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SLS252 - March 20, 2024

Item # SLS252 was discontinued on March 20, 2024. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

COMPACT STABILIZED BROADBAND LIGHT SOURCES

- **Stabilized Light Sources for 360 - 2600 nm, 450 - 5500 nm, or 500 - 9000 nm**
- **Stabilized Color Temperature and Output Power**
- **Long Lifespan: 10 000 Hours (Average)**

SLS201L
Broadband 360 - 2600 nm Source with Included SMA Fiber Patch Cable Connected to the Output

SLS202L
Broadband 450 - 5500 nm Source with SLS202C Collimation Package (Sold Separately)

SLS203L
Broadband 500 - 9000 nm Source with Free Space Output

SLS252
Replacement Bulb for the SLS202L(/M) Stabilized Light Source

OVERVIEW

Features

- Broadband Light Sources for Visible Through IR Wavelengths
- Constant, Stable Intensity Output
  - 0.1% per °C
  - 0.01% per Hour (SLS201L & SLS202L)
  - 0.03% per Hour (SLS203L)
- Closed-Loop Control for High Stability
  - Output Power Stability: <0.05%
  - Color Temperature Stability: ±15 K
- 10 000 Hour Average Bulb Lifespan
- SMA Fiber Interface or Free Space Output
- Removable Filter Holder Accepts Ø1" and Ø25 mm Filters
- Compatible with 30 mm Cage System
- Low-Noise Fan Cooling

Accessories

- Collimation Packages
- Replacement Light Bulb Modules
- Extra Filter Holders
- Blank Insert
- Variable Attenuator Insert

Key Specifications[a]			
Item #	**SLS201L(/M)**	**SLS202L(/M)**	**SLS203L(/M)**
Wavelength Range	360 - 2600 nm	450 - 5500 nm	500 - 9000 nm
Peak Wavelength[b]	1000 nm	1500 nm	2400 nm
Bulb Electrical Power	9 W	7.2 W	24 W
Output Coupling	Fiber Coupled (SMA) and Free Space		Free Space
Coupled Optical Power	10 mW[c]	1.5 mW[d]	>1.5 W[e]
Included Fiber Patch Cable	SMA to SMA, 1 m Long	Not Included[f]	N/A
Output Power Stability[g]	<0.05%		
Output Power Drift per Hour	0.01%		0.03%
Output Power Drift per °C	0.1%		
Color Temperature	2796 K	1900 K	1500 K
Color Temperature Stability	±15 K		
Included Power Supply	12 V, 100 - 240 VAC (Replacement Item # DS12)		24 V, 90 - 264 VAC

a. Please see the *Specs* tab for full list of specifications.
b. Theoretical Value based on Blackbody Radiation
c. Measured with the included fiber patch cable at beginning of bulb lifetime.
d. Measured with Thorlabs' MZ41L1 ZrF_4 MIR patch cable at the beginning of bulb lifetime.
e. Measured directly at the output port with the front lens tube removed.
f. We recommend a mid-IR fluoride fiber patch cable or fiber bundle for this light source.
g. Standard deviation of optical power measured at room temperature over a 1 hour period with 1 Hz sampling rate after a 45 minutes warm-up. Please see the *Graphs* tab for the results of our stability testing.

Thorlabs' Stabilized Light Sources provide a constant-intensity blackbody radiation spectrum from 360 to 2600 nm, 450 to 5500 nm, or 500 to 9000 nm. An internal feedback system is employed to achieve a highly stable power output. The superior performance of Thorlabs' stabilized light sources makes them ideal for experiments that require high accuracy and stability, such as transmittance and reflectance measurements.

Each light source features an integrated filter holder and offers either a fiber-coupled output with an SMA connector [Item #s SLS201L(/M) and SLS202L(/M)] or free-space output [Item # SLS203L(/M)]. The fiber coupling package on the fiber-coupled sources can be replaced with a collimation package (sold separately) for free-space applications. The quick-release mechanism used to mount the fiber coupling package ensures coupling efficiency is maintained when replacing the fiber coupling package. Internally-threaded lens tubes can also be attached directly to the front of each light source using the SM1QAM Quick-Release Adapter for custom optical systems. The compact design of our light sources (see *Specs* tab) gives the user flexibility with positioning this light source on a crowded optical table. Each light source can be post mounted by using the two 1/4"-20 (M6) taps on the bottom of the device and our Ø1" posts.

