

LED strip manual
liniLED® PCB TW/TWW



liniLED®

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Technical notes

Read the instructions and safety precautions before installation, usage and storage of the products to secure safety of the user and reliability of the product.

- Hand over the instructions to the end user and those responsible for installation and usage.
- Triolight B.V. cannot be held responsible for improper handling, product installation, usage or storage.

Handling

- Handle with care.
- The product may not be modified or converted otherwise than prescribed.
- Products are transported in proper packaging. Products should remain packed until installation.
- Take ESD (Electrostatic Discharge) protection measures when handling liniLED® products.
- The products and their components may not be exposed to mechanical, static loads and other tension/compression other than from the product itself.

Installation

- ⚠ Attention: The power has to be switched off the main power supply or the connection before installation. Not doing so may damage the product.
- Use a suitable LED power supply/driver: 24 V DC constant voltage. Do not drive the product on other voltages than described in their datasheet/products specifications.
- Installation has to be done by a certified professional with knowledge of electrical circuits or a specialised maintenance person known with valid directives.
- General and local construction-, safety- and installation regulations should be respected.
- Use only supplied parts, accessories and required tools as prescribed in the installation manual to guarantee a safe installation and use of the product.
- Products may solely be installed in the areas according to their prescribed IP-rating, IK-rating, temperature range and chemical resistances.
- The LED strip should be installed on an adequate cooling body for proper heat dissipation to ensure smooth operation and long lifetime.
- Do not fasten anything to the product. The same applies when hanging.
- Do not install the product in the following cases:
 - Damage is visible on the product or its cables.
 - The inside of the product is moistened or dirty.
 - The product or its cables have been modified. This could lead to an electrical shock or a short circuit may occur.
- Children may not play unsupervised with electrical products as they cannot judge the dangers in dealing with electrical circuits correctly.
- Use proper mounting surfaces when installing in environments with large variations in temperature and operating lengths more than 2 metres. This should absorb the stress of any difference in expansion.

Operation and use

Solely use the product when it's working correctly. If not, switch the power off immediately and ask an electrical specialist for advice in the following cases:

- Damage is visible on the product and/or the product does not function.
- The product is overheating and/or smoke or steam rises from the product.
- Crackling sounds are noticeable.

Repairs on the installation may only be performed by qualified electricians. Product repairs may solely be done by Triolight B.V.

Cleaning and maintenance

- ⚠ Attention: Disconnect the power before maintenance and cleaning.
- Dust and dirt accumulated over time should be removed from the light emitting surface to assure optimal functioning of the product.
- Paints, solvents and corrosive cleaning chemicals may not contact and thus affect the product.

Environment and waste

- Exterior decorative lighting should only be used after sunset.
- This product may not be treated as household waste. Dispose of the material through the waste recycling of electrical and electronic equipment.

Warranty

This product comes with a 2 year warranty. Warranty void if:

- The installation guide has not been consulted (installation mistake).
- The installation is not done by a certified installer.
- Local rules and guidelines are not respected.
- The invoice cannot be shown and/or has been altered.
- Damage is caused by negligence, abnormal use or improper handling, use, maintenance and/or cleaning of the product.

Technical specifications

	2700 - 6500K TW 1200	2700 - 6500K TW 2000	2700 - 6500K TW 3000	2700 - 6500K TW 4000	2200 - 3500K TWW 1200
Product code [m]	12173	12144	12145	12146	12467
Power (24V DC)	10.3 W/m	17.8 W/m	27.7 W/m	36.4 W/m	11.3 W/m
Power (25V DC)	10.7 W/m	18.5 W/m	28.9 W/m	37.9 W/m	11.8 W/m
CCT ¹³	2700 - 6500K	2700 - 6500K	2700 - 6500K	2700 - 6500K	2200 - 3500K
CRI	>80	>80	>80	>80	>80
Luminous flux ¹	1210 lm/m	2000 lm/m	3000 lm/m	3800 lm/m	1200 lm/m
Luminous efficiency ¹	117 lm/W	112 lm/W	108 lm/W	104 lm/W	106 lm/W
Spool length	Max. 9 m	Max. 4.5 m	Max. 3 m	Max. 2.1 m	Max. 9 m
Section length	75 mm				
LED type	3014				
Number of LEDs	12 per section/160 per metre				
Max. connection length ⁴	9 m	4.5 m	3 m	2.1 m	9 m
Min. operating voltage	23V DC				
Max. operating voltage	25V DC				
Beam angle	120°				
Dimensions	8 x 1.45 mm				
Dimmable	PWM dimming, 24V DC Common Anode				
MacAdam Steps	3 MacAdam ellipse per single channel, resulting in combined values of up to 3.8				
Weight	9 gram per metre				
Expected lifetime	L80/B10 > 60,000 hrs @ Tc = 40°C				
Ingress protection	IP00				
Storage temperature	-40°C ... 85°C				
Operating temperature ²	-30°C ... 85°C				
Minimum bending radius	20 mm				
CCT Warm White	2700 K	2700 K	2700 K	2700 K	2200 K
Power 2700 K	5.3 W/m	9.8 W/m	15.5 W/m	20.8 W/m	6.1 W/m
Flux 2700 K	610 lm/m	1070 lm/m	1615 lm/m	2060 lm/m	600 lm/m
CCT Cold White	6500 K	6500 K	6500 K	6500 K	3500 K
Power 6500 K	5.0 W/m	8.0 W/m	12.2 W/m	15.6 W/m	5.2 W/m
Flux 6500 K	600 lm/m	930 lm/m	1385 lm/m	1740 lm/m	600 lm/m

