



## Index

TECHNICAL SPECIFICATIONS	2
PHOTOMETRIC INFORMATION	3
POWER CONSUMPTION	3
MAXIMUM CABLE LENGTH	4
BENDING RADIUS	5
POWER AND CONNECTION DIAGRAM	5
AREA ADVICE	6
SYMBOLS	7

## Top Tunable (Warm) White 1200

The liniLED® Top Tunable (Warm) White 1200 LED strip (IP40) is a high quality, flexible LED strip with a unique co-extrusion technology and can be adjusted to a colour temperature range between 2200-3500 or 2700K-6500K. The combination of high quality and exceptional flexibility, allows for an endless range of indoor and outdoor applications.

**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)

## USPs

- Tunable white for dynamic white applications
- Extra-long lifetime – 60,000 h (L70B50)
- Dimmable with PWM technology
- Single piece reel-to-reel technology
- Unique co-extrusion technology (hollow chamber)
- IP40 | IP67 | IP68
- Very flexible & cuttable (bend radius > 30 mm)
- Effective heat dissipation
- Excellent lumen/Watt ratio
- Available in long lengths
- UV, frost, seawater & chlorine vapour resistant
- Extensive range of accessories Plug & Play
- Made in Europe

## Available colours

Colour	Description
	White 2200K - 3500K liniLED® Top Tunable Warm White 1200
	White 2700K - 6500K liniLED® Top Tunable White 1200



## Technical specifications

	2200K - 3500K Tunable Warm White 1200	2700 - 6500K Tunable White 1200
Product code [m]	12468	11992
Power (24V DC)	11.3 W/m	10.3 W/m
Power (25V DC)	11.8 W/m	10.7 W/m
CCT <sup>1</sup>	2200 - 3500K	2700 - 6500K
CRI	>80	>80
Luminous flux <sup>1</sup>	982 lm/m	838 lm/m
Luminous efficiency <sup>1</sup>	87 lm/W	81 lm/W
Spool length	Max. 45 m	
Section length	75 mm	
LED type	3014	
Number of LEDs	12 per section/160 per metre	
Max. connection length <sup>4</sup>	9 m	
Min. operating voltage	23V DC	
Max. operating voltage	25V DC	
Beam angle	110°	
Dimensions	6 x 12 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	70 gram per metre	
Expected lifetime	L80/B10 > 60,000 hrs @ Tc = 40°C	
Ingress protection	IP40/IP67/IP68	
Storage temperature	-30°C ... 55°C	
Operating temperature <sup>2</sup>	-30°C ... 55°C	
Minimum bending radius	30 mm	
CCT Warm White	2243 K	2707 K
Power 2700 K	6.1 W/m	5.3 W/m
Flux 2700 K	494 lm/m	436 lm/m
CCT Cold White	3481 K	6814 K
Power 6500 K	5.2 W/m	5.0 W/m
Flux 6500 K	532 lm/m	440 lm/m

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

<sup>2</sup> Max. connection length between -30°C and -20°C is 6.3 metres.

<sup>3</sup> Both channels @ 100% = 4000K (TWW) / 2750K (TWW)

<sup>4</sup> UL certification allows an operable length of TWW; max 8.4 m.

## Products drawings

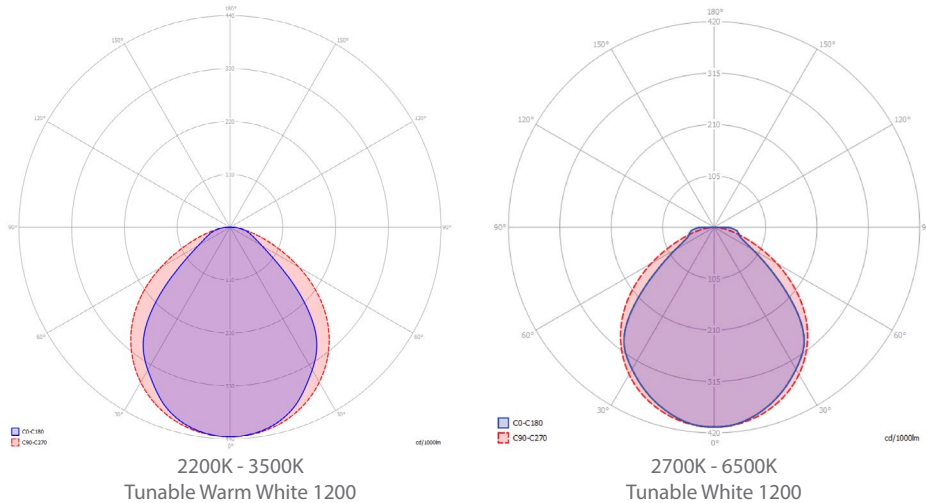


## Photometric information

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. 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.

