

Light source accessories

For most applications you need accessories to extend the performance of your light source. We provide the suitable accessories for tasks as: imaging and filtering the arc, attenuating or splitting the beam, changing beam shape or direction, placing a shutter in the beam, controlling light intensity, or directing light to a sample via a single fiber or fiber bundle. All accessories are connected directly to the output of the condenser. We offer accessories with 35 mm and 50 mm diameter. **Our 35 mm accessories fits both 35 mm and 25 mm condensers.**

The condensers on our lamp housings have an female flange. Most accessories have a male flange on one side and a female flange on the other. They connect directly to the light source condenser or to each other. Some models also have a tapped hole to accept optical rods. If you connect multiple accessories to the condenser output, we recommend that you mount at least one rod to ensure stability.

Lens holders for focusing

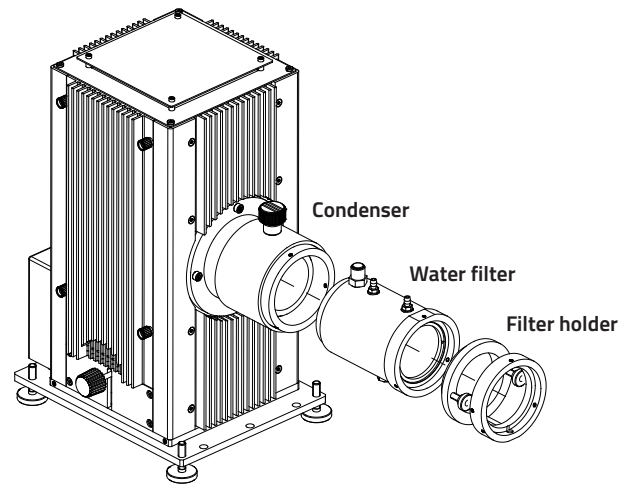
These holders plus a lens focus the collimated beam from a condenser and create an image of the arc or filament one focal length away. We offer quartz and glass lenses for our deuterium, arc, and tungsten halogen sources. Match the lens material to the light source condenser material.



Filter holders

Open holders allow easy access to the filters. You can insert various round or square filters simultaneously, as long as the total thickness does not exceed 19 mm.

Ordering information Filter holder		Filter size	
Part number	Condensor Ø [mm]	Ø or square [mm]	Thickness [mm]
LSZ123	25/35	50	19
LSZ323	50	50	19



Possible accessories

Ordering information Lens holder			
Part number	Condensor Ø [mm]	Length [mm]	Outer Ø [mm]
LSZ111	25/35	24	57
LSZ211	50	24	70

Ordering information Lenses				
UV quartz	Glass	IR quartz	Focal length [mm]	for Lens holder
3-41540	3-40540	3-42540	50	LSZ111
3-41550	3-40550	3-42550	75	
3-41560	3-40560	3-42560	100	
3-41570	3-40570	3-42570	150	
3-41580	3-40580	3-42580	200	
3-41749	3-40749	3-42749	65	LSZ211
3-41765	3-40760	3-42760	100	
3-41775	3-40770	3-42770	150	
3-41790	3-40780	3-42780	200	



Light source accessories

Iris diaphragms

Variable apertures are excellent for light attenuation and as lens aperture stops. A lever located on the top of the diaphragm controls the aperture. For unfiltered light sources with a power of more than 150 W, use diaphragms only behind a water filter, a dichroic mirror or a neutral density filter.

Ordering information Iris diaphragms			
Part number	Condensor Ø [mm]	Aperture range [mm]	Length [mm]
LSZ116	25/35	2 - 36	23
LSZ316	50	3 - 50	25



Manual shutter

This manual shutter couples directly to our light source condensers or other flanged 35 mm or 50 mm accessories. With a lever you can move a slide in and out of the optical path.

Ordering information manual shutter		
Part number	Condensor Ø [mm]	Aperture range [mm]
LSZ158	25/35	40
LSZ159	50	50



Electronic shutter with shutter driver

This electronic shutter couples directly to our light source condensor or other flanged accessories and closes off the beam. It requires 24 V DC (0.25 A) to open. The shutter withstands the heat in a collimated beam up to 500 W electrical lamp power.

