

## Datasheet

liniLED® Top Diffuse 12

V0917





# liniLED®

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## Top Diffuse 12

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## USP's

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Made in Europe  
Unique diffuse co-extrusion technology (hollow chamber)  
IP68 + >50 m/ IP69 K  
Flexible: bend radius > 150 mm  
Dimmable  
Effective heat dissipation  
Excellent lumen/ Watt efficacy  
Binning  $\pm$  50k  
UV, frost, seawater & chlorine vapour resistant  
Available in various white colours  
An extensive range of accessories  
Plug & Play

## Product information

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The liniLED® Top Diffuse 12 LED strips (IP68\*) are high quality, flexible LED strips with a unique, diffuse co-extrusion technology. The combination of high quality and exceptional flexibility, allows for an endless range of indoor and outdoor applications. The liniLED® Top Diffuse 12 LED strips have a width of 12 mm and are available in 2400K, 2700K, 3000K, 4000K and 6500K.






\*The liniLED® Top Diffuse 12 LED strips are pre-assembled with a special mirror welded connector for instant waterproof usage.

**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. For the latest version of this datasheet visit our website: [www.liniLED.com](http://www.liniLED.com)

## Available colours

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Colour	Description
	liniLED® Top Diffuse 12 Ultra Warm White 2400K
	liniLED® Top Diffuse 12 Extra Warm White 2700K
	liniLED® Top Diffuse 12 Warm White 3000K
	liniLED® Top Diffuse 12 Natural White 4000K
	liniLED® Top Diffuse 12 Cold White 6500K

<sup>1</sup> Max. connection length between -20 °C and -30 °C is 7 metres.

<sup>2</sup> Productname CCT refers to internal PCB for typical CCT output refer to Datasheet table.

<sup>3</sup> In combination with the liniLED® Mirror Welded Connector.

## Product codes & characteristics

Colour	UWW 2400K	EWV 2700K	WW 3000K	NW 4000K	CW 6500K
Product code [m]	11829	11830	11831	11832	11833
Power (24 V DC)	9.1 W/m	9.6 W/m	9.0 W/m	9.0 W/m	9.0 W/m
Power (25 V DC)	9.5 W/m	10.0 W/m	9.4 W/m	9.4 W/m	9.4 W/m
Typical CCT <sup>2</sup>	2269K	2534K	2828K	3700K	6201K
CRI	> 88	> 91	> 90	> 92	> 92
Luminous flux steady state	167 lm/m	185 lm/m	169 lm/m	181 lm/m	184 lm/m
Luminous efficiency	18 lm/W	19 lm/W	19 lm/W	20 lm/W	20 lm/W
Spool length	max. 10 m				
Section length	5 cm				
LED	Duris™ E 3				
Number of LEDs	6 per section / 120 per metre				
Max. connection length	10 m				
Operation voltage	24 V DC				
Max. operation voltage	25 V DC				
Beam angle	110°				
Dimensions	12 x 18 mm				
Dimmable	PWM dimming, 24 V DC Common Anode				
Binning	± 50K				
Mac adam	2 steps				
Weight	240 gram per metre				
Material	PVC (for chemical resistance please visit our website <a href="http://www.liniLED.com">www.liniLED.com</a> )				
Expected lifetime	B50/L70 > 50,000 hours @ T <sub>c</sub> = 40 °C				
Degree of protection (IP)	IP68+ > 50 m/ IP69 K <sup>3</sup>				
Degree of protection (IK)	IK08				
Storage temperature	-20 °C .. 55 °C				
Operation temperature	-30 °C .. 55 °C <sup>1</sup>				
Minimal bending radius	150 mm				

