High-Power LED for Microscopy, 660 nm

SOLIS-660C

Description

This high-power LED is designed for microscopy applications. The output of the LED is SM2 (2.035″-40) threaded for compatibility with Thorlabs' microscope ports and thread adapters. This LED needs to be supplied with a constant current that must not exceed the maximum current. The current source must be able to deliver this current at the specified forward voltage. For specifications, please see the table below.

Specifications

Specification[a]	Value
Color	Deep Red
Dominant Wavelength	660 nm
Bandwidth (FWHM)	21 nm
Emitter Size	3.2 mm x 3.2 mm
Maximum Current (CW)	1000 mA
Electrical Power	12.5 W
Typical Lifetime	>10 000 hours
Operating Temperature (Non-Condensing)	0 to 40 °C
Storage Temperature	-40 to 70 °C
Clear Aperture	Ø 48.3 mm (Ø1.90")
Included Collimation Lenses	LB1723-A and ACL25416U-A
Included Diffuser[b]	DG20-1500
Risk Group[c]	RG2 - Moderate Risk Group

a. The specifications listed in the table are nominal values.
b. The included diffuser must be installed by the user if required.
c. According to the Standard IEC 62471:2006, Photobiological Safety of Lamps and Lamp Systems

	Symbol	Min	Typical	Max
Dominant Wavelength	λ	655 nm	660 nm	670 nm
Collimated Output Power[a]	P_{out}	2.0 W	2.7 W	-
Forward Voltage	V_F	-	10.3 V	12.5 V
Maximum Irradiance[b]	E_e	-	0.43 mW/mm^2	-

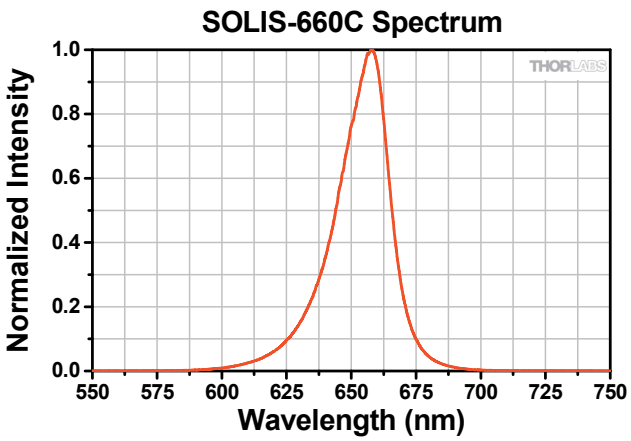
a. When Driven with the Max Current
b. Measured at a Distance of 200 mm