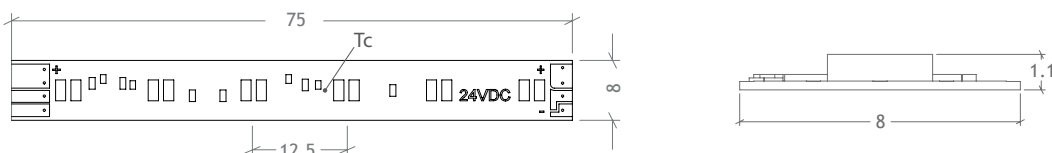
¹ Typical measured values are given, which due to tolerances in components and production process can vary up to 10%.

² Max. connection length between -30°C and -20°C is 70% of the max. connection length (respectively; 6.3, 3.1, 2.0, 1.4 and 6.3 m).

³ Both channels @ 100% = 4000K (TW) / 2700K (TWW)

⁴ UL certification allows an operable length of max 8.4 m for the TWW product.

Product drawings



Maximum cable length TW 1200 - 3000

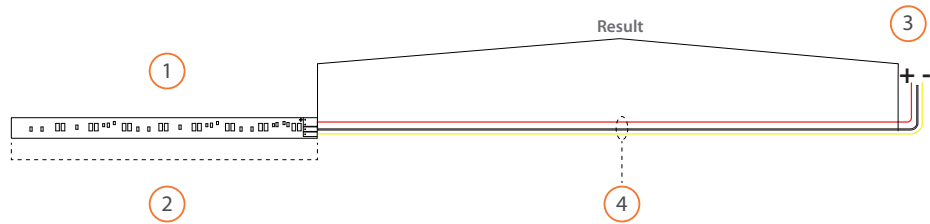
1 = Select colour temperature.

2 = Select LED strip length.

3 = Select output voltage.

4 = Select cable cross section.

Result = Maximum cable length based on the cable thickness and power supply voltage.



1. Colour temperature

2700K-6500K TW 1200

2. LED strip length		1 m		2 m		5 m		9 m	
3. Voltage		24 VDC	25 VDC	24 VDC	25 VDC	24 VDC	25 VDC	24 VDC	25 VDC
4. Cable cross section	0.50 mm ² - 0.035 Ω/m	37.5 m	73.2 m	18.1 m	36.0 m	6.5 m	13.6 m	3.0 m	7.0 m
	0.75 mm ² - 0.023 Ω/m	56.3 m	110.0 m	27.2 m	54.0 m	9.7 m	20.4 m	4.5 m	10.5 m
	1.00 mm ² - 0.018 Ω/m	74.9 m	146.2 m	36.2 m	71.8 m	12.9 m	27.2 m	6.0 m	14.0 m
	1.50 mm ² - 0.012 Ω/m	112.7 m	219.9 m	54.4 m	108.0 m	19.5 m	40.9 m	9.1 m	21.0 m
	2.50 mm ² - 0.007 Ω/m	187.6 m	366.0 m	90.6 m	179.8 m	32.4 m	68.1 m	15.1 m	35.0 m

1. Colour temperature

2700K-6500K TW 2000

2. LED strip length		1 m		2 m		3 m		4.5 m	
3. Voltage		24 VDC	25 VDC	24 VDC	25 VDC	24 VDC	25 VDC	24 VDC	25 VDC
4. Cable cross section	0.50 mm ² - 0.035 Ω/m	20.7 m	41.0 m	9.7 m	19.9 m	6.1 m	12.8 m	3.6 m	8.1 m
	0.75 mm ² - 0.023 Ω/m	31.1 m	61.6 m	14.6 m	29.8 m	9.1 m	19.2 m	5.4 m	12.2 m
	1.00 mm ² - 0.018 Ω/m	41.4 m	81.8 m	19.4 m	39.6 m	12.1 m	25.6 m	7.2 m	16.2 m
	1.50 mm ² - 0.012 Ω/m	62.3 m	123.1 m	29.2 m	59.6 m	18.2 m	38.5 m	10.8 m	24.4 m
	2.50 mm ² - 0.007 Ω/m	103.6 m	204.9 m	48.6 m	99.2 m	30.3 m	64.0 m	18.0 m	40.5 m

1. Colour temperature

2700K-6500K TW 3000

2. LED strip length		1 m		2 m		3 m			
3. Voltage		24 VDC	25 VDC	24 VDC	25 VDC	24 VDC	25 VDC		
4. Cable cross section	0.50 mm ² - 0.035 Ω/m	12.2 m	24.6 m	5.5 m	11.7 m	3.2 m	7.4 m		
	0.75 mm ² - 0.023 Ω/m	18.3 m	37.0 m	8.2 m	17.5 m	4.8 m	11.0 m		
	1.00 mm ² - 0.018 Ω/m	24.4 m	49.2 m	10.9 m	23.3 m	6.4 m	14.7 m		
	1.50 mm ² - 0.012 Ω/m	36.7 m	74.0 m	16.4 m	35.1 m	9.7 m	22.1 m		
	2.50 mm ² - 0.007 Ω/m	61.0 m	123.1 m	27.3 m	58.4 m	16.1 m	36.8 m		

⚠ Note: Calculations are based on a standard connector with 1 metre cable (0.5 mm²).