## Photometric information

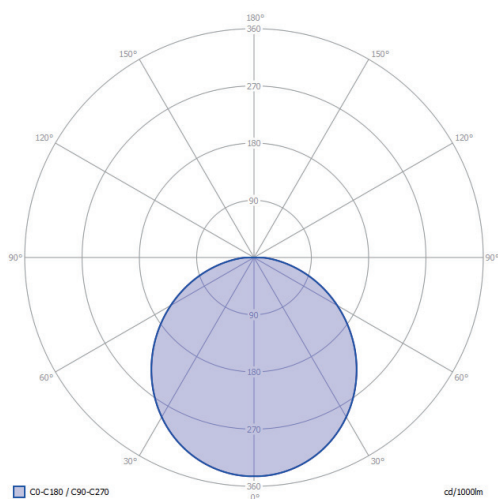
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In the process of lighting design and calculations, the luminous flux and beam angle alone are not enough information to create a representative and realistic calculation or render. Therefore, a complete set of photometric information of the liniLED® LED strips is available on the liniLED® website ([www.liniLED.com](http://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)

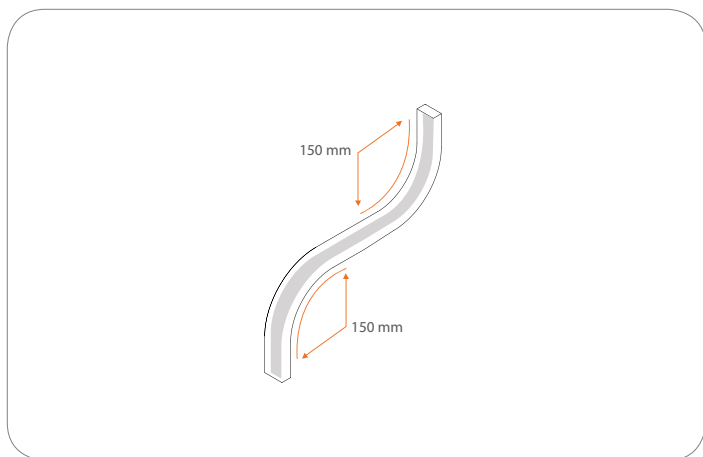
There is one set of photometric files for a one metre length of LED strip and one for a segment length, that corresponds to the cutting length of each LED strip type. Using the one metre data, quick calculations and long lengths can be simulated with photometric software. The segment data allows very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