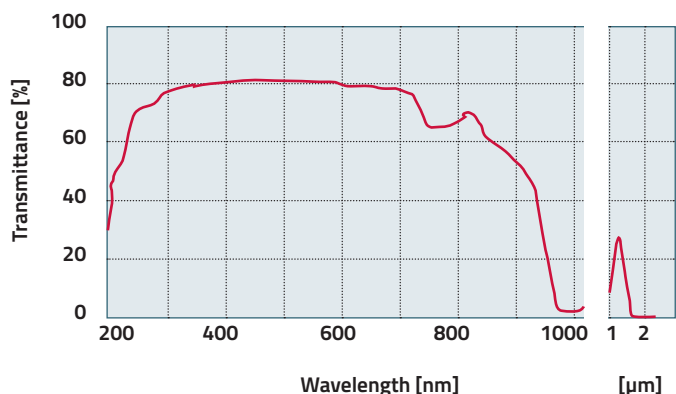
Ordering information electronic shutter with driver		
	Condensor Ø [mm]	Aperture range [mm]
LSZ 166	25/35	40
LSZ 167	50	50
LSZ165 (optional)	Shutter control software and USB relais with modi: manual - count down - interval switching and software development kit (C++, VB, LabView)	

The shutter driver with a minimum exposure time of 500 ms controls an open/close switch on the front and has a TTL input (via BNC). It can be controlled from another source or by software.



Light source accessories

Heat absorbing water filter



- Passes 250 to 950 nm
- No transmittance > 1.2 μm
- Reduces heat load on filters and other optics

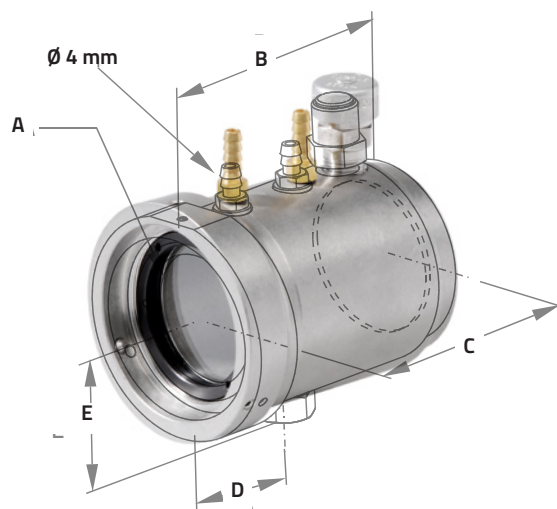
Water filters are used where the infrared is not required and heating effects become a problem. High levels of IR can destroy bandpass and absorbing filters, fiber optics and other optical components. Place the water filter at the end of the lamp housing condenser to protect any optics or sample from IR > 1.2 μm.

Construction

The water filter is a double-walled **stainless steel** cylinder with two quartz windows. The inner cell holds the filtering liquid (distilled water), the outer cell provides cooling water circulation. The stainless steel design provides high corrosion resistance. External cooling is required to remove the energy absorbed by the liquid when filtering sources with more than 200 W power consumption. You can use tap water or water from a recirculating cooler. These steel models can take water, or copper or nickel sulfate solutions (copper and nickel sulfate solutions prevent the growth of organics. These solutions should be preirradiated to stabilize the transmittance.). The inner cell has a relief valve to prevent window damage.

Mounting

With a male flange on one end and a female flange on the other they couple directly to our light source condensers or other light source accessories. An M8 tapped hole at the bottom accepts optical rods for optical bench or variable height mounting.



Ordering information Water filter (stainless steel)						
Part number	Condensor Ø [mm]	Aperture A	Length B	Path length C	D	E
LSZ131	25/35	35	70	56	34	32
LSZ231	50	50	97	82	47	39

Light source accessories

90° beam turner

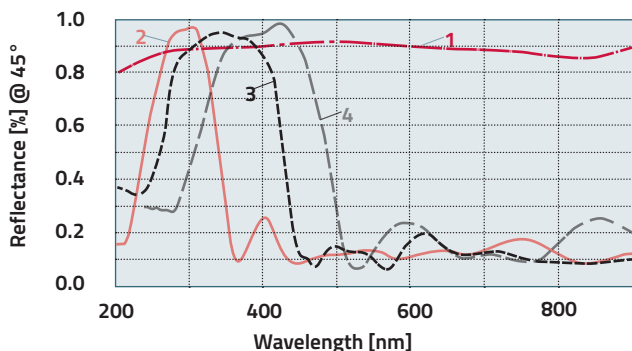
- 360° rotatable around the optical axis
- 2 types of mirrors: full reflector and different dichroics

