



## PORTABLE RADIATION MEASUREMENT

# SPAB-15™

Alpha/Beta Probe



CSP Family

### FEATURES

- Alpha/Beta surface contamination measurement
- 15 cm<sup>2</sup> silicon PIPS® detector
- Very good alpha/beta discrimination
- Lowest MDA available in handheld probe
- Belongs to CSP™ family
- Calibration via PC
- Ergonomic counting mode selector on probe body



### DESCRIPTION

The SPAB-15 probe for measurement of surface contamination is designed to be used with any CSP survey meter. Its Silicon PIPS detector with 15 cm<sup>2</sup> detection area makes it an ideal tool for direct measurement of alpha and beta emitters. PIPS technology brings numerous benefits never encountered before in handheld applications.

These are:

- An improved MDA (much lower gamma background compared to other technologies)
- A very good alpha/beta discrimination (never met before with other type of detector)
- A durable entrance window (not sensitive to pressure, cleanable)

The SPAB-15 unit is part of the Canberra™ SMART Probe (CSP) family. It 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 – including 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 taking and transmitting the measurement to the instrument, which is used for display.

With high voltage and digitization 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 probe uses a serial protocol to communicate with the host which can be an instrument or a PC.

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.

Once calibrated, the SPAB-15 unit is ready to be used as a plug and play probe to start a QA measurement in CPM, DPM, DPM/100 cm<sup>2</sup> or c/s, Bq, Bq/cm<sup>2</sup>. The SPAB-15 unit connects to the survey meter via a 1.5 meter or 20 meter CSP cable.

A push-button located on the probe housing helps 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 and can stay focused on the measurement.

## SPAB-15 | ALPHA/BETA PROBE

SPAB-15 unit includes a metallic protective cap that is very easy to remove to take measurements and helps to protect the entrance window during transportation and storage.



SPAB-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.

SPAB-15 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/cm<sup>2</sup> or CPM, DPM, DPM/100 cm<sup>2</sup>)
- Emitters: Alpha and beta
- Detector: Silicon 1700 mm<sup>2</sup> PIPS
  - Detection Area: 15 cm<sup>2</sup>
  - Protection Grid Transparency: 75%
- 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 <sup>239</sup>Pu for alpha channel and with <sup>60</sup>Co for beta channel
- Dead Time: 8 μs with digital saturation at 10 000 c/s
- Energy Range: Beta >100 keV, Alpha >3 MeV
- Gamma Sensitivity for <sup>137</sup>Cs: 8 c/s per μGy/h (4800 cpm per mR/h)
- Background: Ambient ≤100 nSv/h (10 μR/h): Alpha <0.01 c/s (<0.6 cpm), Beta <0.8 c/s (<48 cpm)
- Cross Talk: Alpha to Beta (<sup>239</sup>Pu) <3%, Beta to Alpha (<sup>90</sup>Sr-<sup>90</sup>Y) = <0.1%

Detection efficiencies and MDAs with 100 cm<sup>2</sup> 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)
<sup>239</sup> Pu	Alpha	30	27	0.14	0.78
<sup>90</sup> Sr+ <sup>90</sup> Y	Beta	37	33	0.23	4.2
<sup>36</sup> Cl	Beta	37	33	0.24	3.9
<sup>60</sup> Co	Beta + Gamma	13	11	0.07	14

MDA: Background = 0.01 c/s (alpha) and 0.8 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%.

### 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 software and PC  
Default alarm threshold is chosen in a list by use of survey meter keypad

### Electrical

- Power: Supplied by survey meter (low voltage only): +5 V
- Consumption: 15 mA maximum

### Mechanical

- Housing: ABS polycarbonate molded
- Dimensions: Length (with connector) x diameter (detector) x diameter (body): 170 x 66 x 38 mm (6.7 x 2.6 x 1.5 in.)
- Weight: 280 g (9.9 oz) with protective cap and without cable

### Environment

- Temperature: -10 °C to +40 °C (+14 to +104 °F)
- Relative Humidity: 40% to 85% at 35 °C – IP20
- Cleaning: Housing easy to decontaminate

### Norm

- CEM: Conform
- CE: Meets CE requirements

## ORDERING INFORMATION

- SPAB-15 Unit: NOM006291 (EM78766)
- CSP Cable (1.5 m length): NOM006282 (EM77336)
- CSP Cable (10 m length): NOM006365 (EM85920)
- CSP Cable (20 m length): NOM006300 (EM80653)
- Carrying Case for Radiagem™ and SPAB-15 Units: NOM006276 (EM76286)
- Carrying Case for Radiagem Emergency Response Kit: NOM006277 (EM76287)
- CSP-PC USB Cable: NOM006288 (EM78466)
- CSPS Calibration/Setup Software:
  - CSPS-F: NOM006289 (EM78468)
  - CSPS-R: NOM006298 (EM80642)
  - CSPS-E: NOM006299 (EM80643)