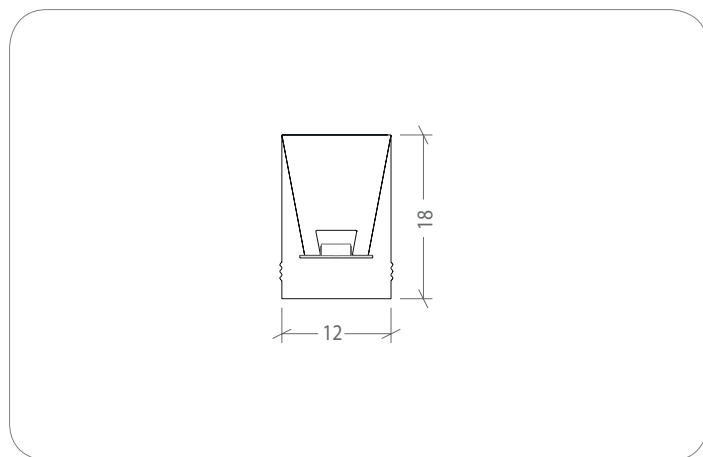
liniLED® Top Diffuse 18 2400 t/m 6500K

## Product drawings

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Bending direction

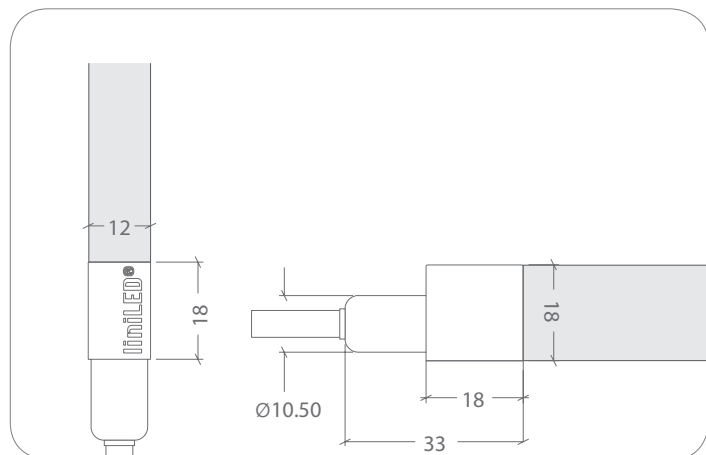


LED strip

## Connectors

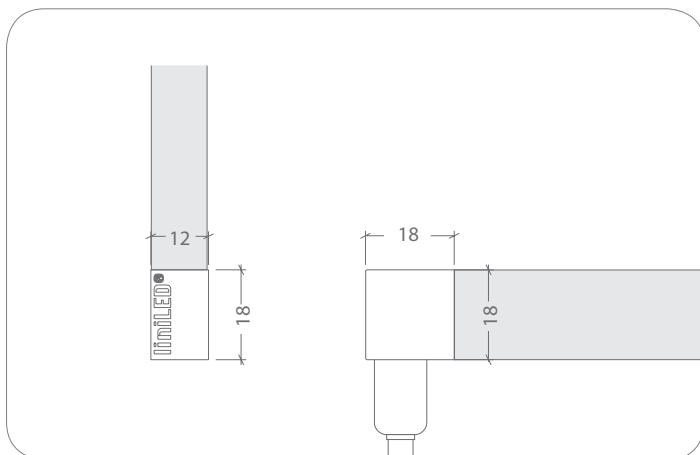
The liniLED® Diffuse 12 connectors are pre-assembled.

### Angle

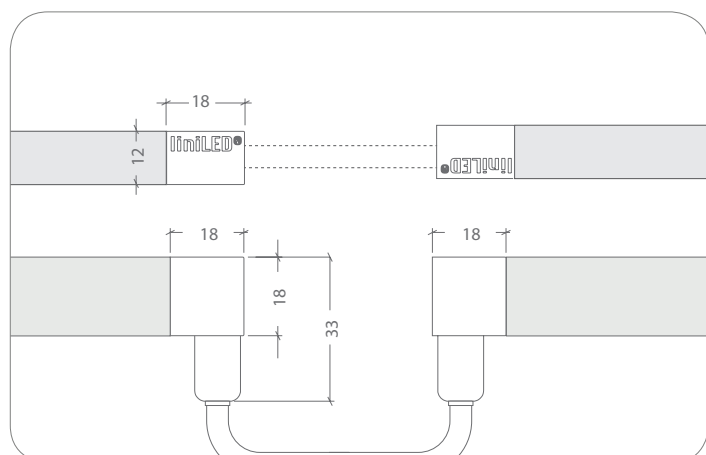


11260 liniLED® Diffuse Connector 90° Angle (IP68+ / IP69K)