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

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



## 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.

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

- $P_{\text{STRIP}}$  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

*Optional:*

- $U_{\text{SUPPLY}}$  Set supply voltage of the power supply in Volt
- 24** Nominal supply voltage of liniLED® in Volt

## Maximum cable length

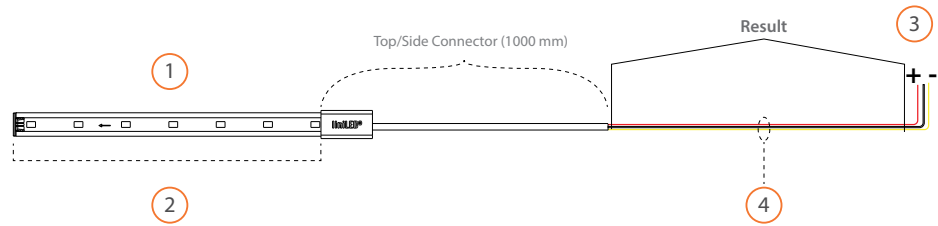
1 = Select colour temperature.

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

### 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 <sup>2</sup> - 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 <sup>2</sup> - 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 <sup>2</sup> - 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 <sup>2</sup> - 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 <sup>2</sup> - 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

### 1. Colour temperature

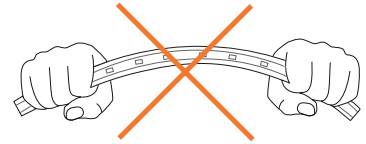
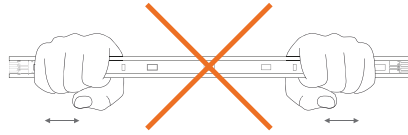
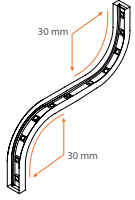
### 2700K-6500K TW 1200

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 <sup>2</sup> - 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 <sup>2</sup> - 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 <sup>2</sup> - 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 <sup>2</sup> - 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 <sup>2</sup> - 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

