

EQF 3200

Radon/Thoron Gas & progeny product monitor



Applications:

- for simultaneous measurements of airborne **radon (^{222}Rn) and thoron (^{220}Rn)** activity concentrations and airborne radon decay products (**EEC**) activity concentrations and/or potential alpha energy concentration (**PAEC**) with determination of equilibrium factors
- use at workplaces, in mining and for geophysical investigations for measurements in the air, in soil air, in water samples...
- public radiological safety measurements and environmental monitoring
- radiological surveillance of places with sources of ionizing radiation

Features:

- determination of the activity concentrations of radon and thoron as well as the radon/thoron derivatives and determination of the equilibrium factor
- processor-controlled rotary vane pump
- outstanding sensitivity and perfect separation of the individual radon decay products using alpha spectroscopy, therefore long-term contamination by ^{210}Pb is excluded
- no desiccant cartridge required
- stores the complete alpha spectrum for each measured value
- optional gamma probe (NaJ detector)
- numerous customer-specific additional sensors possible
- optional GPS module, optional water ingress protection
- DAkkS-accredited calibration according to DIN EN ISO/IEC 17025:2018

Radon measurement

Detector type	4 x 200mm ² Si detector with HV-chambers
Internal volume	250 ml (total volume of the internal air loop)
Range	1 ... 10 000 000 Bq/m ³
Accuracy	<=5%
Sensitivity	3 / 6.5 cpm/(kBq/m ³) for fast / slow mode
Response time	15 / 120 min for fast / slow mode
Results/ Analysis	radon concentration fast (excl. Po-214) and slow (incl. Po-214) thoron concentration storage of record related spectra and over time

RD sampling head *Fixed at the front panel of the EQF 3200*

Detector type	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
Range	1 ... 1 000 000 Bq/m ³ (EEC)
Sensitivity	approx. 600 cpm/(kBq/m ³) (EEC)
Response time	120 min
Results / Analysis	determination EEC, PAEC for both, Radon und Thoron storage of record related spectra and time distribution

Gamma probe (option) *Connected to the front panel of the EQF 3200 by cable*

Detector type	Sodium-Iodid (NaJ(Tl)) with integrated PMT and Bias Scintillation crystal 2" x 2"
Energy range	25keV – 3MeV
Resolution	<7.5% (Cs-137)
Results / Analysis	dose rate, net-activity of seven 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 $\pm 2\%$ temperature -20 ... 40°C, uncertainty $\pm 0.5^\circ\text{C}$ bar. pressure 800 ... 1200mbar, uncertainty 0.5% MW flow rate 0 ... 4 l/min, uncertainty $\pm 5\%$
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.

General

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 storage	SD Card, 2 GByte
Display	touchscreen, 6 x 9 cm
Interfaces	USB, RS232, optional LTE-modem and other
Power supply	12 V NiMH-rec. battery (>100 h continuously) mains adapter 100-240V ~50/60Hz, 1,8A
ATEX category	no
Dimensions/ Weight	235 mm x 140 mm x 255 mm / 6 kg
Software	dVISION: control and data transfer (also via ZigBee-Wi-Fi), visualization, data management dCONFIG: system configuration, creating / changing cycles (also via Net Monitors) dLIBRARY: Nuclid library for NaJ 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
Environmental conditions	0...40 °C 0...95 % rH, non- condensing 800...1100 mbar

Accessories

Scope of delivery

USB- & RS232-cable
dust filter (x2)
aerosol filter (1+10 pcs.)
fuse (x2)
PVC tube 6x4 mm (1,5 m)
charger/power supply adapter (x1)
transport case
user manual & software (electronical version)
DAkkS-accredited calibration certificate

Optional

Soil gas kits (pile drive probe or packer probe)
exhalation bonnet
AquaKit for measurements of Radon in water
and many more.