A D V A N C E D T E C H N O L O G Y F O R A S A F E R W O R L D

RPM 2300

Radon Decay Product Monitor

The RPM 2300 is a high-quality and modern radon progeny working level monitor. The fine-pored membrane filter of the newly developed sampling head is exchangeable with no need of any tool. The reinforced filter is used in combination with an automatically controlled rotary vane pump that guarantees constant air flow through the filter. A sensor permanently measures the air pressure over the filter in order to recognize an exhausted or perforated filter instantly.

Applications:

- Correct dose determination of radon or thoron daughter product exposure
- Radiological assessment of interiors in clay houses

As detector we use a light-protected silicium detector with a sensitive area of 400 mm². In combination with the fine pored membrane filter, an optimal spectral resolution to separate the individual radon decay products is attained.

The analysis is carried out continuously, i.e. disposition of the decay products and determination of the activity of the collected decay products take place simultaneously. It issues the equilibrium equivalent concentration (EEC) and the potential alpha energy concentration (PAEC) and hence the Working Level, each for radon and thoron decay products.

Because of the long radioactive half-life time of the thoron decay product 212Po, the activity on the filter is not used directly for determination of the thoron decay product concentration (response time of about 40 hours). To achieve a reasonable time resolution (e.g. hourly variation) the 212Po decay rate will be differentiated.

The RPM 2300 features a big touch-screen, showing the measured values. All measured data is stored on a 2 GB memory card and is accessible from a PC or laptop through a USB interface. Data transmission and device control can be done by mobile broadband modems, as well as via ZigBee adapter (short range wireless network).

A NaI detector to fix the local gamma dose is an optional feature of the device.

It is possible to equip the RPM 2300 with a gamma probe (NaI) to determine the dose rate or to detect radioactive sources. There are additional inputs and outputs for connecting additional sensors and actors. The data sheet shows some examples.

The software for the operation and configuration of the monitor is included. A transport case can be ordered as optional accessory.

Applications:

- Continuous spectrometric measurement of radon and thoron decay products
- Remote measuring head with minimized surface area to prevent the deposition of unattached decay products before they reach the measuring arrangement
- Tool-free and easy filter replacement
- Handy, portable design – measuring case with external mounting of the measuring head available
- Precisely controlled flow with integrated robust, durable, and quiet pump
- Battery operation for more than 30 hours
- Color touch screen with graphical display of spectra and measurement series
- Outstanding connectivity for system integration and connecting accessories
- Flexible, user-customizable alerting and warning system
- High data security thanks to proprietary controller architecture (no integrated PC solution with operating system)
- Factory calibration in accordance with DIN/ISO/IEC 17025 for decay products

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SPECIFICATIONS

Follow-up product measuring head	*Removable, attaches to accessory adapter*
Measurement principle	Separation of radon decay products on a filter and alpha spectroscopy
Dimensions	Width 43 mm, length 64 mm, height 38 mm
Detector	400 mm² ion-implanted silicon detector
Filter	Membrane filter, 22 mm opening Monitoring for filter breakage, contamination No tools required for filter replacement
Nominal flow rate	1.5 l/min
Measuring range	1 ... 100,000 Bq/m³ (attached)
Sensitivity	approx. 1 800 cpm/(kBq/m³) (EEC)
Response time	120 minutes
Measurement/Analysis	EEC, PAEC for radon and thoron decay products, respectively
Internal Sensors	
Standard	Relative humidity 0 … 100 %, accuracy ±2 % Temperature -20 … 40 °C, accuracy ±0.5 °C Barometric pressure 800 … 1 200 mbar, accuracy 0.5 % MW Flow rate 0 … 4 l/min, accuracy ±5 % Humidity/temperature sensors in the air circuit
Optional	Additional sensors with analog 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 ac-cording to the selected measurement program
Measurement programs	Storage of up to 16 different measurement programs with up to 32 steps (defined or unlimited repetition) Time interval 1 second to weeks
Data storage	Micro-SD, 32 GB
Operation/Display	4,7” Color Touch-Screen
Interfaces	2 independent digital communication channels Channel 1: USB, RS 232, RS 485 B Channel 2: RS 485 A with MODBUS RTU, WLAN (optional) 2 analog outputs, assignable to any measured value and measuring range
Power supply	12 V NiMH rechargeable battery (>30 hours continuous use) 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-com- patible KML files.
Environmental conditions	0 … 40 °C 0 … 95 % rH, non-condensing 800 … 1 100 mbar
Scope of delivery	Charging power supply adapter USB cable Aerosol filters (10 pieces) Hose 6.35 mm x 3.18 mm (1.5 m) Fuse (spare) Transport case Manual & software (on https://sarad.de for download) Factory calibration with DIN certificate for radon decay products
Optional accessories	Measuring case for field applications with external mounting of the measuring head