EQF3200

Radon/Thoron Gas & Decay Product Monitor

The EQF3200 is the ideal monitor to evaluate the availability of radon and its expected dose. The device defines the concentration of gas and decay products for Radon and Thoron, in order to calculate the equivalent factor.

The EQF3200 is equipped with instrument grade semiconductor radiation detectors, both in the radon measurement chamber and the sampling head for the decay products. This allows a perfect separation of the different decay products of radon, using alpha-spectroscopy.

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.

The measurement chamber works following the principle of high-tension separation and has, despite its low volume, an extraordinary sensitivity. This means a decisive advantage when it comes to measuring small thoron probe volumes. The long-term contamination by the increasing Pb210 underground that appears in other measurement principles is completely annulated. There is no cross-sensitivity regarding the ambient radiation. The chamber is immune to humidity changes of the environment. This is why a desiccation cartridge, as needed in other devices working following the principle of high-tension separation, is not necessary in the EQF3200.

The quality control is a main issue of any radiation measurement. Therefore the EQF3200 records a complete alpha spectrum for each measured value. This allows controlling the perfect functioning of the instrument in each moment of the measurement.

The EQF3200 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 wireless network). A NaJ detector to fix the local gamma dose is an optional feature of the device. The EQF3200 disposes of additional input and output terminals to connect sensors and actuators according to client-specific needs. The data sheet shows some examples.

SARAD GmbH, Wiesbadener Str. 10, 01159 Dresden, Germany, Tel 0351/6580712, Fax 0351/6580718 **www.sarad.de**

EQF3200 – Technical Data

Radon chamber	
Detector	4 x 200mm² ion-implanted silicon detector
Internal volume	250mm² (total volume of the internal air loop)
Detection range	0 … 10 MBq/m³
Sensitivity	3 / 7 cpm/(kBq/m³) for fast / slow mode
Response time	12 / 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 time distribution
RDP sampling head	*Fixed at the front panel of the EQF3200*
Detector	400mm² 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/m³ (EEC)
Sensitivity	Approx. 600 cpm/(kBq/m³) (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)	*Connected to the front panel of the EQF3200 by cable*
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, CO2, CH4, 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

SARAD GmbH, Wiesbadener Str. 10, 01159 Dresden, Germany, Tel 0351/6580712, Fax 0351/6580718 ***www.sarad.de***

	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, Net Monitors wireless optionally
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
Software	dVISION: Control and data transfer (also via GPRS, GSM, ZigBee), visualization, data management dCONFIG: system configuration, creating/changing cycles (also via GPRS, GSM, ZigBee) 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.

SARAD GmbH, Wiesbadener Str. 10, 01159 Dresden, Germany, Tel 0351/6580712, Fax 0351/6580718 ***www.sarad.de***