

LED MODULES

LUGA SHOP TW GEN. 2
2000 LM



LUGA SHOP TW GEN. 2 – TUNEABLE WHITE LED MODULES

TW1914

The Tuneable White LED modules LUGA Shop TW with colour temperature dynamic enable seamlessly dynamic light control from 2500 K to 7000 K.

Typical Applications

Built-in luminaires/general illumination

- Residential lighting
- Furniture lighting
- Retail lighting
- Downlights

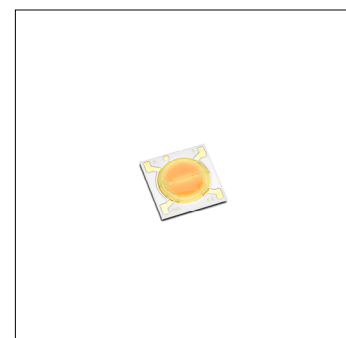
LUGA Shop TW Gen. 2

- **LONG SERVICE LIFETIME**
- **NARROW COLOUR TOLERANCES:
4 STEP MacAdam**
- **TUNEABLE WHITE: FROM 2500 K TO 7000 K**
- **CONSTANT LUMEN PACKAGES:
UP TO 2000 LM OVER ALL CCTS**
- **COMPACT SIZE (19X19 MM, LES14)**

LUGA Shop TW Gen. 2 LES14

Technical Notes

- LED module for integration into luminaires
- Dimensions / Light emitting surface (LES):
TW1914: 19x19 mm / Ø 14 mm
- Beam angle: 120°
- Typ. CRI R_a: 80 & 90
- Use of external LED constant current driver



Electrical Characteristics

at t_p = 65 °C

Type	Typ. voltage DC			Typ. power consumption		
	350 mA = I _r * V	500 mA V	700 mA V	350 mA = I _r * W	500 mA W	700 mA W
TW1914-824-870 TW1914-924-970 (CH1, cold white)	29.1	30.2	n.a.	10.2	15.1	n.a.
TW1914-824-870 TW1914-924-970 (CH2 warm white)	28.3	29.2	30.4	9.9	14.6	21.3

Voltage and power tolerance: ±10 % | * I_r = rated current

Maximum Ratings

Exceeding the maximum ratings can lead to reduction of service life or destruction of the modules.

Type	Operation temperature range at LES*		Storage temperature range		Max. allowed repetitive peak current (mA)	Max. allowed output voltage of drivers (V)
	°C min.	°C max.	°C min.	°C max.		
TW1914-824-870 TW1914-924-970 (CH1, cold white)	-40	+140	-40	+100	600	60
TW1914-824-870 TW1914-924-970 (CH2 warm white)	-40	+180	-40	+100	800	60

* measured with infrared camera

Max. operating temperature at t_c/t_p point per channel per operating current
(when ideal thermal interface material (TIM) is used)

Max. sum of currents of both channels: 700 mA

n.a.: not allowed

TW1914-824-870, TW1914-924-970										
Kanal 1 (CW)	700 mA	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	600 mA	+135	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	500 mA	+135	+135	+135	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	400 mA	+135	+135	+135	+135	n.a.	n.a.	n.a.	n.a.	n.a.
	350 mA	+135	+135	+135	+135	+135	n.a.	n.a.	n.a.	n.a.
	300 mA	+135	+135	+135	+135	+135	+135	n.a.	n.a.	n.a.
	200 mA	+135	+135	+135	+135	+135	+135	+135	n.a.	n.a.
	100 mA	+135	+135	+135	+135	+135	+135	+135	+135	n.a.
	0 mA	+135	+135	+135	+135	+135	+135	+135	+135	+135
Operating current		0 mA	100 mA	200 mA	300 mA	350 mA	400 mA	500 mA	600 mA	700 mA
Kanal 2 (WW)										

