip only at the marked points, through the center of the copper pads. Cutting anywhere else disables the whole segment.

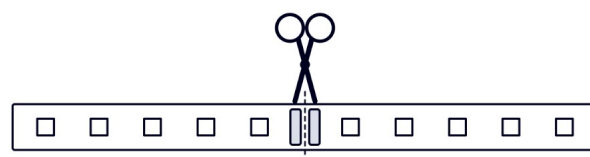


Cut on the lines marked with scissors, through the center of the copper pads. A segment between two lines is the smallest unit.

Steps



- 1 Measure the desired length, then move back to the **previous cut mark**.



- 2 Cut in one clean, square stroke, exactly through the center of the line.

AVOID

Cutting between marks, bending the strip at a cut line, cutting a live strip.

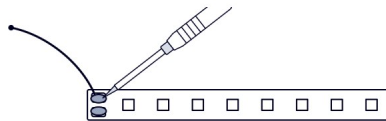
3. Soldering connections

Seven steps to a reliable, long-lasting connection. Polarity and joint inspection are on the next page.

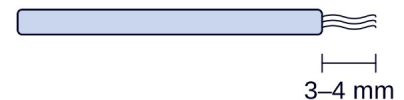
Steps



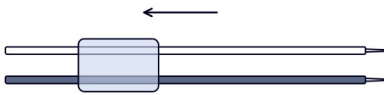
- 1 Clean the pads with isopropyl alcohol and apply a little flux.



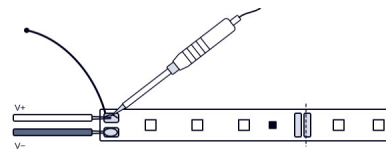
- 2 Tin each pad: apply a small dome of solder.



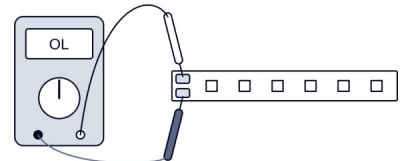
- 3 Strip 3–4 mm of wire, twist the strands and tin them.



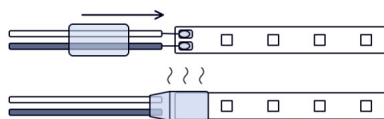
- 4 Slide the heat-shrink tubing onto the cable **before** soldering.



- 5 Lay the wire on its pad, heat until both domes melt, remove the iron and hold still until the joint cools.



- 6 With a multimeter: no continuity between + and –, polarity as per the table (p. 5).



- 7 Slide the tubing over the joint and shrink it with a heat gun.

IRON SETTINGS

Iron set to **320–350 °C** (lead-free solder) or **300–330 °C** (63/37 tin-lead).

Contact time: **2 to 3 s** per pad, maximum.

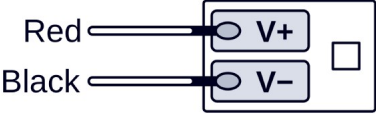
3. Soldering connections (continued)

Respect the polarity of each pad and visually inspect every joint before fitting the tubing.

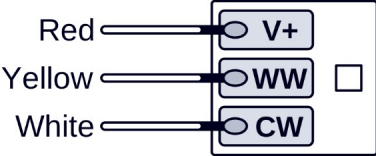
Polarity and color code

Strip type	Pads	Usual wire color
Single color	V+ · V-	Red or white · Black
Tunable white (CCT)	V+ · WW · CW	Red · Yellow · White
RGB / RGBW	V+ (common) · R · G · B · (W)	Black or red · Red · Green · Blue · (White)

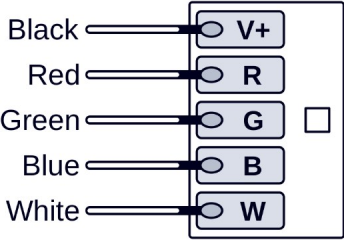
Always follow the markings printed on the strip: they take precedence over wire colors.



