



Moving Filter Monitor

BAI 9128

RADIATION PROTECTION



Transportable Moving Filter Monitor

The **BAI 9128** moving filter monitor is an easily transportable monitor intended for the measurement of Beta particulates. The COMPACT design integrates a sampling head with detector, the pump unit and the control electronics in a standard 19" cassette. An S-class glass fibre filter tape collects the sample air particulates. This filter tape advances at a programmable continuous speed eliminating the need for frequent filter replacement due to dust loading. A rugged Silicon detector allows to measure both Alpha and Beta particulates. The Silicon detector installed above the dust collection area at close distance to the filter, delivers optimal Alpha & Beta performance. A compensation algorithm eliminates Radon progeny from the gross Beta activity. Downstream

of the filter a silent pump unit ensures a stable flow rate of 3m³/h. In the standard version a 3-Channel electronics LB 5310 processes the detector signals. This electronics allows the user to measure the presence of radioactive aerosols as well as the ambient dose rate and to trigger alarms above certain levels. The healthy status of the overall system is continuously monitored.



Mobile cart BAI 9128 MOB The transportable filter-tape monitor BAI 9128 features a compact design and high performances, similar to those obtained with stationary monitors operating at higher flow rates. The unit runs without maintenance for prolonged periods. These performances result from the experience obtained in manufacturing and commissioning of over 200 stationary moving filter monitors. ■ Movable spider wheel cart with 2 x 3 wheels to mount stairs or pass over obstacles like cables. ■ Detection limit for Beta to DIN 25482, at 1 h collection and measuring time < 0.04 Bq/m³.

Detection limit for Alpha to DIN 25482, < 0.004 Bq/m³. Si-CAM- detector 600 mm² for simultaneous Alpha-Beta measurement ■ Compensation for natural activity ■ Measurement of ambient dose rate ■ Measurement of natural activity (Radon - Thoron progeny) ■ Separate warning beacon with 10 m cable ■ Selectable filtertape advance speed (5, 10 mm/h). Filtertape autonomy up to 10 months, filter change warning before end of tape. ■ Pump unit with flow low check. Low pump noise level.



BAI 9128 Applications

General All applications where airborne Alpha and Beta particulates radioactivity has to be measured. To prevent personnel exposure. To measure release rates in ducts and stacks. ■ Decommissioning ■ Nuclear power ■ Source manufacturing ■ Industrial safety ■ Research

Specific Applications In hostile environments where a moving filter monitor has advantages: Workplace or stack monitoring with high dust concentrations ■ Decommissioning with abrasive material removal ■ Titration process monitoring ■ Phosphate manufacturing ■ Waste disposal sites ■ Fuel reprocessing. Where space is at a premium ■ Mobile labs ■ Intervention vehicles ■ Submarines. Where movable intervention equipment is needed: ■ On the spot monitoring ■ Temporary access gates to contaminated areas.

Available versions 230Vac 50Hz

■ BAI 9128-T: Table top model with LB 5310 electronics and 9 HU enclosure

■ BAI 9128-MOB: Cart model with spider wheels, cable winder, alarm beacon and dose rate detector LB 6500-4. Same electronics as above.

■ BAI 9128: Cassette 6 HU for integration in 19" cabinets, counting electronics not included.

Options ■ BAI 9128-SRCE: Check source with 1 kBq ^{241}Am and 0.5 kBq ^{36}Cl ■ BAI 9128-ALRM: Alarm beacon ■ 8687: Serial logging printer with PVC printer support plate ■ 80824: Dual current output board LB 3971 for LB 5310 electronics ■ 24738 + 80904: GM counter tube LB 6500-3 with wall mounting bracket ■ 24739 + 80904: GM counter tube LB 6500-4 with wall mounting bracket

Consumables ■ 9128-0200: Filtertape glass fibre S&S n° 10, roll of 40 m x 50 mm ■ 9128-3110: Empty cardboard core for take-up spool

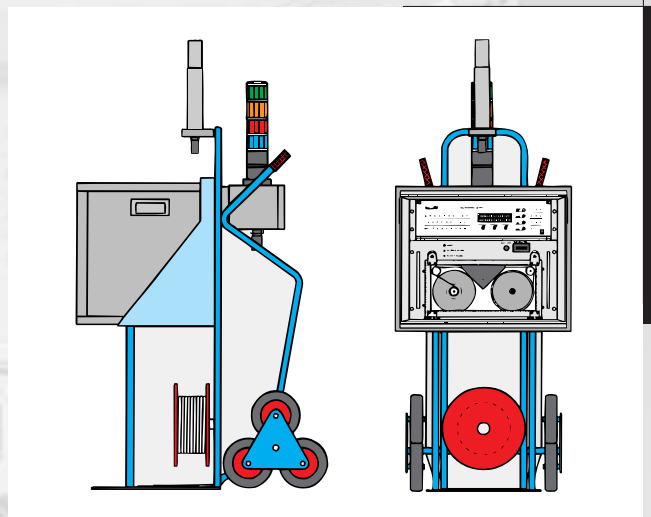
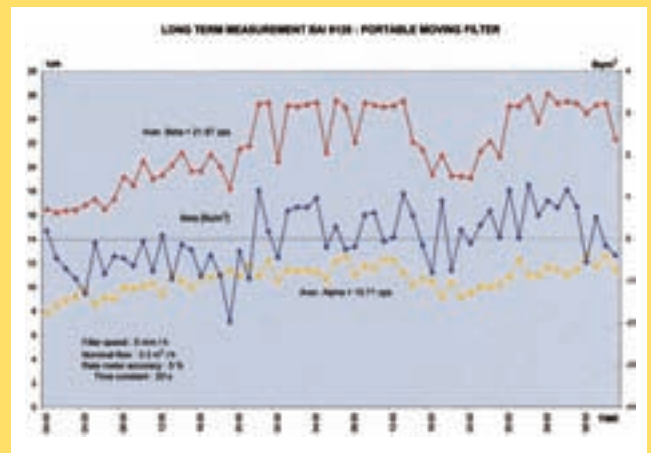
Typical Detection Limits BAI 9128 (Bqm⁻³)