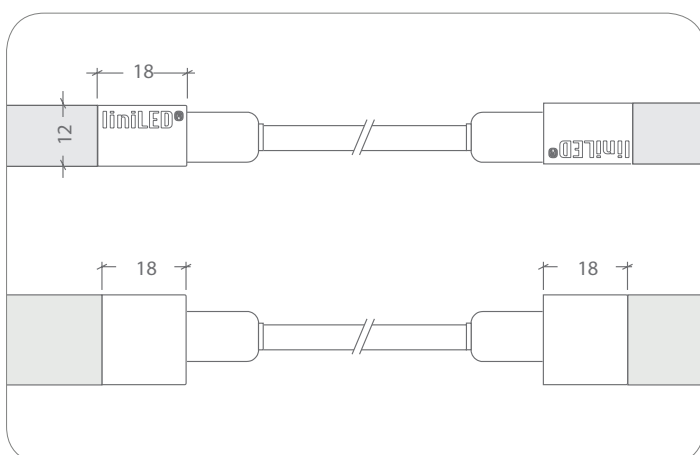
### Straight



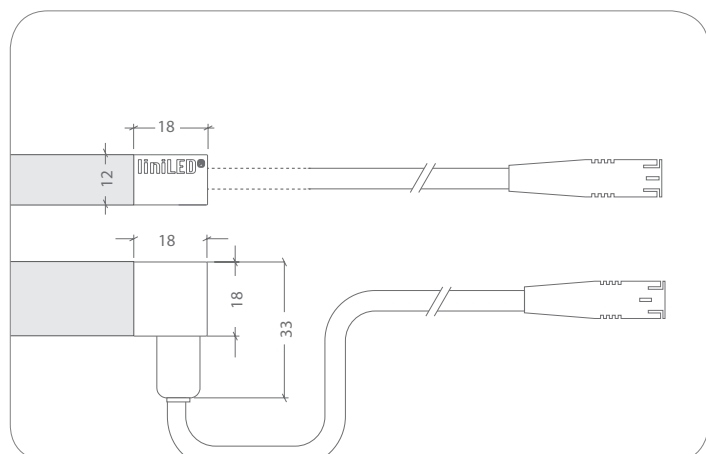
11270 liniLED® Diffuse Connector Straight (IP68+ / IP69K)



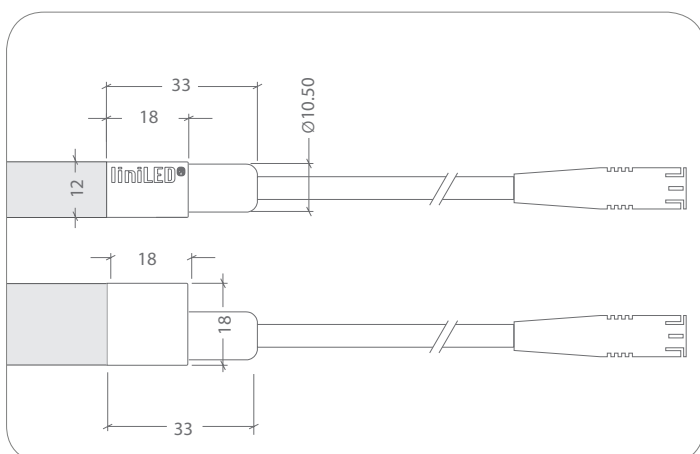
11277 liniLED® Diffuse Extension Cord Angle Male 12 (IP68+ / IP69K)



11279 liniLED® Diffuse Extension Cord Straight Male 12 (IP68+ / IP69K)



11284 liniLED® Diffuse Connector Angle Male 12 (IP67)



11286 liniLED® Diffuse Connector Straight Male 12 (IP67)

## Cable selection

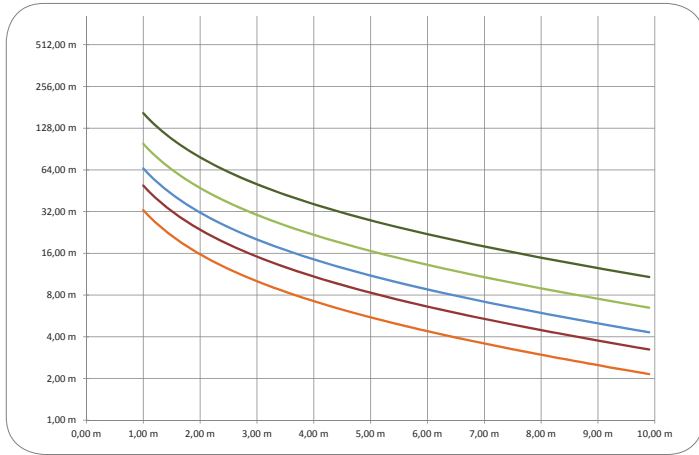
The liniLED® LED strips need a minimum voltage at the beginning of the LED strip to function according to the specifications. The table below gives an indication of the maximum cable length based on the cable thickness and power supply voltage. The connection between the cable and LED strip is with a liniLED® Mirror Welded Connector.

