MIRION TECHNOLOGIES

PORTABLE RADIATION MEASUREMENT

AB-100™ Detection Module

CSPevo®
POWERED BY LIGHTLink®

The AB-100 module, part of the CSPevo® family, offers a lightweight, ergonomic design that reduces user fatigue and enhances ease of use, making it ideal for reliable frisking and smear counting. Its robust construction minimizes maintenance, while improved detection homogeneity ensures accurate results. It integrates with Mirion smart probes and the RDS-32™ survey meter for flexibility in various applications.

The AB-100 module is ideal for detecting Alpha and Beta emitters simultaneously. It offers surface contamination measurement, extensive application coverage, and superior detection performance from a Phoswich detector, featuring a 100 cm² detection area.

The CSPevo family, enhanced with LightLink® technology, combines interchangeable modules, handles and survey meters for flexible user experience and efficiency. An evolution of the Canberra Smart Probes (CSP™) product family, the CSPevo family ensures backwards compatibility with existing CSP products.

FEATURES

- **LightLink Technology:** Enhances light collection and robustness and reduces risk of breakage
- **Detection Homogeneity:** Over 85% detection homogeneity ensures reliable and consistent results
- **USB-C Compatibility:** Facilitates connectivity with third-party systems and calibration software
- **Improved Ergonomics:** Lightweight and comfortable design for prolonged use without discomfort
- **Broad Integration Options:** Flexible integration with legacy CSP meters and RDS-32 survey meter
- **One-Handed Operation Capability:** For seamless functionality when the other hand is occupied and/or in challenging environments

A lightweight design facilitates one-handed operation — ideal for frisking and contamination assessment. Optimized for always-ready use, the CSPevo family ensures reliable performance and seamless integration across diverse radioprotection environments.

Canberra Smart Probe Family

The AB-100 module, part of the Canberra Smart Probe family (CSP and CSPevo), enhances field operations with inter-compatibility for seamless integration and a design that ensures quick readiness. Building on a legacy of exceptional performance, CSP and CSPevo products offer versatile plug and play capabilities and fast readiness for field operations.

Learn more:

POWERED BY LIGHTLINK TECHNOLOGY

The AB-100 leverages advanced light collection based on Mirion LightLink technology for increased robustness and superior detection homogeneity.

Mirion LightLink technology represents a revolutionary advancement in radiation detection, enhancing a wide array of products from handheld devices to contamination monitors. Detectors equipped with LightLink technology incorporate modern plastic scintillators, robust Silicon Photomultipliers and the latest in readout electronics.

This next-generation technology not only improves ergonomics and reduces susceptibility to damage but also extends operational lifespan through lower power requirements and a design that eliminates high-voltage components. With superior light collection efficiency and a design that avoids light decay, LightLink technology ensures hyper-accurate detection and devices that are always ready for use — redefining industry standards in operational productivity and reliability.

LIGHT**Link**®

Robust, Reliable, Ready to Integrate

The AB-100 module is ideal for radiation protection teams and system integrators looking for a robust, reliable, and easy-to-integrate solution.

It is designed to withstand mechanical shocks, ensuring exceptional reliability in demanding environments. LightLink technology eliminates the need for photomultiplier tubes (PMT), significantly increasing the robustness of the probe, while minimizing breakage and decreasing downtime. Its compact size and low sensitivity to magnetic fields help facilitate integration into third-party systems.

Outstanding Performance, Minimal Downtime

Users benefit from rapid maintenance and minimal downtime due to innovative technology that eliminates the need for light decay time.

System Compatibility Provides Enhanced Versatility

The AB-100 detection module is compatible with different handles and can be connected to various host instruments. Suitability for varying applications and user needs — including self-frisking and on-site surveys — increases detection module versatility.

These handles work in two ways:

- **With a cable** that matches a CSP meter or RDS-32 survey meter type connector
- **Without a cable** leveraging an integrated holder for an RDS-32 meter

The integrated setup provides a convenient one-handed operation for most scenarios, while the cable-based handles are useful for measuring hard-to-reach areas where it is important to maintain visibility of the meter display.

With cable for meter/probe connection

Without cable RDS-32 meter integrated

FLEXIBLE HANDLE OPTIONS

Three different handles are available for the AB-100 detection module, enabling the adaptation of the probe for different applications and environmental conditions. Each handle is secured to the AB-100 detection module with one screw and can be tightened without a specific tool.

RDS-I-HANDLE: For One-Hand Operations

The RDS-I-HANDLE connects to the RDS-32 meter wirelessly. When paired with the AB-100 module, it is perfect for one-hand operations. The RDS-32 meter attaches to the handle and releases manually.

CSP-C-HANDLE & RDS-C-HANDLE: For Hard-to-Reach Areas

The CSP-C-HANDLE and RDS-C-HANDLE enable traditional use of the AB-100 detection module with field-deployed meters. The coil cable, with either RDS or CSP connector, allows the probe to access hard-to-reach areas while monitoring the meter display.

