

# MEAP V

## ○ INSTANTANEOUS MEASUREMENT OF THE POTENTIAL ALPHA ENERGY OF RADON 222 SHORT-LIVED DECAY PRODUCTS

### □ APPLICATIONS

- Work environment monitoring
- Environment monitoring
- Monitoring in buildings
- Expertise



- In situ sampling on filtering media with instant analysis.
- MEAP V performs a global alpha count of the short-lived radon decay products in the form of radioactive aerosols collected on the filter.
- MEAP V proposes a choice of two measurement methods both based on the principles of decay timing.
- Sampling is achieved by means of a rotary pump generating a pulse-free flow rate.
- The sampling flow rate is continuously regulated with an electronic mass flowmeter.
- Detection is performed by a **silicon** junction
- Parameter settings and data reading : locally or with the *MeapView2* software provided.
- Compliant with the requirements of International standard NF ISO 11665-3 .

Specifications



### Principle:

The volume potential alpha energy (VPAE) is determined from the count of the alpha decay of the radionuclides collected on a high efficiency filter.

Once sampling stops, the concentrations of the various emitters are calculated from the laws of radioactive decay, by regular counting at intervals of time set by the algorithm used.

MEAPV is equipped with an alpha spectrometer for better measurement traceability.

The energy range is 0 to 10 MeV over 128 channels, with a 0.1 MeV resolution.

MEAPV uses the algorithms of either **Rolle** or **Thomas**.

*Other methods are programmable on request.*

	ROLLE	THOMAS
Value measured	VPAE ( $\mu\text{J.m}^{-3}$ )	- VPAE ( $\mu\text{J.m}^{-3}$ ) - Volume activity of Po218, Po214 and Bi214 in $\text{Bq.m}^{-3}$
Cycle	12 min	35 min
Sampling	2 min	5 min
Counting periods	1	3
Detection limit ( $\mu\text{J.m}^{-3}$ )	0.09 ( $\mu\text{J.m}^{-3}$ )	<0.02 $\mu\text{J.m}^{-3}$ < 8 $\text{Bq.m}^{-3}$ at equilibrium.
Max values	0 to 9999 $\mu\text{J.m}^{-3}$	<ul style="list-style-type: none"> <li>• 0 to 9999 <math>\mu\text{J.m}^{-3}</math></li> <li>• 0 to 999999 <math>\text{Bq.m}^{-3}</math></li> </ul>

### Filtering media:

Low absorption, low pressure drop and humidity resistant cellulose polymer filter, placed in a cardboard holder.

Net sampling diameter 18 mm,

The filter is placed into a mobile filter holder, allowing offset sampling.

### Sampling:

Carbon graphite rotary vane pump, 12 VDC brushless motor.

Flow rate 7  $\text{l.min}^{-1}$

The flow rate is calculated by measurements of pressure and motor rotational speed and subsequent compensation of absolute pressure and temperature.

Polling every 2 seconds.

### Detector :

450  $\text{mm}^2$  silicon junction

Not affected by daylight

Protected by a 2  $\mu\text{m}$  aluminized Mylar sheet

A specific integrated circuit converts the electrical charges given by the detector into voltage pulses

Background noise for detector and amplifier : < 0.5 pulses.  
 $\text{min}^{-1}$

### Monitoring :

16 bits Microcontroller board

Clock Frequency 8 MHz

Display by OLED screen 64 x 128 mm (h\*w)

2 push buttons keyboard

### Environment :

0°C to +45°C / 10-90 % relative humidity

IP code : IP54

Sound level : < 67 dBA

Conforms with standards CEM EN 55022 and CEI 61000-4

### Housing :

AlMgSi painted alloy

L\*w\*h : 340\*190\*91 mm.

Weight: 3.2 kg

Protection cover

### Power supply :

Lithium Phosphate Battery 19.8V, 2.3 Ah

Capacity : 1.2 Ah

Autonomy : 16 hours or 40 cycles

External battery charger

Charging time : 2 hours

### Parameter setting and data download:

Via infrared reader linked to the PC through a USB port.

### MeapView2 software:

For setting operating parameters, downloading data and associated spectra.

### MEAP V is supplied with:

- Filter holder
- 100 disposable filters
- Battery charger
- Infrared reader
- *MeapView2* software
- Inspection certificate
- Carrying case
- Manual

## References:

### 1-Device

MEAP V

P-520-126

### 2-Accessories

Disposable filters (x 100)

Filter holder

P-520-101

P-520-110