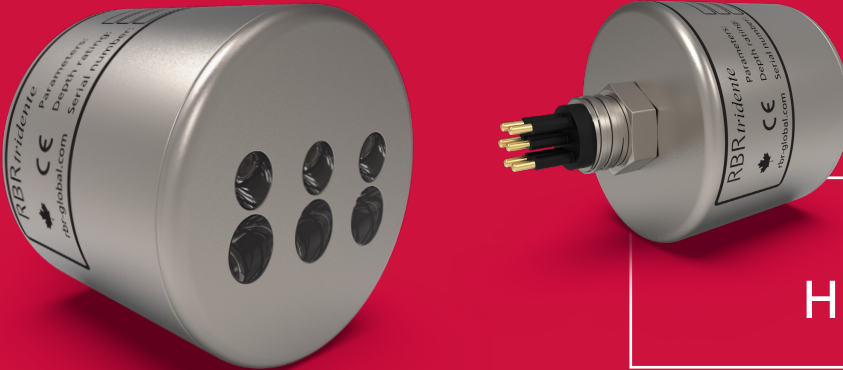


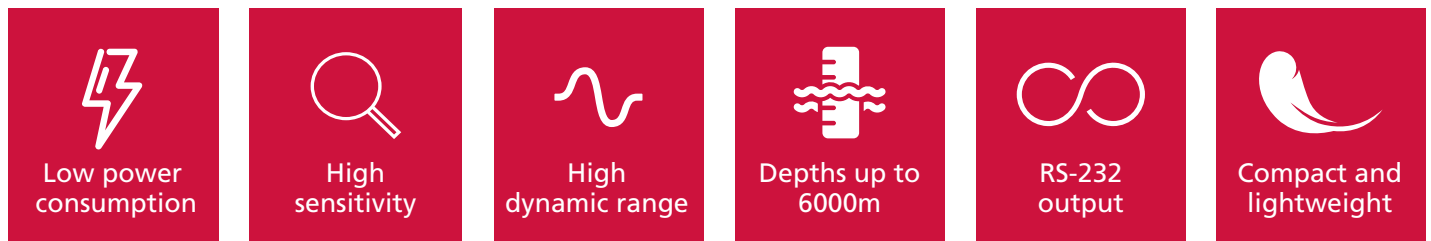
## THREE-CHANNEL FLUORESCENCE AND BACKSCATTER SENSOR



LOW POWER,  
HIGH SENSITIVITY

The RBRtridente is an optical sensor with three channels, capable of making multiple fluorescence and backscatter measurements simultaneously. Its high dynamic range permits exposure to full sunlight with very low detection limits, while power consumption and depth rating have been tailored for use in a wide variety of applications.

### FEATURES



The RBRtridente can integrate any three of the following channels:

- ▶ chlorophyll a
- ▶ fDOM
- ▶ phycocyanin
- ▶ phycoerythrin
- ▶ backscatter
- ▶ turbidity

The size makes the RBRtridente compatible with existing vehicle payload bays. Tolerant of a wide-ranging power supply, data are streamed via RS-232 on the MCBH-6-MP connector. Synchronous detection and automatic gain control allow for full sunlight exposure while still permitting high-resolution measurements of very small signals.

A dry bay OEM variant of the RBRtridente is available for vehicle integration applications.



## THREE-CHANNEL FLUORESCENCE AND BACKSCATTER SENSOR

### LOW POWER, HIGH SENSITIVITY

#### Specifications

##### Physical

Connector	MCBH-6-MP
Depth rating	6000m (standard), 1250m (OEM)
Housing	Titanium
Diameter	63.3mm
Length	57mm, 93mm with connector (standard) 56mm with cap (OEM)
Weight	460g in air, 275g in water (standard) 250g in air, 50g in water (OEM)
Temperature range	-5°C to +35°C
Sampling rate	Up to 32Hz

##### Optical

Centroid angle	120°
Sensing volume	~1.3mL
Linearity, R <sup>2</sup>	0.99
Calibration accuracy	5%

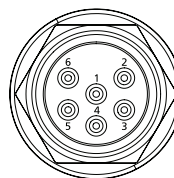
##### Power

Supply voltage	4.5V to 30V (12V nominal)
Power	20mJ/sample (4Hz or slower) 384mW (8Hz or faster)
Sleep current	10µA

##### Interface

RS-232 polled or autonomous streaming
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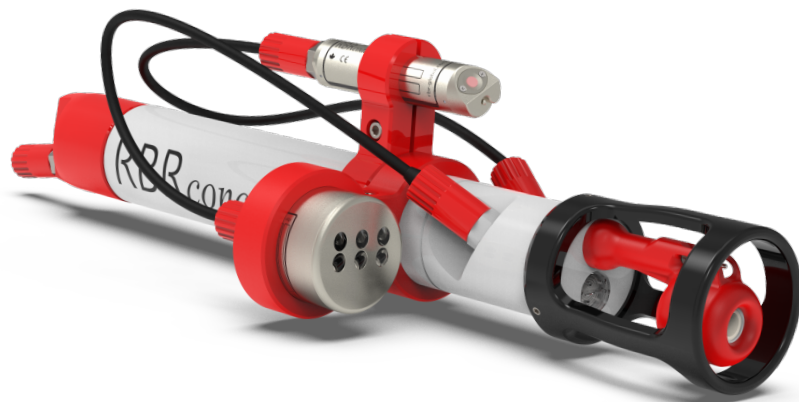
##### MCBH-6-MP connector pinout



- ▶ Pin 1 - Ground
- ▶ Pin 2 - Power
- ▶ Pin 3 - Serial data from sensor
- ▶ Pin 4 - Serial data to sensor
- ▶ Pin 5 - N/C
- ▶ Pin 6 - N/C

##### Instrument integration

The RBRtridente can be easily added to any RBR instrument alongside the CTD and other sensors.



##### Parameters

	Chlorophyll a	fDOM <sup>(2)</sup>	Phycocyanin	Phycoerythrin	Backscatter	Turbidity
Channel wavelengths	Excitation/emission: 470nm/700nm or 435nm/700nm	Excitation/emission: 365nm/450nm	Excitation/emission: 590nm/654nm	Excitation/emission: 525nm/600nm	470nm, 525nm, 650nm, or 700nm	700nm
Calib. range	0-50µg/L <sup>(1)</sup>	0-500ppb	0-500µg/L	0-6000µg/L	0-0.05m <sup>-1</sup> sr <sup>-1</sup> <sup>(3)</sup>	0-500FTU <sup>(4)</sup>
Meas. range	0-500µg/L	0-1500ppb	0-10000µg/L	0-10000µg/L	0-1.5m <sup>-1</sup> sr <sup>-1</sup>	0-1500FTU
Detection limit	0.01µg/L <sup>(1)</sup>	0.03ppb	0.2µg/L	1.5µg/L	1x10 <sup>-6</sup> m <sup>-1</sup> sr <sup>-1</sup>	0.001FTU

<sup>1</sup> Scaled to the fluorescence response from a monoculture of *Thalassiosira weissflogii*.

<sup>2</sup> fDOM can be used as a proxy for cDOM.

<sup>3</sup> Response becomes non-linear above 0.05m<sup>-1</sup>sr<sup>-1</sup>

<sup>4</sup> Response becomes non-linear above 500FTU.

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