

# DRAAGBARE ISOTOPENIDENTIFICATIE MIDDELEN



# Table of contents

<b>BSI</b> .....	<b>3</b>
Hand-held Integrated Gamma Spectrometer .....	4
<b>Else Nuclear</b> .....	<b>4</b>
B-RAD .....	6
FOOMON .....	7
THYMON .....	8
HERMES GSU .....	9
<b>Kromek</b> .....	<b>9</b>
GR Series Gamma Spectrometers .....	11
D5 RIID .....	13
D3S ID .....	14
RayMon 10 .....	15
AARM .....	16
<b>Polimaster</b> .....	<b>16</b>
PM1401K-3M Multipurpose Hand-Held Radiation Monitor/Identifier .....	18
PM1401K-3P Multipurpose Hand-Held Radiation Monitor/Identifier .....	19
<b>GEORADIS s.r.o.</b> .....	<b>19</b>
RT-30 Gamma-Ray Spectrometer with Nuclide ID Capability - Georadis .....	21



## Partner **BSI**



Baltic Scientific Instruments (BSI) is an OEM manufacturer based in Riga, Latvia, dedicated to the development and production of advanced spectrometric and detection equipment. With decades of experience and roots in the former Research Institute for Radioisotope Apparatus (RNIIRP), BSI provides cutting-edge technologies for nuclear power, environmental monitoring, security, medicine, and scientific research.

The company specializes in HPG<sub>e</sub>, Si, CdZnTe/CdTe, and scintillation detector systems, known for their accuracy, stability, and performance in demanding analytical environments.

Through continuous innovation, strict quality assurance (ISO 9001:2015), and strong international collaboration, BSI supports customers worldwide in achieving precise and reliable radiation measurement and analysis.

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### Product offering

#### Hand-held Integrated Gamma Spectrometer





# Hand-held Integrated Gamma Spectrometer

Hand-held Integrated Gamma Spectrometer with an integrated HPGe detector, preamplifier, multichannel analyzer, batteries, and software offers relatively compact, portable solution for high-resolution gamma-ray analysis. Its all-in-one design enhances field usability, requiring no external components for setup.



## Application

Hand-held Integrated Gamma Spectrometer is ideal for nuclear safety, environmental monitoring, radiological emergency response, CBRN and waste characterization, it ensures rapid deployment and reliable data acquisition. The integrated system minimizes cabling, reduces noise, and simplifies operation, making it highly efficient for both laboratory and on-site measurements.

## Features

- Integrated HPGe Detector - High-purity germanium detector ensures excellent energy resolution for precise gamma spectroscopy
- Embedded Digital Multichannel Analyzer (MCA) - Enables real-time spectrum acquisition and processing without external electronics
- Internal Battery Operation - Offers several hours of autonomous use for field measurements
- Compact All-in-One Design - Reduces cabling and simplifies deployment in any environment
- On-board ruggedized display - large and bright to fit the whole spectrum or a part of it since software is adopted for "mobile view mode"
- Analytical Spectroscopy Software - Supports spectrum analysis, nuclide identification, and reporting
- Advanced Spectroscopy Software - allows applying Monte-Carlo simulation results to the analytical software to make sure correct measurement result in case of complex geometry of the measured object

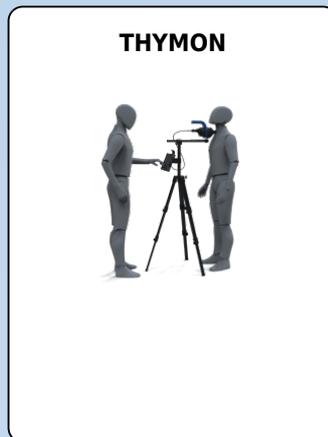


## Partner **Else Nuclear**



ELSE NUCLEAR S.r.l. is an Italian OEM company specializing in advanced radiation-detection and environmental-monitoring systems for nuclear safety, industry and research.

