

# FL-460 Lighting Unit

A source of artificial light is often required when investigating photosynthesis. The light source should have a spectrum similar to sunlight, have sufficient light intensity and should illuminate the object under investigation as uniformly as possible.

High intensities with a light spectrum similar to sunlight can normally be obtained using halogen lamps, but they have the disadvantage that they produce considerable heat and have an inhomogeneous light distribution. In the Lighting Unit FL-460 this general disadvantage of halogen lamps is overturned by the use of fibre optics.



The Lighting Unit FL-460 uses a halogen lamp as light source, but distributes the light with fibre-optics. This enables the advantages of the halogen lamp, namely high light intensity and a light spectrum similar to sunlight, to be utilised. The fibre-optics provides good light distribution complemented by almost completely filtering out the infrared radiation.

The light intensity may be regulated manually by electronic adjustment, mechanical aperture or by bringing neutral density filters into the optical path. However, it is also possible to control the light intensity by an external voltage signal.



Fibre Illuminator FL-460: Filter wheel opened

The flexible special fibre-optics, 120 cm in length, consists of over 200 individual plastic fibres 1 mm in diameter. The fibres are closely together at the light inlet, but at the light outlet they are arranged in grid formation in a circle with a diameter of 95 mm. A higher density of fibres at the edge ensures even distribution of light.

The flange at the light outlet has three threads, which are used to mount an adapter plate. This adapter plate can be drilled with additional holes for mounting the special fibre-optics to a measuring chamber, stand, etc.

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## Specifications

### Fibre Illuminator FL-460

Light intensity*:	Max. 2500 $\mu\text{mol m}^{-2} \text{s}^{-1}$ PAR
Light intensity control:	Electronic adjustment (6 steps), mechanical aperture (5 steps), neutral density filters (NG5, NG11), remote control
Light homogeneity*:	Approx. $\pm 10\%$
Halogen lamps:	24 V/250 W
Heat protection glass:	KG2
Mains supply:	110 V AC, 50/60 Hz or 230 V AC, 50/60 Hz
Ambient temperature:	5 to 40°C
Dimensions:	20 cm x 26.5 cm x 17 cm (W x D x H)
Weight:	approx. 6 kg

### Special Fibre-optics 460-F

Length:	120 cm
No. of individual plastic fibres:	Approx. 200 with 1 mm dia.
Adapter at light input:	Active dia. 16 mm, outer dia. 18 mm
Flange at light output:	Active dia. 95 mm, outer dia. 105 mm
Weight:	0.85 kg

\* With Special Fibre-optics 460-F at a distance of 3.5 cm