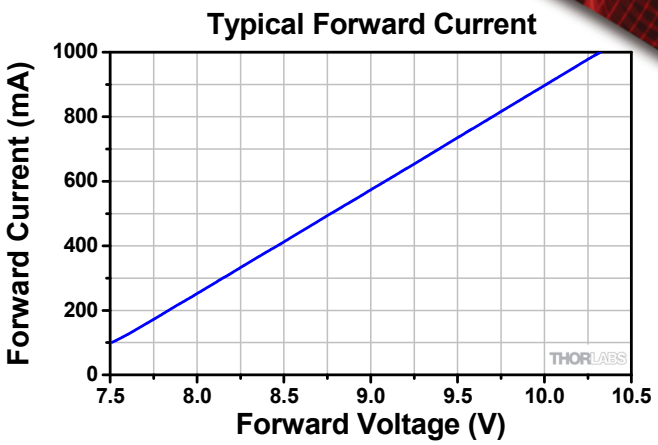
Operating Instructions

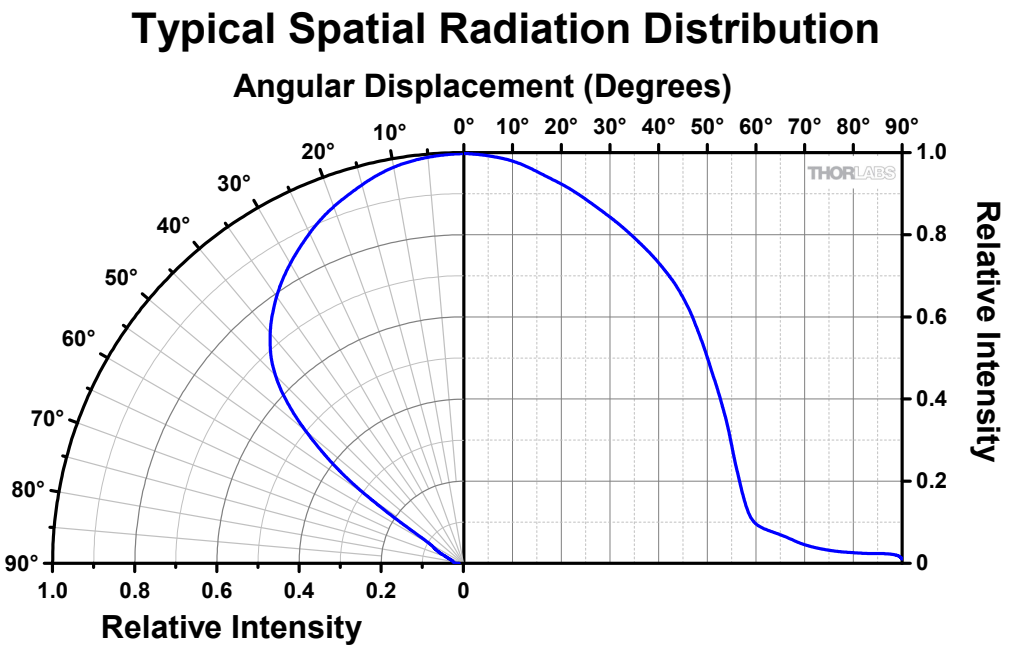
Be sure to provide air ventilation in order to avoid overheating, drops in optical power, and reduced lifetime. Be aware that each LED has a characteristic switch-on behavior, which depends on the LED properties and environment conditions. To supply sufficient heat dissipation, this LED has a unique thermal design that reduces the power decay to a minimum. The LED is designed to shut down if the internal temperature reaches 95 °C to prevent damage to the emitter.

A diffuser is included with each LED which can be placed in front of the beam to create a more uniform beam profile. Insert the diffuser in front of the installed collimation lens and secure it with an SM2 retaining ring using an SPW604 Spanner Wrench. Be sure that the LED is turned off and the housing is cool to the touch before making this adjustment.

Performance Plots

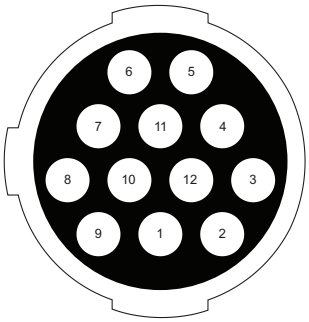






Drawings

Solis Pin Code



Pin	Connection	Pin	Connection
1	LED Cathode	7	LED Anode
2	LED Cathode	8	LED Cathode
3	Not Used	9	LED Cathode
4	LED Anode	10	Not Used
5	LED Anode	11	EEPROM I/O
6	LED Anode	12	EEPROM Ground

Power Supply

Please see the Thorlabs website for the available LED drivers. When selecting the LED driver, ensure that:

- The operating current never exceeds the maximum current specified in the LED specification table.
- Sufficient forward voltage is supplied.

If you decide to use your own DC source, please ensure that the correct connection is made to Pins 1 and 2.

Maintenance and Service

This LED is not water resistant and must be protected from adverse weather conditions. To avoid damage, do not expose it to spray, liquids, or solvents. This LED does not contain any parts serviceable by the user and does not require regular user maintenance. Do not open the enclosure. If a malfunction occurs, contact Thorlabs for return instructions.

Warnings and Safety

During normal operation, the casing temperature may exceed ambient temperature by as much as 25 °C (45 °F). To prevent higher case temperatures, the product should be operated without anything hindering air movement around the convective cooling fins. The LED will automatically shut down if the internal temperature reaches 95 °C.

Please note that this product is not suitable for household room illumination.

This LED must not be operated in explosive environments and should only be used with shielded connection cables.

All statements regarding safety of operation and technical data only apply when the unit is operated correctly according to its specifications. The safety of any system incorporating the equipment is the responsibility of the assembler of the system.

Inappropriate use of any mounted LED product may result in permanent eye damage. To prevent injury, use this product in accordance with the International Standard “Photobiological Safety of Lamps & Lamp Systems” IEC 62471. This product falls under Risk Group RG2 - Moderate Risk Group in accordance to the standard IEC 62471:2006.

If using this LED in a microscope application as a replacement for a mercury vapor lamp, the same precautions should be taken.

UV / Visible Radiation Warning Statement
This LED emits intense UV/visible radiation during operation. Precautions must be taken to prevent looking directly at the UV/visible light. If viewing the UV/visible light directly is necessary, (UV/visible light) protective glasses must be worn to avoid eye damage. Do not look directly into the UV/visible light or look through the optical system during operation, as this can be harmful to the eyes, even for brief periods of exposure, due to the high intensity of the UV/visible light.