### Product offering



← [Back to partner](#)



Stralingsdetectie > Draagbare isotopenidentificatiemiddelen

## B-RAD

B-RAD is a hand-held radio-isotope identifier (RIID) for gamma dose rate survey and spectrometry measurements, specifically designed to work in magnetic fields up to 3 T. For comparison, conventional devices fail to operate at intensities as low as 0.1 T.



Light and compact, B-RAD is ideal for radiation surveys and for local measurements of contamination or residual radioactivity in hot spots. The built-in software and algorithm allow performing accurate gamma spectrometry and dose rate measurement with a single instrument.

B-RAD employs a high sensitivity  $\text{LaBr}_3(\text{Ce}^{3+})$  crystal directly coupled to a SiPM matrix. Its excellent scintillation properties, high energy resolution (3.3% FWHM at 662 keV) and fast response, together with the built-in pile-up and dead-time correction algorithms, allow the device to cover an extremely wide dose rate range (100 nSv/h to > 20 mSv/h).

This technology has been originally developed at CERN (\*) and has become the standard for radiation surveys in the Large Hadron Collider (LHC) experiments. It is commercialized under an official license granted by CERN, with the “CERN Technology” label.



## FOOMON

FOOMON is a portable fully-integrated instrument specifically conceived for screening of I-131, Cs-134 and Cs-137 accumulated in food samples. Its “on-the-field” design allows deploying the device in any kind of situation, such as routine campaigns or emergency procedures.



The whole device is self-contained in a portable high-IP-grade technical case, for an overall weight < 25 kg. The food samples are to be placed in 500 ml Marinelli beakers, which then are lodged inside a 1 cm thick lead shielding well upon the detector’s end cap. The complete setup and deployment of the system requires less than 5 minutes.

The User can manage FOOMON through the user-friendly control and analysis software installed on the embedded panel PC, automatically calculating the specific activity and the Minimum Detectable Concentration (MDC) of the sample (in Bq/kg). Data are stored locally and can be analysed and downloaded with dedicated software routines.

The measured activity concentration is compared with isotope-specific and food-group-specific alarms. In the case of an alarm, the measurement output is clearly labelled and the alarm status is clearly displayed on the software, which also activates the acoustic alarm.

The counts-to-activity-concentration conversion coefficients are calculated by means of dedicated Monte Carlo calculations.

The MDC achievable in 1 minute, with an average indoor background (150 nSv/h), is as low as about 150 Bq/kg for Cs-137 and Cs-134, and about 90 Bq/kg for I-131. Under the same conditions, MDC as low as about 30 Bq/kg for I-131, and about 40 Bq/kg for Cs-134 and Cs-137, can be achieved in about 10 minutes.

If enabled, the automatic background subtraction subroutine allows further lowering MDC and measurement uncertainty without increasing the counting time.



## THYMON

THYMON is a compact NaI(Tl)-based detector specifically conceived to fast, yet reliably, measure I-131 contamination in thyroid. Its compactness, ruggedness, light-weight, together with its simple and intuitive built-in software interface, make the device perfectly suited for emergency screening applications. The instrument can be used either hand-held or hands-free. The instrument is composed by three main subparts:



- Detector probe: a 1.5" x 1.5" collimated NaI(Tl) crystal coupled to a SiPM matrix and extremely compact readout electronics and MCA
- Extendable support: designed as both table-top and standalone, providing the possibility of hands-free operation
- Control tablet: IP65 water- and dust-proof 8" capacitive screen, wired-connected to the probe

The mechanics of the probe is specifically conceived to ensure the best alignment between the probe and the thyroid, guaranteeing excellent crystal-to-thyroid alignment, and reducing positioning uncertainties.

The control and analysis software installed on the control tablet is designed to be simple and intuitive, yet advanced and comprehensive. This is accomplished by combining a simple and intuitive interface with advanced calculation routines, which run automatically as the measurement start, without the need of operator intervention.

