Top Power - White

USP's

Made in Europe
Unique co-extrusion technology (hollow chamber)
IP40 (IP68 with liniLED® Top IP68 Kit)
Very flexible (bend radius > 30 mm)
Dimmable
Effective heat dissipation
Excellent lumen/ Watt ratio
Binning ± 50K
Available in long lengths
UV, frost, seawater & chlorine vapour resistant
Available in various white colours
Extensive range of accessories
Plug & Play

See page 8 for explanation symbols

liniLED® LED strip Top Power - White

The liniLED® Top Power LED strip (IP40/IP68*) is a high quality, flexible LED strip with a unique co-extrusion technology. The combination of high quality and exceptional flexibility, allows for an endless range of indoor and outdoor applications. In addition to the white colours 2400K, 2700K, 3000K, 4000K and 6500K, the liniLED® Top Power LED strips are also available in: Red, Green, Blue and Amber.

* Connect the Top LED strips with the liniLED® Top Connector Sets (1 m 11200 or 5 m 11201). Use the liniLED® Top Extension Cord (11208) to extend. For waterproof (IP68) usage, combine with the liniLED® Top IP68 Kit (11506) and the liniLED® Top IP68 Extension Kit (11507).
In order to power liniLED® products safely, it is absolutely necessary to operate them with an electronically stabilized power supply protected against short circuits, overload and overheating.

To ease the luminaire/ installation approval, electronic control gear for liniLED® products should carry the CE mark. Preferably a controller from the liniLED® Control Range. In Europe, the declarations of conformity must include the following standards: CE: EN 55015, IEC 61547 and IEC 61000-3-2.

Available colours liniLED® Top Power - White

Colour		Description
	Ultra Warm White 2400K	liniLED® Top Power Ultra Warm White 2400K
	Extra Warm White 2700K	liniLED® Top Power Extra Warm White 2700K
	Warm White 3000K	liniLED® Top Power Warm White 3000K
	Natural White 4000K	liniLED® Top Power Natural White 4000K
	Cold White 6500K	liniLED® Top Power Cold White 6500K

Content

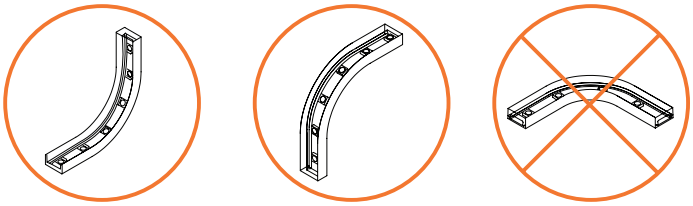
Product codes & characteristics

Ambient temperature = 25 °C

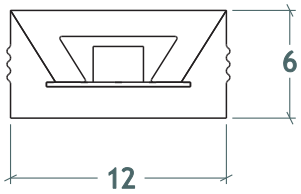
	Ultra Warm White 2400K	Extra Warm White 2700K	Warm White 3000K	Natural White 4000K	Cold White 6500K
Product code [m]	11857	11598	11600	11599	11609
			Product characteristics		
Spool length	max. 50 m				
Section length	20 cm				
LED	Duris™ E 5				
Number of LEDs	7 per section / 35 per metre				
Max. connection length	10 m				
Power (24 V DC)	4.5 W/m	4.6 W/m	4.3 W/m	4.1 W/m	4.1 W/m
Power (25 V DC)	4.7 W/m	4.8 W/m	4.5 W/m	4.3 W/m	4.3 W/m
CRI	> 80	> 80	> 80	> 80	> 80
Luminous flux steady state	318 lm/m	415 lm/m	381 lm/m	411 lm/m	426 lm/m
Luminous efficiency	84 lm/W	90 lm/W	88 lm/W	100 lm/W	103 lm/W
Operation voltage	24 V DC				
Max. operation voltage	25 V DC				
Beam angle	110°				
Dimensions	12 x 6 mm				
Dimmable	PWM dimming, 24 V DC Common Anode				
Binning	± 50K				
Mac adam	2 steps				
Weight	70 gram per metre				
Material	PVC (for chemical resistance please visit our website www.liniLED.com)				
Expected lifetime	B50/L70 > 50,000 hours @ T_c = 40 °C				
Degree of protection (IP)	IP40 (IP68 with liniLED® Top IP68 Kit)				
Degree of protection (IK)	IK08				
Storage temperature	-20 °C .. 55 °C				
Operation temperature	-30 °C .. 55 °C[1]				
Minimal bending radius	30 mm				

[1] Max. connection length between -20 °C and -30 °C is 7 metres.

