



SB-32™

Beta Contamination Probe

The SB-32 probe for measurement of surface contamination is designed to be used with any CSP™ survey meter or any computer-based system developed within CSP environment. The plastic scintillation detector has a 32 cm² detection area.



FEATURES

- Beta surface contamination measurement
- 32 cm² Plastic/ZnS Phoswich scintillation detector
- Calibration via PC software
- Robust screwed-on grid simple to decontaminate
- Easy to change scintillator

SB-32 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

The SB-32 probe is the ideal tool for direct measurement of beta emitters on glove boxes, small areas and for personal self control, allowing to check worker's arm in one pass only. Such a well-defined detection area helps to reduce the background noise and improves the Minimal Detectable Activity to better localize contamination spots. The probe body diameter has been reduced to facilitate general handling and reduce the risk of drops.

Entrance grid has been optimized with ideal balance between open area and detector to grid distance to allowing good efficiency and best detector protection. It is hand screwed on the probe body and very easy to remove for decontamination or Aluminium window foil replacement..

Calibration and QA measurements can be performed directly with the probe, without even using any 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.

SB-32 probe can be upgraded (probe's firmware) via CSPS™ software, a USB cable and a PC.



NUCLEAR CHARACTERISTICS

- **Unit to display:** depending on survey meter (c/s, Bq, Bq/cm² with SI CSP instrument and CPM, DPM, DPM/100cm² with American CSP instruments)
- **Emitter:** Beta
- **Detector:** Plastic scintillator of 0.25 mm thickness
 - Detection area: 32 cm² (total diameter = 70 mm, sensitive diameter = 64mm)
 - Aluminium window made of two layers of 12 µm placed on detector entrance surface, total thickness: 24 µm
 - Protection grid transparency: 89%
- **Measurement range:** 0 to 10,000 c/s, 0 to 600 kcpm. Activity equivalent range depends on calibration emitter. Conversion coefficient is factory set with Co-60.
- **Energy range:** Beta above 150 KeV
- **Dead time:** 2 µs
- **Surface detection uniformity:** better than 60% of the highest efficiency point
- Gamma sensitivity (Cs-137):
 - Beta < 10 c/s/µSv/h
- Neutron sensitivity (Cf-252):
 - Beta < 1.0 c/s/µSv/h
- Background:
 - Ambient ≤ 100 nGy/h (10 µR/h): < 3 c/s (<180 cpm).
 - Alpha influence (Pu-239): < 1%

ERGONOMIC

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

ELECTRICAL

- **Power:** +5V supplied by host instrument (low voltage only)
- **Consumption:** 15 mA maximum.

MECHANICAL CHARACTERISTICS

- **Housing:** painted aluminium
- **Protection grid:** Stainless steel
- **Dimensions:** Length (with connector) x diameter (detector) x diameter (body): 225 x 85 x 55 mm (8.8 x 3.3 x 2.2 in.)
- **Weight:** 678 g (24 oz) without cable

ENVIRONMENT

- **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

NORM

- **EMC:** conform
- **CE:** meets CE requirements
- **IEC:** designed to meet IEC 60325:2004
- **ANSI:** designed to meet ANSI N42.17A

ORDERING REFERENCES

- SB-32: EM97330
- CSP Straight Cable (1.5 m length): EM77336
- CSP Straight Cable (10 m length): EM99006
- CSP Straight Cable (20 m length): EM98830
- CSP Coil Cable (0.7-1.5 m extensible length): 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 EM78466
- Calibration/Setup Software (CSPS):
 - CSPS-F: EM78468,
 - CSPS-R: EM80642,
 - CSPS-E: 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)
Co-60	Beta + Gamma	17	13	0.09	13.6
Cl-36	Beta	41	31	0.26	4.90
Sr-90/Y-90	Beta	41	31	0.26	4.77

MDA: Background = 0.7 c/s (Beta) and 0.01 c/s (Alpha) measured during 100s in a 0.1 µGy/h ambience.
 Measuring time on source = 10s.
 Statistic: false alarm = 5% and non-detection = 5%
 MDA are calculated using the formula recommended by IEC 60325-2004



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