

RADHOME HRE

○ FOR THE CONTINUOUS MEASUREMENT OF THE VOLUMIC ACTIVITY OF RADON* IN HARSH ENVIRONMENT

□ APPLICATIONS

- Monitoring the volumic activity of radon in mining environment.
- Monitoring the air quality in confined environments of homes and buildings.
- Monitoring the volumic activity of radon in the environment.
- Expertise



Mine type RADHOME HRE

- **High sensitivity of radon measurement** obtained by coupling a measurement chamber with a strong electric field.
- **Active** measurement, for a short response time.
- Simultaneous measurement of radon, temperature, humidity.
- Acquisition rate adjustable from 1 min up to 240 min.
- Three programmable radon alarms with local or remote **display and buzzer**.
- Data retrieval via Modbus/RTU (as standard) , Ethernet or Modbus-Tcp (optional)
- Power supply from 110 or 230 VAC main power supply
- 8 hours autonomy from battery back-up in case of power failure
- Sensor parameters setting and data download via **ARAMIS** PC software.
- High quality grade casing for use in adverse environmental conditions.
- Compliant with international standards **ISO 11665-4** and **ISO 11665-5**.

Specifications



* In this document, RADON means radon 222.

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Measurement of radon :

A pump forces the radon into the instrument, where the filter collects the air-borne radon decay products. The radon activity is determined by measuring the α -activity of ^{218}Po , collected by the electric field on the surface of the semiconductor detector. The calibration of the sensor enables the volumic activity of the ^{222}Rn to be calculated.

Sensitivity of the measurement :

2 Bq.m^{-3} per imp.h^{-1} (typically).

Detection limit:

15 Bq.m^{-3} for an integration time of 1 hour.

2 Bq.m^{-3} for an integration time of 24 hours.

Maximum activity $> 1 \text{ MBq.m}^{-3}$.

The radon chamber we used for calibration is linked to LNHB, the French national metrology lab for ionizing radiations.

Alarms :

Three levels, user settable

Options : Local display of alarms coupled with a buzzer. Distant display of alarms coupled with a buzzer.

Other parameters :

Temperature: accuracy 0.1°C (absolute)

Humidity

range from 10 to 95 %,

accuracy $\pm 3\%$,

enables radon correction for humidity

Battery voltage: 0.1 V (resolution)

Sampling pump :

Rotary vane type

Minimum flow rate is 80 l.h^{-1} .

Heating:

The temperature threshold can be adjusted.

The detection housing can be heated for use in adverse weather conditions.

Steering :

Microcontroller board 14 bits with RISC architecture.

Display by LCD back-lit screen $4*20$

Back-up of sampled volume and parameters in the event of power failure.

Measuring cycle :

adjustable parameter: from 1 to 240 min by 1 min step.

(15 minutes advisory)

Memory :

4 Mo Flash memory (saves data in case of power supply failure).

Storage capacity of more than 12 months for a measuring cycle of 15 min.

Power supply :

230VAC adaptor / 110 V on request

Lead battery, autonomy 8 hours.

Casing : steel

Size : $400*600*320 \text{ mm}$. L*H*W

Weight : 20 kg.

Operating conditions :

0°C to $+40^\circ\text{C}$. @ 10-95% of humidity.

Protection index: IP 54.

Sound level (without alarm buzzer): $<55 \text{ dBA}$.

Communication:

- Parameter setting and data download locally via USB link
Fieldbus:
Modbus RTU via RS485 (as standard)
Modbus TCP via an Ethernet link (optional)
- Integrated web server (optional)
Ethernet network connection
Remote access via 3G modem on ASDL (on request)

Radhome HRE is delivered with :

- ARAMIS** driver software,
- a calibration certificate for the radon sensor,
- cables, spare dust filter,
- a manual.

ARAMIS software:

Software for PC using Windows 2000, XP, Vista, Seven

Monitoring :

- initialisation of the sensors,
- reading the whole of the recordings contained in probe memory,
- display of radon, temperature, humidity curves,
- Display of mean radon volumic activity,
- data export to excel type file

To order :

1-Case

Reinforced case mine type P-563-108

2-Accessoiries

Local alarms P-563-109
Remote alarms P-563-111
Web server P-590-108

Modbus Tcp P-590-109

Filters M-563-108