The front face features four 4-40 taps (as shown in the left image below) for Ø6 mm cage rods, making this device compatible with Thorlabs' 30 mm cage system. The back face has an on/off toggle switch, power indicator LED, and power connection (see image to the bottom right). A filter holder is included with each lamp. This filter holder can accommodate Ø1" and Ø25 mm optics up to 0.31" (8.0 mm) thick, allowing bandpass filters to be placed in the light path for applications requiring constant-intensity illumination at a specific wavelength. Alternatively, a sample can be installed in the filter holder between two glass plates, allowing this light source to be used for material analysis. An included SM1RR retaining ring is used to secure the optic inside the holder. We recommend the SPW602 spanner wrench to secure the retaining ring without damaging the optic. The filter holder can be locked into place using the included hex key and a setscrew located on the side of the device (see the center image below). The light sources are also compatible with the CFH2-F filter holder (sold separately below), enabling the user to quickly change between different filters or samples. Additionally, the CFH2-V Variable Attenuator Insert can be used in place of the filter holder to partially or completely block light from passing through the aperture.

Replacement bulbs are available for all three stabilized light sources. Please see the *Bulb Replacement* tab for detailed instructions on how to replace the bulbs in these lamps. Be sure to purchase the appropriate collimation package and bulb module for each lamp, as they are not interchangeable. If a higher color temperature is desired, our color-balancing filters can be used to attenuate red light from the light sources while passing blue light. This results in a beam with a higher color temperature and lower total power.

Click to Enlarge

The removable filter holder (filters sold separately) allows the user to mount Ø25 mm or Ø1" optics inside the stabilized light source. The front face of the light source features four 4-40 tapped holes, making it compatible with our 30 mm cage system.

Click to Enlarge

The filter holder can be locked into place with the filter setscrew located on the side of the housing. The fiber coupling package included with the SLS201L and SLS202L sources can be quickly removed and replaced with a collimation package.

Click to Enlarge

The on/off switch, power indicator, and power input are located on the back of each light source.

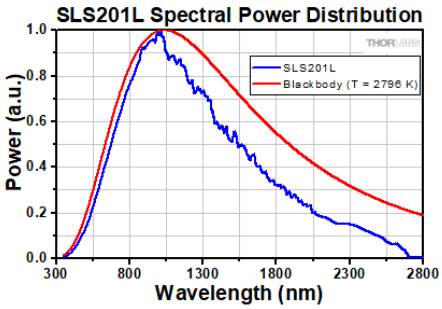
SPECS

Item #	SLS201L(/M)	SLS202L(/M)	SLS203L(/M)
Wavelength Range	360 - 2600 nm	450 - 5500 nm	500 - 9000 nm
Peak Wavelength[a]	1000 nm	1500 nm	2400 nm
Bulb Electrical Power	9 W	7.2 W	24 W
Output Coupling	Fiber Coupled (SMA) and Free Space		Free Space
Fiber-Coupled Optical Power	10 mW[b]	1.5 mW[c]	N/A
Free-Space Optical Power	500 mW[d]	700 mW[d]	>1.5 W
Collimated Optical Power[e]	60 mW	15 mW	N/A
Included Fiber Patch Cable	SMA to SMA, 1 m Long	Not Included[f]	
Beam Divergence without Fiber Coupler[g]	8.2°	13.8°	
Beam Divergence with Optional Collimator[g]	2°	1.4°	
Beam Diameter with Optional Collimator[h]	24 mm	10 mm	
Output Power Stability[i]	<0.05%		
Optical Power Drift per Hour	0.01% (Typical)		0.03% (Typical)
Optical Power Drift per °C	0.1% (Typical)		
Color Temperature	2796 K	1900 K	1500 K
Color Temperature Stability	±15 K		
Lifespan	10 000 Hours (Avg.)		
Compatible Filter Size	Ø1" and Ø25 mm up to 0.31" (8.0 mm) thick		
Operating Temperature	0 °C to 45 °C		
Storage Temperature	-15 °C to 70 °C		
Included Power Supply	12 V, 100 - 240 VAC (Replacement Item # DS12)		24 V, 90 - 264 VAC at 47 - 63 Hz
Dimensions (L × W × H)	216.4 mm × 55.0 mm x 57.5 mm (8.52" × 2.17" x 2.26")		209.1 mm × 55.0 mm x 57.5 mm (8.23" × 2.17" x 2.26")

