

# HyperOCR

## Hyperspectral Ocean Colour Radiometer

The Hyperspectral Ocean Colour Radiometer (HyperOCR) provides 136 channels of precision calibrated optical data from 350 to 800 nm. The HyperOCR can easily integrate into third-party equipment or connect directly to a computer for real-time measurements. Satlantic's proprietary RS-485 SatNet networking interface provides the capability to combine several Satlantic devices on a single telemetry interface for applications where serial inputs are limited on host data acquisition devices.

### Features

- 350-800 nm calibrated range
- Irradiance and radiance radiometers for in-water and in-air
- Fully characterized cosine response
- Integrated shutters for accurate dark correction
- Networking capability
- Fast sampling rate (up to 3 Hz)
- Compatible with Bioshutter II
- Data logging and processing software available



### Applications

- Bio-optical analysis of natural water bodies
- Aquatic photosynthesis studies
- Estimation of UV radiation levels
- Hyperspectral measurements for agriculture and forestry

## Specifications

Characteristics	Irradiance Air	Irradiance Water	Radiance Air	Radiance Water
SPATIAL Field of View	Cosine RMS Error 3% 0 - 60° 10% 60 - 85° (350-800 nm)	Cosine RMS Error 3% 0 - 60° 10% 60 - 85° (350-800 nm)	3° Half-angle Half-radiance	8° Half angle Half-radiance
ELECTRICAL Typical Noise Equivalent (Ir)Radiance*	$1.0 \times 10^{-3}$ ( $\mu\text{W cm}^{-2} \text{ nm}^{-1}$ )	$1.5 \times 10^{-3}$ ( $\mu\text{W cm}^{-2} \text{ nm}^{-1}$ )	$5.3 \times 10^{-5}$ ( $\mu\text{W cm}^{-2} \text{ nm}^{-1} \text{ sr}^{-1}$ )	$9.0 \times 10^{-5}$ ( $\mu\text{W cm}^{-2} \text{ nm}^{-1} \text{ sr}^{-1}$ )
Saturation*	9.0 ( $\mu\text{W cm}^{-2} \text{ nm}^{-1}$ )	13.5 ( $\mu\text{W cm}^{-2} \text{ nm}^{-1}$ )	0.5 ( $\mu\text{W cm}^{-2} \text{ nm}^{-1} \text{ sr}^{-1}$ )	0.8 ( $\mu\text{W cm}^{-2} \text{ nm}^{-1} \text{ sr}^{-1}$ )
*At 500nm with 1024 ms integration time				
PHYSICAL Height: Diameter: Weight: Depth Rating: Operating Temperature:	39.9 cm 6.0 cm 1.0 kg 300 m -10 to +50 °C	39.9 cm 6.0 cm 1.0 kg 300m -10 to +50 °C	36.2 cm 6.0 cm 1.0 kg 300 m -10 to +50 °C	36.2 cm 6.0 cm 1.0 kg 300m -10 to +50°C

## Optical Characteristics

Spectrograph range:	305 - 1100 nm
Factory calibration:	350 – 800 nm
Spectral sampling:	3.3 nm/pixel
Spectral accuracy:	0.3 nm
Spectral resolution:	10 nm
Stray light:	$<1 \times 10^{-3}$
Detectors:	256 channel silicon photodiode array
Entrance Slit:	70 x 2500 $\mu\text{m}$

## Electrical Characteristics

Acquisition module:	16 bit ADC
Integration time:	4 - 2048 ms (adaptive gain feature), 1 ms resolution
Frame rate:	3 Hz (at 128 ms integration time)
Data rate:	9600 – 115200 bps (user selectable)
Telemetry interface:	RS-422 / RS-232 (isolated)
Network Interface:	Proprietary Satlantic RS-485 SatNet (isolated)