Product drawings



Bending radius



Dimensions

Drawings and dimensions are only to be used as indication, please contact Triolight B.V. for exact measurements and tolerances. Dimensions are displayed in mm.

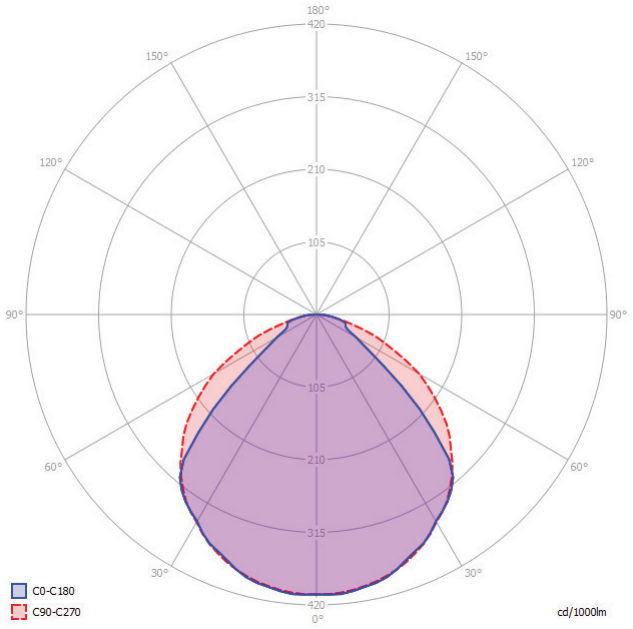
Photometric information

In the process of lighting design and calculations, the luminous flux and beam angle alone are not enough information to create a representative and realistic calculation or render. Therefore, a complete set of photometric information of the liniLED® LED strips is available on the liniLED® website (www.liniLED.com). The photometric information is available as download for each fixture, found under the downloads tab.

The information on the website is available in two different file formats:

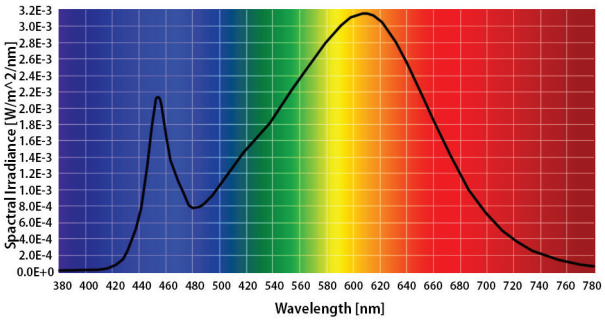
- Eulumdat (*.ldt)
- IES LM-63-1995 (*.ies)

There is one set of photometric files for a one metre length of LED strip and one for a segment length, that corresponds to the cutting length of each LED strip type. Using the one metre data, quick calculations and long lengths can be simulated with photometric software. The segment data allows very detailed simulations, even curved lines can be approached in high detail.



Top Power White LED strips

This light diagram indicates the beam in the C0-C180 plane (perpendicular to the length direction of the LED strip) and in the plane perpendicular to that, the C90-C270 plane (along the length direction of the LED strip).



3000K

Spectral power distribution

Power consumption

To power the liniLED® LED strips and lighting fixtures, a power supply from the liniLED® Power assortment can be selected. Selection of the correct power supply must be done by taking the total requested power and the environment into account.