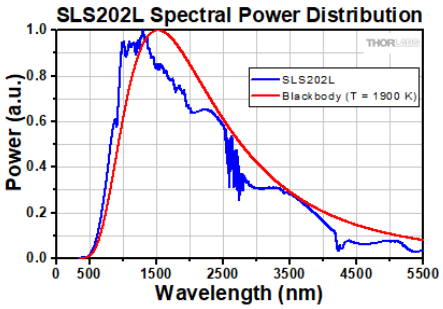
a. Theoretical Value based on Blackbody Radiation
b. Measured with included M28L01 fiber patch cable at beginning of bulb lifetime.
c. Measured with Thorlabs' MZ41L1 ZrF_4 MIR patch cable at the beginning of bulb lifetime.
d. Measured at the output port of the light source with fiber coupler removed.
e. Measured with optional collimation package.
f. We recommend a mid-IR fluoride fiber patch cable or fiber bundle for this light source.
g. Half angle; design value @ 587 nm.
h. Measured 10 cm away from the collimation package.
i. Standard deviation of optical power measured at room temperature over a 1 hour period with 1 Hz sampling rate after a 45 minute warm-up. Please see the Graphs tab for the results of our stability testing.

GRAPHS

Each spectrum below is compared to the blackbody spectrum with the equivalent color temperature. Each curve is normalized to its peak. The measured SLS202L and SLS203L spectra stop at 5500 nm due to limits in the instrument's detection range. The structures in the measured light source spectra are due to absorption from various molecules such as H_2O and CO_2. The stability graph below is a typical comparison of light source stability over time with accompanying room temperature data.



Click to Enlarge
Click for Raw Data



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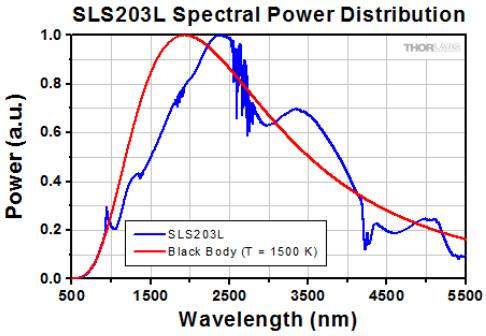

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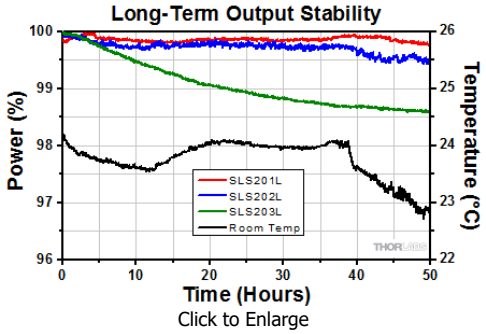
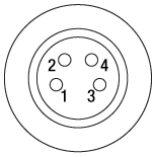
Click for Raw Data



Click to Enlarge
A long-term time comparison between the performance of Thorlabs' SLS series of stabilized light sources and changes in room temperature.

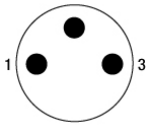
PIN DIAGRAM

SLS201L and SLS202L Stabilized Light Source Power Connector



Pin	Description
1	No Connection
2	No Connection
3	+ 12 V
4	Ground

SLS203L Stabilized Light Source Power Connector



Pin	Description
1	Reserved
2	Ground
3	+ 24 V

BULB REPLACEMENT

The installation instructions and video below detail the recommended procedure for replacing the bulb in the SLS201L(/M) [replacement bulb item # SLS251], SLS202L(/M) [replacement bulb item # SLS252], and SLS203L(/M) [replacement bulb item # SLS253] Stabilized Light Sources. Be sure to install the correct bulb in its corresponding lamp, as the bulbs are not interchangeable.

We strongly recommend wearing gloves when replacing the bulb to prevent skin oils from being deposited onto the bulb. If you suspect the bulb is dirty, carefully clean it with alcohol before connecting it to a power supply.

Open the Cavity

1. Using a 2 mm hex key, remove the screw closest to the end of the unit on the left and right sides. Do not remove the screws closest to the fan ventilation holes.
2. Using the same 2 mm hex key, remove the four screws securing the cavity cover, located on the underside of the unit.

Remove the Old Bulb

3. Unplug the white plug that is connected to the bulb module. This plug is located on the far side of the circuit board if the output aperture of the lamp is facing to the right.
4. Using the 1.5 mm ball-end hex key included with each replacement bulb, remove the cap screw located about half way down on the aluminum divider that separates the PCB chamber and the bulb chamber.
5. Remove the old bulb by sliding the wire and attached plug out through the hole in the aluminum divider.
   Note: Two aluminum dowel pins, located on either side of the bulb module, may slip out of their holes while the bulb is being removed. Be careful not to misplace them as they are needed for the new bulb installation.

