kromek
detect image identify

Protecting the people and infrastructure of our cities, transport hubs and ports

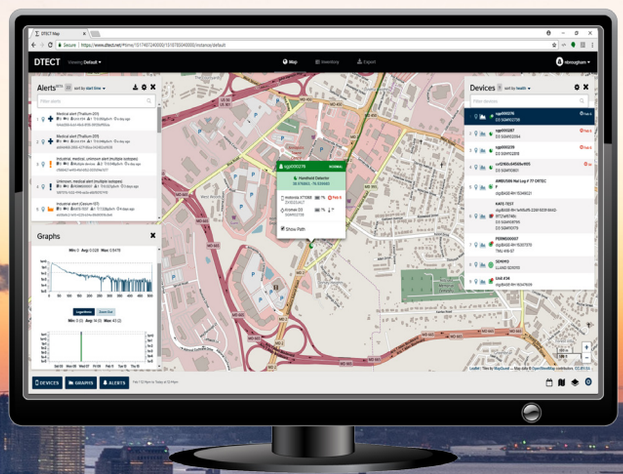
When thousands of people move through a single location, how can we ensure that they are not at risk from a “dirty bomb”? Everyone cannot be scanned individually, as this is hugely expensive, time consuming and frightening.

The D3S Static Node provides continuous radiation monitoring of national infrastructure at a fixed location and is designed to be used in conjunction with the SIGMA platform to provide comprehensive monitoring of radioactive activity. It is discreet, small and highly sensitive to any potential threats.

D3S Static Node

a discreet way to monitor radiation levels in a fixed location

Connected to the SIGMA network



D3S Static Node

The DS3 Static Node combines Kromek's existing DS3 detection device with a custom-built hardware and firmware system which allows results to be sent to the SIGMA network. It utilises an uninterruptible power source with additional battery backup if power is lost for any reason, as well as the ability to store measurements if the connection is lost.

It's totally discreet; a passer-by would see an everyday inconspicuous, opaque box with no user interface to avoid tampering.

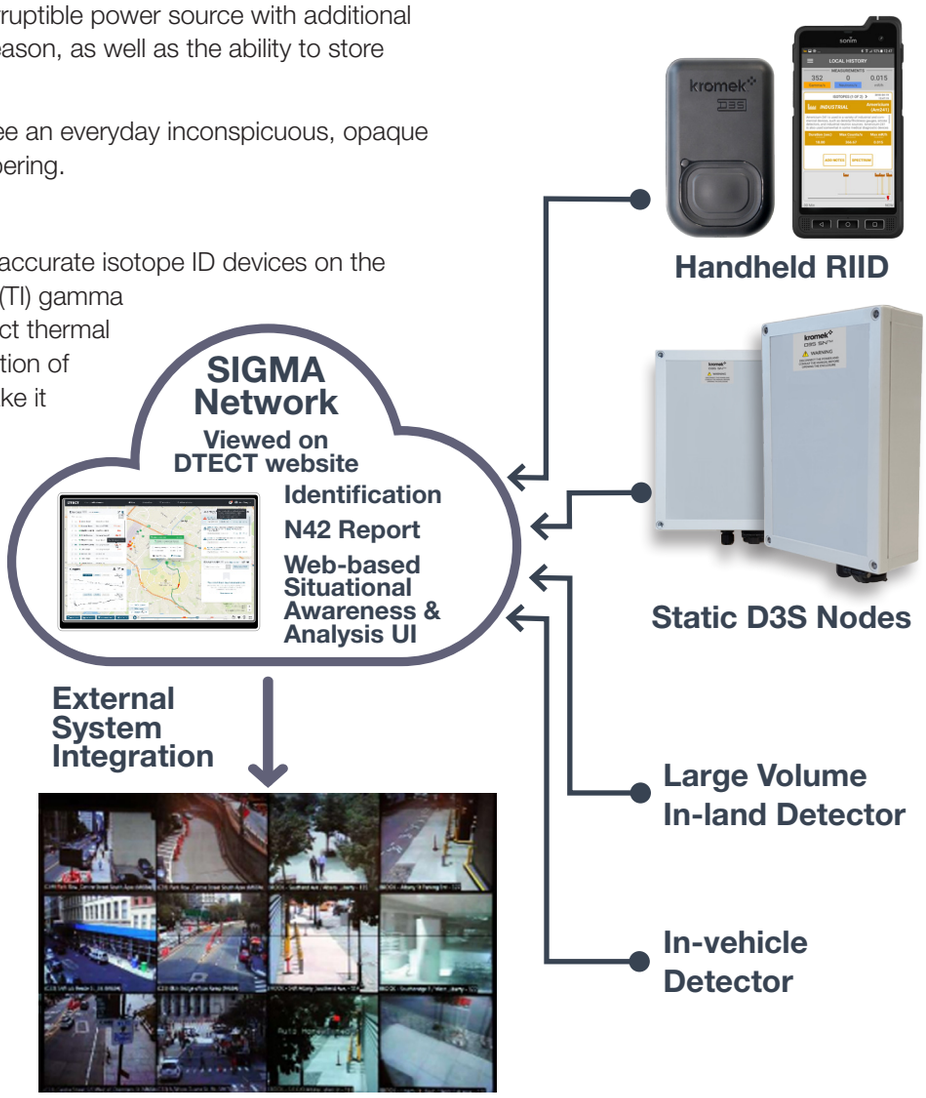
D3S Detector

The D3S is one of the fastest and most accurate isotope ID devices on the market. The technology combines a CsI(Tl) gamma ray spectrometer and a non-He^3 compact thermal neutron scintillator detector. Its combination of high sensitivity and small form factor make it ideal for use within the Static Node.