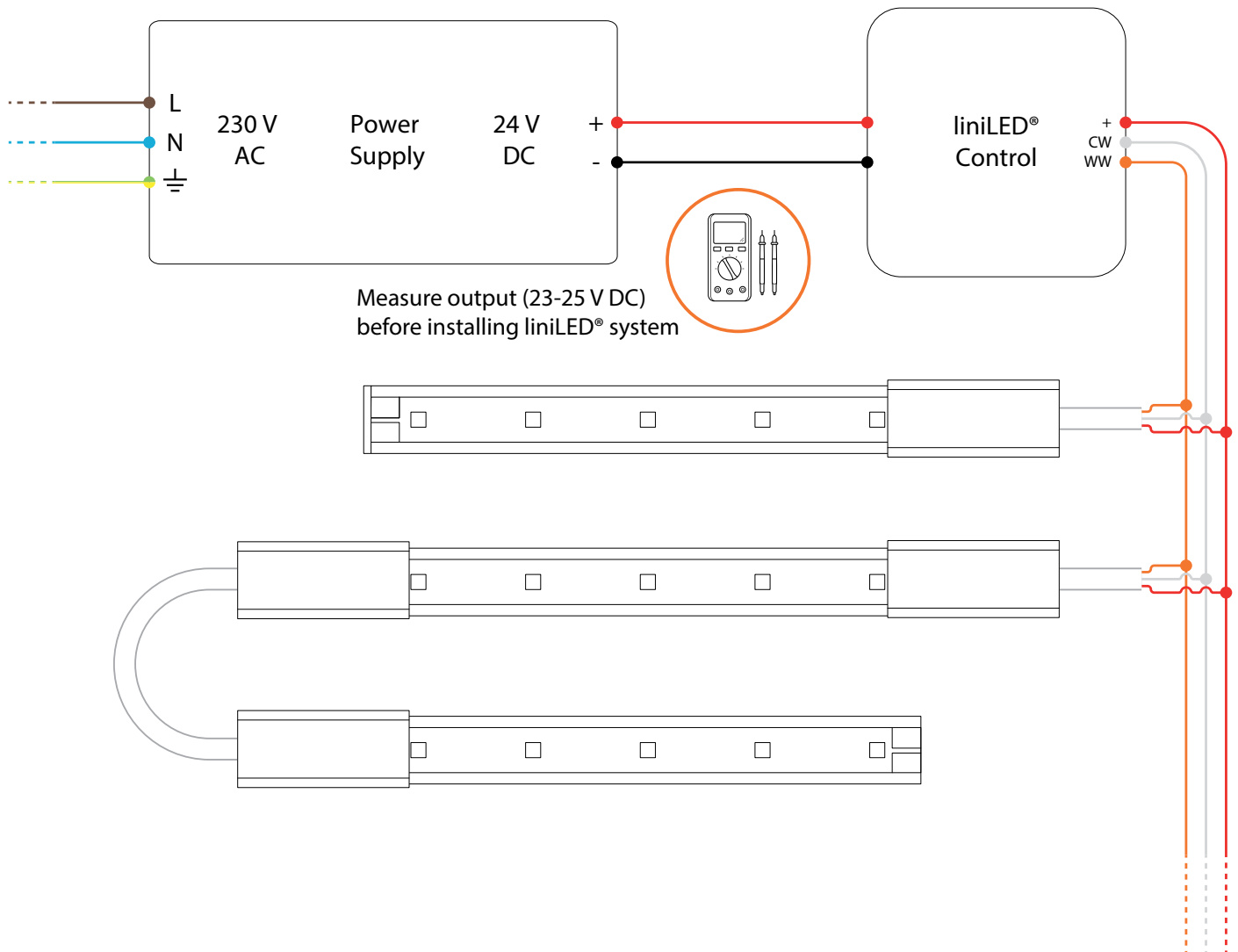
**Note:** Calculations are based on a standard connector with 1 metre cable (0.5 mm<sup>2</sup>).

## Bending radius

Maximum bending radius is 30 mm. Solely bend up or downward. Do not compress, stretch or bend the LED strip sideways.

