kromek
detect image identify

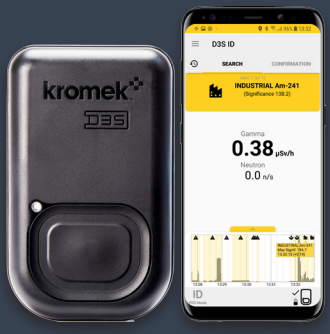
D3S

The power to make the right decisions about nuclear threats in seconds

D3S PRD

Cost-effective radiation detection and preliminary identification for first-line users

D3S ID



Complete radiation detection system for CBRN professionals that enables safe monitoring in high dose environments

Power to Perform

D3S high-performance detectors are designed to fit your operational needs. They are game-changing devices that are revolutionising in-field isotope detection and identification.

Though radiation emergencies are rare, you need to be on your guard and ready to act at any time. The D3S gives you the power to make informed decisions about nuclear threats in seconds.

D3S PRD - a high-speed PRD with isotope ID in seconds

Cost-effective radiation detection and preliminary identification for first-line users

D3S ID - complete radiation detection system for CBRN professionals that enables safe monitoring in high dose environments

Far exceeds the RIID standard, Identifies 22 extra isotopes, 4 times faster

Ready to act

The D3S is one of the fastest and most accurate isotope ID devices on the market that will help you carry out wide area searches when used in conjunction with an Android Smartphone.

The D3S is small but powerful, wearable and discreet. At just five inches tall it's smaller than your average Smartphone. The ID App will easily detect even very low levels of radiation rapidly, even if they pose no significant risk.

What happens when it detects a threat?

There is a three-second rolling average to detect and identify sources of radiation. As well as a rapid, visible, audible and tactile alarm settings. The D3S will classify and categorise industrial, medical, NORM and SNM isotopes, empowering you to take the appropriate action.

It is designed for in-field deployment, helping you monitor your immediate surroundings, always-on, always scanning in the background. Its 12-hour battery life means it keeps working your whole shift long.

It is available in two powerful versions: the PRD and ID. The PRD delivers cost-effective radiation detection and preliminary identification for first-line users.

What do I get?

The D3S is a powerful combination of two of Kromek's leading technologies; the non-^{3}He compact thermal neutron detector and its world leading gamma detector.

The detection algorithm provides substantial enhancements in the detection and identification of low activity shielded threats, masked threats and nuisance isotopes and has been extensively tested and characterised in multiple CWMD and DARPA programs.

The best bit? You can use it discreetly. Once it's on, clip it on your belt or tuck it in your pocket. No one will realise you're using the D3S because it works via an Android Smartphone app which transforms it into a highly capable detection device in seconds, either via Bluetooth or USB.

Content includes:
Manuals
D3S
Smartphone
Chargers and wearable carry pouch

Helping you to:

- Assess the situation
- Manage the risk
- Make informed decisions within seconds

D3S PRD

The D3S PRD is a spectroscopic radiation detector designed for sensitive detection of radioactive and nuclear materials. It is the only PRD that detects the presence of radiation and also displays the isotope ID in seconds.

Small, lightweight and user-friendly, the D3S PRD is a continuous search device that can be worn by first responders as well as customs and border protection personnel to quickly and accurately detect, locate and intercept radiological threats. It can also be carried by event security personnel and law enforcement as part of their regular equipment.

There is a simple user interface with both visual and audio status updates and notifications. As well as providing continuous dose reading, the D3S PRD will detect and alarm if gamma or neutron sources are present.

This sensitive device has a low false alarm rate for wearable search and can perform preliminary identification in just seconds, allowing further screening and investigation to be done as needed.

When a threat is found, you'll be alerted to it because of its rapid, visible, audible and tactile alarm settings. With the D3S PRD you can assess the situation immediately and discreetly, within seconds make an informed decision and then confirm the extent of the threat with D3S ID.

D3S ID

D3S ID is a powerful device with extended detection capabilities that enable safe monitoring in potentially high dose environments.

It is a complete dual RIID and PRD packaged in one single compact device the size of a Smartphone yet has all the features needed by CBRN experts.

