



SABG-15+ Alpha/Beta/Gamma Probe

Features

- Alpha, beta and gamma surface contamination measurement
- Geiger-Mueller detector with a 15 cm² and 2.0 mg/cm² end window.
- Units available: cps, CPM, Bq, Bq/cm², DPM, DPM/100 cm²
- Compliant with IEC 60325 and ANSI N42.17A
- Belongs to CSP Family
- Efficiency over 2 π
 - ¹⁴C: 17%
 - ⁹⁰Sr + ⁹⁰Y: 51%
 - ⁶⁰Co: 31%
 - ²⁴¹Am: 35%

Description

The SABG-15+ probe is designed for the measurement of surface contamination. Its good sensitivity makes it ideal to detect alpha, beta and gamma emitters for initial survey applications.

The SABG-15+ is part of CANBERRA's SMART Probe (CSP™) family. As part of the CSP Family it is compatible with all CSP survey meters.

SABG-15+ includes all key components of hardware circuitry (high voltage power supply, amplifier, discriminator, etc.).

Also, the intelligence associated with controlling those components is located in the probe – that is control and storage of key parameters, settings, calibrations, probe ID, alarm settings (10 values for each unit to display with default setting), etc. Thus, the probe is a fully-integrated subsystem communicating the measurement to the instrument.

With high voltage and acquisition of the data occurring in the probe rather than the instrument, measurement quality is no longer dependent on external device quality (cable, host instrument). Moreover, a CSP is using a serial protocol to communicate with the host that can be an instrument or a PC.

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

Once calibrated, SABG-15+ is ready to be used as a 'plug and play' probe to start a QA measurement in c/s, Bq, Bq/cm², CPM, DPM, DPM/100 cm² depending on the connected survey meter. SABG-15+ connects to the CSP survey meter via a 1.5 meter or 20 meter CSP cable.

The SABG-15+ probe is able to store up to 1000 data points from a data logging procedure handled via the host instrument. These data are: index, date/time, measurement value, selected unit and counting time.

SABG-15+ firmware can be upgraded via CSPS, a CSP/USB cable and a PC.



SABG-15+

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Specifications

NUCLEAR

- UNIT TO DISPLAY – Depending on survey meter (c/s, Bq, Bq/cm² with IS units version survey meter and CPM, DPM, DPM/100 cm² with US version survey meter).
- EMITTERS – Alpha, beta and gamma.
- DETECTOR – Geiger-Mueller with halogen quench thin mica end window 1.8 to 2.0 mg/cm².
 - Detection area: 15.5 cm².
 - Protection grid transparency: 76%.
- MEASUREMENT RANGE – 1 to 9999 c/s, 60 to 600 000 CPM (display: 0.1 to 9999 c/s, 0.1 CPM to 600 kCPM).
- Activity equivalent range depends on calibration emitter. Conversion coefficient is factory set with ⁶⁰Co.
- GAMMA SENSITIVITY for ¹³⁷Cs – 6.4 c/s per µGy/h (3840 CPM per mR/h).
- DEAD TIME – Detector = 50 µs, Probe = 50 µs.
- ENERGY – Alpha >2.6 MeV, Beta >30 keV, Gamma >5 keV.

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 and a PC.

BACKGROUND

- AMBIENT – 1 c/s in <0.1 µGy/h ambience (typical = 0.8 c/s).
- 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)
¹⁴ C	Beta	17	15	0.07	8.0
⁶⁰ Co	Beta-Gamma	31	29	0.16	3.3
³⁶ Cl	Beta	50	42	0.32	1.7
⁹⁰ Sr+ ⁹⁰ Y	Beta	51	45	0.65	0.9
²⁴¹ Am	Alpha	35	31	0.12	4.7
²³⁹ Pu	Alpha	25	24	0.12	4.5

MDA: Background = 0.5 c/s 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%.

ELECTRICAL

- POWER – Supplied by host instrument (low voltage only).
- CONSUMPTION – 8 mA maximum.

MECHANICAL

- HOUSING – ABS polycarbonate molded.
- DIMENSIONS – Length (with connector) x diameter (detector) x diameter (body): 205 x 70 x 42 mm (8.1 x 2.8 x 1.7 in.).
- WEIGHT – 310 g (10.9 oz) without cable.

ENVIRONMENT

- TEMPERATURE – -10 °C to +50 °C (+14 to +122 °F).
- RELATIVE HUMIDITY – 40% to 85% at 35 °C.
- CLEANING – Housing is easy to decontaminate.

NORM

- INGRESS PROTECTION – IP20.
- CEM – Conforms.
- IEC – Meets IEC 60325:2004 standard.
- ANSI – Meets ANSI N42.17A-2003 standard.
- CE – Meets CE requirements.

ORDERING REFERENCES

- SABG-15+ – EM85916.
- CSP Cable (1.5 m – 60 ft) – EM77336.
- CSP Cable (10 m length) – EM85920.
- CSP Cable (20 m – 800 ft) – EM80653.
- CSP Coil Cable (0.7 to 1.5 meter extension) – EM77337.
- CSP-PC Cable – EM78466.
- CSPS (calibration software) –
 - CSPS-E (English SI units) – EM80643.
 - CSPS-R (English US units) – EM8064.
 - CSPS-F (French SI units) – EM78468.



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