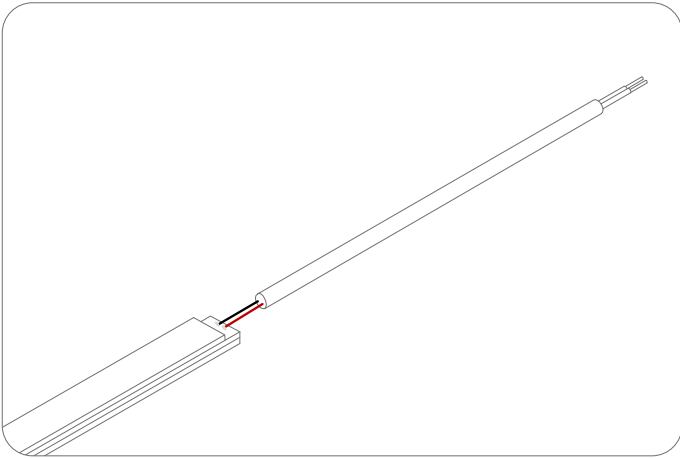


## Power and connection diagram



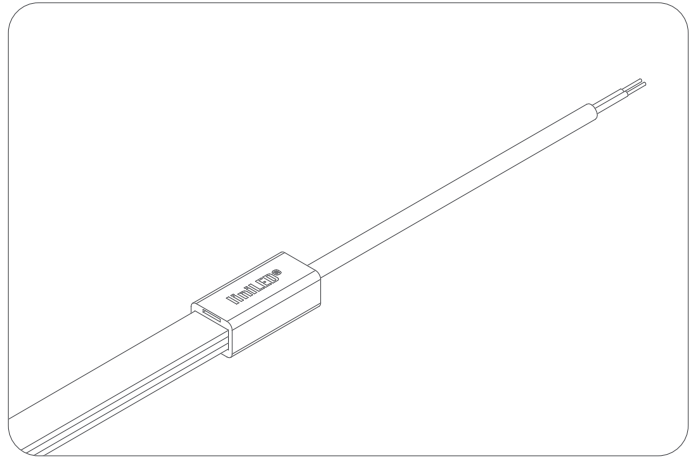
## Area advice

Depending on the installation area of the liniLED® LED strip we offer a range of IP20, IP40, IP67 and IP68 solutions to cope with external factors. Below the different connectors are displayed for use in different environments. See corresponding pages or individual product manual for further instructions.



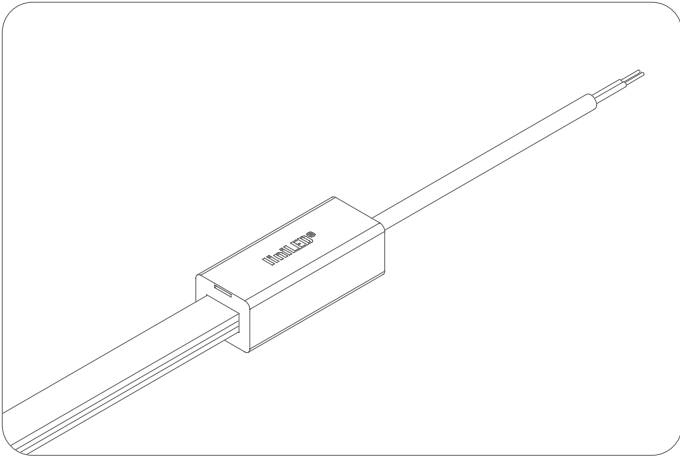
Indoor environment | (IP20)

Solder



Indoor environment | (IP40) | liniLED® Top Connector set

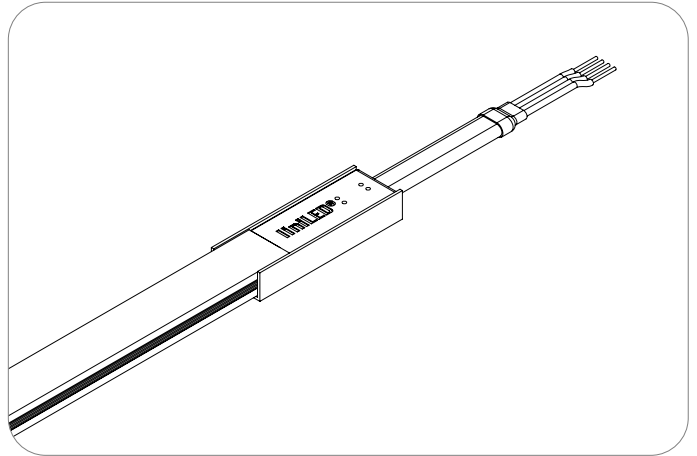
Prod. code: TW 11190, 11191 (1m, 5m)



Wet environment | (IP67) | liniLED® Top IP67 Kit

Product code: 11490

See Manual liniLED® Top IP67 Kit for installation instructions.



Submersible, chlorine resistant | (IP68) | Welded Connector

Product code: 12296 1m

12297 5m

The connector is pre-assembled to the LED strip.

## 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.



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).



Protected against ingress of solid foreign objects  $\geq 1.0$  millimetres. Not-protected against ingress of water.



Dust-tight, no ingress of dust. Protected against the effects of temporary immersion in water (Immersion in water at a maximum depth of 1 metre up to a half hour).



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.



Operating voltage of 24 V DC.



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 discolour fast when exposed to UV light.



Product can be cleaned with normal cleaning agents.



This product can be stored and used below 0 degrees Celsius. Verify the minimum storage and operating temperature in the datasheet or manual 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 of these elements see the liniLED® material sheet. 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 the liniLED® material sheet. Verify 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 the liniLED® material sheet. Verify IP rating for proper use.



The CRI value of this product is 80 or higher.



The binning tolerance of this product is 3 MacAdam.



This product needs to be disposed of separately from normal household waste so it can be recycled. Verify the IP rating for proper use.



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

## Disclaimer

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