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.

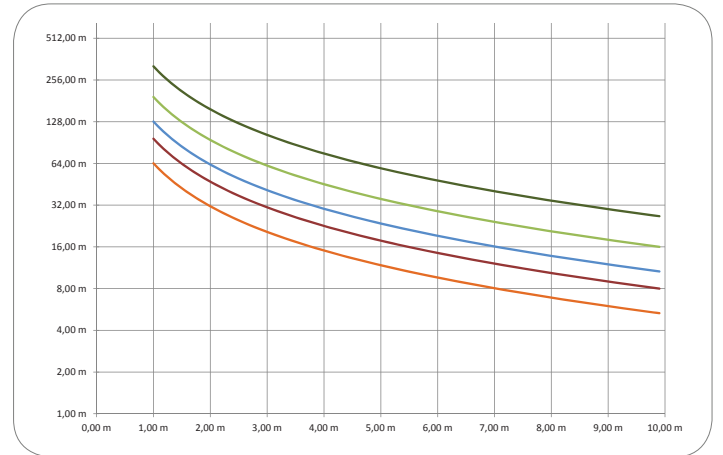
Cable X information	LED strip	Max. cable length 2400, 2700K		Max. cable length 3000K		Max. cable length 4000, 6500K	
		@ 24 V DC	@ 25V DC	@ 24 V DC	@ 25V DC	@ 24 V DC	@ 25V DC
liniLED® cable (2 x 0.50 mm <sup>2</sup> ) 0.035 Ω/m	1 m	33.53 m	65.57 m	36.05 m	70.40 m	34.75 m	67.90 m
	5 m	16.12 m	32.14 m	17.38 m	34.56 m	16.73 m	33.31 m
	10 m	5.68 m	12.08 m	6.18 m	13.05 m	5.92 m	12.55 m
liniLED® cable (2 x 0.75 mm <sup>2</sup> ) 0.023 Ω/m	1 m	50.45 m	98.64 m	54.23 m	105.91 m	52.27 m	102.15 m
	5 m	24.25 m	48.35 m	26.15 m	51.99 m	25.17 m	50.10 m
	10 m	8.54 m	18.18 m	9.30 m	19.63 m	8.91 m	18.88 m
liniLED® cable (2 x 1.00 mm <sup>2</sup> ) 0.018 Ω/m	1 m	67.07 m	131.14 m	72.11 m	140.81 m	69.50 m	135.81 m
	5 m	32.25 m	64.29 m	34.77 m	69.12 m	33.46 m	66.62 m
	10 m	11.36 m	24.17 m	12.36 m	26.10 m	11.84 m	25.10 m
liniLED® cable (2 x 1.50 mm <sup>2</sup> ) 0.012 Ω/m	1 m	100.90 m	197.28 m	108.47 m	211.82 m	104.55 m	204.30 m
	5 m	48.51 m	96.71 m	52.30 m	103.98 m	50.34 m	100.21 m
	10 m	17.08 m	36.36 m	18.60 m	39.27 m	17.82 m	37.76 m
liniLED® cable (2 x 2.50 mm <sup>2</sup> ) 0.007 Ω/m	1 m	167.92 m	328.33 m	180.53 m	352.53 m	174.01 m	340.01 m
	5 m	80.74 m	160.95 m	87.05 m	173.05 m	83.79 m	166.79 m
	10 m	28.44 m	60.52 m	30.96 m	65.36 m	29.65 m	62.85 m



