MIRION TECHNOLOGIES

SB-100™

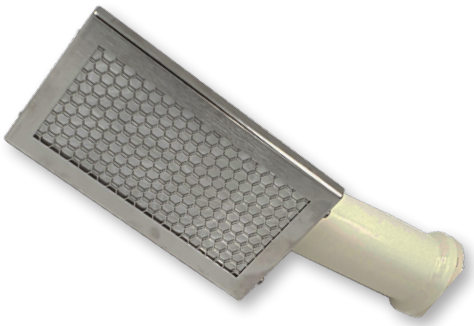
Beta Probe

The SB-100 probe for measurement of surface contamination is designed to be used with any CSP survey meter. Its thin plastic scintillation detector with 100 cm^2 detection area makes it an ideal tool for direct measurement of beta emitters, covering applications like working station contamination check, workers body/clothes frisking or large area check for free release approval.
The probe body diameter has been reduced to facilitate general handling and reduce the risk of drops.

FEATURES

- Beta surface contamination measurement
- 100 cm^2 thin plastic scintillation detector
- Belongs to CSP™ family
- Calibration via PC
- Easy removable grid for decontamination
- Rugged version for harsh environments

SB-100 probe is part of Canberra 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

Calibration and QA measurements can be performed directly with the probe, without using an instrument, by connecting the probe to a computer with CANBERRA Smart Probe Software (CSPS™), allowing your instruments to remain deployed in the field. It can also be connected via CSP-COM modules to integrate third party system and behave as a contamination sensor sub-assembly.

Once calibrated, the SB-100 unit is ready to be used as a plug and play probe to start a QA measurement in CPM, DPM, DPM/100 cm2 or c/s, Bq, Bq/cm2. The SB-100 probe connects to the survey meter via a 1.5 meter to 20 meter CSP cable.

SB-100 unit includes a protective grid that is very easy to remove for decontamination. Once the 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 probe body with flat screws, making it easy to change, reducing the time to service.

The SB-100 probe can use 3 different entrance windows:

- SB-100/B: Aluminum that guarantees a very good alpha rejection
- SB-100/A: Mylar that improves beta efficiency but also detects alpha particles
- SB-100/AR: Mylar with additional very thin grid to add more protection for harsh environment.

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

SB-100 | BETA PROBE

SPECIFICATIONS

NUCLEAR

- **Display units**: Depending on survey meter (c/s, Bq, Bq/cm^2 or CPM, DPM, DPM/100 cm^2)
- **Emitters**: Beta
- **Detector**: 0.25 mm thick plastic scintillation detector adhered to 3 mm thick neutral plastic material (PMMA).
  - Detection area: 102 cm^2 (68 x 150 mm)
  - Removable Entrance Window:
  - SB-100/A: aluminized Mylar window on metallic frame, thickness: 9 mm
  - SB-100/B: Aluminium window on metallic frame, thickness: 24 µm
  - SB-100/AR: mylar window with additional thin grid on metallic frame, thickness: 9µm
  - Protection grid transparency: 83%
- **Measurement range**: 0 to 10000 c/s, 0 to 600 kcpm. Activity equivalent range depends on calibration emitter. Conversion coefficient is factory set wityh ^{60}Co.
- **Dead time**: 2 µs
- **Energy range:** SB-100/A(R): Beta >50 keV, SB-100/B: Beta >150 keV
- Gamma Sensitivity for Cs-137 ≤ 25 c/s/µGy/h
- **Background**:
  - Ambient ≤100 nSv/h (10 µR/h): <4 c/s (<24 cpm)
  - Alpha influence (239Pu): SB-100/B <1%, SB-100/A

ERGONOMIC

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

ELECTRICAL

- **Power**: supplied by survey meter (low voltage only)
- **Consumption**: 15 mA maximum.

MECHANICAL

- **Housing**: Painted aluminum
- **Dimensions**: Length (with connector) x width (detector) x height: 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 122 °F)
- **Relative humidity**: 10% to 93% at 35°C
- **Cleaning**: housing easy to decontaminate
- **IP20**

NORM

- **EMC**: conforms
- **CE**: meets CE requirements.
- I**EC60325**: meets standard requirements

ORDERING REFERENCES

- SB-100/A: NOM006272 (EM75862)
- SB-100/B: NOM006309 (EM82069)
- SB-100/AR : NOM006388 (EM87891)
- 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)
- RDS-31 Straight Cable (1.5 m length): 1233-319
- RDS-31 Coil Cable (0.7-1.6 m extensible length): 1233-320
- CSP-PC USB Cable: NOM006288 (EM78466)
- CSPS Calibration/Setup Software:
  - CSPS-F: NOM006289 (EM78468)
  - CSPS-R: NOM006298 (EM80642)
  - CSPS-E: NOM006299 (EM80643)

Detection efficiencies and MDAs with 100 cm^2 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)
SB-100/A	^{14}C	Beta	9.8	7.4	0.026	68
	^{60}Co	Beta + Gamma	28	21	0.10	17
	^{36}Cl	Beta	41	31	0.17	9.9
	^{90}Sr + ^{90}Y	Beta	41	31	0.36	4.9
SB-100/AR	^{60}Co	Beta + Gamma	15	11	0.057	37
	^{36}Ci	Beta	30	23	0.15	16
	^{90}Sr + ^{90}Y	Beta	29	22	0.29	8
SB-100/B	^{60}Co	Beta + Gamma	15	11	0.057	38
	^{36}Cl	Beta	34	25.5	0.15	15.5
	^{90}SR + ^{90}Y	Beta	33	25	0.29	7.5

MDA: Background = 4 c/s measured over 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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