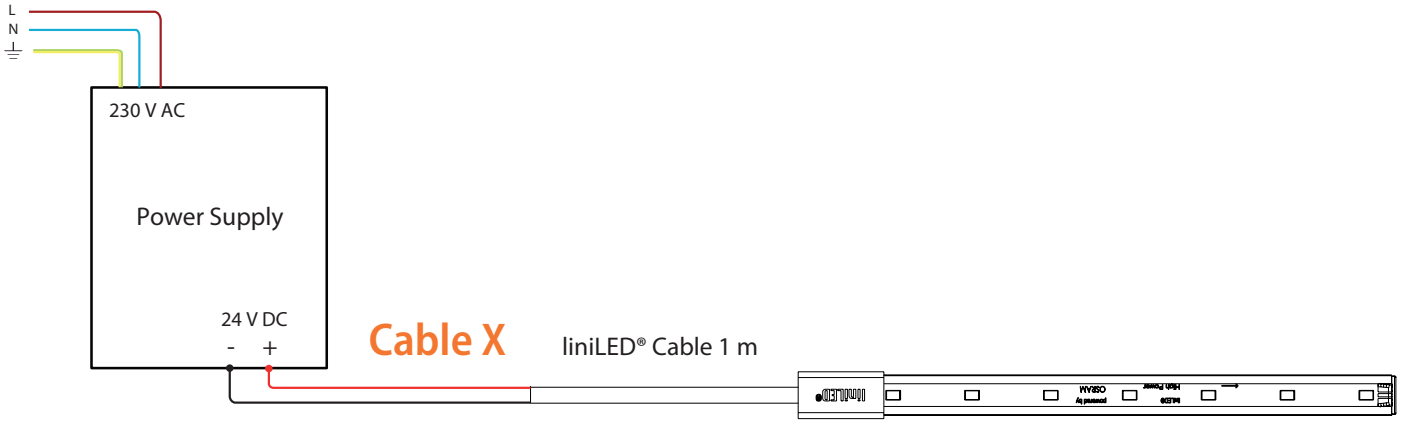
The total power consumption can be calculated by summing the requested power of all connected products.
To calculate the power consumption of a single length of LED strip, use the equation below. The typical equation is valid if the product is supplied by a 24 V DC constant voltage power supply. If the output voltage of a power supply is increased, the power consumption will increase with the same ratio and needs to be corrected by using the optional part of the equation found between brackets.

$$P_{STRIP} = P_{PRODUCT} \times X_{LENGTH} \times 110\% \left[\times \frac{U_{SUPPLY}}{24} \right]$$

P_{STRIP}	Calculated power consumption of one LED strip in Watt
$P_{PRODUCT}$	Typical power consumption in Watt per metre of the selected LED strip This value can be found under 'Product characteristics' on page 2
X_{LENGTH}	Length of the connected LED strip in metres
110%	Safety margin to buffer differences over all production batches
	Optional:
U_{SUPPLY}	Set supply voltage of the power supply in Volt
24	Nominal supply voltage of liniLED® in Volt

Power supply

The liniLED® Power Supplies are available for different environments. For usage in normal dry environments (where the use of an open-frame supply is omitted) the standard liniLED® IP20 Power Supplies can be used. If the environment requires special protection against moisture or even protection against submersion, the selection of IP64, IP65 or IP67 power supplies can be used depending on the environment. All of the IP65 and IP67 Power Supplies are SELV equivalent and can be used if SELV equivalent power supplies are required.



