

Light sources for solar simulation

Solar simulator, 25 mm diameter field

- Low-cost alternative
- Collimated beam with 25 mm diameter
- Output power up to 2 suns
- UV version available

These solar simulators are low cost alternatives where only a small illuminated area is required. They produce either a uniform 25 mm-diameter collimated output beam or a non-uniform 35 mm-diameter collimated output beam that almost matches the sun light.



Full spectrum or UV version

The full spectrum systems provide a horizontal beam. They come with a holder for optional AM filters that directly mounts to the condenser output. You can easily insert or remove AM filters or other filters that are 50 mm square or circular. The collimating condenser is an F/1.0 UV quartz type. All other system optics are also made of UV quartz. An optional 90° beam turner with Al-mirror can be rotated 360° about the optical axis to produce a horizontal or vertical beam.

The UV system comes with a UVB/UVA dichroic mirror which turns the output by 90°. This mirror reflects 280 – 400 nm while reducing the VIS and IR output of the lamp to shape the spectral output. Optional UV blocking filters can be used behind the dichroic to further shape the spectral output, for example an atmospheric edge filter, which simulates the UV edge of the sun.

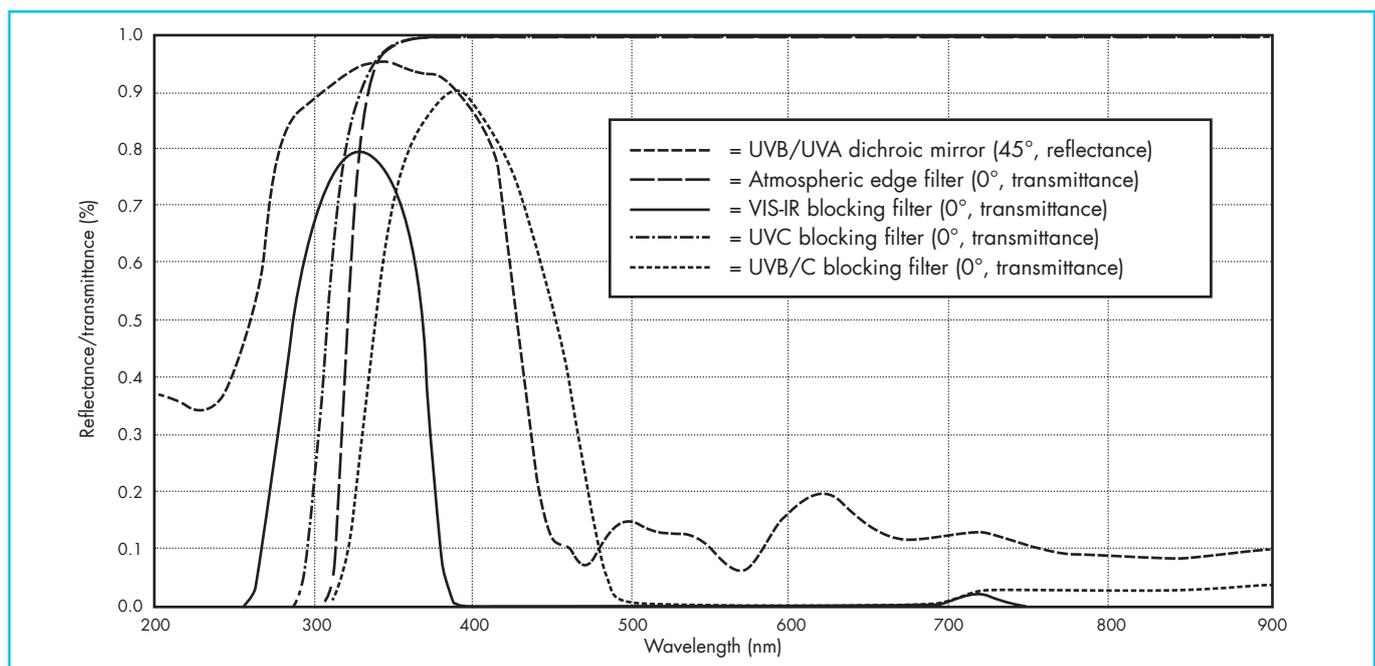
See the transmittance/reflectance curves below for optional UV filters.

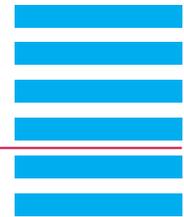
Housing and lamp

The housing holds the arc lamp, arc lamp ignitor and optics. Unlike fan-cooled housings, this housing uses natural convection cooling. This type of cooling is best, because it is quiet and vibration-free, which results in a more stable lamp output. The ignitor is built into the housing, minimizing stray radiated and conducted EMI. The lamp type is a high-pressure 150 W Xe short arc. It is ozone free and has a negligible output of below 260 nm.

