



## MARKUS 10

The Markus 10 is a portable, battery-powered instrument for determining the radon content in the soil. It is designed to be as simple as possible to operate.

In the initial measuring phase, air from the soil is pumped up through a sounding tube into a measuring cell. The pumping time (about 30 sec) has been chosen to ensure that all fresh air in the system is pumped out.

A pressure sensor stops the pump if the pressure in the tube drops below a given value. When the pressure rises, the pump starts again. The pump's effective running time is always the same, which guarantees a certain minimum volume of air to be measured. The pumping time is about 30 seconds.

When the measurement starts the detector high voltage is switched on. The charged radon daughters, formed by the decaying radon gas, are driven towards the detector by an electric field in the chamber. The detector registers the alpha radiation originating from the radon daughters.

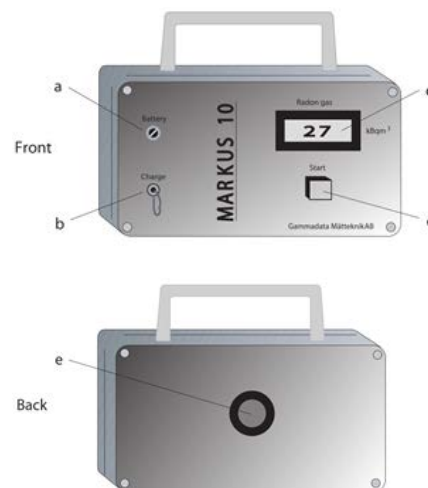
The instrument only accepts pulses from the short-lived radon daughter polonium 218 (with a half-life of about 3 minutes). This eliminates the slow variations in the background from polonium 214.

The pulses are counted and the result is kBq/m<sup>3</sup> of radon-gas activity.

The display flashes during the measuring phase, and becomes steady when the measurement is completed. As the instrument only counts pulses from the short-lived nuclide polonium 218, a new measurement can be started after just 18 minutes. In that time, activity from the previous measurement will have decayed sufficiently.

### User-friendly & reliable instrument

- Easy to handle – one button
- Short measurement time – about 10 minutes
- Battery powered
- Compensates for different air permeability of the soil



- a. Battery indicator      c. Connection charger  
b. Display                      d. Start button  
e. Connection for water seal sounding tube

Radonova Laboratories offers advanced measurement and consulting services in the field of ionising radiation. Using our ISO 17025 accredited system we establish the correct management and technical requirements to achieve accurate results for our customers. Our measurement service, which for example includes **Radtrak**<sup>®</sup>, **Rapidos**<sup>®</sup> and **Duotrak**<sup>®</sup> detectors, is available globally and can be applied to dwellings, multifamily homes, workplaces, mines, institutions and wherever radon gas poses a health threat.

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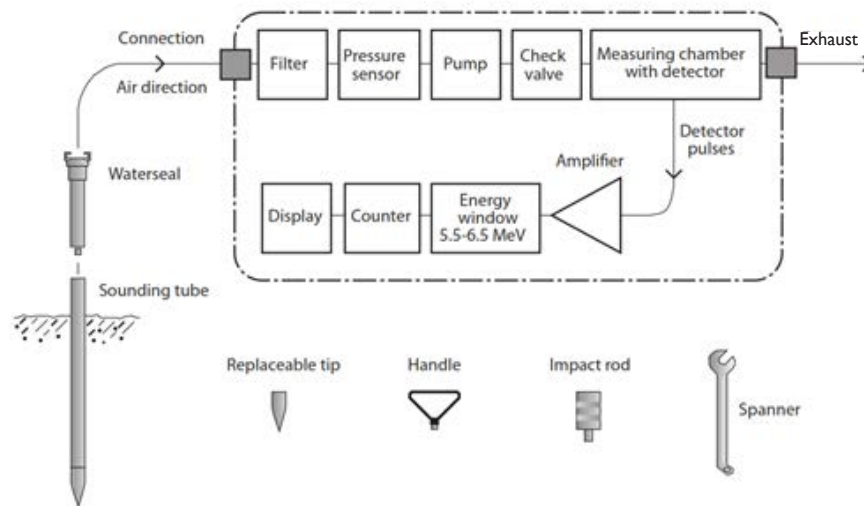
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## Working Principle MARKUS 10



## Technical Specification

Pump capacity:	1.8 lit/min	Accuracy of measurement:	About 10 % at 50 kBq/m <sup>3</sup> (1350 pCi/l)
Effective pumping time:	30 sec	Measurement time:	13 minutes
Lower pressure limit:	0.95 Atm	Measurement range:	0.3-1999 kBq/m <sup>3</sup>
Type of detector:	Canberra PIPS detector	Dimensions (L x H x D):	220 x 122 x 80 mm (8.7 x 4.8 x 3.1 inches)
Active area of detector:	150 mm <sup>2</sup>	Weight:	3.3 kg (6.6 lbs)
Window thickness:	200 µm	Option:	Sliding Hammer
Energy resolution of detector:	< 16 keV (in vacuum)		
Battery capacity:	About 70 measurements		
Recharging time:	8 hours		

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