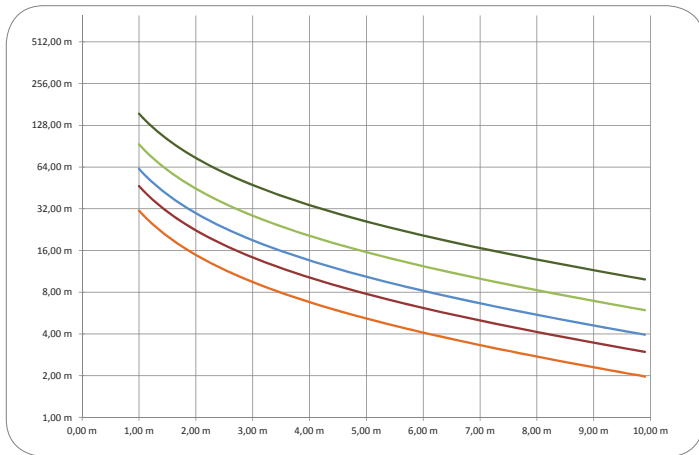
## Maximum cable length



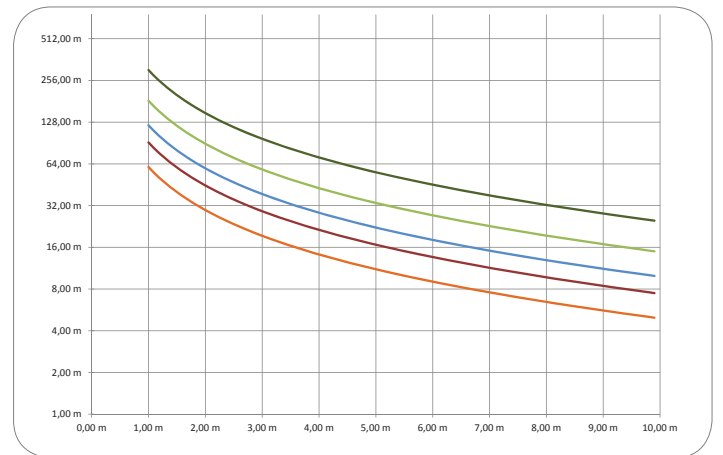
2400K @ 24V DC



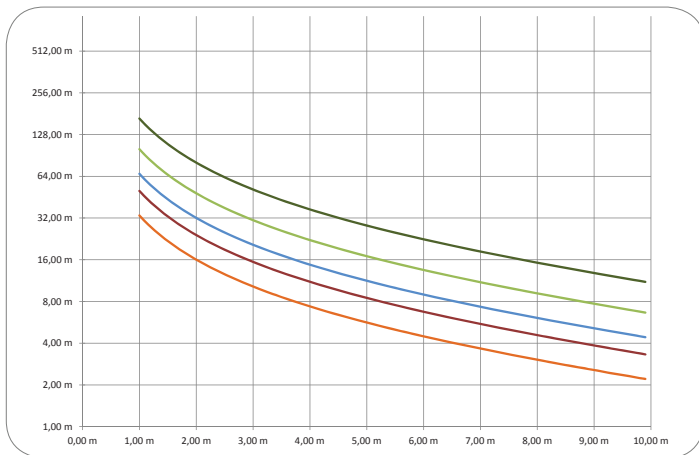
2400K @ 25V DC



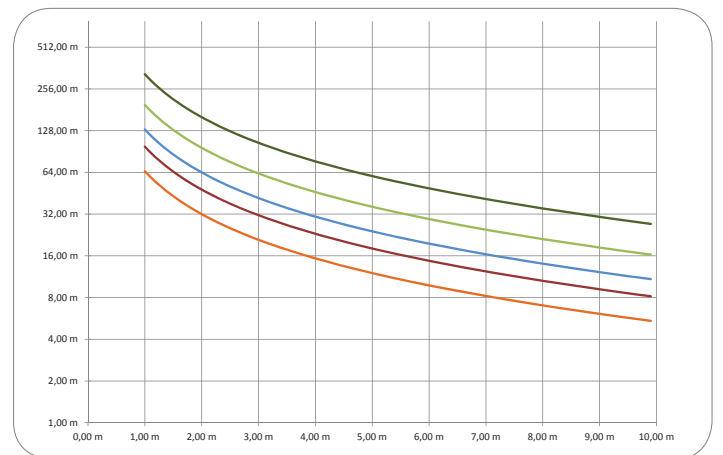
2700K @ 24V DC



2700K @ 25V DC



3000K/ 4000K/ 6500K @ 24V DC



3000K/ 4000K/ 6500K @ 25V DC

## Power consumption & cable calculations

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.

