



SABG-100™

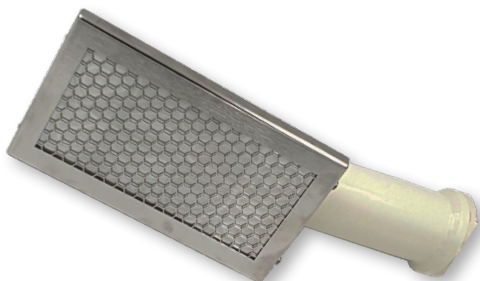
Alpha / Beta / Gamma Probe

The SABG-100 probe for measurement of surface contamination is designed to be used with any CSP survey meter or any other device able to handle CSP™ protocol. Its phoswich detector with 100 cm² detection area makes it an ideal tool for direct measurement of alpha, beta and gamma emitters.

FEATURES

- Alpha/Beta/Gamma surface contamination measurement
- 100 cm² ZnS(Ag) scintillation detector
- Belongs to CSP™ family
- Calibration via PC
- Easy removable grid for decontamination
- Ergonomic counting mode selector on probe body

SABG-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 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.

Once calibrated, SABG-100 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 SABG-100 probe connects to survey meter using a 1.5 meter, 10 meter or 20 meter CSP cable.

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

The SABG-100 includes a protection grid that is very easy to remove for decontamination purposes. 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 setup time.

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



SPECIFICATIONS

NUCLEAR

- Unit to display: Depending on survey meter (c/s, Bq, Bq/cm² or CPM, DPM, DPM/100 cm²)
- Emitters: Alpha and beta-gamma
- Detector: ZnS(Ag) adhered to 1.5 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 10000 c/s, 0 to 600 kcpm. Activity equivalent range depends on calibration emitter. Conversion coefficients are factory set with ²³⁹Pu for alpha channel and with ⁶⁰Co for beta channel
- Dead time: 2 μs
- Energy range: Beta > 150 keV, Alpha > 3 MeV, Gamma > 100 keV
- Gamma sensitivity in dose rate for ¹³⁷Cs - ≥ 70 c/s per μGy/h (42 kcpm per mR/h)
- Gamma sensitivity activity: Sealed source positioned at 20 mm from the protection grid:

Radionuclide	Gamma sensitivity in c/s per kBq
¹³⁷ Cs	2.7
⁶⁰ Co	9.0
⁵⁷ Co	1.4
²⁴¹ Am	0.01

- Background: Ambient ≤ :100 nSv/h (10 μR/h): Alpha <0.05 c/s (<3.0 cpm), beta < 10.0 c/s, (<600 cpm)
 - Sunlight effect: No effect up to 80 000 lux
- Cross Talk: Alpha to Beta (²³⁹Pu) < 12 %, Beta to Alpha (⁹⁰Sr-⁹⁰Y) < 0.1 %
- in probe memory. They can be edited with CSPS and a PC. Default alarm threshold is chosen from a list by use of the survey meter's keypad

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 an 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

- Housing - painted aluminium
- 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 122 °F) use and storage
- Relative humidity: 10% to 93% at 35°C
- Cleaning: Housing easy to decontaminate
- IP20

NORM

- **EMC:** conforms
- **CE:** meets CE requirements.
- **IEC 60325:** meets standard requirements

ORDERING INFORMATION

- SABG-100 - EM81933
- CSP Cable (1.5 m length) - EM77336
- CSP Cable (10 m length) - EM99006
- CSP 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-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)
²⁴¹ Am	Alpha	46	34.5	0.147	0.74
²³⁹ Pu	Alpha	46	34.5	0.151	0.72
⁹⁰ Sr + ⁹⁰ Y	Beta	44	33	0.384	6.98
³⁶ Cl	Beta	42	31.5	0.181	14.8
⁶⁰ Co	Beta + Gamma	18	13.5	0.061	44.1

MDA: Background = 0.01 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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