# SITE ALPHA DOSIMETER

## PSVOL2

**FOR THE MEASUREMENT OF INTERNAL EXPOSURES DUE TO ALPHA EMITTERS NATURAL.**

**Applications :**

- **Environmental survey**

- **The instrument includes:**
  - **an air sampler built with a rotating pump driven by a long life motor,**
  - **an electronic flow meter for the continuous measurement of the sampling volume of air,**
  - **a head for the integrated measurement of :**
    - alpha emissions of short-lived decay products of radon 222 and 220
    - long-lived alpha emitters from uranium and thorium chains.

- **Setting of sampling flow rate at the nominal value chosen by the user,**
- **Access protected by confidential code,**
- **Operational programming over a week,**
- **Display of the sampled volume and the instantaneous flow rate,**
- **Parameter setting and data reading by keyboard or by *PaView* software,**
- **230 V AC or 12 V DC power supply,**
- **Compliant with the requirements of ISO 11665-2 standard.**

**ALGADE INSTRUMENTATION**
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### Measuring head :

A solid-state nuclear track detector (cellulose nitrate) is located in front of the sampling filter to record alpha emissions of the decay products of radon 222 and 220.

Three moderating absorbers associated to a system of collimators make a mechanical spectrometer which enables the measurements of isotopes Po218, Po214, Po212, Bi212.

An estimatation of the concentration of Radon 222 activity concentration in the air enables a correction of the measurement of Po218.

Long-lived emitters deposited on the filter are counted afterwards by a photomultiplier fitted with a scintillator.

The alpha emitters usually measured are U238, Ra226, Po210, U234 and Th230.

The filter used is a cellulose acetate membrane , useful diameter 18 mm, poer diameter 1.2 µm.

The average efficiency is 80%.
For the unattached fraction the average collecting efficiency is 20%.

### Reference to order :

| *1- Products* | Reference |
|---|---|
| **PSVOL2 230V** | **P-515-113** |
| **PSVOL2 12V** | **P-515-114** |

| *2- Accessories* | |
|---|---|
| **Photovoltaic power supply (encl. Solar panel, support, battery, regulator)** | **P-515-102** |

**The PSVOL2 instruments are delivered with:**

- **Power supply cable 230 V or battery charger,**
- **Serial link cable,**
- **Verification certificate.**
- **Documentation.**

### Specifications:

**Sampling pump :**
- rotating with paddles
- 12V DC

**Sampling flow rate**

Nominal flow that can be set at from 30% to 100% of the maximum value by the ***PaView*** steering software, available from www.algade.com
Factory setting : 80 $l.h^{-1}$
Maximal : 100 $l.h^{-1}$.

Setting at ± 0.5% of the nominal flow
Polling every 36 seconds.
Tolerance on the measurement of the sampled volume ($\Delta V/V$) < 0.8%

**Programming** :
Weekly programming with a daily operational range.

**Parameters monitored:**
**Temperature** : accuracy 0.5°C (absolute)
**Power voltage:** 0.1 V (resolution)
**Current used.**

**Steering :**
Microcontroller board 14 bits with RISC architecture.
Display by LCD back-lit screen 4*20
Controls by 2 push button keyboard.
**Access protected** by 4 figure confidential code
Back-up of sampled volume and parameters in the event of power failure.

**Memory capacity :**
Flash memory of 1Mo (saves the data in the absence of power supply).

**Environment :**
-10°C à +70°C / 10-90 % relative humidity.
Protection index: IP54.
Sound level (dBA): <63

**Power supplies :**
**PSVOL2 12V** 12 V DC from Lead battery coupled to photovoltaic cell
**PSVOL2 230V** Mains AC 230 V single phase + ground, 10W.
Data backup battery, PC type, charge duration of 1 year.

**Casing :**
Poly carbonate casing. L*l*h : 340*190*190 mm.

**Weight :** 220 V AC: 5 kg
12 V DC: 4 kg

**Parameter setting and data capture:**
Transfer of information by RS232C wire series link or by modem / GSM.
(19200 Bauds, 8bits, 1 stop).

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