Install the New Bulb

6. Place the two dowel pins in their corresponding holes in the new bulb module.
7. Slide the new bulb module in the bulb chamber, point up. Pass the wire and plug through the hole in the divider first and then insert the module. The two dowel pins should slide smoothly into the holes in the divider.
8. While pressing the bulb against the divider, screw the cap screw back in using the included 1.5 mm ball-end hex key.
9. Insert the white plug back into the circuit board and secure the cavity cover.

APPLICATION

Reflection Spectroscopy Application

These broadband light sources can be used along with our reflection spectroscopy probes, CCD spectrometers, and fiber probe holders to take diffuse reflection, specular reflection, and color measurements.

Spectrometers

Thorlabs offers several CCD-based spectrometers for use in the visible, NIR, or UV to NIR spectral ranges. The CCS100 and CCS175 operate in the 350 - 700 nm and 500 - 1000 nm spectral ranges with 0.5 nm and 0.6 nm resolution, respectively. The extended-range CCS200 operates in the 200 - 1000 nm spectral range with 2.0 nm resolution, but the UV range may be heavily attenuated when analyzing broadband spectra.

Light Sources

The SLS201L tungsten-halogen broadband fiber-coupled light source, sold below, delivers a 2796 K blackbody-type spectrum in the 360 - 2600 nm wavelength range and has active electronic stabilization for low spectral and intensity drift. Alternatively, the SLS202L light source delivers similar performance with a 1900 K color temperature and 450 - 5500 nm emission range, while the SLS203L provides free space output with a 1500 K temperature and 500 - 9000 nm emission range. We also offer fiber-coupled LEDs available with a selection of peak wavelengths or a broadband white-light emission spectraand our line of fiber-coupled laser sources offers a selection of options for intense single-wavelength illumination.

Reflection Probe Fiber Bundles

Thorlabs offers reflection probes with either high-OH or low-OH multimode fiber for wavelengths from 250 - 1200 nm and 400 - 2400 nm, respectively. Probes are available with a sample end that terminates in either a Ø1/4" probe or an SMA905 connector. We also offer Ø1/4" and SMA-terminated probes with linear fiber bundle spectrometer ends for increased spectrometer coupling efficiency for samples with low reflectance.

Click to Enlarge
Diffuse Measurement
Taken at 45° Using RPH
Holder Block

If the coaxial illumination provided by a reflection probe bundle is not critical, separate fiber patch cables or bundles with SMA connectors can be used for illumination and signal collection. Our large-core round bundles maximize illumination intensity, while our single-fiber multimode SMA patch cables are useful for precise illumination, or for connection to a fiber-coupled laser. We also offer round-to-linear fiber bundles, which maximize signal strength at the spectrometer.

Reflection Probe Holders

Thorlabs offers the RPS and RPS-SMA fiber probe stands (RPS-SMA shown above and to the right), which allow for precise, stable positioning of the fiber optic probe at an angle of 90° or 45° relative to the sample. The probe holder arms (also sold separately) can also be integrated into other optomechanical setups using Ø1/2" posts. Alternatively, the RPH and RPH-SMA probe holder blocks sit directly on a sample, allowing the fiber tip to be positioned close to the surface and also blocking out room lights from the area under test.

LAMP SELECTION GUIDE

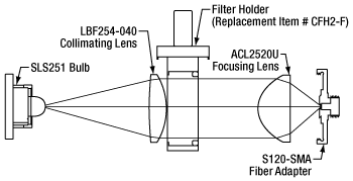
Below is a selection guide for all of our white-light, broadband light sources (or lamps). In addition to these sources, Thorlabs also offers unmounted white-light LEDs, white-light mounted LEDs, white-light fiber-coupled LEDs, and high-powered, white-light Solis® LEDs.

