

# Light irradiance

max. depth 350 m.



Sea & Sun  
Technology

The LI-193 Spherical Quantum Sensor measures photosynthetically active radiation (PAR) underwater from all directions at depths up to 350 meters. This sensor is useful for studies of phytoplankton, which uses radiation from all directions. The measurement is referred to as Photosynthetic Photon Flux Fluence Rate (PPFFR) or Quantum Scalar Irradiance.

The LI-193 uses a diffusive sphere to direct light through glass optical filters to the silicon photodiode. The filters create uniform sensitivity to light between 400 and 700 nm, which closely corresponds to light used by most aquatic plants and algae. The angular response of a typical LI-193 is slightly lower in the direction of the cable connection. When mounted, the low response is usually not significant due to the small proportion of upwelling radiation compared to the total.



## ADVANTAGE

- + measures PAR from all directions

### Light irradiance / LI-COR 193SA

Pressure resistance	350 dbar
Absolute calibration	5 % in air
Sensitivity	typ. 4 $\mu\text{A}$ per 1,000 $\mu\text{mol/s m}^2$ in water
Linearity	max. deviation of 1% up to 10,000 $\mu\text{mol/s m}^2$
Response time	10 $\mu\text{s}$
Temperature dependence	$\pm 0.15\%$ per $^{\circ}\text{C}$ maximum
Azimuth	$< \pm 1\%$ error over $360^{\circ}$ at $45^{\circ}$ elevation
Operating temperature	$-40^{\circ}\text{C} \dots 65^{\circ}\text{C}$
Principle	Quantum sensor
Used for	CTD75M, CTD90, CTD90M, CTD115M



Sea & Sun Technology GmbH  
Arndtstrasse 9-13  
24610 Trappenkamp Germany  
+49 4323 91 09 13  
+49 4323 91 09 15  
sales@sea-sun-tech.com  
www.sea-sun-tech.com