Visualisation cable calculation

Cable selection

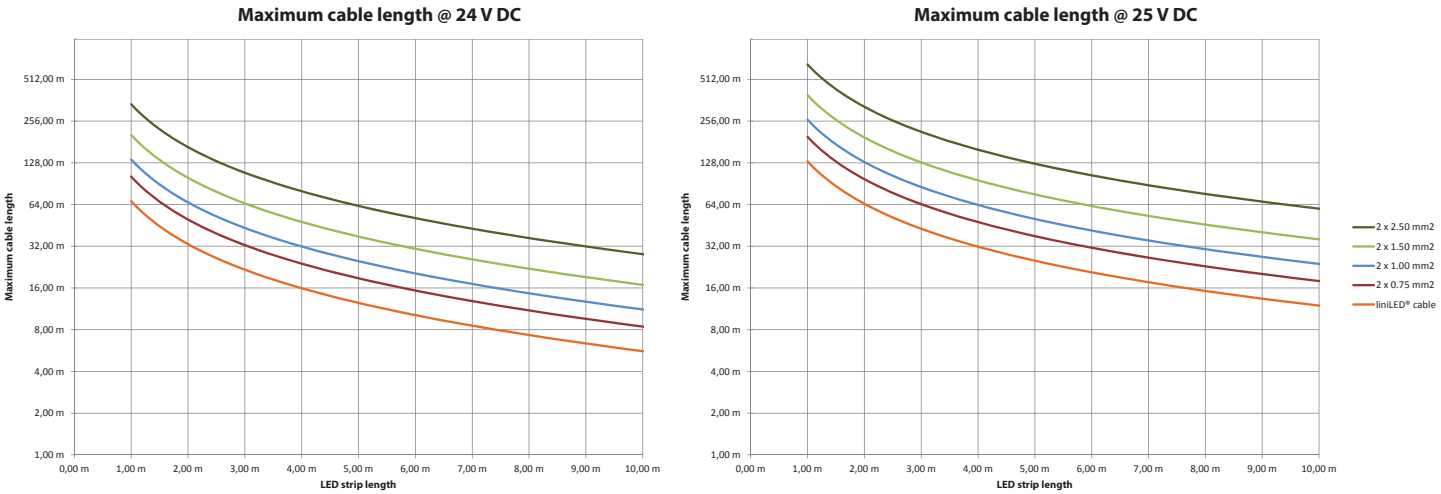
The liniLED® LED strips need a minimum voltage at the beginning of the LED strip to function according to the specifications.
The table below gives an indication of the maximum cable length based on the cable thickness and power supply voltage.
The connection between the cable and LED strip is with a liniLED® Top connector with a cable length of 1m (Product code: 11200).

In case the required length is larger than the length mentioned in this table, the supply voltage is different or if a detailed wire plan with branches is planned, please contact your distributor for a detailed cable calculation.

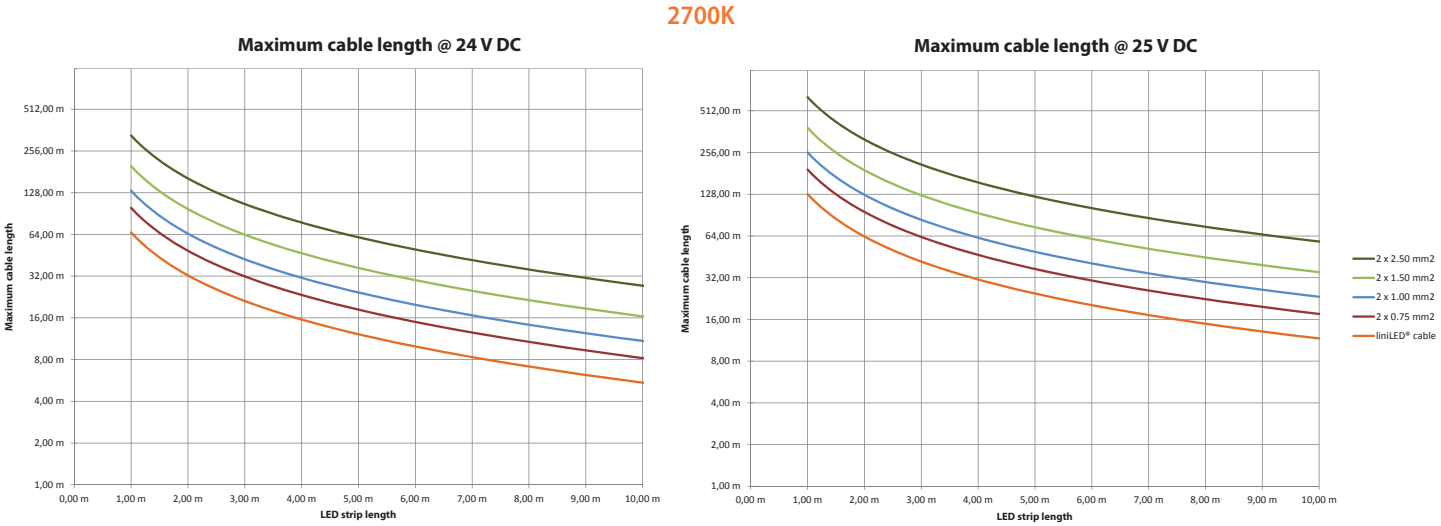
Cable X information	LED strip length	Max. cable length 2400K		Max. cable length 2700K		Max. cable length 3000K		Max. cable length 4000K / 6500K	
		@ 24 V DC	@ 25 V DC	@ 24 V DC	@ 25 V DC	@ 24 V DC	@ 25 V DC	@ 24 V DC	@ 25 V DC
liniLED® cable (2 x 0.50 mm²) *0.035 Ω/m*	1 m	67.58 m	130.94 m	66.08 m	128.07 m	70.78 m	137.09 m	74.30 m	143.84 m