Broadband Light Source Selection Guide									
Item #	**(Click to Enlarge; Not to Scale)**	**Emitter Type**	**Wavelength Range (Click for Plot)**	**Output Coupling**	**Output Power**	**Bulb Electrical Power**	**Color Temperature**	**Bulb Lifetime**	**Replacement Bulb**
SLS204		Deuterium	200 - 700 nm	Free Space or Fiber Coupled (SMA)	2 mW[a] 0.1 mW[b] (Typ.)	30 W	N/A	2000 h[c]	SLS254B
SLS205		Xenon Arc	240 - 1200 nm	Free Space or Fiber Coupled (SMA)	290 mW[a] 5 mW[d] (Typ.)	75 W	5800 K[a] 5400 K[d]	2000 h[c]	SLS255B
SLS401		Xenon Arc	240 - 2400 nm	Free Space[e]	>1.3 W[a]	150 W	5800 K	2000 h[c]	SLS401B[f] or SLS402B
SLS402		Mercury-Xenon Arc	240 - 2400 nm	Free Space[e]	>1.3 W[a]	150 W	6000 K	2000 h[c]	SLS401B or SLS402B[f]
SLS302		Quartz Tungsten-Halogen	360 - 2500 nm	Free Space[e]	>10 W[a]	150 W	3400 K	1000 h[g]	SLS301B
SLS201L(/M)		Quartz Tungsten-Halogen	360 - 2600 nm	Free Space[e] or Fiber Coupled (SMA)	500 mW[a] 10 mW[h]	9 W	2796 K	10 000 h	SLS251
SLS301		Quartz Tungsten-Halogen	360 - 3800 nm	Free Space[e]	>1.6 W[a]	150 W	3400 K	1000 h[g]	SLS301B
OSL2		Quartz Tungsten-Halogen	400 - 1600 nm (Typical)	Fiber Bundle	1.4 W[i]	150 W	3200 K	1000 h[c]	OSL2B[f], OSL2B2, or OSL2BIR
OSL2IR		Quartz Tungsten-Halogen	400 - 1750 nm (Typical)	Fiber Bundle	3.8 W[i]	150 W	3200 K	200 h[c]	OSL2B, OSL2B2, or OSL2BIR[f]
QTH10(/M)		Quartz Tungsten-Halogen	400 - 2200 nm	Free Space	50 mW (Typ.)	10 W	2800 K[j] (Typ.)	2000 h	QTH10B
SLS202L(/M)		Tungsten	450 nm - 5.5 µm	Free Space[e] or Fiber Coupled (SMA)	700 mW[a] 1.5 mW[k]	7.2 W	1900 K	10 000 h	SLS252
SLS203L(/M)		Silicon Carbide Globar	500 nm - 9 µm	Free Space	>1.5 W[a]	24 W	1500 K	10 000 h	SLS253
SLS303		Silicon Nitride Globar	550 nm - 15 µm	Free Space	4.5 W[a]	70 W	1200 K	5000 h[g]	SLS303B

a. Free-space optical power measured without adapters at the beginning of bulb lifetime.
b. Measured with Thorlabs' M114L01 solarization-resistant patch cable at beginning of bulb lifetime.
c. Operation time before the maximum optical output power of the bulb reaches 50% of its original output.
d. Measured with Thorlabs' M111L01 solarization-resistant patch cable at beginning of bulb lifetime.
e. Adapters are available separately to couple the free-space output into liquid light guides (LLGs).
f. This bulb is identical to the original bulb that comes with the light source.
g. Operation time before the controller cannot stabilize the output power of the bulb.
h. Fiber-coupled optical power, measured with included fiber patch cable at beginning of bulb lifetime.
i. Power at Fiber Tip at Maximum Bulb Intensity
j. Color temperature will vary from unit to unit.
k. Measured with Thorlabs' MZ41L1 ZrF4 mid-IR patch cable at the beginning of bulb lifetime.

Stabilized Tungsten-Halogen Light Source, 360 - 2600 nm

- 360 - 2600 nm Stabilized Light Source
- Includes Fiber Patch Cable and DS12 Power Supply
- >10 mW Coupled Power Through Included Patch Cable
- Replacement Bulb Module Sold Below



Click to Enlarge
The SLS201L(/M) contains an N-BK7 LBF254-040 Spherical Lens and a B270 ACL2520U Aspheric Lens to couple blackbody radiation into a fiber.

Thorlabs' Stabilized Tungsten-Halogen Light Source provides a constant-intensity, 10 mW blackbody radiation spectrum between 360 and 2600 nm. Since the blackbody spectrum spans both the visible and near-infrared spectral ranges, this source is ideal for integration into optical measurement equipment. Combine the stabilized light source with a reflection probe and spectrometer for diffuse reflection and fluorescence measurements or use it to back-illuminate a test target as part of a detector calibration system. It can also be used as an illumination source in a white light interferometer for applications such as mapping surface structure. The included filter holder is interchangeable with the CFH2-F filter holder, sold below.

The coupled output power of the SLS201L(/M) source with the included multimode SMA fiber patch cable is 10 mW. Patch cables with smaller core sizes and numerical apertures or longer fibers can be used at the expense of the output power while a larger core size or shorter fiber length can increase the output power. The S120-SMA fiber adapter on the front of this light source is removable and can be replaced with any internally SM1-threaded fiber adapter. In particular, to provide compatibility with LLGs, the SM1T1 coupler can be used with a liquid light guide (LLG) collimation adapter. Transmission of wavelengths longer than 800 nm through the LLG for longer than an hour may result in permanent damage to the LLG tip; to reduce damage during extended use, incorporate a filter to limit transmission of IR wavelengths.

