

RTM2200

Radon and Thoron Monitor Scalable Multiple Parameter Station



Even in the basic version, the RTM2200 represents the perfect Radon/Thoron monitor for any kind of Radon measurements. The outstanding performance of the unit becomes really visible if complex sampling procedures must be applied. Due to its versatile possibilities for connecting additional sensors and actors, a multi-parameter station can be created without effort. The RTM2200 is not limited to the data acquisition but is also able to control equipment which is required for the sampling (e.g. pumps, valves, positioning etc.).

By connection of up to four additional Radon chambers (soil gas probe, indoor air sensor) is it possible to measure the Radon concentration in different rooms with one monitor. Additional differential pressure and temperature sensors may complete a sampling system to investigate the Radon transportation processes in buildings and facilities. Another application is the geo-physical instrumentation where the water analytics and the sampling of soil gases can be integrated. A spectroscopic NaI(Tl) gamma detector and/or gas sensors for Carbon Monoxide and combustible gases are very helpful for the mining and Uranium industry. There is no limit for your ideas.

The Radon measurement chamber, based on the principal of high voltage collection, offers a high sensitivity at a small internal volume. This is big advantage for Thoron sensitivity and it allows to use a small pump rate which is often important (soil gas sampling). The long term contamination by Po-210, known from other measurement principals is completely rejected. There is no cross sensitivity to ambient gamma radiation. Due to the special design, the chamber is not sensitive against variations of the ambient humidity. The commonly used drying equipment for instruments using this principal is for the RTM2200 not required. We use high quality silicon radiation detectors inside the chamber to separate the various radon daughter products by Alpha spectroscopy.

Quality assurance is a basic item of any radiation measurement. Therefore, the RTM2200 saves a complete Alpha spectrum for each data record. The spectrum always indicates an error free operation of the unit.

All results are presented on a large display with touch buttons. A SD memory card allows collecting of a huge amount of data if necessary. Each record will be stamped by the GPS coordinates if the GPS option has been chosen. Data transfer is realized by USB port and serial interface (RS232). The RS232 allows the connection of GSM modems. Optionally, the serial port can be replaced by an integrated wireless network adapter (Net Monitors).

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RTM2200 - Technical Data

Radon chamber	Internal
Detector	4 x 200mm ² ion-implanted silicon detector
Internal volume	250mm ³ (total volume of the internal air loop)
Range	0...10 MBq/m ³
Sensitivity	3 or 7 cpm/(kBq/m ³) for fast or slow mode
Response time	12 or 120 min for fast or slow mode
Results	Radon concentration fast (excl. Po-214) and slow (incl. Po-214) Thoron concentration Storage of time distribution and spectra
Pump	High quality membrane pump Flow rate 0.3 l/min controlled by processor
Gamma probe (option)	Connected by a cable to front panel of the RTM2200
Detector	NaJ(Tl) with integrated PMT and HV supply Scintillation crystal 2" x 2" Energy range for Spectroscopy 40 keV - 2.7 MeV Resolution 8% (Cs-137)
Results	Local dose rate, net activity of six user defined nuclides Storage of time distribution and spectra
Dimensions of probe	Diameter 60 mm, Length 260 mm Connection cable 5 m (optional 10 m)
Additional Radon chambers	Connected by a cable to front panel of the RTM2200
Soil gas probe	Stainless steel probe for permanent installation in the soil, additional sensors for humidity and temperature (for specification see data sheet)
Indoor air sensor	Like internal Radon chamber, pump or diffusion (for specification see data sheet)
Results	Like internal Radon chamber
Additional sensors	
Standard unit (internal)	Rel. humidity 0 ... 100%, accuracy $\pm 2\%$ Temperature -20 ... 40°C, accuracy $\pm 0.5^\circ\text{C}$ Bar. pressure 800 ... 1200mbar, accuracy 0.5% MW Flow rate 0 ... 0.6 l/min, accuracy $\pm 5\%$ Humidity/temperature sensor inside the air internal air loop
Air analytic (option)	CO, CO ₂ , CH ₄ , combustible gases etc., various ranges available
Water analytic (option)	pH-value, redox potential, conductivity etc.
Process (option)	Pressure, differential pressure, flow rate, stream velocity, soil moisture etc.
Meteorology (Option)	Wind direction, Wind speed etc.
Common	
Sampling	Simultaneous sampling of all detectors/sensors with respect to the selected sampling program
Sampling programs	Storage of up to 16 sampling programs with up to 32 steps

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Memory	(defined or infinite repetition) Sampling interval from one second to weeks SD card, 2 GB (larger cards can be also inserted)
Control/Display	Touch screen 6 x 9 cm wide
Power supply	Interfaces: USB and RS232 (or wireless network adapter) Internal 12V rechargeable battery, AC/DC wall adapter Option: additional connector for 12V car battery or solar power station
Dimensions/weight	235mm x 140 mm x 255 mm / approx. 6 kg
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	Internal screw terminals: 8 analogous inputs, 3 counter inputs, 2 status inputs, 6 switch outputs, clock timer, 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.
Accessory	
Included	Charger USB - cable Serial cable
optional	Transportation box Soil gas set (simple or packer) Exhalation bonnet Radon in water sampling kit Gas drying unit (Peltier cooler) for stationary water sampling GSM modem incl. AC/DC adapter and cables

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