Maximum cable length TW 4000 - TWW 1200

1. Colour temperature **2700K-6500K TW 4000**

2. LED strip length		1 m		1,5 m		2,1 m			
3. Voltage		24 VDC	25 VDC	24 VDC	25 VDC	24 VDC	25 VDC		
4. Cable cross section	0.50 mm ² - 0.035 Ω/m	9.7 m	19.8 m	6.0 m	12.8 m	3.9 m	8.7 m		
	0.75 mm ² - 0.023 Ω/m	14.5 m	29.7 m	9.1 m	19.2 m	5.9 m	13.1 m		
	1.00 mm ² - 0.018 Ω/m	19.3 m	39.5 m	12.0 m	25.5 m	7.9 m	17.5 m		
	1.50 mm ² - 0.012 Ω/m	29.1 m	59.4 m	18.1 m	38.3 m	11.8 m	26.3 m		
	2.50 mm ² - 0.007 Ω/m	48.4 m	98.9 m	30.1 m	63.8 m	19.7 m	43.7 m		

Tunable Warm White

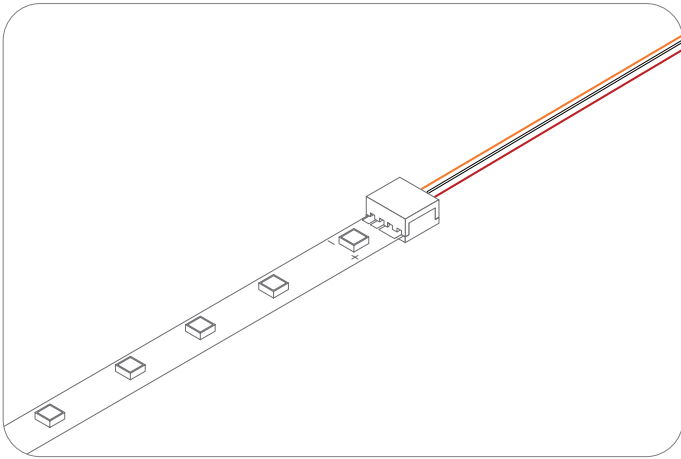
1. Colour temperature **2200K-3500K TWW 1200**

2. LED strip length		1 m		2 m		5 m		9 m	
3. Voltage		24 VDC	25 VDC	24 VDC	25 VDC	24 VDC	25 VDC	24 VDC	25 VDC
4. Cable cross section	0.50 mm ² - 0.035 Ω/m	34.4 m	67.2 m	16.6 m	33.0 m	5.9 m	12.4 m	2.7 m	6.3 m
	0.75 mm ² - 0.023 Ω/m	51.7 m	101.0 m	24.9 m	49.5 m	8.8 m	18.6 m	4.0 m	9.5 m
	1.00 mm ² - 0.018 Ω/m	68.7 m	134.2 m	33.1 m	65.8 m	11.7 m	24.8 m	5.4 m	12.6 m
	1.50 mm ² - 0.012 Ω/m	103.3 m	201.9 m	49.7 m	99.0 m	17.6 m	37.3 m	8.1 m	19.0 m
	2.50 mm ² - 0.007 Ω/m	171.9 m	336.0 m	82.8 m	164.8 m	29.3 m	62.1 m	13.4 m	31.6 m

 **Note:** Calculations are based on a standard connector with 1 metre cable (0.5 mm²).

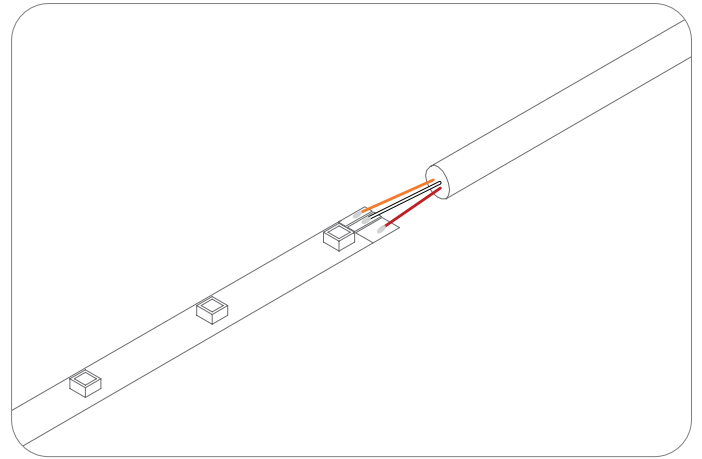
Area advice

Depending on the area where the liniLED® LED strip is installed we offer a range of solutions to cope with external factors. The product portfolio for the liniLED® PCB LED strip includes an IP00 connector.