Power supply

The highly regulated power supply LSN150/2 provides constant current to the xenon lamp. The current is adjustable to maintain constant light output. For specifications of the power supply go to "Arc lamp power supplies, specifications" on www.lot-qd.com/lightsources ("Arc light sources").





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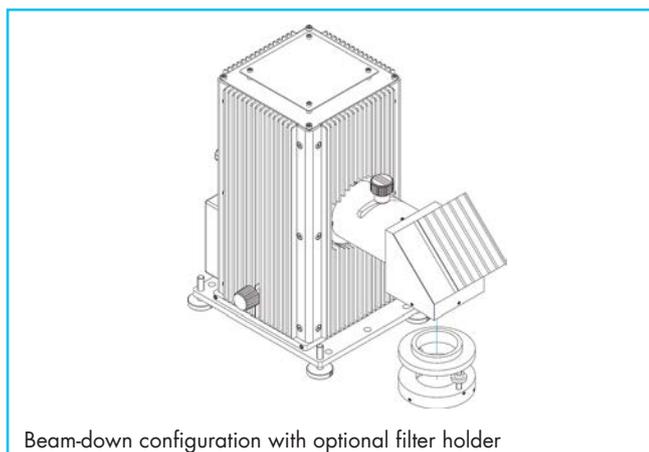
Uniformity

If properly adjusted the LS0104 provides a 35 mm collimated beam which is not uniform. There are smaller areas within the collimated beam providing more or less uniformity. They can be found by iteratively adjusting the condenser optics and changing the working distance.

If you do not want to keep adjusting the optics, consider the LS0106. This system provides a collimated beam of 25 mm in diameter with a uniformity of $\pm 5\%$. All optics are fixed, so no adjustments are necessary.

Specifications

Lamp type	Xenon short arc, 150 W average life: 1200 h
Irradiance	LS0104: 1 - 2 suns depending on optics adjustment and working distance LS0106: 1 sun (min.) @ 80 mm
Spectral match	AM filters: IEC 60904-9, class A UV system: UVB/UVA dichroic mirror, 280 - 400 nm
Collimated beam diameter	LS0104: 35 mm LS0106: 25 mm
Beam uniformity	LS0104: not specified LS0106: $\pm 5\%$
Temporal stability	1% RMS; IEC 60904-9, class A
Input	90 - 250 VAC; 48 - 63 Hz



Safety

The solar simulators emit dangerous levels of UV radiation harmful to the eyes and skin. Persons working near the source must wear UV protective goggles and avoid direct exposure of the output beam to the skin!

A word on fibers

Fibers, fiber bundles or liquid light guides are excellent tools for carrying the output of light sources to areas that are difficult to access with the direct beam. We offer fibers and fiber couplers which directly mount to the output of the lamp housing. However, you should be aware that the transmission of the fiber has an impact on the spectral output of the solar simulator. Choose a fiber optic with "flat transmission" in the wavelength range of interest.

Ordering information

LS0104	Full spectrum solar simulator, no AM filter, horizontal output
LS0106	Full spectrum solar simulator, no AM filter $\pm 5\%$ uniformity, with 90° beam turner
LS0108	Full spectrum solar simulator, no AM filter $\pm 5\%$ uniformity, with 90° beam turner and electronic shutter
LS0105	UV solar simulator with UVB/UVA output and 90° beam turner
Replacement lamp	
LSB521U	150 W Xe arc lamp, ozone free
Filters for full spectrum solar simulators	
LSZ185	Air mass 0 (outer space)
LSZ489	Air mass 1.5-global (direct and diffuse) through atmosphere, 48°
Filters for UV solar simulators	
LSZ176	Atmospheric edge filter, 290 - 4400 nm
LSZ177	VIS-IR blocking filter, 290 - 400 nm, 650 - 800 nm
LSZ178	UVC blocking filter, 280 - 4400 nm
LSZ179	UVB/C blocking filter, 320 - 480 nm, 700 - 4400 nm
Accessories	
LSZ123	Open filter holder for 50 mm square or diameter filters (included in LS0104)
LSZ124	Closed filter holder for 50 mm square or diameter filters (included in LS0106)
LSZ115	Mirror holder and 90° beam turner (included in UV simulator and LS0106)
LSZ170	Al mirror for LSZ115 (for full spectrum simulator if downward beam is required), included in LS0106
LSZ158	Manual shutter
LSZ020	Solar UV-NIR detector, spectral range: 200 - 1200 nm, flat above 700 nm