

## RAMSES

40SXXX010



### Spectral imaging radiometer to measure radiance or irradiance in UV, VIS and UV/VIS

RAMSES radiometers are spectral imaging radiometers to measure radiance, irradiance, or scalar irradiance in the UV, VIS and UV/VIS ranges. Thanks to their ultra small size and weight as well as very low power consumption, they are especially suitable for hand-held and autonomous applications. RAMSES radiometers combine precision hyperspectral light measurements with a maximum of flexibility. The modular system increases cost-effectiveness, while the many accessories and special solutions enable a wide range of applications such as installation on ships, handheld usage or autonomous measurements in remote places, like the Arctic or Antarctica.

#### Benefits

- Extremely low power consumption
- Environmentally robust
- World market leader

#### Applications

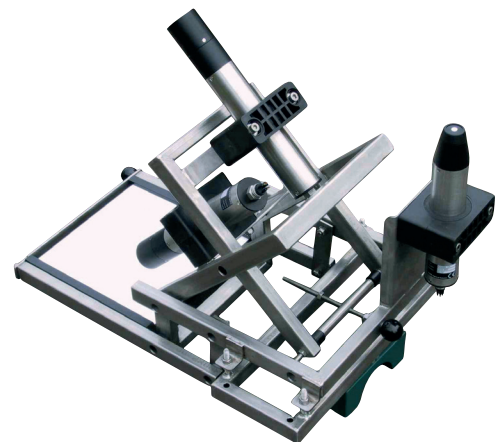
- Water quality
- Field measurements
- Satellite validation
- Biology
- Photosynthesis
- Color measurements
- Climate research



Frame 1



Frame 2



Frame 3

## Technical Specifications

<b>Measurement technology</b>	detector	High-end miniature spectrometer	
		256 Channels	
<b>Measurement principle</b>		Radiance or irradiance	
<b>Parameter</b>		See parameter list p. 3	
<b>Measuring range</b>		See parameter list p. 3	
<b>Measurement accuracy</b>		See parameter list p. 3	
<b>Data logger</b>		-	
<b>T100 response time</b>		min. 16 s (burst mode)	
<b>Measurement interval</b>		min. 8 s (burst mode)	
<b>Housing material</b>		Stainless steel (1.4571/1.4404) or titanium (3.7035), POM	
<b>Dimensions (L x Ø)</b>		ACC 260 mm x 48 mm	ACC ~ 10.2" x 1.9"
		ASC 245 mm x 48 mm	ASC ~ 9.6" x 1.9"
		ARC 300 mm x 48 mm	ARC ~ 11.8" x 1.9"
<b>Weight</b>	stainless steel	0.9 kg	~ 2 lbs
	titanium	0.7 kg	~ 1.5 lbs
<b>Interface</b>	digital	RS-232 (TriOS)	
<b>Power consumption</b>		≤ 0.85 W	
<b>Power supply</b>		8...12 VDC (± 3 %)	
<b>Maintenance effort</b>		≤ 0.5 h/month (typical)	
<b>Calibration/maintenance interval</b>		24 months	
<b>System compatibility</b>		RS-232 (TriOS protocol)	
<b>Warranty</b>		1 year (EU: 2 years)	US: 2 years
<b>INSTALLATION</b>			
<b>Max. pressure</b>	with SubConn	30 bar	~ 435 psig
<b>Protection type</b>		IP68	NEMA 6P
<b>Sample temperature</b>		+2...+40 °C	~ +36 °F to +104 °F
<b>Ambient temperature</b>		+2...+40 °C	~ +36 °F to +104 °F
<b>Storage temperature</b>		-20...+80 °C	~ -4 °F to +176 °F
<b>Inflow velocity</b>		0.1...10 m/s	~ 0.33 fps to 33 fps

## RAMSES PARAMETER LIST

	ACC			ARC	ASC
					
	UV	UV/VIS	VIS	VIS	VIS
Wavelength range* [nm]	280...500	280...720	320...950	320...950	320...950
Detector*	256 channel silicon photo diode array				
Pixel dispersion* [nm/pixel]	2.2	2.2	3.3	3.3	3.3
Wavelength accuracy*	0.2	0.2	0.3	0.3	0.3
Usable channels	100	200	190	190	190

	ACC-UV		ACC-VIS	ARC-VIS	ASC-VIS
	UV A / UV B irradiance		VIS irradiance	VIS radiance	VIS scalar irradiance
Wavelength range*	280...500 nm			320...950 nm	
Typical saturation (IT: 4 ms)**	20 W m <sup>-2</sup> nm <sup>-1</sup> (at 300 nm)	10 W m <sup>-2</sup> nm <sup>-1</sup> (at 400 nm)			20 W m <sup>-2</sup> nm <sup>-1</sup> (at 400 nm)
	17 W m <sup>-2</sup> nm <sup>-1</sup> (at 360 nm)	8 W m <sup>-2</sup> nm <sup>-1</sup> (at 500 nm)	1 W m <sup>-2</sup> nm <sup>-1</sup> sr <sup>-1</sup> (at 500 nm)		12 W m <sup>-2</sup> nm <sup>-1</sup> (at 500 nm)
	18 W m <sup>-2</sup> nm <sup>-1</sup> (at 500 nm)	14 W m <sup>-2</sup> nm <sup>-1</sup> (at 700 nm)			15 W m <sup>-2</sup> nm <sup>-1</sup> (at 700 nm)
Typical NEI (IT: 8 s)**	0.85 μW m <sup>-2</sup> nm <sup>-1</sup> (at 300 nm)	0.4 μW m <sup>-2</sup> nm <sup>-1</sup> (at 400 nm)			0.8 μW m <sup>-2</sup> nm <sup>-1</sup> (at 400 nm)
	0.75 μW m <sup>-2</sup> nm <sup>-1</sup> (at 360 nm)	0.4 μW m <sup>-2</sup> nm <sup>-1</sup> (at 500 nm)	0.25 μW m <sup>-2</sup> nm <sup>-1</sup> sr <sup>-1</sup>		0.6 μW m <sup>-2</sup> nm <sup>-1</sup> (at 500 nm)
	0.80 μW m <sup>-2</sup> nm <sup>-1</sup> (at 500 nm)	0.6 μW m <sup>-2</sup> nm <sup>-1</sup> (at 700 nm)			0.8 μW m <sup>-2</sup> nm <sup>-1</sup> (at 700 nm)
Collector type	cosine response			FOV: 7° in air	Spherical, 2 Pi
Accuracy	Better than 6-10 % ***			Better than 6 % ***	Better than 5 % ***
Integration time	4 ms...8 s				

\*) Specifications of Carl ZEISS AG, Germany

\*\*) IT: integration time

\*\*\*) Depends on wavelength range