

RPM2200

Radon/Thoron Decay Product -Monitor



The RPM 2200 is a high quality and modern radon progeny 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 a constant air flow through the filter. A sensor measures permanently the air pressure over the filter in order to recognize instantly an exhausted or perforated filter.

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

The analysis is carrying out continuously, i.e. disposition of the decay products and determination of the activity of the collected decay products take place simultaneously. It issued the equilibrium equivalent concentration (EEC) and the potential alpha energy concentration (PAEC) each for radon and Thoron decay products.

Because of the long radioactive half-life of Thoron decay product Po-212, the filter activity 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 Po-212 decay rate will be differentiate.

The RPM2200 disposes of a big touch-screen, showing the measured values. All measured data are stored in a 2GB memory card and are available from your PC or laptop through a USB interface. Data transmission and device control can be done by GPRS or GSM modems, as well as via ZigBee adapter (Net Monitors). Optionally, the instrument can be equipped with a GPS receiver.

It is possible to equip the RPM 2200 with a gamma probe (NaJ) 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. The transport case can be ordered.

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RPM 2200 – Technical Data

RDP sampling head	<i>Fixed at the front panel of the RPM2200</i>
Detector	400mm ² ion-implanted silicon detector
Filter	Membrane filter, d=27mm, 1µm pore size Active filter monitoring against perforation, exhaustion No tool for filter replacement required
Pump	Rotary vane type 1,65 l/min, processor controlled
Detection range	0 ... 1 MBq/m ³ (EEC)
Sensitivity	Approx. 600 cpm/(kBq/m ³) (EEC)
Response time	120 min
Results / Analysis	EEC, PAEC for both, Radon und Thoron Storage of record related spectra and time distribution
Gamma probe (option)	<i>Connected to the front panel of the RPM2200 by cable</i>
Detector	Sodium-Iodid (NaJ(Tl)) with integrated PMT und Bias Scintillation crystal 2" x 2" Energy range for spectroscopy 10keV – 2MeV Spectral resolution 8% (Cs-137)
Results / Analysis	Dose power, Net-activity of six user defined nuclides Storage of record related spectra and time distribution
Probe dimensions	Diameter 60mm, length 260mm Cable 5m (optional 10m)
Additional sensors	
Standard	Rel. Humidity 0 ... 100%, uncertainty ± 2% Temperature -20 ... 40°C, uncertainty ± 0.5°C Bar. pressure 800 ... 1200mbar, uncertainty 0,5% MW Flow rate 0 ... 4 l/min, uncertainty ± 5%
Air analytics (option)	CO, CO ₂ , CH ₄ , combustible gases, several ranges
Water analytics (option)	pH value, Redox potential, conductivity etc.
Process (option)	Pressure, differential pressure, flow, velocity etc.
Meteorological (option)	Wind direction, wind speed etc.
Common	
Sampling	Simultaneous measurement with all detectors/sensors with respect to the selected sampling cycle
Sampling cycles	Storage of up to 16 different sampling cycles with up to 32 steps (pre-defined or infinite repetition) Interval 1 Second to several weeks
Data memory	SD Card, 2 GByte
Controlling	Touch-Screen 6 x 9cm Interface: USB, RS232, optional Net Monitors wireless
Power supply	Internal 12V rechargeable battery, mains power adapter Optionally additional connector for 12V car battery or solar power supply
Dimensions/weight	235mm x 140mm x 255mm / 6kg

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Software	dVISION: Control and data transfer (also via GPRS, GSM, Net Monitors), visualization, data management dCONFIG: system configuration, creating/changing cycles (also via GPRS, GSM, Net Monitors) dLIBRARY: Library for NaI gamma probe (option)
Extensions	Available at internal connectors: 8 analogous inputs, 3 counter inputs, 2 status inputs, 6 switch outputs, clock switch, PID regulator/analogous output
GPS (option)	GPS coordinates are recorded and stored together with the measurement results. GIS compatible *.kml files can be exported (can be opened by Google-Earth). Antenna connected by cable.

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