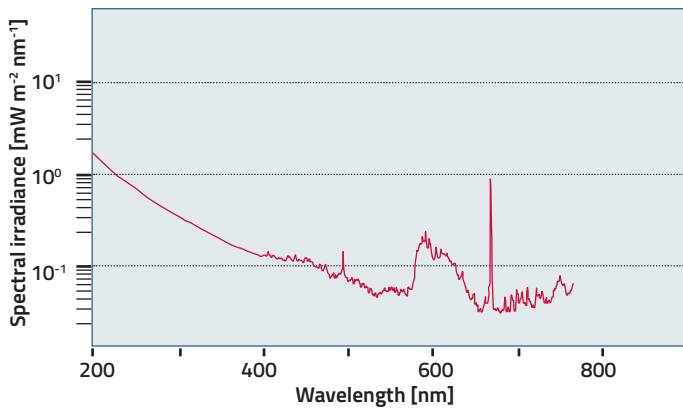


# Deuterium light source

## 30 W

Typical spectra of deuterium lamp



- UV Source with low VIS and IR output
- Smooth continuous UV spectrum 160 - 400 nm
- Preferred source for UV spectroscopy

### Deuterium lamps

Deuterium lamps are arc lamps filled with 99.7 % pure deuterium at low pressure (some Torr). They produce an intense UV continuum from 160 - 370 nm and have some structure above 400 nm. For typical spectral distribution compared to arc or halogen lamps see "Lamp spectra and irradiance data".

Deuterium lamps have advantages in UV spectroscopy, where stray light often is a significant problem. Sources like halogen or other arc lamps have blackbody type spectra: relatively low UV and high VIS and IR output. Most detectors show higher response in the visible. As a result the signal produced by scattered visible light may exceed the real signal in the UV. With D<sub>2</sub> lamps, a high signal to noise ratio is obtained for many UV measurements due to the intense continuum from the vacuum UV to 400 nm, and the low VIS and IR output.

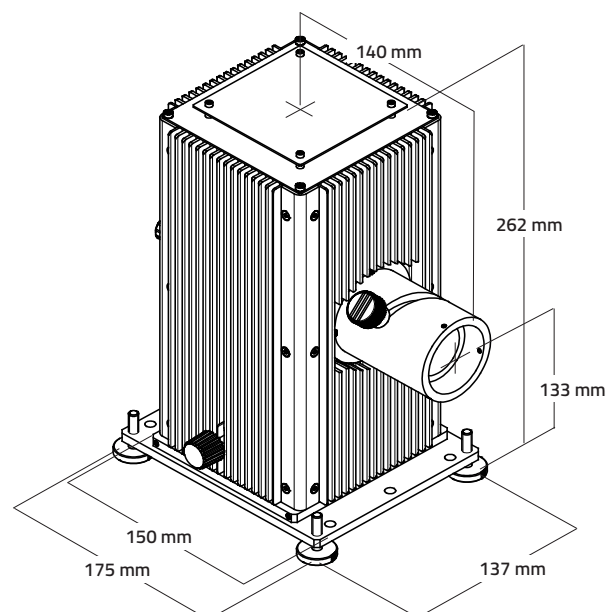
### Convection cooled housing

Unlike fan cooled housings, this housing uses natural convection cooling. This type of cooling is acoustically quiet and vibration free, which results in the most stable lamp output. Openings in the bottom and top of the housing allow air to enter and circulate through the housing without excessive light leakage. The ribbed exterior improves the cooling efficiency.

The housing has precise external lamp adjusters that allow you to place the filament where it is needed. This is important while simplifying optical adjustments. For many applications this eliminates the need to readjust optics located in the beam after it leaves the housing.



Deuterium light source with lamp examples and power supply



Dimensions Deuterium light source

# Deuterium light source

## 30 W

### Power supply

The power supply is easy to use with just an on-off switch (and a filament warm-up selection for calibrated irradiance standards). The lamp is automatically operated within its admissible current/voltage range.

### Condensing optics

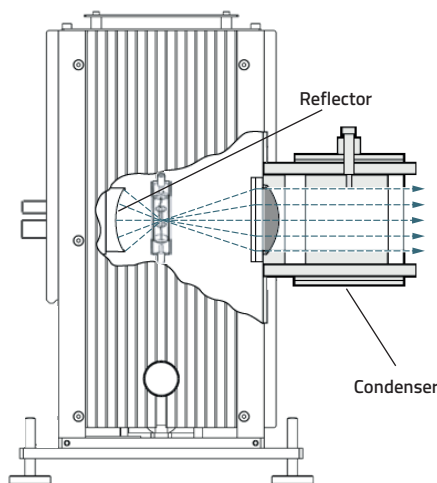
We offer 3 types of different condensers with 25 mm or 35 mm nominal aperture. They differ in:

- Lens material and therefore usable spectral range
- F/number and therefore beam quality and collection/collimation efficiency

The condensers are intended for collimated beams but can also be positioned for compensating focal length change due to dispersion and to produce a more diverging or converging beam. For best uniformity use a slightly diverging beam. For best quality images use the condenser as a collimator and a secondary focusing lens. The condenser lenses are made of high-quality UV quartz for transmissions down to 200 nm.

### A word on safety

Deuterium lamps emit dangerous levels of UV radiation. Always wear UV protective eyewear and gloves. We recommend using an electronic shutter to block the beam when the source is not in use. For DUV work, vent the ozone to the outside. In a well ventilated laboratory, none of our lamps produce medically concerning concentrations of ozone



Functional diagram Deuterium light source

### Lamp types

We offer three 30 W D<sub>2</sub> lamps, differing in their window/envelope material, arc diameter and electrode technology. The "high stability lamp offer longer life and higher stability than the "conventional" lamps.

The lamps with small arc diameter produce both the highest irradiance and radiance. A UV glass envelope gives a lower transmission between 167 - 250 nm. The 167 nm line, responsible for most of the produced ozone, is completely absorbed. Ozone has a strong absorption band in the UV peaking at 250 nm. If the gas remains in the lamp housing and condensing system or along an enclosed optical path, then the observed UV radiation level may change accordingly and lead to misinterpretation of lamp or sample performance (especially with single beam measurements). A lamp with UV glass envelope reduces this problem.

### Ordering information

The LSxxx light source **includes** already lamp housing, power supply, cables and adapters needed for a proper operation. Just select lamp bulb and condenser according to your requirements to complete.

Part number	Description
LS30D2	30 W Deuterium light source
→ LSB211	30 W D <sub>2</sub> lamp (ozone generating)
→ LSB312	30 W D <sub>2</sub> lamp (ozone generating)
→ LSB313	30 W D <sub>2</sub> lamp (ozone generating)

### Condensing optics

Part number	Nominal Ø [mm]	f-number	Lens material
LSC105	25	1,2	UV quartz
LSC115	35	1,3	UV quartz
LSC110	35	1,0	UV quartz

### D<sub>2</sub> lamp specifications

Part number	Arc Ø [mm]	Envelope material	Spectral output [nm]	Average life [h] <sup>*)</sup>	Type
LSB211	1.0	Synthetic quartz	160 - 400	1400	1
LSB312	0.5	Synthetic quartz	160 - 400	1400	1
LSB313	0.5	UV glass	185 - 400	2000	2

Filament voltage: 10 V. Anode voltage: 60 - 90 V. Rated current: 300 mA

<sup>\*)</sup> To half of initial intensity in UV range, at 300 mA.

Type 1: conventional, Type 2: high stability