

SITE ALPHA DOSIMETER

○ FOR THE MEASUREMENT OF INTERNAL
EXPOSURES DUE TO ALPHA EMISSIONS

□ APPLICATIONS

- Environment 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 life daughter products of radon 222 and 220
 - long life products of uranium and thorium
- Setting of sampling flow at the nominal value chosen by the user.
- **Access protected** by confidential code, no ON/OFF switch accessible.
- 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 standards NF M 60-764 .

Specifications



SITE ALPHA DOSIMETER

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 $\pm 0.5\%$ of the nominal flow

Polling every 36 seconds.

Tolerance on the measurement of the sampled volume ($\Delta V/V$) < 0.8%

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.

Programming :

Weekly programming with a daily operational range.



Measuring head :

A solid-state nuclear track detector (cellulose nitrate) is located in front of the sampling filter to record alpha emissions of the daughter 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 estimate of the concentration of Radon 222 in the air enables a correction of the measurement of Po218.

Long-life emitters deposited on the filter are coated 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, pore diameter 1.2 μ m.

The average efficiency is 80%.

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

Memory capacity :

Flash memory of 1Mo (saves the data in the absence of power supply).

Environment :

-20°C to +70°C / 10-90 % relative humidity.

Protection index: IP54.

Sound level: < 63 dBA.

Power supplies :

PSVOL2-S 12 V DC from Lead battery coupled to photovoltaic cell

PSVOL2 Mains AC 230 V single phase + ground, 10W.

Data backup battery, PC type, charge duration of 1 year.

Casing : Poly carbonate casing. L*I*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.

(Rs232, 19200 Bauds, 8bits, 1 stop).

The PSVOL2 instruments are delivered with :

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

To order :

1 -Type of instrument

PSVOL2 / Standard / 230V AC charge

PSVOL2-S / 12 V DC

P-515-113

P-515-114

2 -Accessories

Photovoltaic power supply

(encl. Solar panel, support, battery, regulator)

P-515-102