eDPRW
Radon exposimeter

❍ CONTINUOUS MEASURE OF RADON EXPOSURE

❑ APPLICATIONS

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

- ❑ **Individual** device, belt clip.
- ❑ **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 measure of radon, temperature and humidity.
- ❑ Continuous measure with programmable cycle.
- ❑ Control via 2 press pads.
- ❑ Screen display of instant volume activity, mean volume activity and trend curve.
- ❑ Radon measure 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 recheargeable 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.**

Specifications ⇨

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SPECIFICATIONS

Radon measurement:
Radon penetrates the detection volume through a filter collecting all solid descendants.
Radon activity is determined by measuring the α-activity of radon progenies, collected by an electric field on the surface of a silicon based detector.
To identify radionuclides, ***e*DPRW** has an inbuilt alpha spectrometer.
^{216}Po is used for the measure of ^{220}Rn.
^{218}Po is used for the measure of ^{222}Rn.

Energy range 0 to 10 MeV over 128 channels, resolution 0.1 MeV
Measurement sensitivity: 30 Bq.m^{-3} per pulse.h^{-1} (typical).
Maximum concentration > 1 MBq.m^{-3}

Detection limit (Dl) and uncertainty vs exposure time

	Dl
1 h	145 *Bq.m*$^{-3}$
2 h	82 *Bq.m*$^{-3}$
7 h	34 *Bq.m*$^{-3}$
35 h	14 *Bq.m*$^{-3}$

	10%	20%
100 *Bq.m*$^{-3}$	< 150 h	< 35 h
400 *Bq.m*$^{-3}$	< 35h	< 8h
1000 *Bq.m*$^{-3}$	< 12 h	< 4h

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.

Environmental parameters:
Temperature Sensor : 0.1°C accuracy (absolute)
Humidity sensor : 10 to 95 %, ± 3 %, accuracy allowing adjustment of the radon result

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 measures (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

***e*DPRW is supplied with:**
- a battery charger,
- an infra red reader,
- ***RnView3*** software
- Calibration certificate indicating the calibration factor of the radon sensor
- User guide

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 measures, temperature, and relative humidity vs time,
- display of mean radon volume activity over a selected time period,
- Data transfer towards MS Excel, printout.

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References:

***e*DPRW** radon exposimeter	P-519-100	Infra red reader	P-590-111
Battery charger	P-519-101	***RnView3*** software	P-519-103