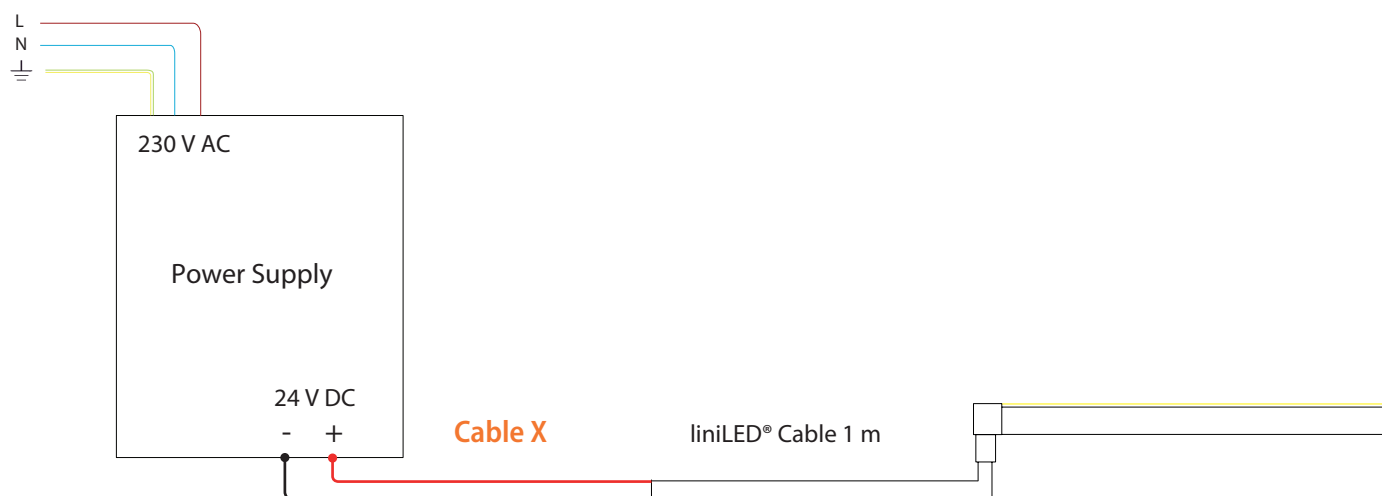
The total power consumption can be calculated by summing the requested power of all connected products. To calculate the power consumption of a single length of LED strip, use the equation below. The typical equation is valid if the product is supplied by a 24 V DC constant voltage power supply. If the 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.