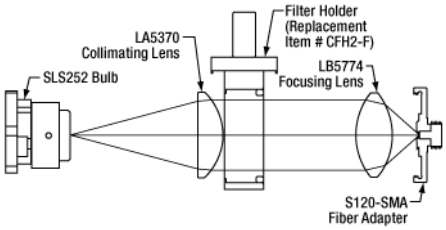
Take care when removing and reinserting the fiber adapter, as it is pre-adjusted to its optimum position during manufacturing. The adapter may be loosened and adjusted using the included 30 mm hex wrench. Alternatively, the entire fiber coupling package can be replaced by the SLS201C Collimation Package (sold below) to allow this lamp to be used in free-space applications.

An internal fan keeps the light source temperature regulated. This fan is low noise and engages only when the internal temperature exceeds 65 °C. The SLS201L(/M) includes a DS12 power supply.

Part Number	Description	Price	Availability
SLS201L/M	**Stabilized Fiber-Coupled Light Source w/ Universal Power Adapter, 360 - 2600 nm, M6 Taps**	**$1,199.80**	**Today**
SLS201L	**Stabilized Fiber-Coupled Light Source w/ Universal Power Adapter, 360 - 2600 nm, 1/4"-20 Taps**	**$1,199.80**	**Today**

Stabilized Tungsten IR Light Source, 450 - 5500 nm

- 450 - 5500 nm Stabilized Light Source
- Includes a DS12 Power Supply
- >1.5 mW Coupled Power Through Thorlabs' MZ41L1 ZrF_4 MIR Patch Cable
- Recommended for Use with Our Mid-IR Fluoride Fiber Patch Cables and Fiber Bundles
- Replacement Bulb Module Sold Below



Click to Enlarge
The SLS202L(/M) contains an LA5370 Plano-Convex Lens and an LB5774 Bi-Convex Lens to couple blackbody radiation into a fiber; both substrates are CaF_2.

Thorlabs' Stabilized Tungsten IR Light Source provides a constant-intensity blackbody radiation spectrum between 450 and 5500 nm. Since the blackbody spectrum spans the visible and mid-infrared spectral ranges, this source is ideal for integration into mid-IR measurement and analysis systems. The S120-SMA fiber adapter on the front of this light source is removable and can be replaced with any internally SM1-threaded fiber adapter. The fiber adapter is pre-adjusted to its optimum position during manufacturing. The adapter may be loosened and adjusted using the included 30 mm hex wrench. Alternatively, the fiber-coupling package can be replaced by the SLS202C Collimation Package (sold below) to allow this lamp to be used in free-space applications. A MIR fluoride fiber patch cable or fiber bundle is recommended for use with this device. The included filter holder is interchangeable with the CFH2-F filter holder, sold below.

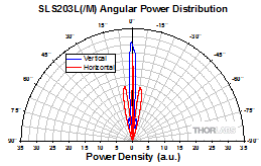
An internal fan keeps the light source temperature regulated. This fan is low noise and engages only when the internal temperature exceeds 65 °C. The SLS202L(/M) includes a DS12 power supply.

Part Number	Description	Price	Availability
SLS202L/M	**Stabilized Fiber-Coupled IR Light Source w/ Universal Power Adapter, 450 - 5500 nm, M6 Taps**	**$1,397.00**	**7-10 Days**
SLS202L	**Stabilized Fiber-Coupled IR Light Source w/ Universal Power Adapter, 450 - 5500 nm, 1/4"-20 Taps**	**$1,397.00**	**Lead Time**

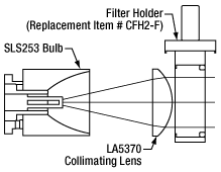
Stabilized Globar Light Source, 500 - 9000 nm

- 500 - 9000 nm Stabilized Light Source
- Collimated, Free Space Output
- >1.5 W Power Measured Over Output Port
- Includes a Universal Power Supply

Thorlabs' Stabilized Globar Light Source provides a constant-intensity, >1.5 W blackbody radiation spectrum from 500 to 9000 nm. Since the blackbody spectrum spans the visible and mid-infrared spectral ranges, this source is ideal for integration into mid-IR measurement and analysis systems. It uses a silicon carbide Globar that is housed in an ellipsoid reflector to increase the optical output. A LA5370 Plano-Convex Lens inside the main housing collimates the output light. The angular distribution of this output beam is shown in the graph to the right. The included filter holder is interchangeable with the CFH2-F filter holder, sold below.



Click to Enlarge
The angular power distribution emitted from the SLS203L(/M) Stabilized Globar Source.



