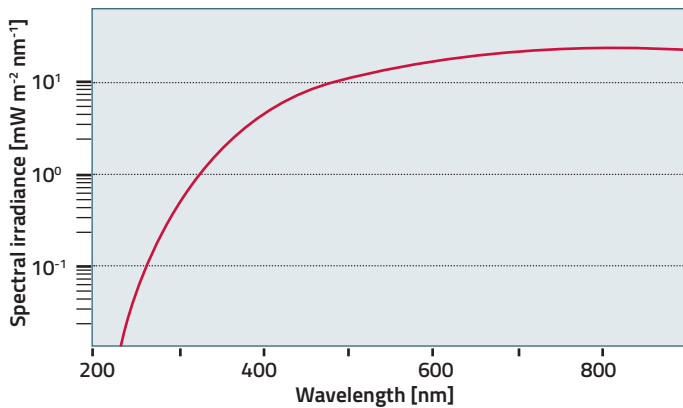


# Halogen light sources

## 50-150 W

Typical spectra of halogen lamp



- Stable VIS-NIR sources
- Convection cooling
- Precision external lamp adjustments
- Choice of different UV-NIR condensing optics
- Supports wide range of accessories

### Halogen lamps

Quartz Tungsten Halogen (QTH) lamps are thermal radiators. The light is generated by heating a solid body to high temperature. The higher its temperature, the "brighter" the light. In halogen lamps the required temperature is produced by a current flow through an electrical conductor of more or less high conductivity. The filament material must have a high melting point and a low evaporation rate to achieve the highest possible temperature and maintain it for a long period of time. Although tungsten is limited with melting point of 3383 °C and low vaporization rate, no better filament material with better properties has been found yet despite intensive research. Quartz Tungsten Halogen lamps are useful visible and near infrared sources. They have a smooth spectrum and stable output.

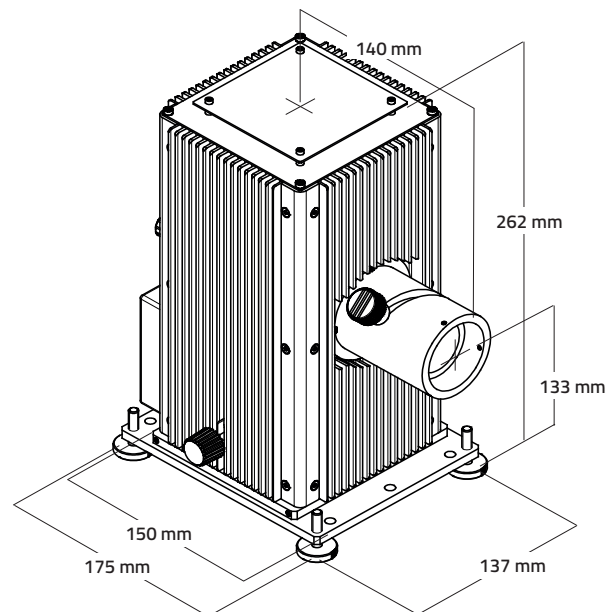
### Convection cooled housing

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.



Halogen light source with power supply



Dimensions Halogen light source

# Halogen light sources

## 50-150 W

### Power supply

The power supply is easy to use and allows for simple light source setup and safe lamp operation. The current is slowly brought up to its operating level without exceeding it, so the lamp never reaches over-power level. This start mode is called "soft-start" or current ramp. To maintain irradiance the operation mode is "constant current".

### Condensing optics

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

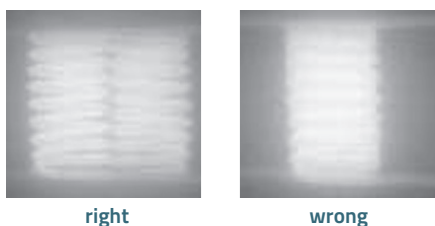
- Lens material and therefore usable spectral range
- F-number and therefore beam quality and collection/collimation efficiency

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, or optical borosilicate glass (BK7; B270) for applications, where an output below 360 nm is not required.

### Rear reflector

An optional spherical reflector assembly with  $\text{AlMgF}_2$  coating collects additional radiation from the lamp.

Lamp and mirror must be adjusted so that the image of the filament is next to the actual filament (see Fig.). The image of the filament on itself must be avoided, as this would lead to overheating of the filament, increased evaporation and shorter lamp life.



### A word on safety

Although it is little compared to arc and deuterium lamps, tungsten halogen lamps still produce UV radiation. Especially in the high wattages the ultra-violet radiation is hazardous. Always wear protective eyewear. When imaging the filament to small probes you will even need welding goggles during adjustments because of glare. Tungsten halogen lamps reach surface temperatures up to 900 °C during operation. The cooling phase can therefore take up to 15 minutes! Only then is it safe to touch the lamp.

### 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.

The optional rear reflector can be used to maximize output power.

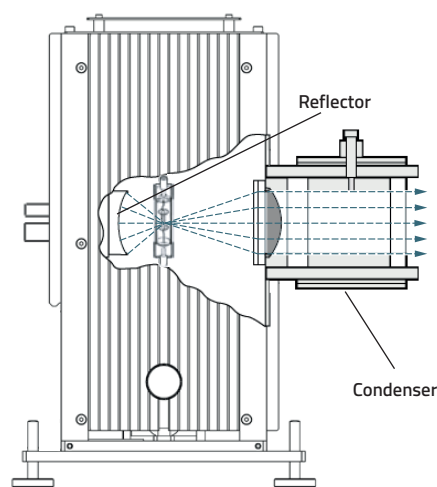
| Part number | Description                                 |
|-------------|---|
| LS50-150QTH | 50-150 W QT Halogen light source            |
| → LSB114/2  | 50 W QT Halogen lamp (set of 2)             |
| → LSB116/2  | 100 W QT Halogen lamp, long life (set of 2) |
| → LSB117/2  | 100 W QT Halogen lamp (set of 2)            |
| → LSB121/2  | 150 W QT Halogen lamp (set of 2)            |

### 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     |
| LSC116      | 35             | 1,3      | glass         |
| LSC111      | 35             | 1,0      | glass         |

### Rear reflector

| Part number | Description    |
|-------------|----------------|
| LSC121      | Rear reflector |



Functional diagram Halogen light source