Indoor environment | (IP00) | liniLED® PCB Connector Set

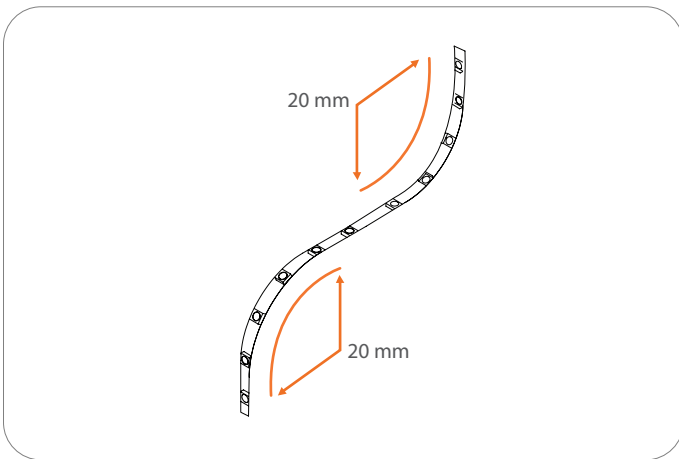
Product code: 11798



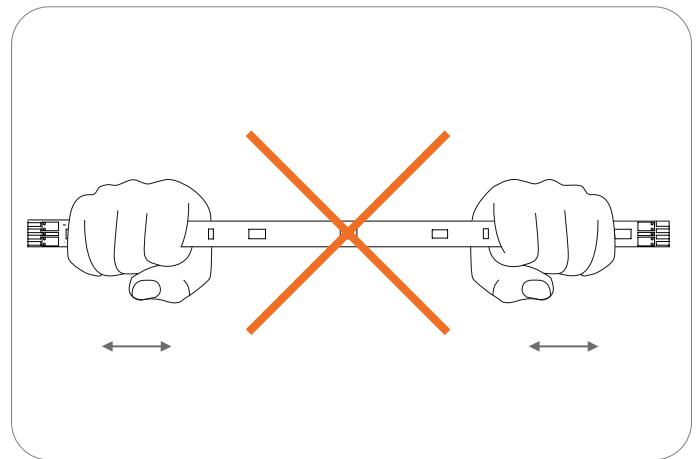
Indoor environment | (IP00)

Solder

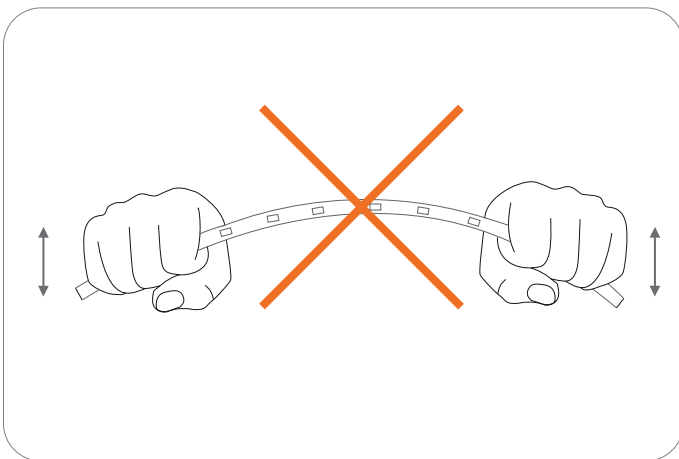
Product care and handling



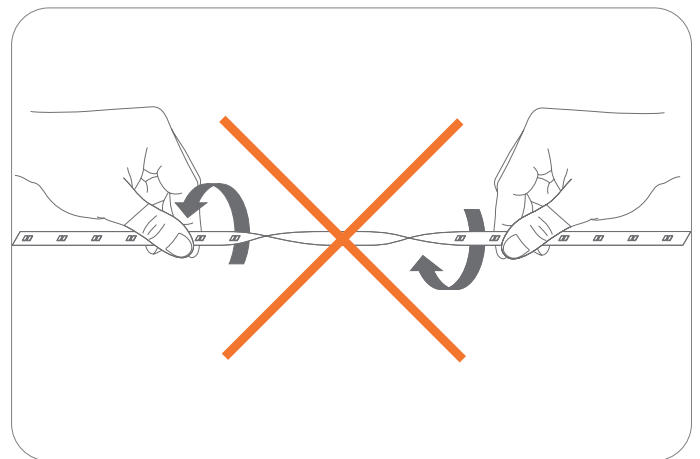
Maximum bending radius is 20 mm. Solely bend up or downward.



