



SAB-100™

Alpha / Beta Probe



FEATURES

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

SAB-100 is part of Canberra's Smart Probe (CSP™) family, that drives numerous benefits, such as plug and play capabilities and exceptional readiness for field operations. Please refer to the "hand-held probes" brochure for further details.

DESCRIPTION

The SAB-100 probe for measurement of surface contamination is designed to be used with any CSP survey meter. Its phoswich detector with 100 cm² detection area makes it an ideal tool for direct measurement of Alpha and Beta emitters.

A push-button located on the probe housing selects the counting mode. When pressed, the probe switches to the next mode in a list of three and the LED is activated accordingly: alpha only – LED off, beta only – LED on and Alpha+beta – LED blinking. It is a powerful feature for the user to avoid the need to look back on the instrument when changing the mode.



SAB-100 includes a protection grid that is very easy to remove for decontamination purpose. Once this grid is detached, the probe remains operational and the whole assembly stays light tight.

The entrance window is attached on a removable metallic frame that is fixed on the probe body with flat screws and does not need very long to be exchanged, reducing the time to service.

The SAB-100 probe can use two different entrance windows:

- SAB-100: Mylar Window
- SAB-100R: Mylar window with additional very thin grid to add more protection for harsh environment.

SAB-100 can be upgraded (probe's firmware) via CSPS, a USB cable and a PC.

SAB-100 connects to CSP compatible survey meters via a 1.5 meter, 10 meter or 20 meter CSP cable.



SAB-100 | ALPHA BETA PROBE

NUCLEAR CHARACTERISTICS

Unit to display: depending on survey meter c/s, Bq, Bq/cm² or CPM, DPM, DPM/100 cm²

Emitters: Alpha and Beta

Detector: ZnS(Ag) adhered to 0.5 mm thick plastic scintillation material

- **Detection area:** 102 cm² (68 x 150 mm)
- Removable aluminized Mylar® entrance window on metallic frame, thickness: 6 µm
- **Protection grid transparency:** 83%

Measurement range: 0 to 10 000 c/s, 0 to 600 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: 2 µs

Energy range: Alpha > 3 MeV, Beta > 150 KeV

Gamma sensitivity for Cs-137: <35c/s per µGy/h

Background - ambient ≤ 100 nSv/h (10 µR/h):

- Alpha < 0.05 c/s (<3.0 cpm),
- Beta < 5.0 c/s. (<300 cpl)

Sunlight effect: no effect up to 80 000 lux

Cross talk:

- Alpha to Beta (Pu-239) < 5%
- Beta to Alpha (Sr-90, Y-90) < 0.1%

ERGONOMIC

- **Display:** provided by survey meter
- **Alarm Setpoints:** 10 values for each unit to display. Saved in probe memory. They can be edited with CSPS and PC.
- **Default alarm threshold** is chosen in a list by use of survey meter keypad.

ELECTRICAL

- **Power:** supplied by survey meter or PC (low voltage only): +5 V.
- **Consumption:** 15 mA maximum.

MECHANICAL CHARACTERISTICS

- **Housing:** painted aluminium steel
- **Dimensions:**
length (with connector) x width (detector) x height (detector):
318.5 x 99 x 102 (12.5 x 3.9 x 4 in)
- **Weight:** < 710 g (25 oz) without cable

ENVIRONMENT

- **Temperature:** -20 °C to +50 °C (-4 °F to 113 °F) use and storage
- **Relative humidity:** 10% to 93% at 35 °C
- **Cleaning:** housing easy to decontaminate
- **IP20**

NORM

- **EMC:** conform.
- **CE:** meets CE requirements.
- **IEC60325:** meets standard requirements

ORDERING REFERENCES

- SAB-100: NOM006274 (EM75864)
- SAB-100R - Version with rugged grid: NOM006500 (EM97400)
- CSP Cable (1.5 m length): NOM006282 (EM77336)
- CSP Cable (10 m length): NOM006513 (EM99006)
- CSP Cable (20 m length): NOM006512 (EM98830)
- CSP Coil Cable (0.7-1.5 m extensible length): NOM006283 (EM77337)
- Carrying Case for Radiagem Emergency Response Kit : NOM006277 (EM76287)
- CSP-PC USB Cable: NOM006288 (EM78466).
- Calibration/Setup Software (CSPS):
 - CSPS-F: NOM006289 (EM78468)
 - CSPS-R : NOM006298 (EM80642)
 - CSPS-E : NOM006299 (EM80643)

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-100R	SAB-100	SAB-100R	SAB-100	SAB-100R	SAB-100	SAB-100R	SAB-100
Am-241	Alpha	27.5	48	20.5	36	0.089	0.22	1.23	0.50
Pu-239	Alpha	28	48	21	36	0.090	0.22	1.21	0.50
Sr-90 + Y-90	Beta	36	43	27	32	0.317	0.30	5.8	7.3
Cl-36	Beta	36	40	27	30	0.155	0.28	12.2	7.8
Co-60	Beta + Gamma	12	15	9	11	0.043	0.09	42.8	24.3

MDA: Background = 0.01 c/s (alpha) and 4.0 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%.



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