

BAI 9109-4 BETA GAS MONITOR

Reliable measurement of radioactive
gases in room and exhaust air



BERTHOLD

TAILORED TO YOUR NEEDS

HIGHLY CONFIGURABLE FOR YOUR MEASUREMENT TASKS

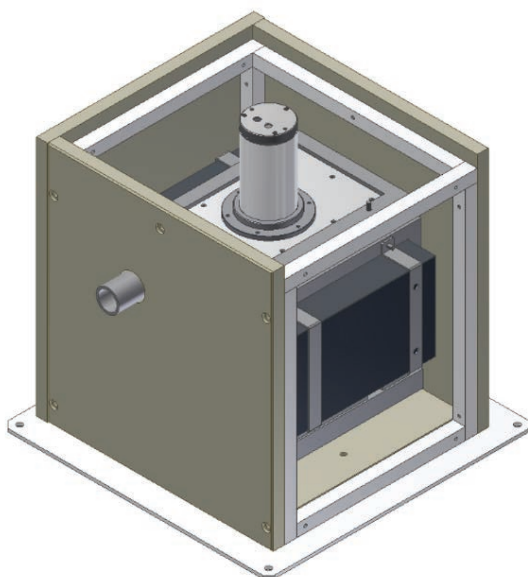
The BAI 9109-4 gas monitor allows the measurement of radioactive gases in room and exhaust air. The low-maintenance xenon detectors are specially designed for beta emitters such as krypton-85, argon-41, xenon-133, carbon-11 and fluorine-18.

The measuring chamber of the BAI 9109-4 is designed in order to install up to 4 measuring detectors and 1 compensation detector inside the lead shielding on all sides, according to the required sensitivity of the system.

The use of large-area proportional detectors enables the greatest possible sensitivity with low sensitivity to external gamma radiation and thus outstanding detection limits.

BAI 9109-4 benefits at a glance:

- 1 - 4 Xenon large area proportional detectors.
- Compensation detector (optional) for compensation of the background.
- Measuring chamber with approx. 11 l measuring volume.
- 2 cm thick lead shielding on all sides.
- NaI detector (optional) for gamma spectrometry.
- Versatile connection to Berthold data loggers and systems for monitoring exhaust air for radioactive components.



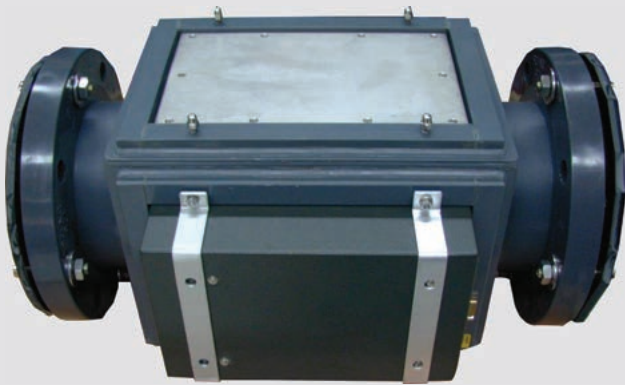
BAI 9109-4 with NaI detector (optional) on top.



The BAI 9109-4 noble gas monitor with LB 115 data logger including alarm tower. The detection chamber of the BAI 9109-4 is shielded on all sides with 2 cm lead.

VERSATILE APPLICATION OPTIONS

USE IN EXHAUST AIR LINES OR IN COMBINED SYSTEMS FOR EXHAUST AIR MONITORING



Inline version of BAI 9109-4, Connection by means of a flange directly into the exhaust air duct.

The inline version (picture on the left) of the BAI 9109-4 can be optimally integrated into an existing exhaust air system and thus enables measurements without the use of a sampling line (bypass system).

The BAI 9109-4 can also be connected in combination with other systems for monitoring radioactive components of exhaust air such as aerosols, iodine or tritium from Berthold Technologies. The picture below shows a complete exhaust air system in which a BAI 9109-4 has been integrated. Measurement data evaluation, alarming and transmission is performed via the integrated LB 9000 data logger.



The BAI 9109-4 noble gas monitor integrated in a complete system for exhaust air monitoring.

TECHNICAL SPECIFICATION

Monitor BAI 9109-4

Air flow rate	3 m ³ /h (optional 10 m ³ /h)
Weight	approx. 250 kg
Dimensions (W x H x D)	approx. 440 x 940 x 440 mm
Connections	½" KF nozzle at inlet and outlet

Environmental conditions

Temperature	0 °C to +40 °C
Humidity	10 % to 95 % no condensation

Measurement chamber

Volume	approx. 11 l
Weight	approx. 25 kg
Dimensions (W x H x D)	300 x 259 x 224 mm

Lead shielding

Geometry	4π – 2 cm on all sides
Weight	approx. 185 kg
Dimensions (W x H x D)	358 x 399 x 390 mm

Detector

Type	LB 6350-3 Xenon Large Area Proportional detectors
Sensitive surface	230 cm ²
Background	approx. 4 ips per detector in 2 cm lead shielding
Measurement range	1 kBq/m ³ to 100 MBq/m ³
Gamma sensitivity	Measured in the isotropic Cs-137 field: 1 detector: 110 ips per μSv/h 2 detectors: 220 ips per μSv/h 3 detectors: 330 ips per μSv/h 4 detectors: 440 ips per μSv/h
External protection	Double support grid against pressure fluctuations up to 0.2 bar and pre-filter (optional)

Detection limits

According to DIN ISO 11929 in Bq/m³
(Measurement time = 3600 s, Background: 4 ips)

Isotope	1 Detector	2 Detectors	3 Detectors	4 Detectors
¹¹ C	294	208	169	146
¹⁸ F	542	382	312	270
⁴¹ Ar	285	201	164	142
⁸⁵ Kr	552	390	318	275
¹³³ Xe	807	570	465	403

Ordering information

BAI 9109-4 with 2 cm lead shielding	71862
Suitable aerosol prefilter Ø 110 mm	64926
BAI 9109-4 Inline version	91195

TRANSFORMING SCIENCE INTO SOLUTIONS



Experience and expertise are of great importance to be able to ensure safety-relevant measurements properly and reliably. With more than 70 years of experience in planning and design, installation and commissioning, calibration, documentation and service of radiation protection measurement systems, we continue to support our customers in their task to continuously optimize their work processes and to ensure the safety of the environment and personnel.

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