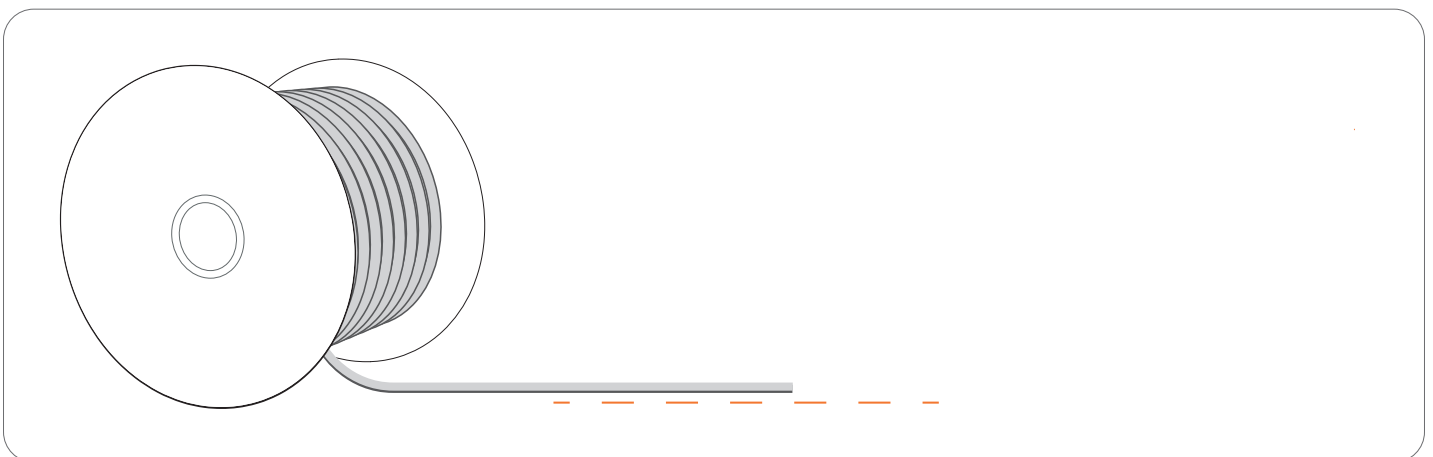
⚠ Do not compress or stretch the LED strip.



⚠ Do not bend the LED strip sideways.

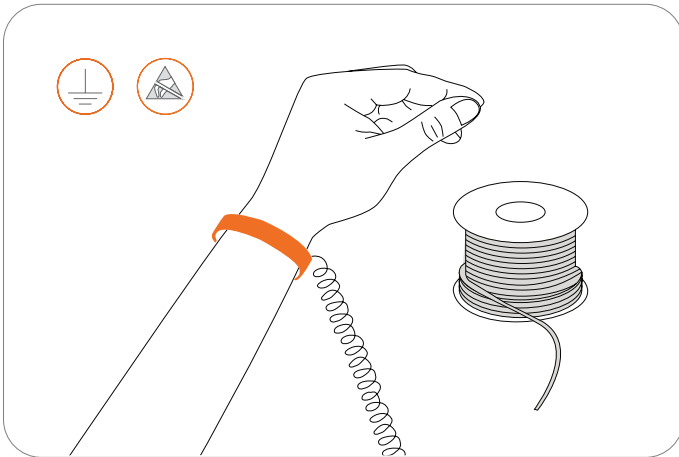


⚠ Do not twist the LED strip.

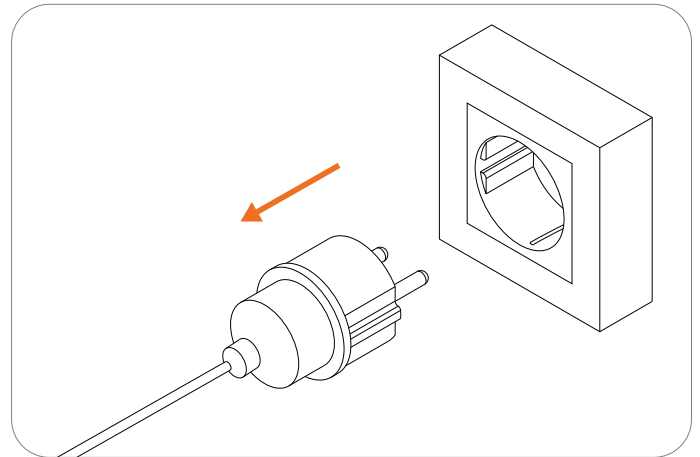


The LED strip has to be unreeled on a horizontal surface at the time of installation. Do not unroll the spool of LED strip before installation.

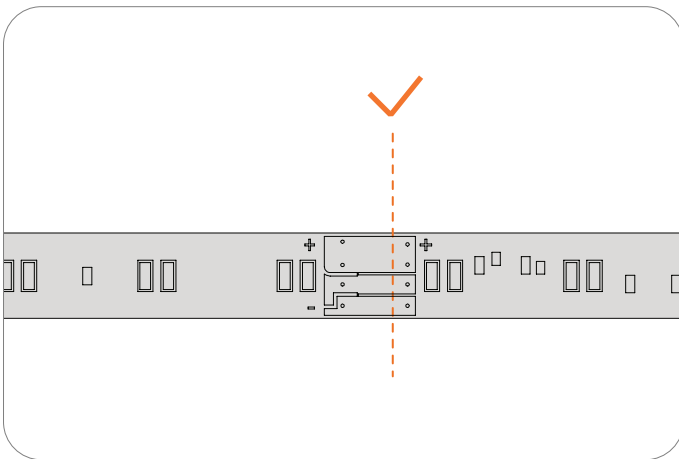
Cutting instructions



Work in an ESD protected environment. Make use of an anti-static strap.