Data are stored locally on the tablet internal memory, and can be analysed and downloaded with dedicated software routines.

The automatic I-131 activity calculation is given for pre-defined age groups: 1 yo, 5 yo, 10 yo, 15 yo (Adult Female), Adult Male. Counts-to-activity conversion coefficients are calculated by dedicated Monte Carlo simulations based on detailed detector and thyroid numerical models. The simulations are always validated for the specific system through experimental tests performed with reference radioactive sources.

The activity is compared to 2 User-defined threshold levels, each defined per each age group, following the two Action Levels logic.

MDA as low as about 100 Bq can be achieved in 2 min screenings. The MDA can be further lowered by enabling the background subtraction option.

← [Back to partner](#)



Stralingsdetectie > Draagbare isotopenidentificatiemiddelen

## HERMES GSU

HERMES GSU is a portable gamma spectrometry system designed for rapid and precise in-field analysis of environmental samples. As part of the HERMES product line, it features a rugged, modular, and self-contained design housed in a high IP-rated technical case, ensuring durability and reliability in demanding conditions.



HERMES GSU quantifies isotope activity concentrations based on a rich built-in, yet fully-editable, isotope library. Its portability and autonomous operation make it ideal for both routine monitoring and emergency response scenarios.

Samples can be directly collected from the field, placed in 500 ml Marinelli beakers, and inserted into the built-in 1 cm lead-shielded well, minimizing background radiation for immediate, on-the-spot, low MDC analysis, and enhancing measurement accuracy and sensitivity. The system automatically calculates activity concentrations, making it a powerful tool for in-situ, laboratory-grade measurements.

HERMES GSU features advanced routines for gain stabilization, dead time correction, and automatic energy calibration (relying on natural background only, thus not requiring any radioactive reference source).

Efficiency calibration curves are generated using validated Monte Carlo simulations. Predefined efficiency curves are available for different sample matrices, including soil, water, and foodstuffs, across various densities. Custom calibration curves can be provided upon request.



## Partner **Kromek**



Kromek Group plc is een wereldleider in geavanceerde stralingsdetectietechnologieën en is gespecialiseerd in compacte oplossingen met een hoge resolutie voor beveiligings-, defensie-, nucleaire en onderzoekstoepassingen. Kromek maakt gebruik van gepatenteerde Cadmium-Zinktelluride (CZT) halfgeleidertechnologie en levert een veelzijdig portfolio met handheld monitoren, draagbare isotopeidentifiers, CZT-gebaseerde gammacamera's en spectrometers van laboratoriumkwaliteit.

### Product offering

**GR Series Gamma Spectrometers**



**D5 RIID**



**D3S ID**



**RayMon 10**



**AARM**





## GR Series Gamma Spectrometers

**A family of small and light CZT-based Gamma detector spectrometers!**



The Kromek GR family is a range of CZT-based high-performance Gamma spectrometers. They are completely self-contained, with built-in preamplifier, shaping amplifier, baseline restorer, pulse height digitizer and HV supply. The digitised pulse heights of detected Gamma signals are sent to a computer via the USB. The unit is powered entirely from the USB bus, so no external power supply is needed.

Can be used for all Gamma radiation detection needs either straight out of the box or built into your own devices. The GR Gamma detectors can be mounted side by side in an array to give you coverage of a large area.