Single color
V+: red or white wire

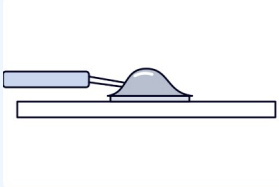


Tunable white (CCT)

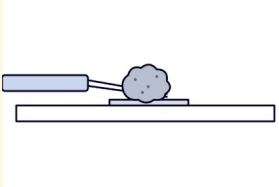


RGBW

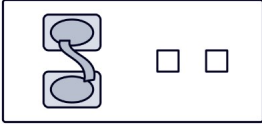
Visual joint inspection



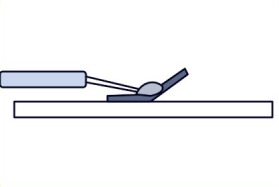
GOOD
Smooth, shiny, concave; strands fully wetted, pad covered.



REDO
Dull or grainy joint: cold solder.



REDO
Solder bridge between two pads.



REDO
Lifted or darkened pad: overheating.

4. Power supply and run-length calculation

Three calculations ensure uniform brightness: run length per feed point, power supply rating and cable gauge.

Maximum run per feed point

≈ 5 m

12 V strip

≈ 10 m

24 V strip

Beyond that, inject power at the other end or in the middle, in **parallel** — never daisy-chain several strips end to end on a single feed.

POWER SUPPLY RATING

$$P \geq (W/m \times \text{length}) \div 0.8$$

Keep a 20% margin; round up to the next standard model.

VOLTAGE DROP IN THE CABLE

$$\Delta V = 2 \times L \times I \times 0.0175 \div S$$

L: one-way length (m) · I: current (A) · S: cross-section (mm²). Aim for ≤ 3%.

Supply cable gauge

Gauge	Cross-section	Max. cable length*
20 AWG	0.52 mm²	2.1 m
18 AWG	0.82 mm²	3.4 m
16 AWG	1.31 mm²	5.4 m
14 AWG	2.08 mm²	8.6 m
12 AWG	3.31 mm²	13.6 m

* For 24 V, 5 A and 3% drop (0.72 V). At 12 V, divide lengths by 2; at 2.5 A, multiply them by 2.

EXAMPLE — 24 V STRIP, 14.4 W/m, 8 m, 6 m CABLE

Power: $14.4 \times 8 = 115.2 \text{ W} \rightarrow \text{supply} \geq 115.2 \div 0.8 = 144 \text{ W} \rightarrow \mathbf{150 \text{ W}}$

Current: $115.2 \div 24 = 4.8 \text{ A} \cdot 8 \text{ m} < 10 \text{ m} \rightarrow$ a single feed is enough

16 AWG: $2 \times 6 \times 4.8 \times 0.0175 \div 1.31 = 0.77 \text{ V (3.2\%)} \rightarrow \mathbf{14 \text{ AWG : } 0.48 \text{ V (2.0\%) } \checkmark}$

5. Installation without extrusion

Direct adhesive mounting: quick and discreet, for low-power strips on a sound surface.

When is it suitable?

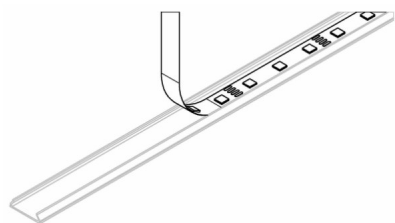
SUITABLE

- Strip up to ≈ 5 W/m
- Smooth, non-porous surface: metal, glass, varnished wood, baked enamel
- Dry location, protected from impact

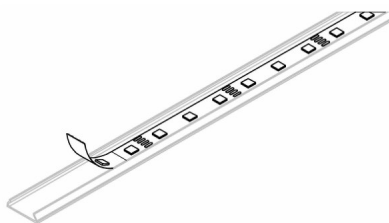
EXTRUSION RECOMMENDED

- Strip over 5 W/m (heat dissipation)
- Raw wood, unpainted drywall, concrete, damp surface
- Enclosed cavity or covered by insulation

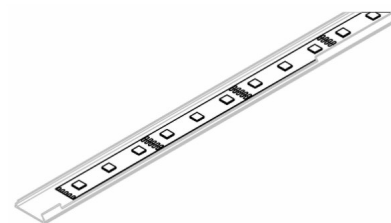
Steps



- 1** Clean, dry surface (isopropyl alcohol, 10 °C min.). Peel the liner starting from one end.