Turn off the power before cutting the LED strip.

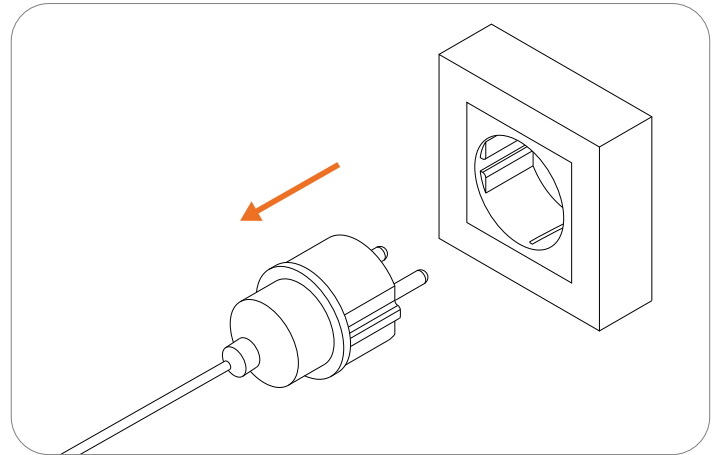


Top view | Only cut on the dotted lines to prevent damaging the LED strip.

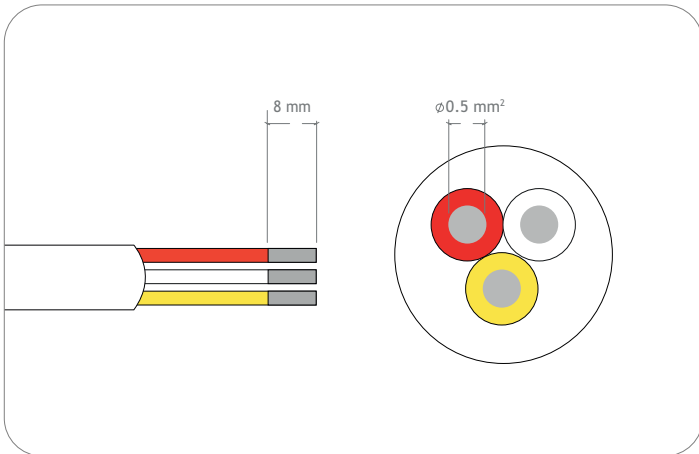
Solder



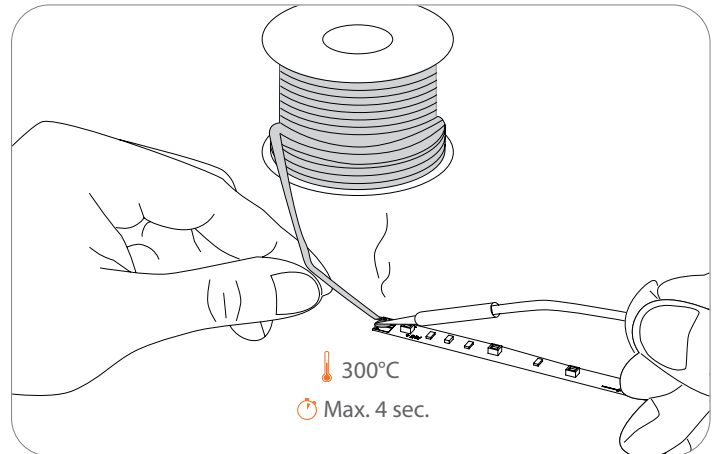
⚠ Work in an ESD protected environment. Make use of an anti-static strap and use lead-free solder.



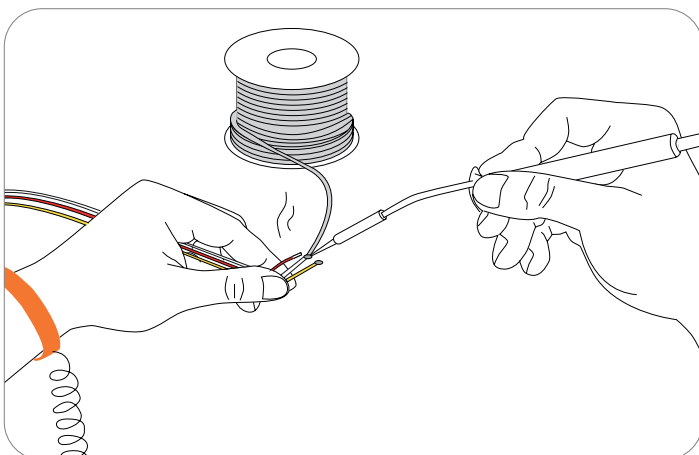
⚠ Turn off the power. Make sure the wires are not under electric current.