SIGMA Network

Static Nodes connect to the SIGMA network. Using SIGMA's DTECT web-based user interface, each unit can be monitored in real-time on a map of a specific area from a remote and centralised location by trained experts in radionuclide identification. The location of all units is displayed, and any threats can be identified.

SIGMA Platform Components



Creating the ultimate field of detection

Take several to a thousand Static Nodes and network them together.

The SIGMA Program

The SIGMA Network, developed as a US DHS/DARPA program, is a comprehensive network providing:

- Cost-effective, continuous radiation monitoring
- Networkable systems covering large cities or regions
- Real-time mapping with increased sensitivity

It has been successfully deployed in cities and with security forces in varying operations: urban, tactical and event-based scenarios.

Optimal coverage can be obtained using fixed location Static Nodes with Kromek's handheld D3S ID portable RIIDs. This means that a specific area can be mapped and all potential threats can be identified, with fixed Static Nodes working in conjunction with portable detectors. Large volume in-land and in-vehicle detectors are also available.

High-performance Detection
Utilises Kromek's D3S platform

Uninterruptible Power Source
Battery backup

Embedded PC
No ancillary equipment required

Unattended
Fixed to infrastructure and transmits to the SIGMA network unaided

Works When Unconnected
Measurements stored if connectivity lost

Secure
No user interface, enclosed electronics prevents tampering.Secure emergency plug-in comms

Connectivity
Uses 3G/4G network, WiFi & ethernet

Discreet
Small form factor allows device to be concealed behind signs

Isotopes available in the SIGMA isotope library

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

The table opposite lists the isotopes available in the SIGMA isotope library.

Notes:

*Mandatory radionuclides as defined in ANSI N42.34

**Beta+ emitting

***Beta- emitting radionuclide

****Neutron emitting radionuclide

Device Specification	
Communications	Cellular, Ethernet
Operational battery life	~1 hour UPS back up
Humidity	Up to 93% RH ANSI N42.32 section 7.3 *
Moisture/dust protection	IP55
Weight	3.37 lbs (1530 g)
Power input	90-264 VAC, UPS enabled with 1-hour battery backup
Power consumption	~9W
Mounting	Wall mounting: screws supplied Pole mounting: Universal band clamp fixture for poles up to 7.5 in diameter (194 mm)
Cellular	3G/4G/LTE
Mains Supply	115V AC ± 10%, 50-60Hz, 10VA 230V AC ± 10%, 50-60Hz, 10VA Product is compatible with either voltage range with no further modification needed.
Safety	EN62368-1
EMC	EN 61326-1:2013
RED	EN 301 511 V12.5.1 EN 301 908-1 V11.1.1 EN 301 908-2 V11.1.2 EN 303 413 V1.1.1
Physical (H x W x D)	Plastic Enclosure Size: 180 x 255 x 66.7
Temperature Range	Operation: -20-50 C (max 90% RH, non condensing) Storage: -20-70 C
IP/NEMA Rating	Plastic enclosure: IP55
Inputs/Outputs	Ethernet GSM/3G

Detector Specification	
Detector type	Gamma and Neutron detection
Gamma detector material	CsI(Tl)
Gamma detector volume	1 in3 (16 cm3)
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-3He
Neutron detector	9 cps in a 1 neutron per cm2 field
Neutron detector gamma rejection	Better than 10-7, meets ANSI N42.34 section 6.7
Maximum throughput for neutron channel	5,000 cps

SIGMA Network Specification	
Spectra storage	ANSI N42.42 compliant
Isotope ID	Special isotope(s) detection. Classification of isotopes (industrial, medical, NORM, SNM)
False Alarm Rate	Superior false alarm rejection (ANSI N42.32) for the gamma and neutron channels independently

High Performance Detection
Utilises Kromek's D3S radiation detection platform

Uninterruptible Power Source
With battery backup in the event of a power outage

Embedded PC
No ancillary equipment, such as a smartphone, required

Unattended
Fixed to infrastructure and transmits to the SIGMA network unaided

Works When Unconnected
Measurements are stored if connectivity is lost

Secure
No user interface and enclosed electronics to disable tampering.
Secure plug in comms in case of emergency

Connectivity
Can be connected using 3G/4G cellular network, WiFi and ethernet connection

Discreet
Form factor optimised to allow the device to be fitted behind signs

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D3SN A4 SPF-DOC-1260 Rev1, /