



## RAMSES G2

42SXXXXX0



### Spectral imaging radiometers for measuring radiance or irradiance in the UV, VIS or UV/VIS range

RAMSES radiometers are spectral imaging radiometers for measuring radiance, irradiance or scalar irradiance in the UV, VIS or UV/VIS range. Due to their low weight and size, as well as very low power consumption, they are especially suitable for portable or autonomous use. The RAMSES radiometer group combines spectral imaging light measurement with maximum flexibility. The modular measuring system reduces the price and many accessories. Special solutions enable a wide range of applications, such as installations on ships, as a handheld device or in autonomous measuring stations and remote locations such as the Arctic or Antarctic.

With the implementation of the G2 extension module, the RAMSES radiometry series now also has the innovative G2 interface and can now be easily configured via a web browser. The internal data logger with 2 GB memory and comparatively low power consumption offers the possibility of self-sufficient measurement operation without a separate controller. The addition of the Modbus RTU protocol to the interface simplifies integration into existing process control systems and external data loggers. In addition to radiance and irradiance, the parameters inclination and pressure can also be queried.

### Advantages

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

### Applications

- Environmental research
- Satellite validation

# RAMSES G2

## Mounting options



Frame 1



Frame 2



Frame 3

## Technical specifications

|                                 |                  |                                                                               |                                                    |
|---------------------------------|------------------|-------------------------------------------------------------------------------|----------------------------------------------------|
| Measurement technology          | Detector         | High-end miniature spectrometer<br>256 channels                               |                                                    |
| Measurement principle           |                  | Radiance, irradiance, scalar irradiance                                       |                                                    |
|                                 |                  |                                                                               |                                                    |
| Parameters                      |                  | see parameter list                                                            |                                                    |
| Measurement range               |                  | see parameter list                                                            |                                                    |
| Measurement accuracy            |                  | see parameter list                                                            |                                                    |
| Response time T100              |                  | ≤ 24 s (burst mode)                                                           |                                                    |
| Measurement interval            |                  | ≤ 12 s (burst mode)                                                           |                                                    |
|                                 |                  |                                                                               |                                                    |
| Housing material                |                  | Stainless steel (1.4571 / 1.4404) or titanium (3.7035), POM                   |                                                    |
| Dimensions without plug (L x Ø) | up to 30 bar     | ACC G2 284 mm x 48.5 mm<br>ARC G2 322 mm x 48.5 mm<br>ASC G2 274 mm x 48.5 mm | ~ 11.2" x 1.9"<br>~ 12.7" x 1.9"<br>~ 10.8" x 1.9" |
|                                 | Deep sea version | ACC G2 DS 284 mm x 51 mm<br>ARC G2 DS 322 mm x 51 mm                          | ~ 11.2" x 2.0"<br>~ 12.7" x 2.0"                   |
| Weight *                        | VA               | ACC G2 1.45 kg                                                                | ~ 3.2 lbs                                          |
|                                 | Ti               | ACC G2 1.25 kg                                                                | ~ 2.8 lbs                                          |

\* For clarity, only the weight for ACC sensors is listed here. Weight specifications for ARC and ASC are approximately 250 g higher than the values given here.

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|                                              |                            |
|----------------------------------------------|----------------------------|
| <b>Interface</b>                             | RS-485; Ethernet (TCP/IP)  |
| <b>Data memory</b>                           | ~ 2 GB                     |
| <b>Power consumption</b>                     | typ. 1 W                   |
| <b>Power supply</b>                          | 9 - 24 VDC ( $\pm 10 \%$ ) |
| <b>Maintenance effort</b>                    | $\leq 0.5$ h/month typical |
| <b>Calibration/<br/>maintenance interval</b> | 24 months                  |
| <b>System compatibility</b>                  | RS-485 (Modbus RTU)        |
| <b>Warranty</b>                              | 1 year (EU & USA: 2 years) |

|                             |                             |              |                  |
|-----------------------------|-----------------------------|--------------|------------------|
| <b>Max. Pres-<br/>sure</b>  | <b>with<br/>SubConn</b>     | 30 bar       | ~ 435 psi        |
|                             | <b>Deep sea<br/>version</b> | 200 bar      | ~ 2900 psi       |
| <b>Degree of protection</b> |                             | IP68         |                  |
| <b>Sample temperature</b>   |                             | +2...+40 °C  | ~ +36 to +104 °F |
| <b>Ambient temperature</b>  |                             | +2...+40 °C  | ~ +36 to +104 °F |
| <b>Storage temperature</b>  |                             | -20...+80 °C | ~ -4 to +176 °F  |
| <b>Inflow velocity</b>      |                             | 0.1...10 m/s | ~ 0.33 to 33 fps |

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## Parameter list

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

|                                                                     | ACC-UV                                                   | ACC-VIS                                               | ARC-VIS                                                                 | ASC-VIS                                               |
|---------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------|
|                                                                     | UV A / UV B Irradiance                                   | VIS Irradiance                                        | VIS radiance                                                            | VIS scalar irradiance                                 |
| Wavelength range [nm]                                               | 280...500 nm                                             | 320...950                                             |                                                                         |                                                       |
| Typ. saturation [W m <sup>-2</sup> nm <sup>-1</sup> ] (IT: 4 ms) ** | 20 (at 300 nm)<br>17 (at 360 nm)<br>18 (at 500 nm)       | 10 (at 400 nm)<br>8 (at 500 nm)<br>14 (at 700 nm)     | 1<br>W m <sup>-2</sup> nm <sup>-1</sup> sr <sup>-1</sup><br>(at 500 nm) | 20 (at 400 nm)<br>12 (at 500 nm)<br>15 (at 700 nm)    |
| Typ. NEI *** [μW m <sup>-2</sup> nm <sup>-1</sup> ] (IT: 8 s)       | 0.85 (at 300 nm)<br>0.75 (at 360 nm)<br>0.80 (at 500 nm) | 0.4 (at 400 nm)<br>0.4 (at 500 nm)<br>0.6 (at 700 nm) | 0.25<br>μW m <sup>-2</sup> nm <sup>-1</sup> sr <sup>-1</sup>            | 0.8 (at 400 nm)<br>0.6 (at 500 nm)<br>0.8 (at 700 nm) |
| Collector                                                           | 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 from Carl ZEISS AG, Germany; \*\* Integration time;

\*\*\* Noise equivalent irradiance; \*\*\*\* Dependent on wavelength range