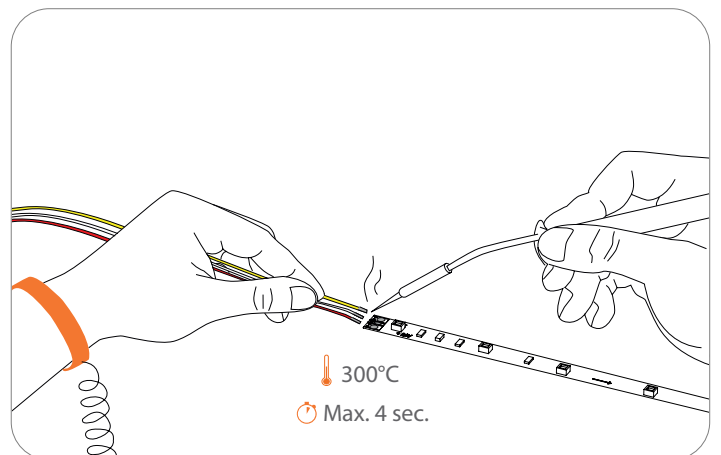
Solder the wires to the PCB. We advise to use a cable with an area not bigger than 0.5 mm^2 .



Pre-solder the connector pads.

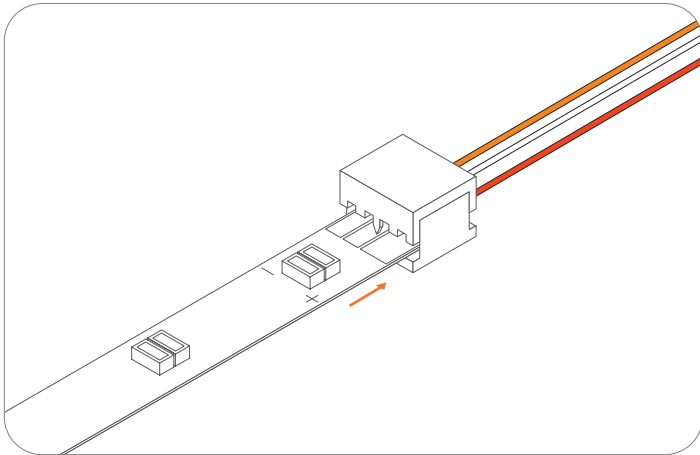


Pre-solder the wires.

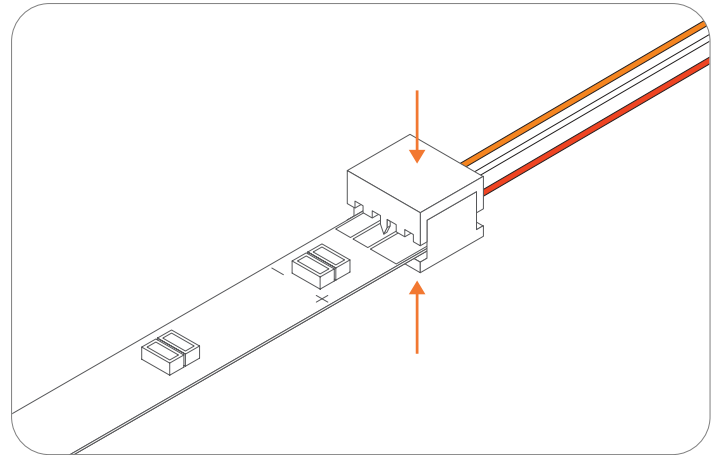


Solder the wires to the connector pads.

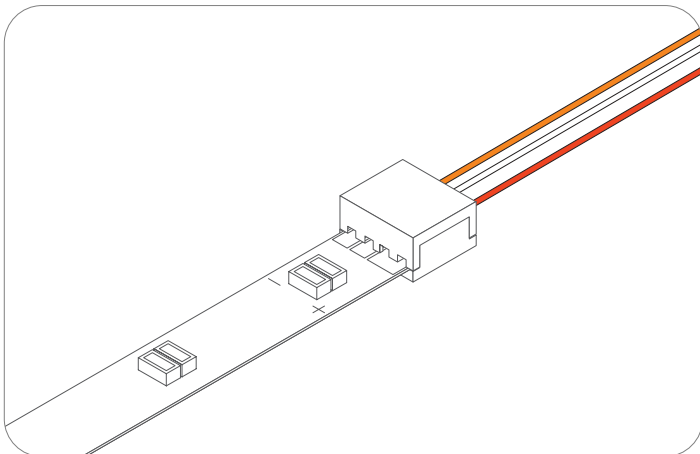
Connect IP00



Open the PCB connector.

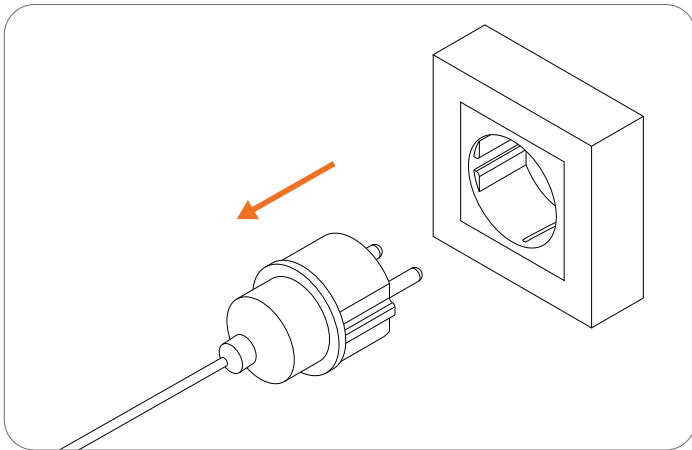


Push the liniLED® PCB LED strip into the connector. Make sure the + is above.