The D3S ID shares the same simple user interface of the PRD, with both visual and audio status updates and notifications. Results can be reported back discreetly and instantly using the 'Reachback Report' on the Android app. The D3S ID will also keep track of your detection and ID history.

Wearable hands-free use, faster than a conventional RIID, clear identification of isotopes and neutron source detection. Its high dose sensor capability enables detection of up to 1 Sv/h while its high sensitivity means it can rapidly identify low levels of radioactive material and possible shielded or concealed sources.

The device has a low false alarm rate for both wearable search and high sensitivity identification confirmation mode functions and the reachback feature allows instant sharing of data for efficient adjudication, making it the perfect all in one radiation detection system for CBRN professionals.

The D3S ID is discreet, wearable and a fraction of the price of other much larger RIIDs, meaning it's not only light on your belt, it's light on your budget.

Who's using it?

It is used by personnel across a wide variety of sectors, including: customs and border patrols, police, first-responders, at airports, sea ports, event security and with environmental monitoring.

The D3S has been extensively tested and characterized and used in the field via the DARPA Sigma Program. More than 10,000 have been shipped worldwide and more than 4bn+ data points acquired.

Performance

- Detection ID probability ≥ 90% at 12+ meters against nominal source activities
- Demonstrated ability to identify weak threats masked by high-level background radiation
- Android app turns D3S into a highly capable RIID with high dose capability
  - Near real-time ID with high accuracy (1 Hz update rate)
  - Discrimination between Medical, NORM, SNM, Industrial
  - Wearable, wide area search mode gives a low false alarm rate that exceeds the performance of current instruments for search
- Identification confirmation mode out performs the false alarm rate of conventional RIID instruments

Feature	D3S PRD	D3S ID
Gamma detector	✓	✓
Neutron detector	✓	✓
Voice annunciation upon detection	✓	✓
Alert classifications (NORM, Medical, Industrial, Special Nuclear Material)	✓	✓
Radionuclide library list	✓	✓
Search mode (realtime scan and identification, 1 Hz update rate)	✓	✓
Confirmation mode (scan time for identification of up to 5 minutes)	✗	✓
Reachback report (spectra and results sharing)	✗	✓
Historical alert view	✗	✓
Spectra storage in N42 file format	✗	✓
High dose sensor up to 100 R/h (1 Sv/h)	✓	✓
Field upgradeable to D3S ID	✓	N/A

Specification

D3S ID Isotope Library and Performance

- Library far exceeds ANSI and international standards
- 42 isotopes – 22 more than ANSI N42.34 standard
- Discriminates between Medical, NORM, Industrial and SNM classes
- 69 unique signatures which accounts for shielding and mixed configurations

Notes:

