



SAB-250

Alpha/Beta Probe



Nuclear



Healthcare



Homeland
Security
& Defense



Labs &
Education



Industrial and
Manufacturing

OVERVIEW

The SAB-250 probe for measurement of surface contamination is designed to be used with any CSP™ survey meter. Its phoswich detector with 250 cm² detection area makes it an ideal tool for direct measurement of Alpha and Beta emitters covering applications like hand monitoring fixed station, workers body/clothes frisking or large area check for dismantling operations.

The SAB-250 includes a presence sensor that helps, when docked on the wall mounting, to operate with an automatic background subtraction, either in fixed position for hand counting, or in frisking mode.

The small diameter probe body is similar to many other CSP probes and supports easy handling of the probe with less risk of dropping.

KEY FEATURES

- Alpha/Beta surface contamination measurement
- 250 cm² Phoswich scintillation detector
- Belongs to CSP family
- Calibration via PC
- Easy removable grid for decontamination
- Ergonomic counting mode selector on probe body

RELATED PRODUCTS

- MIP-10 Digital,
- MIP-2,
- AVIOR® 2000,
- AVIOR-2,
- Radiagem™ 2000,
- Colibri®
- Or any computer based system developed with CSP-PL programming library

PHYSICAL CHARACTERISTICS

- **Display units:**
c/s, Bq, Bq/cm², cpm, dpm, dpm/100xcm²
(depending on survey meter)
- **Emitters:** Alpha & Beta
- **Detector:** ZnS(Ag) adhered to 0.25 mm thick plastic scintillation material
- **Detection area:** 249 cm². Removable aluminized Mylar® entrance window on metallic frame, thickness: 6 µm
- Protection grid transparency: 83%.
- **Measurement range:**
 - 0 to 7 000 c/s, 0 to 420 kcpm.
 - Activity equivalent range depends on calibration emitter. Conversion coefficients are factory set with Pu-239 for alpha channel and with Co-60 for beta channel
- **Dead time:** < 20 µs
- **Energy range:**
 - Alpha > 3 MeV
 - Beta > 150 keV
- **Area response uniformity:**
 - > 80% Alpha
 - ≥ 60% Beta
- **Gamma sensitivity (Cs-137)**
 - Alpha : < 0.3 c/s per µGy/h
 - Beta : < 70 c/s per µGy/h
- **Background (ambient < 100 nGy/h (10 µR/h)):**
 - Alpha < 0.1 c/s (< 6.0 cpm),
 - Beta < 10 c/s (< 600 cpm)
- **Cross talk:**
 - Alpha to Beta (Pu-239) < 10%
 - Beta to Alpha (Co-60) < 0.1%

ELECTRICAL CHARACTERISTICS

- Power: Supplied by survey meter or PC (low voltage only): +5 V
- Consumption: < 30 mA

ENVIRONMENTAL CHARACTERISTICS

- Temperature: -10 °C to +45 °C (+14 to +113 °F)
- Relative humidity: 40% to 85% at 35 °C
- Cleaning: housing easy to decontaminate
- Ingress protection: IP20

MECHANICAL CHARACTERISTICS

- Housing: stainless steel
- Protection grid: stainless steel
- Dimensions: length x width x height: 360 x 150 x 125 mm (14.2 x 5.9 x 4.9 in.)
- Weight: < 1.2 kg (2.6 lb) without cable

NORMS

- EMC : Conform
- CE : Conform
- IEC : Built to meet IEC 60325:2004
- ANSI : Built to meet ANSI N42.17A



The wall mounting of the SAB-250 probe can be used with an automatic background subtraction, either in fixed position for Hand Counting, or in Frisking mode. The operating mode is selected on the equipment menu.

Detection efficiencies and MDAs with 100 cm² ISO 8769 sources in contact with probe

	Nuclide	Emitter	Typical efficiency over 2π (%)	Guaranteed efficiency over 2π (%)	Response to activity (c/s)/Bq	MDA (Bq)
SAB-250	Am-241	Alpha	46	35	0.23	1.3
	Pu-239	Alpha	44	33	0.22	1.35
	Co-60	Beta	18	13	0.1	32
	Cl-36	Beta	36	28	0.24	13.7
	Sr-90 + Y-90	Beta	35	27	0.25	13.6

MDA: Background = 0.02 c/s (alpha) and 7 c/s (beta), measured during 100 s in a 0.1 µGy/h ambience.

Measuring time on source = 10 s.

Statistic: false alarm = 5% and non-detection = 5%.