Advanced Portable Radioisotope Identifier
SM2000ID

For faster, more accurate radiation threat identification
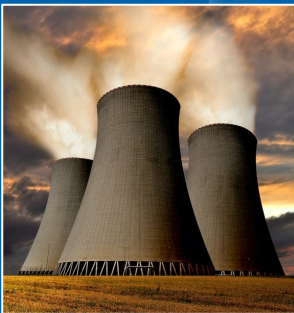
Nuclear Emergency Homeland Security Customs Medical

MAKING RADIATION VISIBLE

![innovative physics logo]

Intelligent Isotopic Threat Identification

For decommissioning, homeland security and emergency response operations where quick, accurate identification of radioisotopes is essential, the SM2000ID achieves this by combining advanced sensing technologies with an adaptive, multi-pattern recognition approach to isotope identification.

Isotopic identification is a complex process that is susceptible to different conditions and environmental factors, such as, shielding, temperature, and humidity, which affect its performance and produce unreliable results. Some conventional approaches to isotope identification such as Peak Based and Template Matching processes are not able to overcome some of these challenges.

Innovative Physics' (IPL) intelligent Multi-Pattern Recognition Approach, uses proprietary statistical pattern recognition software (known as the Threat Engine) to characterise, classify and identify spectra. By also taking into account context information, more intelligent decisions are able to be made based on the environment the threat is detected in. Moreover, it can achieve identification of multiple isotopes in complex, mixed radiation field environments (e.g. dirty bomb explosion).

A key feature of the Threat Engine is its ability to be adaptive; the algorithms constantly self-refine, providing ever more accurate identification. It's superior speed and accuracy allows decision makers in critical scenarios to address radioactive threats as swiftly as possible, and as intelligently as possible.

Operational Advantages

- Quick, accurate isotope identification in complex fields

- Sensor pods are robust and easy to deploy in a variety of different ways (see next section)

- SM2000ID Application Software is available on a variety of tablet and smartphones for familiarity

- Sensor pods connect to the Graphic User Interface through Bluetooth or wired communications

- Data can be easily transferred to a laptop/PC or to Cloud-based storage solutions

Advanced Portable
Radioisotope Identification SM2000ID

Modular, Adaptable and Expandable

The SM2000ID solution offers customers a range of sensors encased in a standard, modular 'pod' form to suit different project and budgetary requirements. Sensors available (but not limited to) include:-

- CZT (Cadmium Zinc Telluride)

- CsI(Tl) (Caesium Iodide—Thalium Doped)

- NaI (Sodium Iodide)

- Solid State Neutron Detector

The SM2000ID has been designed to enhance usability, allowing for the sensor pods to be interlinked with one another and mounted on different platforms to suit disparate deployment scenarios, including:-

- Over the shoulder strap to free hands

- Backpack with mounted sensors for covert operations

- Telescopic probe for hard to access areas

- Unmanned Ground Vehicle for remote access

Applications

- Emergency First Responders

- Security Screening by Customs, Border Control, Police, Fire and Rescue Services

- Nuclear Power Facilities

- Decommissioning and Decontamination

- Government Laboratories

- Medical and Research Facilities
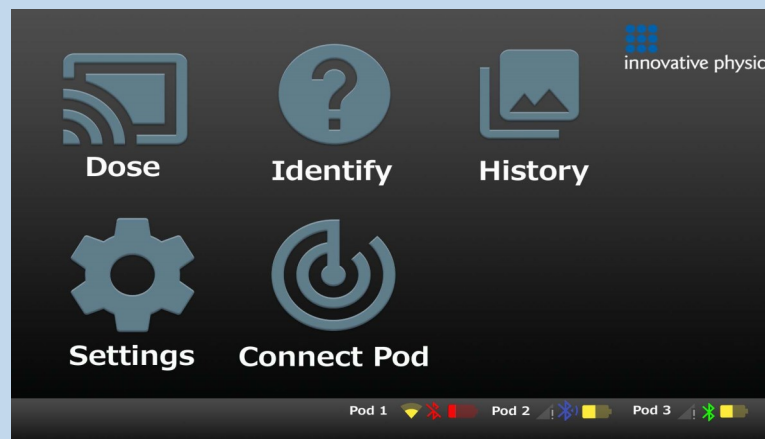
- Environmental Assessments

Intuitive Software

IPL's SM2000ID App is designed with smartphone users in mind. The user easily navigates through the intuitive App by touching bold descriptive icons, allowing them to read data in a way that suits them best.

The software displays dose and dose rate information continuously on screen in a pre-selected measurement unit e.g. uSv/hr, uRad, uCi etc. Isotope identification results can be displayed in a number of clear graphical formats e.g. colour coded gauge, bar graph or pie chart.

Tactile and audible thresholds and warnings can be set by the user, or pre-programmed for out-of-box readiness.

Data is manually or automatically saved with GPS co-ordinates and temporal data, and can then be accessed and downloaded to a laptop, PC or to Cloud-based storage solutions.

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SM2000ID Specifications

Detector

Sensors	CsI	CZT	Neutron
Energy Range	50 keV– 3.0 MeV		Thermal to 14 MeV
Energy Resolution	<8% @ 662 keV FWHM	<2.5% @ 662 keV FWHM	
Dose Rate Range	0.01 - 100µSv/h	0.01µSv/h - 10mSv/h	0.1 to 18 cps
Response Time	<5s for dose rates < 1µSv/h <2s doe dose rates >= 1µSv/h	<5s from 0.01µSv/h - 1µSv/h <2s from 1µSv/h - 100µSv/h	<10 for dose rates <10 mSv/h <2s for dose rates >= 10 mSv/h
Spectral Data Storage	Unlimited. As defined in IEC 62327		

Software and Communication

Data Output	SM2000ID Software provides data in numerical format, a colour coded gauge, bar graph, line graph or pie chart. Dose and dose rate information can be viewed in uSv/hr, uRad, uCi, Sv, Bq Gy, CPS etc.
Data Logging Size	Stores up to 50,000 dose rate records including capacity to store other data records
Communication	Built in Bluetooth for remote operation. Wired connection also available

Power

Battery	Lithium ion battery pack
Battery Runtime	Up to 20 hours operation from full charge

Operating Environment

Temperature	Operational: -20 C to +50 C Storage: -25 C to +50 C
Humidity	Up to 90% RH

Physical Characteristics

Display	Android touchscreen smartphone or tablet
Ergonomics	Convenient holding shape, balanced weighting and stable standing position
Dimensions/ Weight	Sensor Pod: 9.05in x 1.18in / 2.64lb
IP Rating	Designed to IP65/68
Additions	Customisable to enable more than one sensor to be attached Multiple deployment configurations available (optional)

These specifications are correct at the time of printing, however are subject to engineering change to improve reliability, function, or design.

Find out more

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