- 2** Align the strip with its location, then press the end into place.



- 3** Press along the full length with your fingers, without stretching the strip.

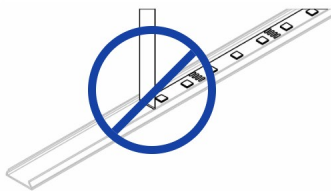
- Ceiling, wall or rough surface: add a mounting clip every 30 to 50 cm.
- Full adhesion after 24 to 72 h: avoid pulling on the wires until then.

Corners and bends



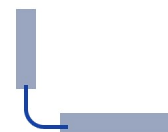
Flat bend

Radius as per datasheet



Do not over-bend

The circuit may be damaged

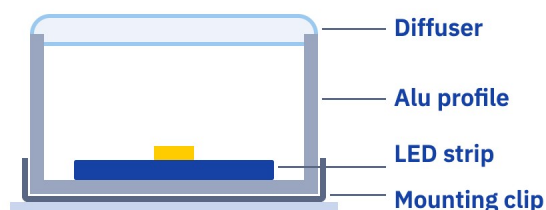


90° corner

Cut, then join with a jumper or connector

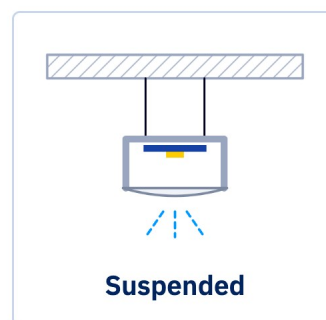
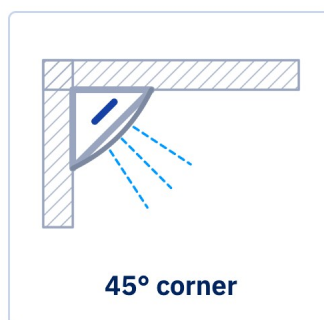
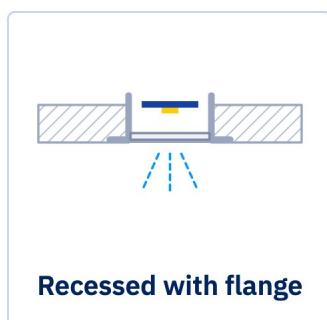
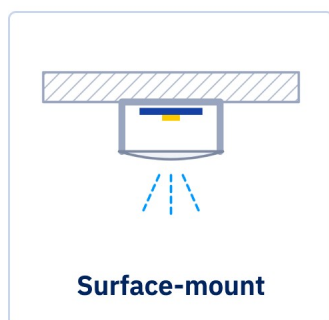
6. Installation with aluminum extrusion

The extrusion dissipates heat, diffuses light and protects the strip: it is the recommended method for architectural work.

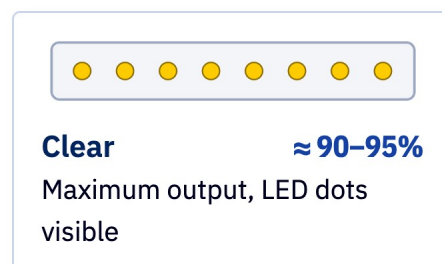
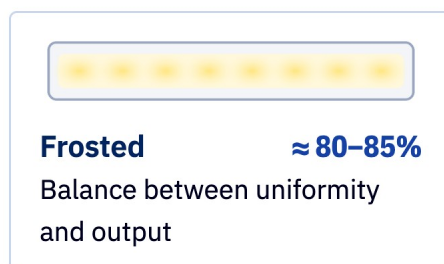
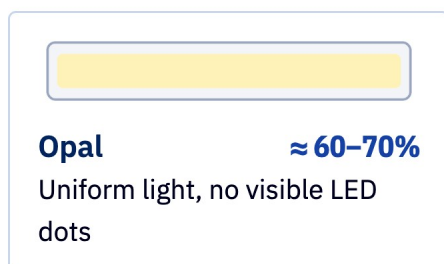


