Product Information

BAI 9109-4 Beta-Gasmonitor



Applications:

- Monitoring of radioactive gases in rooms and discharged air
- Measurement of beta- and beta+ (positrons) nuclides

Highlights:

- 1 to 4 large area proportional counter tubes, xenon sealed
- Integrated preamplifier and high voltage supply
- Measuring chamber with 11.45 l volume
- Lead shield, all sides with 2 cm thickness in 4 π geometry
- Different data acquisition systems available depending on the application:

  Data Logger LB 112

  Data Logger LB 5340

  Data Logger LB 9000

RADIATION PROTECTION

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Product Information

BAI 9109-4 Beta-Gasmonitor

System conception

The Beta-Gasmonitor BAI 9109-4 provides the opportunity to monitor radioactive gases such as Krypton-85, Argon-41, Xenon-133, Carbon-11 and Fluorine-18 in rooms and discharged air with low minimal detectable activities.

The measuring chamber of the BAI 9109-4 can be equipped with 1 to 4 large area proportional counter tubes, xenon sealed, whereas one detector can be used as a compensation detector.

The sample air being measured will be directed via a prefilter by means of a pump. Disturbing particles within the sample air will be removed and the air will be directed to the measuring chamber.

The measuring chamber has a volume of 11.45 l and is equipped with a lead shield all sides with 2 cm thickness in 4π geometry to minimize the background as much as possible.

The minimal detectable activities (MDAs) in Bq/m³ according to DIN 25482-1 are given in the table below (measuring time 3600s, background 6 cps):

Minimal detectable activities in Bq/m³ according to DIN 25482-1 (measuring time 3600s, background 6 cps)	1 Detector	2 Detectors	3 Detectors	4 Detectors
C-11	3.20E+2	2.27E+2	1.85E+2	1.60E+2
F-18	5.91E+2	4.18E+2	3.42E+2	2.95E+2
Ar-41	3.10E+2	2.20E+2	1.79E+2	1.55E+2
Kr-85	6.02E+2	4.31E+2	3.53E+2	3.39E+2
Xe-133	8.80E+2	6.57E+2	5.23E+2	4.52E+2

Technical Data

Measuring Chamber BAI 9109-4

Construction material	PVC
Volume	11.45 l
Pump	max. nominal flow rate through the vessel 15 m³/h

Lead Shield

Type	96 % Pb + 4 % Sb
Geometry	4π – all sided with 2 cm thickness
Construction	6 plates
Weight	approx. 185 kg (lead only)

Detector

Type	sealed xenon large area proportional counter tubes LB 6350-1
Sensitive detector area	230 cm²
Background	typical approx. 4 cps per detector in 2 cm lead shield
Measuring range	1 kBq/m³ to 100 MBq/m³
Gamma-sensitivity	measured in Cs-137 isotropic dose rate field: 1 Detector: 110 cps per µSv/h 2 Detectors: 220 cps per µSv/h 3 Detectors: 330 cps per µSv/h 4 Detectors: 440 cps per µSv/h
Protection	double protection grid for protection against pressure fluctuations up to 0.2 bar and prefilter
Electronics	Integrated preamplifier and high voltage supply LB 2022-22

Ambient Conditions

BAI 9109-4	temperature:	0°C to +40°C
	humidity:	10 % to 95 % (non-condensing)
Sample air	temperature:	-5°C to +50°C
	humidity:	10 % to 95 % (non-condensing)
	max. flow:	15 m³/h
	max. differential pressure:	0.2 bar absolute

sample must be free of caustic and acid vapours and solvents.

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Subject to changes without prior notice