### **GR1/GR1+ Gamma spectrometer**

- Perfect for most uses
- Energy resolution: < 2.5% FWHM @ 662 KeV
- USB output only
- 1 cm cubed CZT detector
- The plus model is available for those that need higher resolution:
- Energy resolution: <2.0% FWHM @ 662 KeV

### **GR1-A/GR1-A+ Gamma spectrometer**

- For those that need extra outputs channels
- Energy resolution: < 2.5% FWHM @ 662 keV
- USB output
- Three MCX connectors that provide energy and timing outputs and gate inputs
- MultiSpect Analysis spectroscopy software included in the price
- 1 cm cubed CZT detector
- The plus model is available for those that need higher resolution:
- Energy resolution: <2.0% FWHM @ 662 KeV

### **GR05 Gamma spectrometer**

- For use in a high-flux environment
- Energy resolution: < 2.5% FWHM @ 662 keV
- Max dose rate approximately 10mSv/hr
- USB output
- Smaller 0.125 cm cubed CZT detector

- For use in high-count (high-flux) environments



← **Back to partner**



**Stralingsdetectie > Draagbare isotopenidentificatiemiddelen**

## **D5 RIID**

De D5 RIID biedt een uniek, krachtig en veelzijdig stralingsdetectieapparaat in een draagbaar pakket voor militair, binnenlandse veiligheids- en industrieel personeel.



De D5 RIID is een klein, licht, draagbaar radio-isotopenidentificatieapparaat (RIID) met een resolutie van 3,5%, een uitgebreide bibliotheek met radio-isotopen en een ultralaag aantal valse alarmen. Het scant en identificeert voortdurend radiologische bedreigingen in realtime, zelfs in gemengde bronomgevingen.

De D5 RIID combineert een kleine vormfactor met krachtige radiometrische prestaties en verbeterde gevoeligheid bij een gemiddelde resolutie van 3,5%. De D5 RIID heeft een oppervlakte-efficiëntie die 62% hoger is in vergelijking met conventionele RIID's.

**D5 RIID Overview** <https://youtu.be/yi-uvoO5nFg>



**SCAN TO VIEW  
VIDEO**

D5 RIID is de kleinste, lichtste met de ultieme detectieprestaties. Het heeft een resolutie van 3,5%, met een uitgebreide bibliotheek met radio-isotopen en een ultralaag aantal valse alarmen. Het scant en identificeert voortdurend radiologische bedreigingen in realtime, zelfs in gemengde bronomgevingen.

← **Back to partner**



**Stralingsdetectie > Draagbare isotopenidentificatiemiddelen**

## **D3S ID**

Een draagbare, camouflieerbare gamma- en neutronendetector die de kracht van een RIID in een pakket ter grootte van een persoonlijke stralingsdetector (PRD) stopt. D3S ID is de nieuwe standaard in draagbare stralingsdetectoren.

De D3S ID is een krachtig, draagbaar, onopvallend en handsfree apparaat dat voortdurend scant op bedreigingen voor gamma- en neutronenstraling.



Kromek's D3S voldoet aan de databeveiligingsverwachtingen van overheden, inlichtingendiensten en veiligheidsautoriteiten. De D3S wordt standaard geleverd met een beveiligde smartphone (Android-bediening), waarop de exclusieve en beveiligde Kromek-detectorsoftware staat. In de Verenigde Staten wordt de D3S al veelvuldig gebruikt, bijvoorbeeld op brandweerwagens en ambulances of als area mapping systeem met 1.000 detectoren tijdens een 'speurtocht'. In Europa is de D3S de afgelopen jaren ingezet tijdens staatsbezoeken en NAVO-overleg om vroegtijdige radioactieve dreigingen op te sporen die aanwezig kunnen zijn in vracht, voertuigen, gebouwen, andere objecten en in het milieu.

### **Functies:**

- Identificeert 37 isotopen (17 meer dan de huidige ANSI-standaard)
- Identificeert sneller dan een RIID
- Budgetvriendelijk in vergelijking met andere producten op de markt
- Klein formaat, draagbaar, past aan de riem
- Netwerkbaar



## RayMon 10

### RayMon 10

Een krachtige en robuuste draagbare gammadetector voor identificatie van radioactieve isotopen met hoge resolutie. De RayMon10 is een van de krachtigste en meest robuuste draagbare stralingsmonitors ter wereld. Het kan worden gebruikt voor het detecteren, meten en nauwkeurig identificeren van gammastraling uitzendende radionucliden, waardoor isotopenidentificatie met hoge resolutie mogelijk wordt gemaakt met behulp van de nieuwste vastestofdetectortechnologie van CZT. Het is een alles-in-één oplossing voor uw identificatiebehoeften voor gamma-radionucliden

Het kan een verscheidenheid aan rapporten uitvoeren, waaronder datum/tijd, handheld-ID van de gebruiker, foto- en audionotities, GPS-positionering, stralingsspectra en isotopenidentificatie.