	Profile type	Use
	Surface-mount ex. LS-EXT-SUR-16*13	Under cabinets, shelves, ceilings
	Recessed with flange ex. LS-EXT-ENC-22*13	Drywall or wood, flush finish
	45° corner ex. LS-EXT-SUR-CORNER	Inside corners, angled lighting
	Suspended or wall ex. LS-EXT-SUS-19*19	Direct / indirect lighting

Mounting by type



Choosing the diffuser

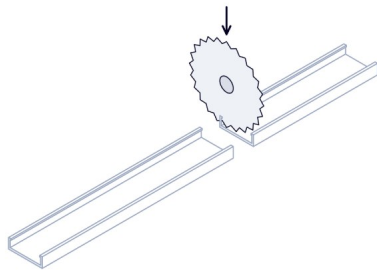


Percentage of light transmitted by the lens — typical values, see the profile datasheet.

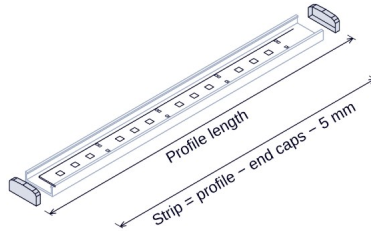
6. Installation with extrusion (continued)

From cutting the profile to final installation, in six steps.

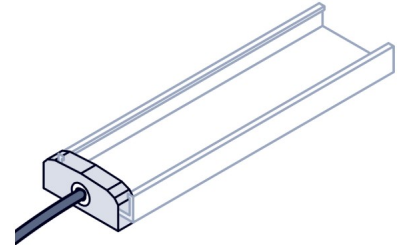
Steps



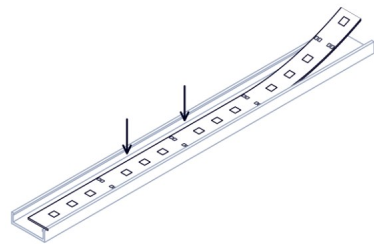
- 1** Cut the profile and diffuser with a miter saw (aluminum blade), then deburr.



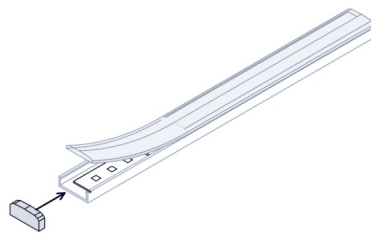
- 2** Strip length = profile – end caps – 5 mm clearance, rounded down to the **nearest cut mark**.



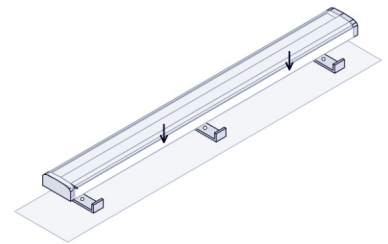
- 3** Drill the end cap or profile for the cable exit and fit a grommet.



- 4** Clean the inside with isopropyl alcohol, then stick the strip centered, pressing firmly.



- 5** Insert the diffuser starting from one end, then fit the end caps.



- 6** Screw the clips 5 cm from each end, then every 30 cm. Test the strip, then snap in the profile.

7. Commissioning and troubleshooting

Before powering up

- ☐ Polarity checked at every connection
- ☐ No continuity between + and – (multimeter)
- ☐ Power supply of correct voltage and sufficient rating (20% margin)
- ☐ Joints insulated with heat-shrink, ends protected
- ☐ Power supply and connections accessible for maintenance

Troubleshooting

Symptom	Likely cause	Solution
Nothing lights up	Reversed polarity, short circuit, supply in protection mode	Measure output voltage, correct + / –, clear the short
One section stays off	Cold solder joint or cut off the mark	Redo the joint; replace the affected segment
Flickering	Undersized supply or loose contact	Recalculate the load (p. 6); redo the connections
Light dims toward the end of the run	Voltage drop	Inject power; increase the cable gauge
Colors swapped (RGB)	Channels miswired	Swap the R, G, B wires at the controller
Strip peeling off	Dirty or porous surface, heat	Clean, add clips or use an extrusion
LEDs turning dark	Insufficient heat dissipation or overvoltage	Mount in aluminum extrusion; check the voltage

Need help?

Datasheets, run-length calculations and technical support

borealux.com