

BARASOL multi sensors BMC2

○ FOR THE CONTINUOUS MEASUREMENT OF THE
VOLUMIC ACTIVITY OF RADON.

□ APPLICATIONS

- Measurements of radon in the ground:
 - geophysical studies,
 - earthquake predictions,
 - predictions of volcanic eruptions.
- Measurements of radon flux.
- Measurements of gas velocity in soils.
- Monitoring of the atmosphere in confined environments.

- Instrument designed to be used in difficult environments.
- Passive measurement, no disturbance of the environment.
- Simultaneous measurement of radon and of the main meteorological parameters:
 - temperature and atmospheric pressure,
 - rainfall measurement (as an option).
- Acquisition rate parameters adjustable for 1 mn up to 240 mn.
- 1 year of independent operating time for power supply and memory capacity.
- Power supply from 2 x 1.5 Volt alkaline batteries.
- Sensor parameters set by *RnView2* PC software (see technical data sheet).
- Monitoring of battery voltage and shocks.



Specifications



Quantities measured :

- internal: - ^{222}Rn ,
 - temperature,
 - atmospheric pressure,
 - shocks, battery voltage.
- external with options:
 - two additional ^{222}Rn channels,
 - a rainfall measurement channel.

Measurement of radon :

The radon enters a detection volume through three cellulose filters which trap all the solid daughter products.

The sensor is an implanted silicon detector with a depleted depth of 100 μm and 400 mm^2 of sensitive area. It authorises the counting by spectrometry of atoms of ^{222}Rn and its daughter products created in the detection volume (window set at between 1.5 MeV and 6 MeV).

The calibration of the sensor enables the volumic activity of the ^{222}Rn to be calculated.

Radon: 50 $\text{Bq}\cdot\text{m}^{-3}$ per $\text{imp}\cdot\text{h}^{-1}$ (typically)
Range from 0 to 1 $\text{GBq}\cdot\text{m}^{-3}$

Others parameters :

Temperature: accuracy
0.05°C (relative)
0.1°C (absolute)

Atmospheric pressure:
0.1 hPa (relative)
1 hPa (absolute) from 500 to
1500 hPa

Shocks: binary detection,
the sensor is set for a sensitivity equivalent to that of the radon sensor (the silicon detector generating spurious pulses in the event of a shock)

Battery voltage: 0.1 V (resolution)

Rainfall measurement: 0.2 mm of water
(resolution)

Measuring cycle:

adjustable parameters: 1 to 240 minutes

Memory capacity:

1 MByte Flash memory (saves the data if there is no power supply).

Storage capacity of more than 1 year for a measuring cycle of 15 mn.

Power supply:**D type batteries**

- 2 alkaline batteries (10 months operating time)

- 1 Lithium battery (10 months o.t.)

2 D type batteries

- 1 Lithium (18 months o.t.)

Operating temperature:

-20°C to +70°C with alkaline batteries.

Casing:

Casing made of fibreglass and corrosion-resistant stainless steel.

Lining: 5 μm of copper + 3 μm of nickel.

2 Grab handles.

Protection index: IP 68.

Dimensions:

Height: 489 mm.

Diameter: 62 mm.

Weight: 2 kg. (with 2 alkaline batteries).

Parameter setting and data retrieval:

RS232 connection (19200 Bauds).

Hyperterminal or,

PC software for Windows 2000, NT, XP, Vista, Seven

The sensor is delivered complete with:

- a protective cover with shoulder strap for easy carrying on site,
- a certificate indicating the calibration coefficients of the radon.
- a user manual