OPTICAL RADIOMETER

HIGH PERFORMANCE, LONG DEPLOYMENTS

The RBR*solo³* rad is a small, high-performance optical radiometer with multiple wavelength options and logging capabilities. Low power consumption, large memory, and ability to endure harsh conditions make it a perfect instrument for many oceanographic applications.

FEATURES

Long deployments	High accuracy	Multiple wavelengths	Fast response	USB-C download	Compact and lightweight

The following configurations are available:

▶ RBR*solo³* rad   wavelengths from 413nm to 560nm, depths up to 1000 m
▶ RBR*solo³* rad|deep   wavelengths from 413nm to 560nm, depths up to 2000 m

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The RBR*solo³* rad compact instruments provide calibrated, accurate optical narrow-band data in multiple wavelengths. Large storage capacity and reliable battery power facilitate long deployments with higher sampling rates. Downloads are quick with USB-C. A dedicated desiccant holder makes it simple to replace desiccant before each deployment. The calibration coefficients are stored with the instrument, and only one software tool, Ruskin, is required to operate it. Datasets can be read directly in Matlab, or exported to Excel, OceanDataView®, or text files.

Specifications

Physical

Power	Any AA cell
Communication	USB-C
Clock drift	±60 seconds/year
Diameter	~25mm
Length	~250mm
Depth rating	1000m (plastic)
	2000m (Ti)
Weight (air)	140g (plastic), 320g (Ti)
Weight (water)	15g (plastic), 195g (Ti)

Optical wavelengths

Wavelengths	413nm ±5nm
	445nm ±5nm
	475nm ±13nm
	488nm ±5nm
	560nm ±5nm
Accuracy, centre wavelength	±3nm (bandwidth =10nm)
	±5nm (bandwidth >10nm)
Accuracy, full width at half-maximum	3nm
Out-of-band rejection[1]	>25dB (typical)

Optical radiometry

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Full scale range	1.5Sun or
	400µW/cm²/nm (minimum)
Initial offset error[2]	0.0025% full scale
Dynamic range	>5.5 decades (nominal)
Resolution[1]	0.0002% full scale or
	0.001µW/cm²/nm
Absolute calibration[3]	5%
Linearity	1%
Response time	<25ms
Temperature range	-5°C to 35°C
Gain temperature dependence	±0.15%/°C
Cosine response error (water)	±5% at 0-60°
	±10% at 61-82°
Azimuth error (water)	±1.5% at 45°

[1] Out-of-band rejection and resolution are wavelength dependent.
[2] Dark offset is internally temperature-compensated.
[3] RBR calibrates radiometers with NIST traceable references.
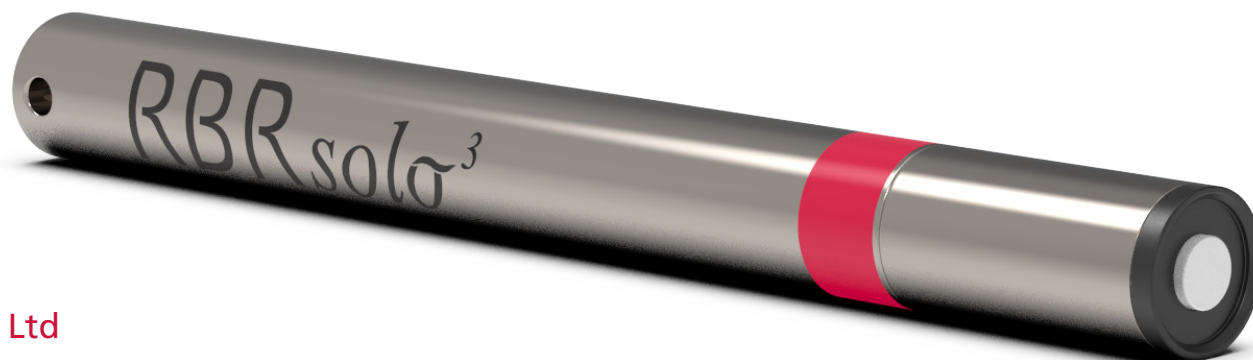
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