SPECIFICATIONS

Nuclear Characteristics:

- **1 Unit to Display:** Depending on survey meter (c/s, Bq, Bq/cm^2 with SI units and CPM, DPM, DPM/100 cm^2 with US units)
- **Emitters:** Alpha and Beta
- **Detector:** ZnS(Ag) adhered to 0.25 mm thick plastic scintillation material
- **Detection area:** 101.25 cm^2 (67.5 x 150 mm – 2.66 x 5.9 in.)
- **Detection uniformity:** ≥85% for Alpha and Beta (IEC 60325)
- Removable aluminized Mylar entrance window on metallic frame, thickness: 6 µm (0.84 µg/cm²) made of 2 layers of 3 µm each.
- **Protection Grid Transparency:** 83%. Honeycomb mesh of 7.1 mm held to detector housing via 2 screws only.
- **Measurement Range:** 0 to 10,000 c/s (600 kcpm) for Alpha channel and 0 to 100,000 c/s (6,000 kcpm) for Beta channel. Conversion coefficients are factory set with ^{239}Pu for Alpha channel and with ^{60}Co for Beta channel.
- **Dead Time:** Beta ≤3 µs, Alpha ≤80 µs
- **Energy Range:** Alpha 3 MeV to 8 MeV, Beta 100 keV to 2.2 MeV
- **Gamma Sensitivity for ^{137}Cs:** Beta 42 c/s per µSv/h, Alpha 0.2 c/s per µSv/h
- **Background:** Ambient ≤100 nSv/h (10 µR/h): Alpha ≤0.05 c/s (≤3 cpm), Beta ≤5.0 c/s (≤300 cpm)
- **Cross Talk:** Alpha to Beta (^{239}Pu) ≤5.0%, Beta to Alpha (^{90}Sr-^{90}Y) ≤0.1%

Easily and quickly insert the detection module needed for your unique application needs.

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)
^{241}Am	Alpha	46	35	0.22	1.84
^{239}Pu	Alpha	49	37	0.23	1.75
^{90}Sr+^{90}Y	Beta	48	36	0.62	4
^{36}Cl	Beta	49	37	0.30	8
^{137}Cs	Beta + Gamma	40	30	0.25	10
^{60}Co	Beta + Gamma	25	19	0.13	19
^{14}C	Beta	6	4.5	0.02	118

- **MDA:** Background = 0.01 c/s (Alpha) and 4.0 c/s (Beta), measured during 100 s in a 0.1 µSy/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 changed with CSPS™ and PC.
- Default alarm threshold is chosen in a list by use of survey meter keypad.
- **Connection:** CSP-EVO USB-C versatile interface

Electrical:

- **Power:** Dual voltage with automatic selection supplied by survey meter or computer (+5 V or +3.3 V).
- **Battery Life:** 50 hours approx. with AVIOR™-2 meter (Backlight level 1, no alarm and one probe connected). 140 hours approx. with RDS-32 power with NiMH rechargeable batteries and 180 hours with Alkalines batteries (No radio, no backlight and no alarm)
- **Consumption:** ≤25 mW. 5 mA maximum with 5 V power and 7.6 mA maximum with 3.3 V power.

Mechanical:

- **Housing:** Molded ABS/PC easily decontaminable
- **Drop:** Tested from 1 meter height on concrete
- **Dimensions:**
  - AB-100 alone -
    Length x width x height: 187 x 84 x 71 mm (7.4 x 3.3 x 2.8 in.)
  - AB-100 with RDS-I-HANDLE -
    Length x width x height: 278 x 84 x 151 mm (10.9 x 3.3 x 5.9 in.)
  - AB-100 with RDS-C-HANDLE or CSP-C-HANDLE -
    Length x width x height: 278 x 84 x 121 mm (10.9 x 3.3 x 4.8 in.)
- **Weight:**
  - AB-100 alone: 370 g (13 oz)
  - AB-100 with RDS-I-HANDLE: 570 g (20.1 oz)
  - AB-100 with RDS-C-HANDLE or CSP-C-HANDLE: 640 g (22.6 oz)

Environment:

- **Operating Temperature:** -20 °C to +50 °C (-4 °F to +122 °F)
- **Storage Temperature:** -25 °C to +60 °C (-13 °F to +140 °F) device in shipping package
- **Relative Humidity:** 10% to 95% at 35 °C (95 °F)
- **Cleaning:** Housing easy to decontaminate
- **Ingress Protection:**
  - AB-100: IP53
  - RDS-I-HANDLE: IP54
  - RDS-C-HANDLE/CSP-C-HANDLE: IP64

Norms:

- **EMC:** Conform
- **CE:** Meets CE requirements
- **IEC:** Type tested to IEC 60325-2002 (DOC023441)
- **ANSI:** Type tested to ANSI 42.17A-2003 (DOC023440)

ORDERING INFORMATION

- **AB-100:** NOM008006
- **RDS-I-HANDLE:** NOM008005
- **CSP-C-HANDLE:** NOM008216
- **RDS-C-HANDLE:** NOM008214
- **Calibration/Setup Software (CSPS):**
  - CSPS-F (French – SI units): NOM006289
  - CSPS-E (English – SI/US units): NOM006299

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