Variaties in normale bedrijfsomstandigheden kunnen vaak de prestaties van de identificatie van radio-isotopen beïnvloeden. De geavanceerde één kubieke centimeter CZT coplanaire rasterdetector van de RayMon10 biedt stabielere prestaties dan detectoren van het scintillatietype



← [Back to partner](#)



Stralingsdetectie > Draagbare isotopenidentificatiemiddelen

## AARM

**Real-time locatie, meting en kartering van radioactiviteit vanuit de lucht met Kromek's drone-gebaseerde lading!**



Wanneer het AARM-payloadsysteem van Kromek op een multirotor-dronemodel wordt gemonteerd, kan het worden gebruikt om snelle, gedetailleerde radiologische onderzoeken over grote gebieden uit te voeren. Het geavanceerde sensorsysteem van geïntegreerde stralings- en positiesensoren maakt het mogelijk isotopische vingerafdrukken, tellingen per seconde en volledige spectrale gegevens te verzamelen en vervolgens elke seconde aan de gebruiker te leveren.

Gegevens worden ook in realtime gevisualiseerd in de vorm van een stralingswarmtekaart met meterresolutie op de iOS-gebaseerde app van AARM. Hotspots en anomalieën kunnen snel worden geïdentificeerd vanaf een veilige afstand, optimaal voor toepassingen zoals, maar niet beperkt tot, milieuonderzoeken en -monitoring, en voor het verbeteren van het situationeel bewustzijn en de snelle respons bij toepassingen op het gebied van nucleaire beveiliging.

Er zijn ook flexibele detector- en communicatieopties beschikbaar, wat de veelzijdigheid van het systeem vergroot. Dankzij cloudgebaseerde communicatie kunnen spectrale gegevens en tellingen per seconde overal ter wereld worden bekeken. Er zijn ook niet-cloudgebaseerde opties beschikbaar, waarbij ook gegevensopslag aan boord mogelijk is. De lading bevat de bewezen stralingsdetectiemogelijkheden van Kromek, met enkele of dubbele detectorconfiguraties van de GR1, SIGMA 50, TN15 of D3S. Het grote bereik van de bedrijfstemperatuur van het systeem vergroot de missie veelzijdigheid van het systeem verder, waardoor missies overal ter wereld mogelijk worden.





## Partner **Polimaster**



Polimaster is wereldwijd toonaangevend in oplossingen voor stralingsdetectie en -monitoring en biedt een uitgebreid scala aan instrumenten die zijn ontworpen om ioniserende straling in diverse omgevingen te detecteren, identificeren en meten. Hun productassortiment omvat handmonitoren, persoonlijke elektronische dosimeters, draagbare isotopenidentifiers, portaalmonitoren en mobiele detectiesystemen, allemaal ontworpen om te voldoen aan de strenge eisen van beveiliging, noodhulp en industriële toepassingen.