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

LUGA Shop TW – Tuneable White LED Modules

Operating Life

at $t_p = 65^\circ\text{C}$

in hours at measured temperature at t_p point

(when ideal thermal interface material (TIM) is used)

Lumen maintenance	TW1914 – CH1 (single-channel operation)			TW1914 – CH2 (single-channel operation)			TW1914 – (double-channel operation)		
	I_f 350 mA	I_f 500 mA	I_f 700 mA	I_f 350 mA	I_f 500 mA	I_f 700 mA	I_f 350 mA	I_f 500 mA	I_f 700 mA
L90/B10	> 30,000	> 30,000	n.a.	> 30,000	> 30,000	> 30,000	> 30,000	n.a.	n.a.
L80/B10	> 60,000	> 60,000	n.a.	> 60,000	> 60,000	> 60,000	> 60,000	n.a.	n.a.
L70/B10	> 60,000	> 60,000	n.a.	> 60,000	> 60,000	> 60,000	> 60,000	n.a.	n.a.

Optical Characteristics

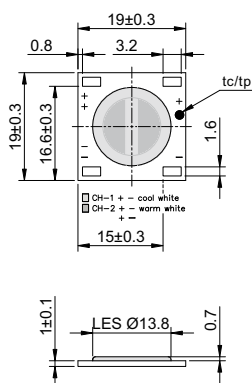
at $t_p = 65^\circ\text{C}$

Type	Ref. No.	Colour	Correlated colour temperature * K	Typ. luminous flux** and efficiency at 350 mA = I_r ***						Typ. beam angle °	Typ. CRI Ra	Photometric Code
				lm	lm/W	lm	lm/W	lm	lm/W			
TW1914-824-870 (Ch1, cold White)	572527	cool white	7000	1480	145	2000	132	-	-	120	82	870/449
TW1914-824-870 (Ch2, warm white)		warm white	2450	1400	141	1880	129	2430	114	120	82	824/449
TW1914-924-970 (Ch1, cold White)	572528	cool white	7000	1280	126	1716	114	-	-	120	92	970/449
TW1914-924-970 (Ch2, warm white)		warm white	2450	1120	113	1508	103	1940	91	120	92	924/449

* Colour tolerance: 4 MacAdam | ** Production tolerance of luminous flux and efficiency: $\pm 15\%$ | Min. CRI Ra: > 75 | *** I_r = rated current

Mechanical Dimensions

TW1914

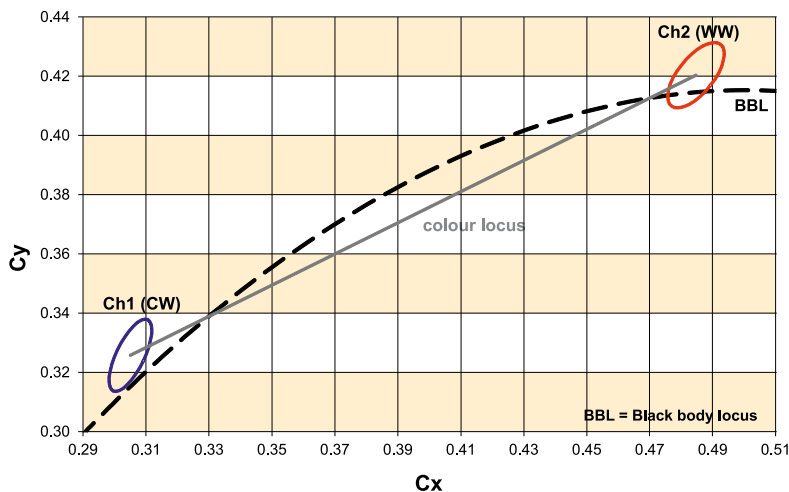


The clearance and creepage distances are designed for working voltages up to:

Type	Basic insulation	Reinforced insulation
TW1914	330 V DC	175 V DC

Thickness of PCB is included in calculation.

