

PAR IRRADIANCE SENSOR



APPLICATIONS

- Designed to be moored, profiled or deployed in towed vehicles (AQUA^{shuttle}, N²-shuttle and SeaSoar) and can be used to measure both upwelling and downwelling light and also as an on-deck reference.
- Integral sensor within the FAST^{tracka} system



FEATURES

- Logarithmic 6 Decade Range
- $(1 + \cos\theta)/2$ Response
- Relative Spectral Sensitivity flat to $\pm 3\%$ from 450-700nm, down 8% of 400nm & 36% at 350nm
- PTFE 2π Scalar Collector
- Angular Detection Range $\pm 130^\circ$ from normal incidence
- Protective cover when not in use

PAR Irradiance Sensor

The Chelsea Technologies PAR (Photosynthetically Active Radiation) Scalar Quantum Irradiance Sensor was designed at Plymouth Marine Laboratory to assist the study of marine photosynthesis, where the prime concern is to quantify the amount of PAR available.

With the use of logarithmic amplification, the sensor covers a range of 6 orders of magnitude. This has the advantage of avoiding setting up the sensor range for the expected signal level for different ambient conditions which can be tedious and can produce calibration errors between ranges.

The sensor's simple construction consists of a hollow PTFE 2π collector supported by a clear acetal dome diverting light to a filter and photodiode from which a $(1 + \cos\theta)/2$ response is obtained.

The sensor's input (7 to 20 Vdc) and output (0 to 5V range covering 3000 to $0.002\mu\text{m}^{-2}\text{s}^{-1}$) lend for ease of integration to standard oceanographic data acquisition systems.

A depth rating of 1000 metres is achieved using a stainless steel outer casing, which also provides a mounting plate for clamping to either a profiling cage or towed vehicle.

Due to the sensitivity of the collector dome itself, a cover is provided to protect the sensor when not in use.

SPECIFICATION

Dimensions	
length	130 mm
diameter	50 mm
Material	PTFE, Acetal and Stainless Steel
Weight	
in air	0.85 kg
in water	0.5 kg
Operating Depth	1000m
Supply Voltage	7-20VDC
Connector	VSG-4-BCL (others on request)
Output	0 to 5V
Range	2000- $0.002\mu\text{E}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ ($E=6.023 \times 10^{23}$ quanta)



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