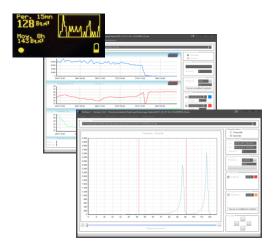# Radhome HRE

➡ **FOR THE CONTINUOUS MEASUREMENT OF RADON* ACTIVITY CONCENTRATION IN HARSH ENVIRONMENT.**

Applications :

- Monitoring the radon activity concentration in mining environment,

- Monitoring the air quality in confined environments of houses and buildings,

- Monitoring the radon activity concentration in the environment,

- Expertises.

➢ High sensitivity of radon measurement obtained by coupling a measurement chamber with a high electric field.

➢ Active measurement, for a short response time

➢ Acquisition rate adjustable for 1 min up to 240 min.

➢ Compliant with the requirements of ISO 11665-5 standard.

➢ Simultaneous measurement of radon, temperature, humidity.

➢ Local display of measurement

➢ Three programmable radon alarms with local or remote display and buzzer.

➢ Power supply from 110 or 230 VAC main power supply.

➢ 8 hours autonomy from battery back-up in case of power supply failure

➢ Sensor parameters setting and data download via *ARAMIS* PC software.

➢ High quality grade casing for use in adverse environmental conditions.

ARAMIS software

Software for PC using Windoxs 2000, XP, Vista, Seven.
Monitoring :
- initialisation of the sensors,
- reading the whole of the recordings contained in the probe memory,
- Display of radon, temperature, humidity curves,
- Display of mean radon activity concentration,
- Data export to excel type file

In this document, RADON means radon 222.

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 218Po, collected by the electric field on the surface of the semiconductor detector.
The calibration of the sensor enables the radon activity concentration to be calculated.

Sensitivity of the measurement:

2 Bq.m^{-3} per imp.h^{-1} (typically).
Detection limit:
- o   15 Bq.m^{-3} for an integration time of 1 hour.
- o   2 Bq.m^{-3} for an integration time of 24 hours.

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

Rn222					
	Ld			10%	20%
15 min	34 Bq.m^{-3}		100 Bq.m^{-3}	< 8 h	< 2 h
1 h	10 Bq.m^{-3}		400 Bq.m^{-3}	< 3h	< 1h
24 h	1 Bq.m^{-3}		1000 Bq.m^{-3}	< 1 h	< 1h
Rn220					
	Ld			10%	20%
15 min	68 Bq.m^{-3}		100 Bq.m^{-3}	< 16 h	< 4 h
1 h	19 Bq.m^{-3}		400 Bq.m^{-3}	< 5h	< 2h
24 h	2 Bq.m^{-3}		1000 Bq.m^{-3}	< 2 h	< 1h

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

Radhome HRE is delivered with :

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

References to order :

Radhome HRE	P-563-108

Accessories :

Filters	M-563-108
Local alarms	P-563-109
Remote alarms	P-563-111
Web server	P-590-108
Modbus Tcp	P-590-109

Specifications

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)

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.

Sampling pump:
Rotary vane type
Minimum flow rate is 80 l.h^{-1}.

Power supply:
230VAC adaptor / 110 V on request
Lead battery, autonomy 8 hours.

Casing: steel
Size: 400*600*320 mm. L*H*W
Weight: 20 kg.

Operating conditions:
0°C to +40°C / 10-95% of humidity.
Protection index: IP 54.
 Sound level (without alarm buzzer): < 55 dBA.

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

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