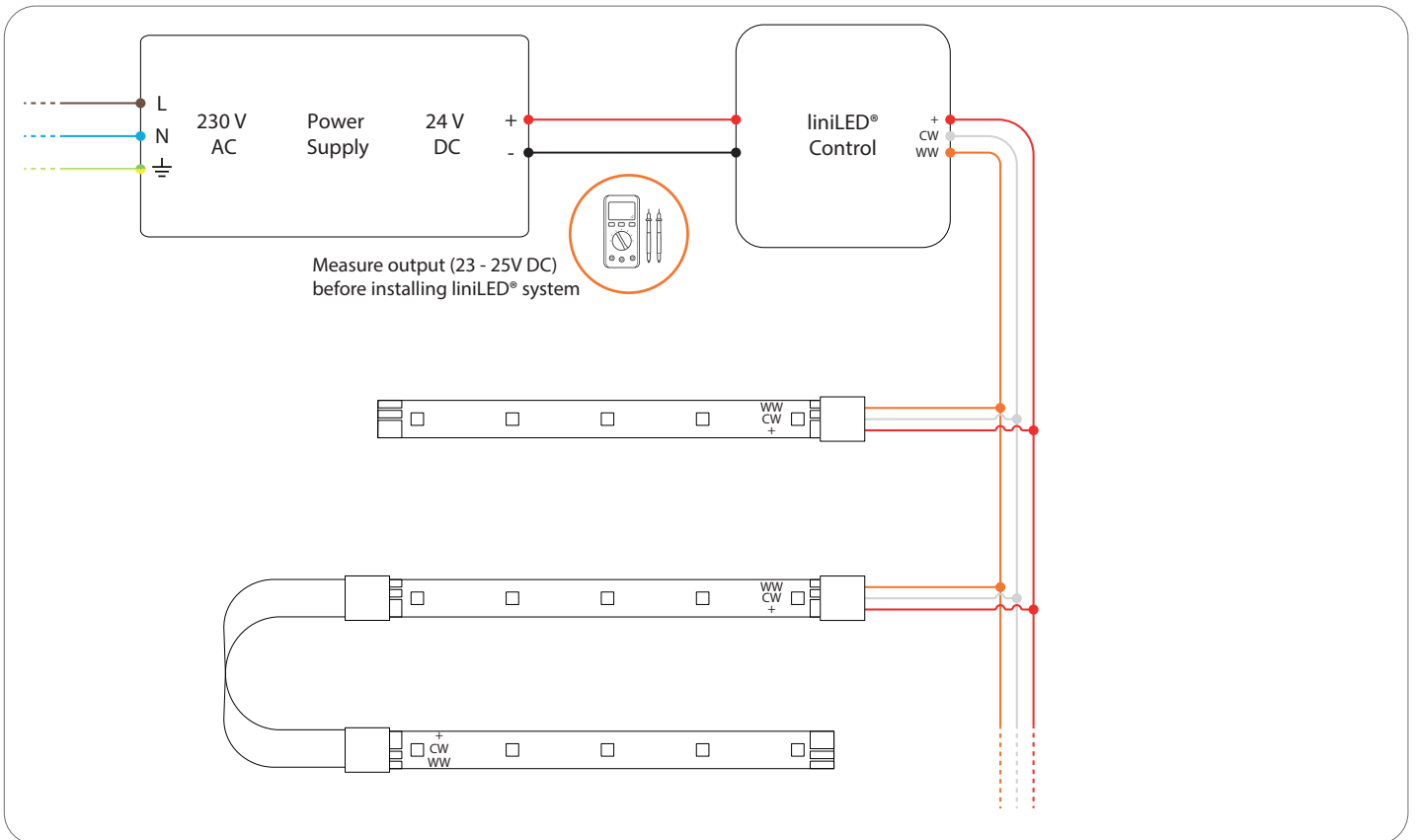


Close the PCB connector.

Power and connection diagram



⚠ Turn off the power. Make sure the wires are not under electric current.



Symbols



Electro Static Discharge (ESD) sensitive device, apply standard ESD precautions when handling the product.



Manufacturer's declaration that the product meets the applicable EC directives.



Restriction of Hazardous Substances (RoHS): product complies with the RoHS directive and each homogeneous material does not exceed the limits for the materials mentioned under the RoHS directive (Pb, Hg, Cd, Cr6+, PBB and PBDE).



Not protected against ingress of solid foreign objects. Not-protected against ingress of water.



Bending of the LED strip is possible with a radius of ≥ 20 millimetres in the specified direction.



Operating voltage of 24 V DC.



Electrical appliance class III: this product is designed to be supplied from an extra-low voltage (≤ 60.0 V DC or ≤ 42.4 V AC).



The binning tolerance of this product is 3 MacAdam.



System guarantee of 5 years when the complete system consist of liniLED® products with the 5 years system warranty logo. Terms & conditions apply.

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