Bins



The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

LUGA Shop TW

Assembly and Safety Information

Installation must be carried out under observation of the relevant regulations and standards. The LED modules are designed for operation within a casing or luminaire. Installation must be carried out in a voltage-free state (i.e. disconnection from the mains). The following advice must be observed; non-observance can result in the destruction of the LED assembly modules, fire and/or other hazards.

- ESD (electrostatic discharge) protection measures must be observed when handling and installing the LED modules. See VS's application notes on ESD protection.
- LED assembly modules must not be subjected to any undue mechanical stress, e. g.:
 - do not treat as bulk cargo
 - avoid shear and compressive forces during handling and installation
 - do not damage circuit paths
 - do not touch the yellow phosphorus layer
- The module must be fixed onto a thermally conductive surface.
- Safe operation only possible by the use of external constant current sources ($I_{\max}$, see table "Electrical Characteristics").
- Operation only with power supply units that feature the following protection:
 - Short-circuit protection
 - Overload protection
 - Overheating protection
 - SELV (Safety Extra Low Voltage); $U_{\max.} \leq 60 \text{ V}$
 - $I_{\max.}$ (see table "Maximum Ratings") must not be exceeded.
- When operating devices will be selected care has been taken to ensure that the maximum values (see table "Maximum Ratings") will not be exceeded.
- Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.
- Safety regulations acc. to EN 60598 (or further standards) has to be observed if the maximum output voltage exceed the permitted touchable value.
- Measurement tolerances:
 - luminous flux: $\pm 7 \%$
 - voltage: $\pm 3 \%$
 - CRI: $\pm 1 \%$
- Maximum allowed number of switching cycles: 15,000
- A parallel connection of the modules is not allowed.
- To ensure problem-free operation, the specified maximum temperature at the t_c point (see "Operating Life") must be observed (and measured in accordance with EN 60598-1). To satisfy this point, it may be necessary to put measures in place to ensure any heat is dissipated from the PCB to the environment.
- In the event of outdoor applications or applications in damp locations, care must be taken to protect LED assembly modules against humidity, splashes and jets of water. Any corrosion damage resulting from humidity or contact with condensation will not be recognised as a defect or manufacturing fault. LED assembly modules are not specially protected against foreign bodies or dust. Depending on the type of application, further protection must be ensured to prevent dust and foreign bodies from entering.
- Operating LED modules in the presence of certain chemical substances or in chemically enriched (aggressive) environments can impair module functionality or even cause total module failure. Detailed information can be found in our "Chemical Incompatibility" PDF on our website www.vossloh-schwabe.com
- The photobiological safety of the LED modules must be classified into risk groups in accordance with EN 62471: risk group 1

Product Guarantee

- 3 years
- The conditions for the Product Guarantee of the Vossloh-Schwabe Group shall apply as published on our homepage (www.vossloh-schwabe.com). We will be happy to send you these conditions upon request.

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

LUGA Shop TW

Reflectors:

- ACL-Lichttechnik GmbH
www.reflektor.com
- Jordan Luxar GmbH & Co. KG
www.jordan-luxar.de
- JORDAN REFLEKTOREN GmbH & Co. KG
www.jordan-reflektoren.de
- LEDIL
www.ledil.com

Heat sinks with active cooling:

- AVC
www.avc-europa.de
- Nuventix, Inc.
www.nuventix.com
- Sunon
www.sunon.com
- MechaTronix
www.led-heatsink.com
- Colliance, Inc.
www.cooliance.eu

Heat sinks with passive cooling:

- AVC
www.avc-europa.de
- Fischer Elektronik GmbH & Co. KG
www.fischerelektronik.de
- Frigo Dynamics
www.frigodynamics.com
- MechaTronix
www.led-heatsink.com

LED Constant Current Drivers

Please visit our homepage for details for suitable

LED constant current drivers: www.vossloh-schwabe.com

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.