



# eDPRW

CONTINUOUS MEASUREMENT OF RADON EXPOSURE

## eDPRW

### Applications :

- Measurement of radon exposure for agents working underground,
- Air quality monitoring in buildings and underground environment,
- Monitoring of radon activity concentration vs time,
- Expertise.



- High sensitivity radon measurement obtained by the association of an optimized measurement chamber and an electric field.
- Spectral analysis allowing discrimination of Radon220 and Radon222.
- Simultaneous measurement of radon, temperature and humidity.
- Continuous measurement with programmable cycle.
- Control via 2 press pads.
- Screen display of spot activity concentration, mean activity concentration and trend curve.
- Radon measurement display can be deactivated : « Blind mode » when data confidentiality is required.
- PC communication via infra red reader.
- Battery powered, for up to 10 days.
- The battery is rechargeable by induction, with a purpose built charger.
- Sensor parameters setting and data download via RnView3 software.



Compliant with international standards ISO 11665-4 : 2012 and ISO 11665-5 : 2012.



## RnView3 Software

PC Software operating under Windows XP, Windows Vista, Windows 7

### Monitoring :

- eDPRW initialisation,
- Complete data readout of the memory contents,
- display of radon activity concentration, temperature, and relative humidity vs time,
- display of mean radon activity concentration over a selected time period,
- Data transfer towards MS Excel, printout.

## ALGADE INSTRUMENTATION

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### RADON MEASUREMENT:

Radon penetrates the detection volume through a filter collecting all solid decay products.

Radon activity concentration is determined by measuring the  $\alpha$ -activity of radon progenies, collected by an electric field on the surface of a silicon based detector.

To identify radionuclides, eDPRW has an inbuilt alpha spectrometer.

$^{216}\text{Po}$  is used for the measurement of  $^{220}\text{Rn}$ .

$^{218}\text{Po}$  is used for the measurement of  $^{222}\text{Rn}$ .

Energy range 0 to 10 MeV over 128 channels, resolution 0.1 MeV

Measurement sensitivity:  $30 \text{ Bq.m}^{-3}$  per pulse.h<sup>-1</sup> (typical).

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

Detection limit (DI) and uncertainty vs exposure time.

DI		10%	20%	
1 h	145 Bq.m <sup>-3</sup>	100 Bq.m <sup>-3</sup>	< 150 h	< 35 h
2 h	82 Bq.m <sup>-3</sup>	400 Bq.m <sup>-3</sup>	< 35h	< 8h
7 h	34 Bq.m <sup>-3</sup>	1000 Bq.m <sup>-3</sup>	< 12 h	< 4h
35 h	14 Bq.m <sup>-3</sup>	Uncertainty calculated for a coverage factor of 2		

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



#### References to order :

eDPRW	P-519-100
Battery charger	P-519-101
Infra red reader	P-590-111
RnView3 software	P-519-103



#### Specifications :

##### Environmental parameters:

Temperature Sensor: 0.1°C accuracy (absolute)

Humidity sensor: 10 to 95 %,  $\pm 3$  %, accuracy allowing adjustment of the radon activity concentration.

##### Additional sensors:

Shock sensor: detection of impacts on the instrument

Battery voltage: 0.1 V (resolution)

##### Monitoring:

Microcontroller board 14 bits with RISC architecture.

Display by OLED graphic screen 64x128 (h\* l)

Menu access via 2 push pad:

##### Measure storage:

64Mo Flash memory

Capacity: 14 400 data (5 months @ 15min)

##### Measuring cycle:

Intervals of 15 min (recommended), 20, 30, 60, 120, 180 or 240 min.

##### Power supply:

Li ion battery, 3.7V / 1.8 Ah,

Autonomy: 10 days screen on, 15 days screen off.

Rechargeable by induction from a purpose-built charger

Maximum charging time: 12 h.

##### Parameters setting and data download:

Infra red connection with a reader linked by USB to a PC

##### Housing:

Plastic housing ABS + PC

H\*L\*D: 133\*74\*33 mm.

Weight : 295 g

##### Operating Conditions:

+5°C to +40°C / 10-90 % relative humidity

Protection index: IP54

##### eDPRW is supplied with:

- a battery charger,
- an infra red reader,
- **RnView3** software
- Calibration certificate indicating the calibration factor of the radon sensor
- User guide