Click to Enlarge
The SLS203L(/M) contains an LA5370 Plano-Convex Lens made from CaF_2 to collimate blackbody radiation.

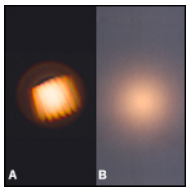
Additionally, this light source features an internally SM1-threaded (Ø1.035"-40) lens tube at the output of the device. This tube is removable and includes an SM1RR retaining ring which can be used to secure Ø1" or Ø25 mm optics up to 18 mm thick inside it. A low-noise fan inside this light source engages when the temperature exceeds 65 °C to provide temperature regulation. The SLS203L(/M) includes a universal AC/DC power converter capable of accepting 90 - 264 VAC at 47 - 63 Hz.

Part Number	Description	Price	Availability
SLS203L/M	**Customer Inspired! Stabilized Free Space IR Light Source w/ Universal Power Adapter, 500 - 9000 nm, M6 Taps**	**$1,859.10**	**Today**
SLS203L	**Customer Inspired! Stabilized Free Space IR Light Source w/ Universal Power Adapter, 500 - 9000 nm, 1/4"-20 Taps**	**$1,859.10**	**Today**

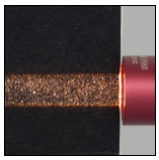
Collimation Packages

- SLS201C: Collimation Package for SLS201L(/M) Stabilized Tungsten-Halogen Light Source
- SLS202C: Collimation Package for SLS202L(/M) Stabilized Tungsten IR Light Source
- Collimation Packages for Previous-Generation SLS Sources

The SLS201C and SLS202C are collimation packages for the SLS201L(/M) tungsten-halogen and SLS202L(/M) tungsten IR stabilized light sources, respectively. Each unit consists of two collimating lenses and a pinhole packaged inside an internally SM1-threaded (1.035"-40) quick-release lens tube, which is engraved with the item number for easy identification. The SLS201C contains two uncoated Aspheric Condenser Lenses, while the SLS202C contains two Uncoated CaF_2 Bi-Convex Lenses.



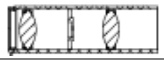
Click for Details
SLS201L Beam Profile with
(A) SLS201C Collimator Only,
(B) SLS201C and DG10-600-MD Diffuser


Click to Enlarge
SLS201L Source with SLS201C Collimator

We also offer the SLSC1 and SLSC2 Collimation Packages for our previous-generation SLS201(/M) and SLS202(/M) sources, respectively. The SLSC1 and SLSC2 collimators and not compatible with the light sources sold above.

To install, unthread the fiber adapter from the output of the light source and thread on the appropriate collimation package with the quick-release adapter facing toward the lamp. Be sure to install the correct collimation package in its corresponding lamp, as they are not interchangeable.

Please note that the output beam cannot be perfectly collimated due to the halogen lamp's incoherent emission. The SLS201C or SLS202C Collimation packages may be used directly with their respective halogen light sources (see A in photo to the right, 25 cm away from the end of the collimation package), or they may be used in conjunction with a Ø1" mounted diffuser attached to the threaded end of the collimation package (see B in photo above). The diffuser serves to smooth out the beam profile while increasing the beam divergence angle.

Item #	Compatible Stabilized Light Source[a]	Beam Diameter	Half Divergence Angle	Output Power (Typ.)	Outer Dimensions	Threads on Output Port	Mechanical Drawing (Click for Details)
SLS201C	SLS201L(/M)	24.0 mm[b]	2.0° [c]	60 mW	Ø30.5 mm x 97.6 mm (Ø1.20" x 3.84")	Internal SM1 (1.035"-40)	
SLS202C	SLS202L(/M)	10.0 mm[b]	1.4° [c]	15 mW			
SLSC1[d]	SLS201(/M)[d]	22.4 mm[e]	1.3° [f]	39 mW[g]	Ø30.5 mm x 35.0 mm (Ø1.20" x 1.38")		
SLSC2[d]	SLS202(/M)[d]	16.8 mm[e]	1.0° [f]	19 mW[g]			

a. Collimation packages are not interchangeable between sources.
b. Measured 10 cm away from the collimating lens.
c. Half angle, design value @ 587 nm.
d. These collimation packages are only compatible with our previous generation of SLS light sources.
e. Theoretical RMS beam diameter at 10 mm after the collimating lens in the collimation package.
f. Theoretically calculated using the operating wavelength ranges of the respective lamps.
g. Measured with a thermal sensor at the output port of the collimation package.

