

# RTM 2300 ULTRA

## Radon and Thoron Monitor with two separate channels



### Applications:

- Radon and thoron measurements in indoor air, in soil gas, in water samples, in ventilation ducts, etc.
- Search for radon entry paths
- Quality-assured radon soil air measurements
- Direct display and temperature-compensated measurement of radon content in water samples
- Determination of surface exhalation rates
- Process monitoring in the areas of NORM, TNORM, and nuclear medicine

### Features:

- Two independent Radon measurement channels can be operated either separately or in combination
- Outstanding sensitivity especially for combined mode

## Closer to your application

- Combines the advantages of two physically different measuring principles
- Precisely controlled flow with integrated robust, durable, and quiet pump for reproducible thoron measurement
- “Soil Gas” version with determination of soil permeability during radon soil gas measurement, fresh air flushing, and quality assurance via integrated CO<sub>2</sub> sensor
- Protection against water ingress during soil gas and water measurements
- Up to four days of battery life
- Built-in GPS receiver
- Colour touch screen with graphical display of spectra and measurement series
- Outstanding connectivity for system integration and connection of accessories
- Flexible, user-customizable alerting and warning system
- High data security thanks to proprietary controller architecture (no integrated PC solution with operating system)
- DAkkS calibration certificate for radon activity concentration
- Meets all requirements of DIN/IEC 61577-2
- Compatible with all relevant measurement methods in accordance with DIN/ISO 11665

**Specifications:**
**Measuring chamber 1**

<b>Measurement principle</b>	Measuring chamber with high-voltage deposition on silicon detector and alpha spectroscopy
<b>Detector</b>	4 x 200 mm <sup>2</sup> Si detector with HV chambers
<b>Intrinsic background</b>	< 0.2 Bq/m <sup>3</sup>
<b>Nominal flow rate</b>	0.5 l/min
<b>Internal volume</b>	260 ml (total volume of the air circuit)
<b>Measuring range</b>	1 ... 10 000 000 Bq/m <sup>3</sup>
<b>Intrinsic accuracy</b>	<= ±2,5 %
<b>Sensitivity</b>	4.2 or 8.5 cpm/(kBq/m <sup>3</sup> ) for fast or slow mode, respectively
<b>Response time</b>	15 or 120 minutes for fast or slow mode

<b>Measurement/Analysis</b>	Radon air concentration fast (excluding Po-214) and slow (including Po-214) Thoron air concentration Radon concentration in water samples
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#### Measuring chamber 2

<b>Measurement principle</b>	Scintillation chamber (Lucas cell)
<b>Detector</b>	Silicon photo multiplier
<b>Operation mode</b>	Diffusion through filter membrane
<b>Internal volume</b>	260 ml (total volume of the air circuit)
<b>Measuring range</b>	1 ... 1 000 000 Bq/m <sup>3</sup>
<b>Intrinsic accuracy</b>	<= ±3 %
<b>Sensitivity</b>	22,5 cpm/(kBq/m <sup>3</sup> )
<b>Response time</b>	120 minutes for fast or slow mode
<b>Measurement/Analysis</b>	Radon air concentration

#### Combined measurement

<b>Measuring range</b>	1 ... 1 000 000 Bq/m <sup>3</sup>
<b>Intrinsic accuracy</b>	<= ±3 %
<b>Sensitivity</b>	31 cpm/(kBq/m <sup>3</sup> )
<b>Response time</b>	120 minutes for fast or slow mode
<b>Measurement/Analysis</b>	Radon air concentration

#### Internal sensors

<b>Standard device</b>	Relative humidity 0 ... 100 %, accuracy ±2 % Temperature -20 ... 40 °C, accuracy ±0.5 °C
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	<p>Bar. Pressure 800 ... 1 200 mbar, accuracy 0.5 % MW</p> <p>Flow rate 0 ... 4 l/min, accuracy <math>\pm 5</math> %</p> <p>Humidity/temperature sensors in the air circuit</p>
<b>Version Soil Gas</b>	<p>Differential pressure 0 ... 10 mbar (for high permeability)</p> <p>Differential pressure 0 ... 600 mbar (for low permeability)</p> <p>CO2 sensor 0 ... 10 % (VAISALA)</p>
<b>Optional</b>	<p>Additional sensors with analogous or pulse signals can be connected to the AUX1 and AUX2 sockets, e.g., local dose rate probe, weather station, and much more.</p>

### General information

<b>Measurement</b>	<p>Simultaneous measurement with all detectors/sensors according to the selected measurement program</p>
<b>Measurement programs</b>	<p>Storage of up to 16 different measurement programs with up to 32 steps (defined or unlimited repetition)</p> <p>Time interval 1 second to weeks</p>
<b>Data storage</b>	<p>Micro SD, 32 GB</p>
<b>Operation/Display</b>	<p>4,7" Colour Touch-Screen</p>
<b>Interfaces</b>	<p>2 independent digital communication channels</p> <p>Channel 1: USB, RS 232, RS 485 B</p> <p>Channel 2: RS 485 A with MODBUS RTU, WLAN (optional)</p> <p>2 analogous outputs, assignable to any measured value and measurement range</p>
<b>Power supply</b>	<p>12 V NiMH rechargeable battery (&gt;72 hours continuously)</p> <p>Plug-in power supply 100-240 VAC ~50/60 Hz, 18 VDC / 1.8 A</p>
<b>Dimensions/Weight</b>	<p>235 mm x 140 mm x 255 mm / 6 kg</p>
<b>Software</b>	<p>dVISION</p>
<b>GPS</b>	<p>Highly sensitive GPS receiver usually provides position even indoors; coordinates are stored simultaneously with the measured values. Map view in dVISION, export of GIS-compatible KML files.</p>
<b>Environmental conditions</b>	<p>0 ... 40 °C</p>

	0 ... 95 % RH, non-condensing
	800 ... 1 100 mbar
<b>Scope of delivery</b>	Charging power supply adapter
	External Temperature/Humidity sensor
	USB cable
	Dust filters (spare)
	Hose 6.35 mm x 3.18 mm (1.5 m)
	Fuse (spare)
	Transport case
	Manual & software (on <a href="https://sarad.de">https://sarad.de</a> )
	DAkkS-compliant calibration certificate according to DIN EN ISO/IEC 17025:2018
<b>Optional accessories</b>	Water ingress protection (standard for "Soil Gas" version)
	Soil test set (impact probe and/or packer probe)
	Exhalation bonnet
	Aqua kit for DACM32 for measuring radon in water
	Decay product measuring head for grab sampling (Markov)
	Measuring case for field applications with connections for tubes and power supply