	5 m	12.49 m	25.16 m	12.19 m	24.58 m	13.13 m	26.39 m	13.83 m	27.74 m
	10 m	5.60 m	11.93 m	5.45 m	11.65 m	5.92 m	12.55 m	6.27 m	13.22 m
2 x 0.75 mm² *0.023 Ω/m*	1 m	101.66 m	196.98 m	99.41 m	192.65 m	106.48 m	206.23 m	111.77 m	216.38 m
	5 m	18.78 m	37.85 m	18.33 m	36.98 m	19.75 m	39.70 m	20.80 m	41.73 m
	10 m	8.42 m	17.95 m	8.20 m	17.52 m	8.91 m	18.88 m	9.43 m	19.90 m
2 x 1.00 mm² *0.018 Ω/m*	1 m	135.17 m	261.89 m	132.17 m	256.14 m	141.57 m	274.19 m	148.61 m	287.69 m
	5 m	24.98 m	50.32 m	24.38 m	49.17 m	26.26 m	52.78 m	27.66 m	55.48 m
	10 m	11.20 m	23.87 m	10.90 m	23.30 m	11.84 m	25.10 m	12.54 m	26.45 m
2 x 1.50 mm² *0.012 Ω/m*	1 m	203.33 m	393.96 m	198.83 m	385.31 m	212.97 m	412.46 m	223.55 m	432.77 m
	5 m	37.57 m	75.70 m	36.67 m	73.97 m	39.50 m	79.40 m	41.61 m	83.46 m
	10 m	16.85 m	35.91 m	16.40 m	35.05 m	17.82 m	37.76 m	18.87 m	39.80 m
2 x 2.50 mm² *0.007 Ω/m*	1 m	338.41 m	655.66 m	330.91 m	641.27 m	354.45 m	686.46 m	372.05 m	720.26 m
	5 m	62.53 m	125.98 m	61.03 m	123.11 m	65.74 m	132.14 m	69.26 m	138.90 m
	10 m	28.05 m	59.78 m	27.30 m	58.34 m	29.65 m	62.85 m	31.41 m	66.23 m