Part Number	Description	Price	Availability
SLS201C	**Collimation Package for SLS201L(/M) Light Source**	**$218.58**	**Today**
SLS202C	**Collimation Package for SLS202L(/M) Light Source**	**$267.29**	**Today**
SLSC1	**Customer Inspired! Collimation Package for Previous-Generation SLS201(/M) Light Source**	**$134.24**	**Today**
SLSC2	**Customer Inspired! Collimation Package for Previous-Generation SLS202(/M) Light Source**	**$242.33**	**Today**

Replacement Light Bulb Modules

- SLS251: Replacement Tungsten-Halogen Bulb for SLS201L(/M) Stabilized Light Source
- SLS252: Replacement Tungsten IR Bulb for SLS202L(/M) Stabilized Light Source
- SLS253: Replacement Globar for SLS203L(/M) Stabilized Light Source

Bulb Item #	Compatible Light Source	Bulb Type	Bulb Electrical Power	Color Temperature
SLS251	SLS201L(/M)	Tungsten-Halogen	9 W	2796 K
SLS252	SLS202L(/M)	Tungsten IR	7.2 W	1900 K
SLS253	SLS203L(/M)	Globar	24 W	1500 K

The SLS251, SLS252, and SLS253 are replacement light bulb modules for the SLS201L(/M) tungsten-halogen, SLS202L(/M) tungsten IR, and SLS203L(/M) Globar stabilized light sources, respectively. Please see the *Bulb Replacement* tab for detailed bulb replacement instructions. Each bulb module comes with the required 1.5 mm balldriver / hex key. Be sure to install the correct bulb in its corresponding lamp, as the bulbs are not interchangeable.

Note: We strongly recommend wearing gloves when replacing the bulb in any of our stabilized light sources to prevent skin oils from being deposited onto the bulb. If you suspect the bulb is dirty, carefully clean it with alcohol before connecting it to a power supply.

Part Number	Description	Price	Availability
SLS251	**Customer Inspired! Replacement Tungsten-Halogen Module for SLS201L(/M) Light Source**	**$146.12**	**Today**
SLS252	**Customer Inspired! Replacement Tungsten IR Module for SLS202L(/M) Stabilized Light Source**	**$242.33**	**Lead Time**
SLS253	**Customer Inspired! Replacement Globar Module for SLS203L(/M) Stabilized Light Source**	**$242.33**	**Today**

Extra Filter Holder and Other Inserts

- Inserts Compatible with Our Compact Stabilized Light Sources
- SM1-Threaded Filter Holder Insert Mounts Ø1" or Ø25 mm Optics up to 0.31" (8.0 mm) Thick
- Blank Plate can be Machined for Mounting Custom Optics
- Variable Attenuator Insert with Adjustable Shutter

Click to Enlarge
Pushing the adjuster down on the CFH2-V quickly closes the shutter.

The CFH2-F Filter Holder accommodates Ø1" or Ø25 mm optics up to 0.31" (8.0 mm) thick and can be used as a replacement for the filter holders included with the light sources sold above. With multiple filter holders, filters can be quickly swapped in and out of the stabilized light sources. The optic is secured against the back lip of the mount using the included SM1RR retaining ring.

The CFH2-B Blank Plate, also purchased separately, can be used as a manual shutter or machined to suit your specific requirements. The top plate of the CFH2-F and CFH2-B feature two laser-engraved boxes for labeling and identification of the mounted optic.

The CFH2-V is a variable attenuator insert that is equipped with a black-oxide-coated variable single-blade shutter to partially or fully block light. The shutter moves vertically from the top across the Ø0.54" aperture and is intended for a maximum 0.50" beam diameter. Shutter position is controlled with a 3/16"-120 adjuster that provides 0.005" shutter translation per revolution; fine adjustments can be performed with the included 5/64" hex key. To quickly close the shutter, press the adjuster down (see photo to the right); letting go of the adjuster will return the shutter to the set position (within 0.0005"). For best performance, light after the attenuator insert should be coupled into a fiber optic patch cable as the output beam profile will not be circular. The lamp output will be clipped on the attenuator if the aperture is smaller than the beam size; therefore, the output power will be smaller even if the shutter is completely open.

Part Number	Description	Price	Availability
CFH2-F	**Customer Inspired! Extra Filter Holder Insert for Ø1" Optics for use with CFH2R(/M)**	**$70.09**	**Today**
CFH2-B	**Customer Inspired! Blank Plate Insert for use with CFH2R(/M)**	**$63.84**	**Today**
CFH2-V	**Variable Attenuator Insert for use with CFH2R(/M) and Fiber Optic Filter Mounts**	**$207.30**	**Lead Time**