Beam turners consist of a mirror and a holder placing the mirror under 45° in the collimated output beam of our light sources. You can reflect the entire lamp output or only a selected portion of the UV in the VIS spectrum. The beam turners couple directly to the lamp housing condensers or flanged optical accessories. The beam turner can be rotated 360° about the optional axis. Fix a secondary focusing lens to the output port of a beam turner to produce a focused beam. This is practical for illumination of small samples placed under the condenser.

There are two types of mirrors: one full reflector and different dichroics. The full reflecting mirror is coated with AlMgF_2 and is useful from 200 nm to 30 nm. The other mirrors have a durable multilayer dielectric coating reflecting a certain range in the UV, UV/VIS or VIS and transmitting IR radiation to an absorbing heat sink on the holder.

Dichroic filters

Reflectance curves dichroic filters used at 45°

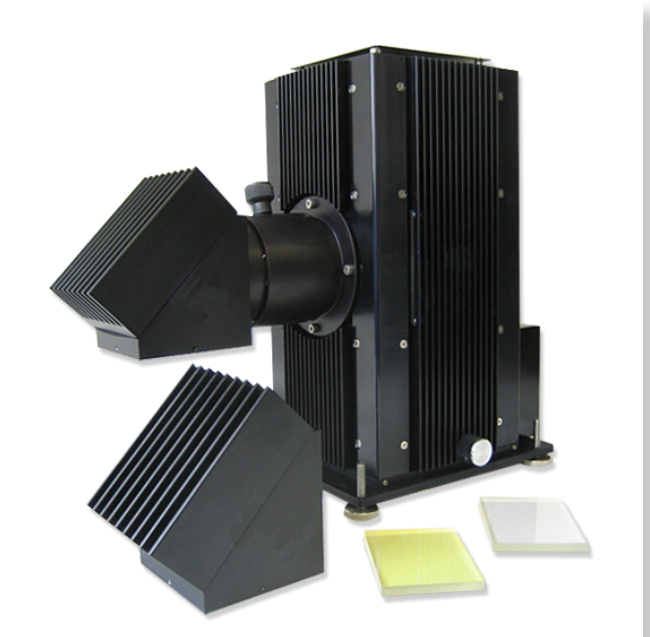


Dichroic filters are designed for high reflectance and polarization insensitivity in a limited spectral range. They pass one portion of the spectrum and block another. Use them to shape the output of a broadband source or to block the heat (IR).

We offer 2 types of dichroic filters:

- UV-reflecting long pass filters and
- heat-transmitting filters (cold mirrors).

All filters are used at 45° to the radiation source.



The UV dichroic mirrors are used primarily to efficiently reflect a defined range of UV wavelengths to match your application, e.g. photolithography, UV curing, photobiology, etc. They have high transmittance outside of their specified reflecting wavelength range. Three spectral ranges are offered. Cold mirrors transmit the IR undeviatingly, while the VIS is reflected at 90°. For many sources this is better than reflecting the IR back towards the source. The dichroic filters come in a rectangular shape which is large enough for a 35 or 50 mm diameter beam incident at 45°.

The reflectance curves show that not all IR is removed. At normal incidence the curves shift to longer wavelengths by ~20 nm for the UV models and 40 nm for the 350 - 450 nm filters. If additional filtering is required fix a filter holder to the beam turner output and use a broadband filter. For additional IR filtering use our water filter in front of the beam turner. The dichroic rejection can be doubled by using two of them in series. Because of the flanging system the input at one fits to the output of the other.

Ordering information Beam turner with filter

Beam turners consist of holder and mirror and are sold as a unit.

Condenser Ø [mm]		Mirror/ filter type	Reflectance range [nm]	Average reflectance [%]	Curve (see figure)
25/35	50				
LSZ110	LSZ210	Al(MgF ₂) UV long pass	200 - 30.0000	80 - 90	1
LSZ117	LSZ217		260 - 320	95	2
LSZ118	LSZ218		280 - 400	95	3
LSZ119	LSZ219		350 - 450	95	4