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

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

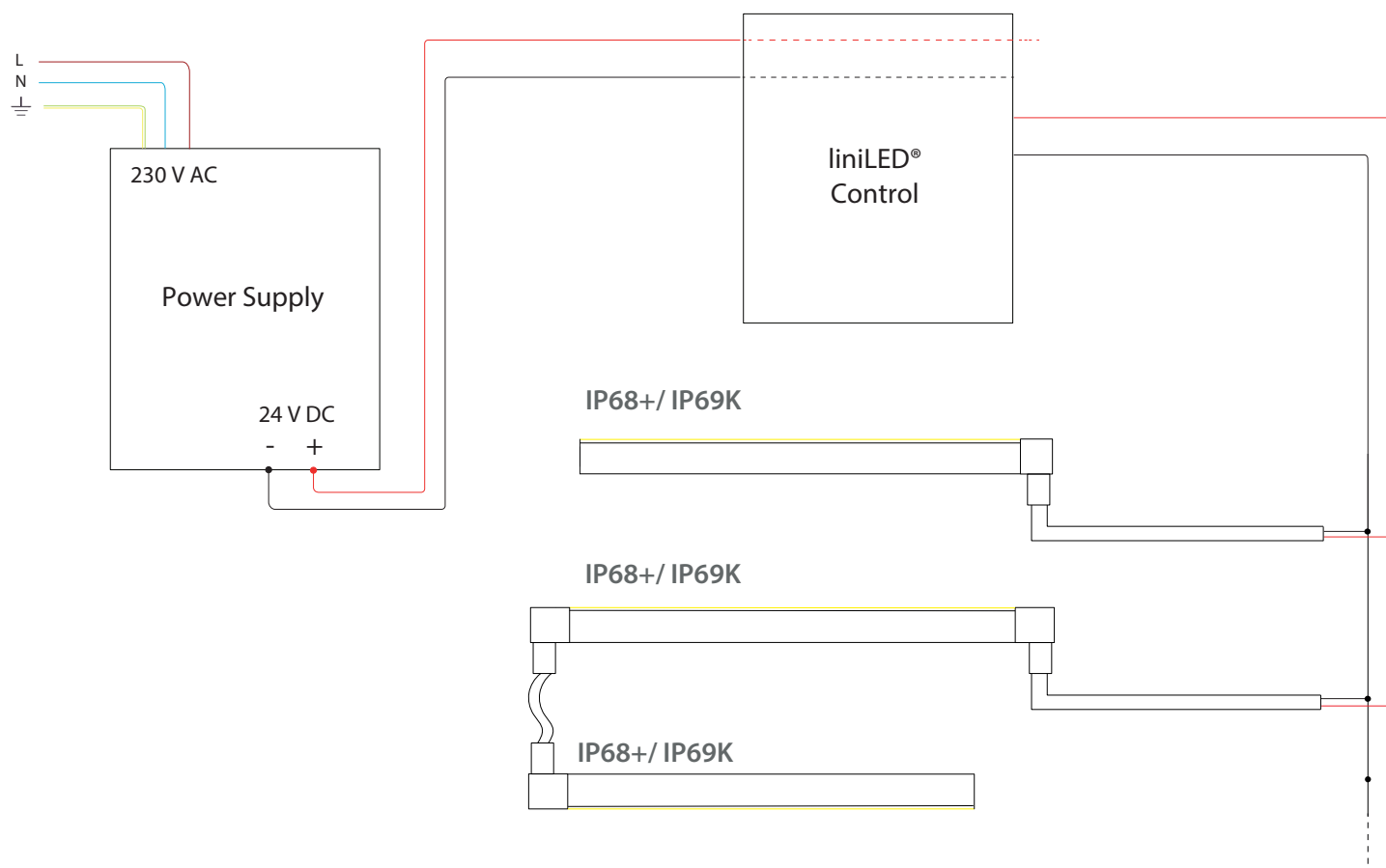
## Power supply

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.



## Connection diagram

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



## Disclaimer

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## Symbols

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-  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, Cr6+, PBB and PBDE).
-  This product can be both IP40 and IP68 depending on the configuration and application. See the documentation for the exact IP rating.
-  Protected against impact energy of 5 joules.
-  Bending of the LED strip is possible with a radius of  $\geq 30$  millimetres in the specified direction.
-  Current Voltage. 24 Volt
-  Electrical appliance class III: this product is designed to be supplied from an extra-low voltage ( $\leq 60.0$  V DC or  $\leq 42.4$  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 in the datasheet under 'chemical compliances'.
-  This product can be stored and used below 0 degrees Celsius. Verify the minimum storage and operation temperature in the datasheet 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 datasheet. Verify the IP rating for proper use.
-  This product can be applied inside swimming pool environments. Elements in the air will have no harmful effect on the product. For chemical specifications of these elements see datasheet. Verify the IP rating for proper use.
-  This product is available on request and can be applied submerged in swimming pools and their environment. Disinfectants will have no harmful effect on the product. For chemical specifications of these elements see datasheet. Verify the IP rating for proper use.
-  The CRI value of this product is 80 or higher.
-  The binning tolerance of this product is 2 MacAdam.