Filter speed 2.5 mmh⁻¹, 3 sigma values

Time	Alpha	Beta
10 min	0.016	0.096
30 min	0.009	0.056
1 h	0.006	0.039
2 h	0.005	0.028

Typical Calibration Factors (Bqm⁻³s)

Filter speed	Alpha	Beta
2,5 mmh ⁻¹	0.30	0.37
5 mmh ⁻¹	0.61	0.74
10 mmh ⁻¹	1.21	1.48



Technical data Moving Filter Monitor BAI 9128

Filtercassette

Structural shape	19" cassette 6 HU, IP 20, 483x264x320 mm ³ , frontplate RAL 7032, elapsed hour counter, flow low, filter trouble indicators (led), fast filter advance pushbutton, reset filter timer push button, plexi door for access wetted parts
Dust collection area	25 x 25 mm ²
Wetted parts mat'l	Ni plated brass to MIL stdrd
Construction mat'l	Alu side & backplate, plexi cover front
Isokinetic sampling section from inlet to filter	to DIN 25423 Draft (06/96), Stainless steel RS 316L Inleakage: < 3.5 %
Pressure	Ambient: 940 – 1100 hPa Sample: –150 mbar to atm. pressure
Temperature	Ambient: 0 to +40° C Sample: –20 to +40° C
Humidity	Ambient: 0 – 95 % RH non condensing Sample: 0 – 95 % RH non condensing

Filter

Type	Glas fibre Particulates filter to DIN, S&S N° 10, roll 40 m x 50 mm, core 25 mm dia
Advance	continuous, speed selectable 5,10 mm/h fast 500 mm/h pushbutton frontpanel
Autonomy	> 10 months at 5 mm/h speed
Controls	Filter ruptured, Filter supply low (< 3m)

Pump Unit

Pump	low maintenance (10,000 h), silent operation (< 55 dBA), pump head max -440 mbar, typical operating -160 mbar
Flow rate	typical 3.3 m ³ /h at NTP
Controls	pump head pressure switch (flow low) typical setpoint 3.2 m ³ /h at NTP

Alpha-Beta Detector

Type	Si- CAM 600 mm ² light tight,
Efficiencies solid sources	Alpha ²⁴¹ Am typ. 20%/4 pi, Beta ³⁶ Cl typ. 25%/4 pi, ⁶⁰ Co typ. 10%/4 pi
Energy range (preamp threshold setting)	Beta: 100 keV - 3 MeV Alpha: 3 MeV - 9 MeV
Background in system	Alpha <0.002 cps, Beta <0.2 cps
Leadshield	2 cm/4 pi
Ambient gamma sensitivity:	Beta channel, <0.4 cps per μSv/h ¹³⁷ Cs radiation

Preamplifier

Type	LB 2029 preamplifier with built-in dual pulse height discriminator
------	--

Electronics

Type	LB 5310, 3-channel
------	--------------------

Enclosure 9128/5310

Type	Steel 9 HE, RAL 7032 painting
Dimensions	457 x 548 x 450 (h x w x d) mm ³
Protection degree	IP 40
Weight	40 kg (with cassette & electronics)

Cart

Type	Steel frame, blue synthetic coating, 2 x wheel spider with 3 rubber wheels
Dimensions cart	height: approx. 1220 mm width: approx. 550 mm depth: approx. 600 mm (inc 9128)
Load	max 200 kg

Dose rate detector

Type	LB 6500-4, see technical data sheet 6500-4
Power supply	+15V single supply, DIN T 3406 6 pole connector male

Alarm unit

Type	LB 9128-ALRM, green system healthy lamp, yellow, red, blue flashing lamps, resetable horn 90 dBA at 1m
Lamps	ba 15d/230-260V/5 - 7 W
Functions	Reset horn, lamp test pushbutton
Connections	mains 230V ac connector, remote signals DIN T 3406 6 pole male

Overall Electrical Specifications

Mains	230Vac/50 Hz/Single phase, I nom 1 A, Fuse : 1.6A T, thermal safety 1.3A
Safety	VDE 0100 compliant
EMC	CE compliant: EN 55011; EN 50082-2

