

Ultraviolet sensor (Specifications)

13.12.10

1888.40 Ae

UVA-Sensor

The A/S S. Frederiksen 1888.40 ultraviolet sensor is designed to measure directly incident ultraviolet radiation within the UVA spectral region (320-400 nm). Broad band radiation strikes a narrow band UV filter which permits only radiation around 365 ± 3 nm to strike the silicon photodiode detector. The photocurrent generated is proportional to the intensity of the incident 365 nm radiation. After amplification the output signal is a voltage from 0-5 volts with 4-5 volts corresponding to the UV signal in direct sunlight around noon.

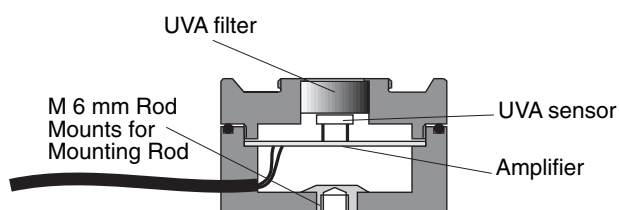


Figure 1: The UVA-Sensor can be mounted on a standard tripod or on an optical bench.

Readout Options

The UVA-Sensor can be directly connected to Science Workshop, Handy Log or other data collection system. Using an adapter the UVA-Sensor can also be connected to a digital voltmeter, chart recorder or other readout device.

Applications Overview

The UVA-Sensor can be used for student science projects, for laboratory exercises or classroom demonstrations. Here are a few examples of measurements which can be made:

- Direct or diffuse solar radiation
- UVA absorption of sunglasses
- Suntan lotion effectiveness
- UVA reflectivities of various materials
- UVA transmittance of glass, plastic, UV-film, etc.
- UVA transmittivity of water
- Total UVA dose to paint, plastic, fabrics or other products

Spectral Response

Figure 2 shows the spectral response of the UVA-probe.

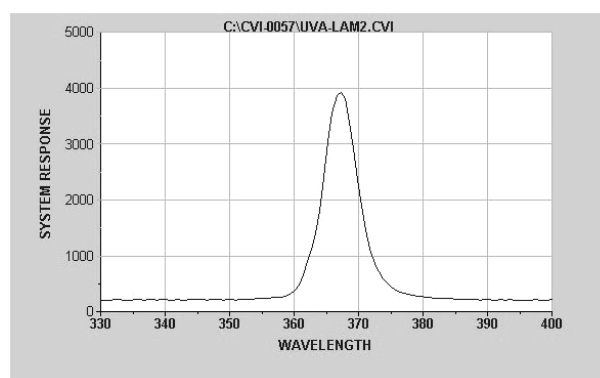


Figure 2: The interference filter has a maximum transmittivity of about 40% and a full width at half maximum (FWHM) of about 6 nm. The off-band attenuation factor is at least 10^6 .

Directional Response

The detector responds to incident radiation predominantly within a conical region with an aperture angle of $\pm 20^\circ$. Combined with an appropriate collimator this makes the UVA-Sensor well-suited to measurements of directly incident solar radiation. Figure 2 shows a graph of directional responsivity.

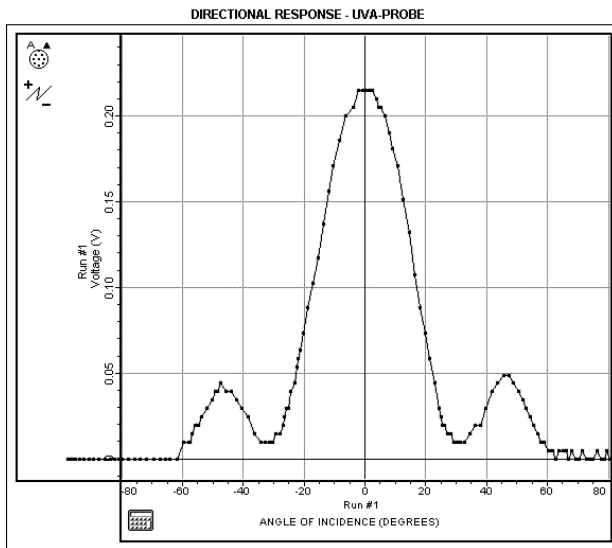


Figure 3: The UVA-sensor detects primarily directly incident radiation within a conical region with an aperture angle of about $\pm 20^\circ$.

SPECIFICATIONS

Size:	Length 38 mm, diameter 50 mm.
Mass:	100 gram.
Entrance aperture:	10 mm.
Angular aperture:	$\pm 20^\circ$.
Mounting:	Standard 1/4" tripod thread.
Cable:	1.5 meter with Science Workshop connector (other adapters available).
Detector:	Hamamatsu silicon photodiode.
Spectral region:	365 nm \pm 3 nm.
Sensitivity:	10 W/(cm ² · nm) per volt at 365 nm.