Maximum cable length

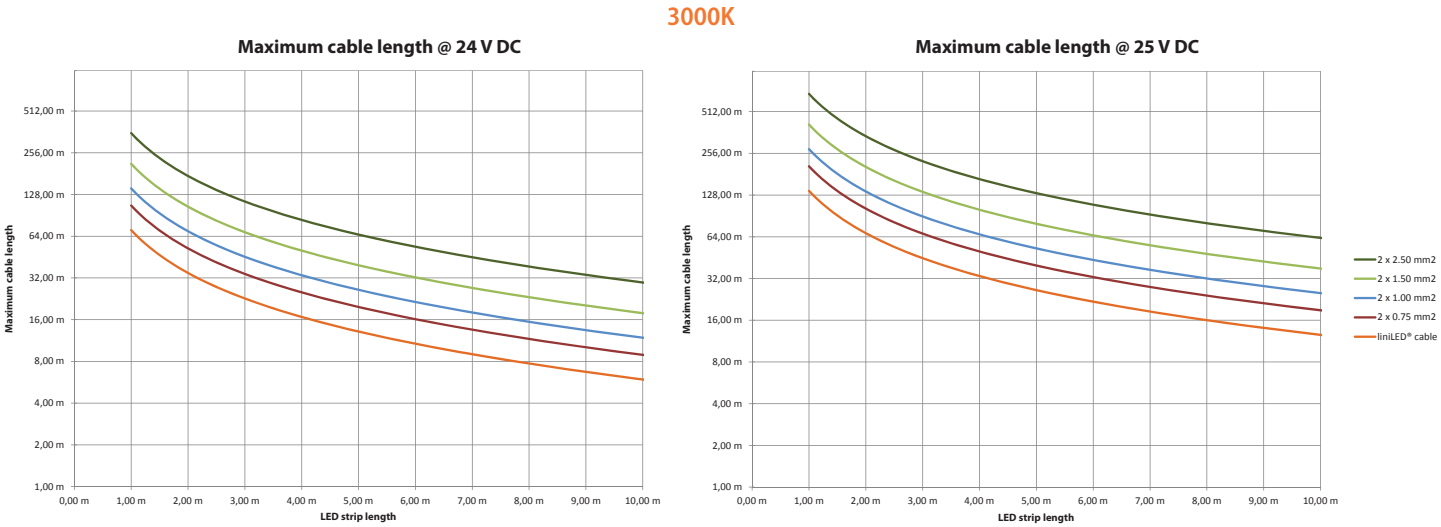
2400K



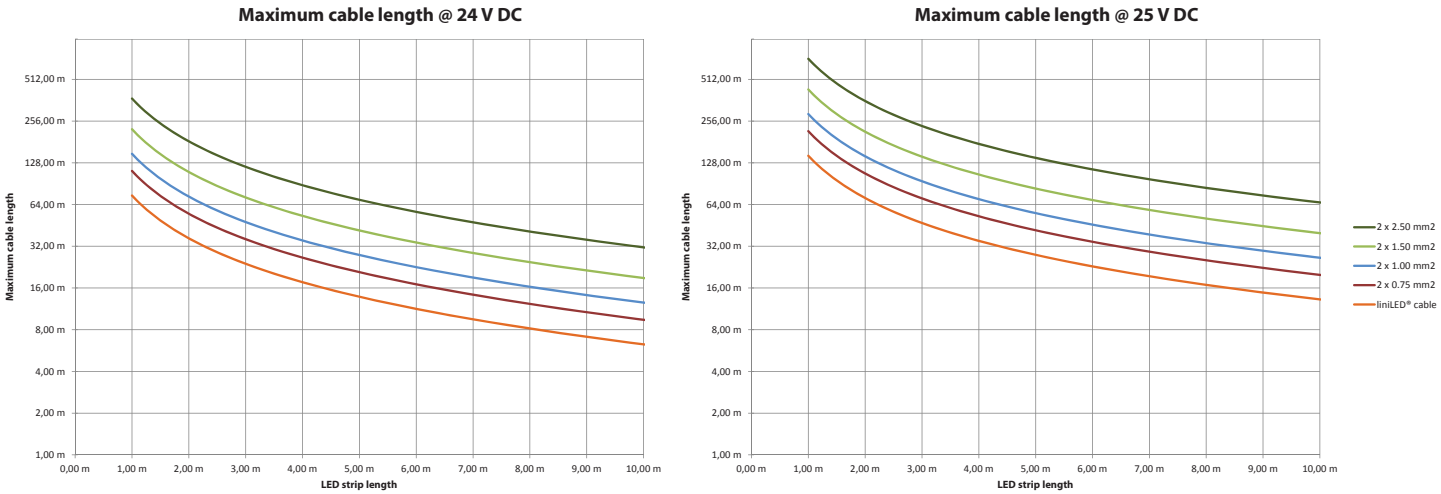
2700K



3000K

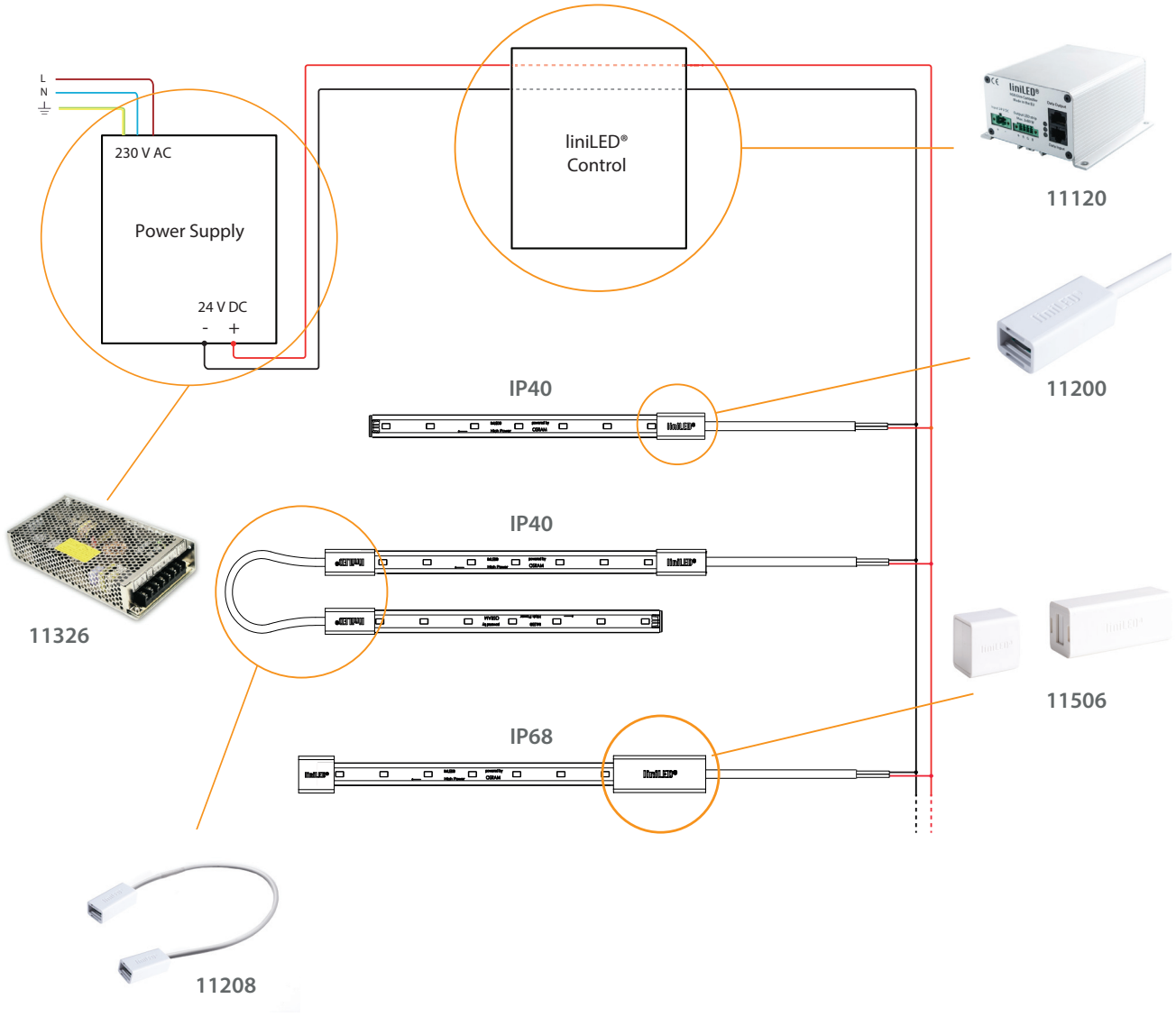


4000K / 6500K



Connection diagram

The LED strip can be connected with a connector set as shown in the diagram.



Symbols

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

Suitable for mounting on all surfaces and suitable to cover with insulating material.

Passed glow wire test at 850 degrees Celsius.
Global European regulations specify 650 degrees Celsius by default.

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, Cr^{6+}, PBB and PBDE).

IP68 in combination with the liniLED® Top Connector Set and the liniLED® IP68 Kit, otherwise IP40.

Protected against impact energy of 5 joules.

Bending of the LED strip is possible with a radius of ≥ 30 millimetres in the specified direction.

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).

Product is resistant against ultraviolet (UV) light or sunlight.
Non-UV resistant products can degrade or discolor fast when exposed to UV light.

Product can be cleaned with normal cleaning agents as specified under '*LED strip chemical resistance*'.

This product can be stored and used below 0 degrees Celsius. Verify the minimum storage and operation temperature under *'Product characteristics'* for the lowest temperature allowed.

This product can be applied in seawater and its environment. Elements in seawater will have no harmful effect on the product. For chemical specifications see *'LED strip chemical resistance'*. Verify the IP rating for proper use.

This product can be applied inside swimming pools and their environment. Elements in the water -for water treatment- will have no harmful effect on the product. For chemical specifications of these elements *'LED strip chemical resistance'*. Verify the IP rating for proper use.

This product needs to be disposed or separated from normal household waste so it can be recycled.

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