*Mandatory radionuclides as defined in ANSI N42.34

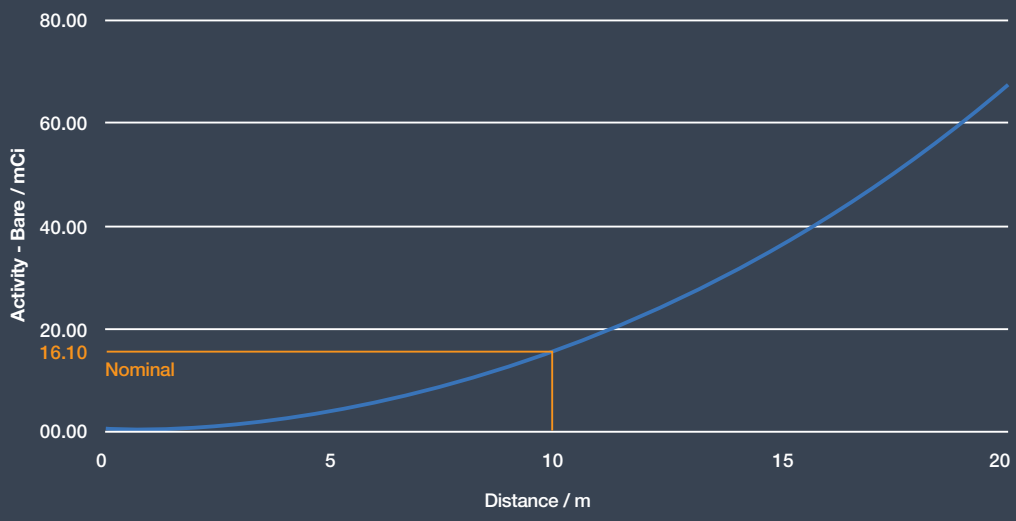
**Beta+ emitting radionuclide

***Beta- emitting radionuclide

****Neutron emitting radionuclide

Americium-241*	Indium-111	Radium-226*
Antimony-124	Iodine-123	Scandium-46
Barium-133*	Iodine-131*	Selenium-75
Bromine-82	Iridium-192 in various shielding*	Sodium-22
Caesium-134	Lutetium-177	Strontium-90***
Caesium-137 in various shielding*	Lutetium-177m	Technetium-99m*
Californium-252****	Manganese-54	Thallium-201*
Chromium-51	Molybdenum-99	Thorium-232*
Cobalt-57*	Neptunium-237	Tin-113
Cobalt-60 in various shielding*	Palladium-109	Uranium-235*
Europium-152	Plutonium-239*	Uranium-238*
Fluorine-18**	Plutonium, reactor grade in various shielding*	Uranium, depleted in various shielding*
Gallium-67*	Plutonium, weapons grade in various shielding*	Uranium, highly enriched in various shielding*
Gold-198	Potassium-40*	Yttrium-88

Detection variation with distance for Caesium-137 at 50 µR/h (0.5 µSv/h) (Meets ANSI 42.34)



Detector specification

Detector type	Gamma and Neutron detection
Gamma detector material	CsI(Tl)
Gamma detector volume	1 in^3 (16 cm^3)
Gamma energy range	30 keV to 3 MeV
Gamma sensitivity for Cs137	5 cps/µR/h (500 cps/µSv/h) Photo peak 1.2 cps/ µR/h (120 cps/µSv/h)
Maximum throughput for gamma channel	10,000 cps
Maximum dose rate	2.0 mR/h (20 µSv/h) at 662 keV (spectroscopic) 100 R/h (1 Sv/h) at 662 keV with high dose module
Neutron detector material	Non-^{3}He
Neutron detector	9 cps in a 1 neutron per cm^2 field
Neutron detector gamma rejection	Better than 10^{-7}, meets ANSI N42.34 section 6.7
Maximum throughput for neutron channel	5,000 cps
Communications	Micro USB, Bluetooth®
Operational battery life	12 hours, 24 hours with add-on battery pack
Operational temperature range	–20°C to 50°C, meets ANSI N42.32 section 7.1, section 7.2, section 7.5
Device size (excluding phone)	5.2" x 3.1" x 0.9" (132 mm x 80 mm x 23.5 mm)
Device volume (excluding phone)	248 cm^3
Humidity	Up to 93% RH ANSI N42.32 section 7.3
Moisture/dust protection	IP53 as per ANSI N42.32 section 7.4 IP65 with add-on enclosure
D3S weight (excluding phone)	0.52 lbs (237 g)
Battery	1450 mAh Lithium polymer
Charging	Charging via USB or inductive charging
External LEDs	Visual detector status
Device status indicator	External LED

Hardware tested to ensure compliance with the following standards

Vibration	ANSI N42.32 section 9.1
ESD immunity	ANSI N42.32 section 8.1
Radiated emissions	ANSI N42.32 section 8.4
Drop test	ANSI N42.32 section 9.2
Impact (microphonics)	ANSI N42.32 section 9.3
Software	
Graphic user interface	Android Smartphone
Spectra storage	ANSI N42.42 compliant
Spectra sharing	Reachback Report

Isotope Identification

Confirmation mode complies with	ANSI 42.34 within 30 seconds
Search mode	Isotope ID within 3 seconds
Isotope ID	Special isotope(s) detected Classification of isotopes (industrial, medical, NORM, SNM)
False Alarm Rate	Superior false alarm rejection (ANSI N42.32) for the gamma and neutron channels independently

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