# 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



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- 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 $CO_2$ 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** | |
|---|---|
| **Measurement principle** | Measuring chamber with high-voltage deposition on silicon detector and alpha spectroscopy |
| **Detector** | 4 x 200 mm² Si detector with HV chambers |
| **Intrinsic background** | < 0.2 Bq/m³ |
| **Nominal flow rate** | 0.5 l/min |
| **Internal volume** | 260 ml (total volume of the air circuit) |
| **Measuring range** | 1 ... 10 000 000 Bq/m³ |
| **Intrinsic accuracy** | <= ±2 % |
| **Sensitivity** | 4.2 or 8.5 cpm/(kBq/m³) for fast or slow mode, respectively |
| **Response time** | 15 or 120 minutes for fast or slow mode |

| | |
|---|---|
| **Measurement/Analysis** | Radon air concentration fast (excluding Po-214) and slow (including Po-214)<br>Thoron air concentration<br>Radon concentration in water samples |

| **Measuring chamber 2** | |
|---|---|
| **Measurement principle** | Scintillation chamber (Lucas cell) |
| **Detector** | Silicon photo multiplier |
| **Operation mode** | Diffusion through filter membrane |
| **Internal volume** | 260 ml (total volume of the air circuit) |
| **Measuring range** | 1 ... 1 000 000 Bq/m³ |
| **Intrinsic accuracy** | <= ±3 % |
| **Sensitivity** | 22,5 cpm/(kBq/m³) |
| **Response time** | 120 minutes for fast or slow mode |
| **Measurement/Analysis** | Radon air concentration |

| **Combined measurement** | |
|---|---|
| **Measuring range** | 1 ... 1 000 000 Bq/m³ |
| **Intrinsic accuracy** | <= ±3 % |
| **Sensitivity** | 31 cpm/(kBq/m³) |
| **Response time** | 120 minutes for fast or slow mode |
| **Measurement/Analysis** | Radon air concentration |

| **Internal sensors** | |
|---|---|
| **Standard device** | Relative humidity 0 … 100 %, accuracy ± 2 %<br>Temperature -20 … 40 °C, accuracy ± 0.5 °C |


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| | |
|---|---|
| | Bar. Pressure 800 … 1 200 mbar, accuracy 0.5 % MW<br>Flow rate 0 … 4 l/min, accuracy ± 5 %<br>Humidity/temperature sensors in the air circuit |
| **Version Soil Gas** | Differential pressure 0 … 10 mbar (for high permeability)<br>Differential pressure 0 … 600 mbar (for low permeability)<br>CO2 sensor 0 … 10 % (VAISALA) |
| **Optional** | 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. |

## General information

| | |
|---|---|
| **Measurement** | Simultaneous measurement with all detectors/sensors according to the selected measurement program |
| **Measurement programs** | Storage of up to 16 different measurement programs with up to 32 steps (defined or unlimited repetition)<br>Time interval 1 second to weeks |
| **Data storage** | Micro SD, 32 GB |
| **Operation/Display** | 4,7” Colour Touch-Screen |
| **Interfaces** | 2 independent digital communication channels<br>Channel 1: USB, RS 232, RS 485 B<br>Channel 2: RS 485 A with MODBUS RTU, WLAN (optional)<br>2 analogous outputs, assignable to any measured value and measurement range |
| **Power supply** | 12 V NiMH rechargeable battery (>72 hours continuously)<br>Plug-in power supply 100-240 VAC ~50/60 Hz, 18 VDC / 1.8 A |
| **Dimensions/Weight** | 235 mm x 140 mm x 255 mm / 6 kg |
| **Software** | dVISION |
| **GPS** | 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. |
| **Environmental conditions** | 0 … 40 °C |

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|---|---|
| | 0 … 95 % RH, non-condensing |
| | 800 … 1 100 mbar |
| **Scope of delivery** | 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 (electronic) |
| | DAkkS-compliant calibration certificate according to DIN EN ISO/IEC 17025:2018 |
| **Optional accessories** | Water ingress protection (standard for “Soil Gas” version) |
| | Soil gas set (impact probe and/or packer test) |
| | Exhalation bonnet |
| | Aqua kit for DACM32 for measuring radon in water |
| | Decay product measuring head for grab sampling (Markov) |
| | Measuring case with connections for hoses and power supply |


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