### Product offering

**PM1401K-3M**  
**Multipurpose Hand-  
Held Radiation  
Monitor/Identifier**



**PM1401K-3P**  
**Multipurpose Hand-  
Held Radiation  
Monitor/Identifier**





## Stralingsdetectie > Draagbare isotopenidentificatiemiddelen

# PM1401K-3M Multipurpose Hand-Held Radiation Monitor/Identifier

PM1401K-3M model is a gamma-only radiation monitor without a neutron detector which is designed for quick and reliable measurement of gamma dose rate, detection of alpha, beta, and gamma sources, measurement of alpha and beta radiation flux density, acquisition of gamma spectra, identification of radioisotopes, and measurement of food/soil contamination with  $^{137}\text{Cs}$

### Features

- Storage of up to 10000 events and 1000 spectra
- Audible, visual and external vibration alarm
- Categorization of identified radionuclides
- Shock and water resistant IP65 case
- Adjustable radionuclide libraries
- USB communication with PC
- Built-in GPS module

### Applications

- Customs and border control
- HAZMAT and CBRNe teams
- Emergency services
- Police and security
- Industrial facilities
- First responders





## Stralingsdetectie > Draagbare isotopenidentificatiemiddelen

# PM1401K-3P Multipurpose Hand-Held Radiation Monitor/Identifier

Gamma-neutron model suitable for various radiation control tasks.

The **PM1401K-3 series** of radiation monitors comprises a wide range of all-in-one devices for radiation detection, dose rate, contamination measurements, spectrometry, and radionuclide identification.

The **PM1401K-3P model** is the **gamma-neutron model** suitable for various radiation control tasks, including measurement of ambient dose equivalent rate, detection of alpha, beta, gamma, and neutron sources, measurement of alpha and beta radiation flux density, acquisition of gamma spectra, identification of radioisotopes, and measurement of food/soil contamination with  $^{137}\text{Cs}$ .



### Features

- Storage of up to 10000 events and 1000 spectra
- Audible, visual, and external vibration alarm
- Categorization of identified radionuclides
- Shock and water-resistant IP65 case
- Adjustable radionuclide libraries
- USB communication with PC
- Built-in GPS module

### Operation principle

The PM1401K-3P continuously measures ambient dose equivalent rate  $\dot{H}^*(10)$  of photon radiation in the wide energy range, detects alpha, beta, gamma, and neutron radiation, measures alpha and beta radiation flux density, operates as a gamma radiation spectrometer and radioisotope identifier, and measures food/soil contamination with  $^{137}\text{Cs}$  radionuclide.



## Partner **GEORADIS s.r.o.**



Georadis s.r.o. is een gespecialiseerde fabrikant van geavanceerde instrumenten voor stralingsdetectie en -monitoring en biedt een uitgebreid scala aan oplossingen voor veld- en laboratoriumtoepassingen. Hun productportfolio omvat handeld monitoren, draagbare isotoopenidentifiers, apparatuur voor omgevingsmonitoring en laboratoriumapparatuur, allemaal ontworpen om te voldoen aan de strenge eisen van professionals in sectoren zoals milieumonitoring, industriële veiligheid en openbare veiligheid.

### Product offering

**RT-30 Gamma-Ray  
Spectrometer with  
Nuclide ID Capability  
- Georadis**



← Back to partner



Stralingsdetectie > Draagbare isotopenidentificatiemiddelen

## RT-30 Gamma-Ray Spectrometer with Nuclide ID Capability - Georadis

The RT-30 Gamma-Ray Spectrometer with Nuclide ID Capability (Georadis) integrates a radiation survey meter, dose meter and radionuclide identification device in a weather protected, lightweight and easy to use instrument.



### RT-30 Gamma-Ray Spectrometer with Nuclide ID Capability features:

- multiple functions; nuclide ID (isotope name), scan and search
- auto-stabilization
- protection: IP66
- single button operation
- sensitivity: Co-60: 270 cps/MBq, Cs-137: 160 cps/MBq, Am-241: 75 cps/MBq
- data interchange; Bluetooth or USB
- readout search mode; 0 - 65535 cps
- energy response: 20 keV to 3000 keV
- energy compensated doserate: 0 - 10 mSv/h (with G/M detector)
- graphic LCD display; 128 x 64 pixels
- 2GB memory

Read more about the RT-30 Gamma-Ray Spectrometer with Nuclide ID Capability on the [Georadis website](#)