Graetz
Strahlungsmeßtechnik



PIONEERS OF RADIATION MEASUREMENT TECHNOLOGY SINCE 1949 – MADE IN GERMANY

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RadXplore-ident

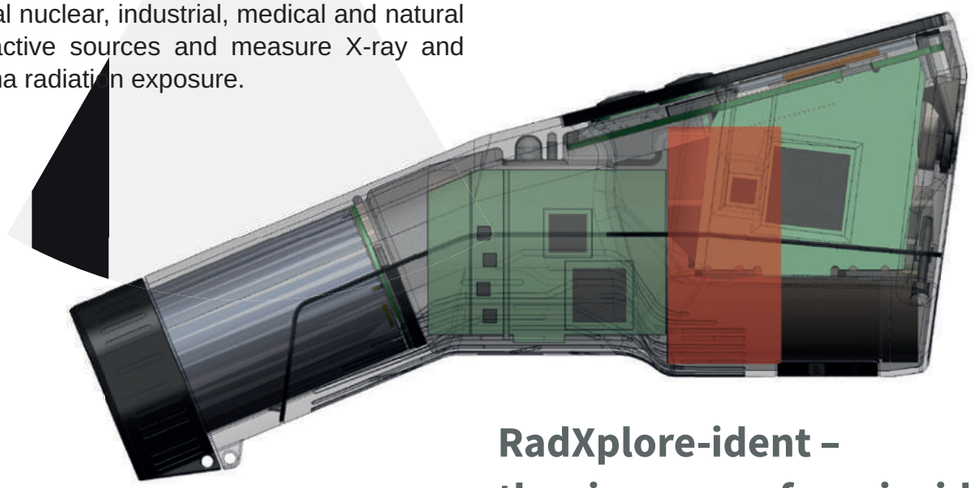
High Efficiency Radionuclide Identifier (RID)

An ultra-compact, robust and sensitive radionuclide identifier (RID) which features a wide energy range, high throughput and excellent stability with outstanding application capabilities.

RadXplore-ident

versatile and precise

The RadXplore-ident is designed to detect gamma, beta, neutron and cosmic radiation from natural and man-made sources, identify special nuclear, industrial, medical and natural radioactive sources and measure X-ray and gamma radiation exposure.



RadXplore-ident – the size comes from inside

In the development of the device, which is powered by a Li-Ion battery powered device, great emphasis was placed on comfortable handling as well as a high degree of user-friendliness.
The result is a housing shape and weight that makes the RadXplore-ident highly ergonomic and unique: compact and operable with one hand.

This is because, for the first time, it has been possible to combine a 2“ x 1“ BGO (bismuth germanate) detector with high-precision, high-speed digital electronics in an ergonomic, lightweight and waterproof aluminum housing that can be operated with one hand.
The RadXplore-ident convinces in use on land, on water and even under water up to 10 meters diving depth.

info

The RadXplore-ident one-hand measuring device comes standard with 2“ x 1“ BGO detector in a robust aluminum housing - ergonomic, lightweight and waterproof. For more information, please refer to our product data sheet.

Dimensions:
235 mm x 88 mm x 92 mm (9.3“ x 3.5“ x 3.6“)

Weight:
950 - 1,250 g (2 - 2.7 lbs) depending on detector type

Convincing stability in every application situation

The novel patented stabilization of the RadXplore-ident is based on the measurement of the quantum photoelectric effect. It requires no built-in source or LED and instantly and automatically compensates for any gain variations due to hysteresis and temperature changes.

The main advantages of this method are:

- No internal stabilization source „blinds“ the instrument
- No faulty LED can affect the stabilization affect stabilization
- Excellent stability in any situation

With the highest precision, the RadXplore-ident thus provides consistent performance in all conditions and environments, reducing false alarms and shortening decision-making processes in the field.



Detect, measure, localize and identify

Especially for missions with unknown risks, the wide measurement range (10 keV_{ee} to 1000 MeV_{ee}) as well as the dose rate measurement is a convincing advantage.
The sophisticated analog and digital electronics make it possible to measure a wide gamma dose rate range and neutrons with only one BGO crystal.

Low radiation levels can be detected earlier, faster and with higher accuracy than with comparable handheld instruments. Stronger radiation sources are analyzed and identified even at high input rates. With the Easy-Finder function, radiation sources can be found, located and then quickly identified. For example, a radiation source with an activity of 37 kBq Cs-137 is identified within 3 seconds.

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The RadXplore-ident in night mode allows working in complete darkness without blinding the user.

Simple and intuitive

The high-resolution and bright display ensures trouble-free operation both in bright sunlight and in the dark. During development, particular attention was paid to a proven operating concept and a user-friendly user interface with the display of essential information.

This results in simple and intuitive handling for the single-handed measuring device. The individual modes can be started very quickly. The visualization is colorful and self-explanatory. Even when the RadXplore-ident is upside down, it is easy to operate because the user interface automatically rotates the various elements.



Display views of the various functions:



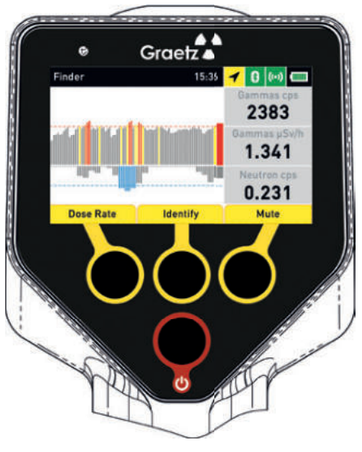
Easy Finder (Scan)



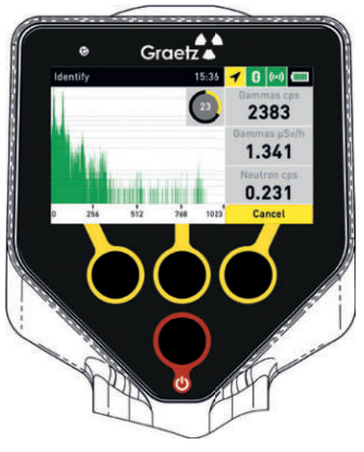
Easy Finder (Direction)



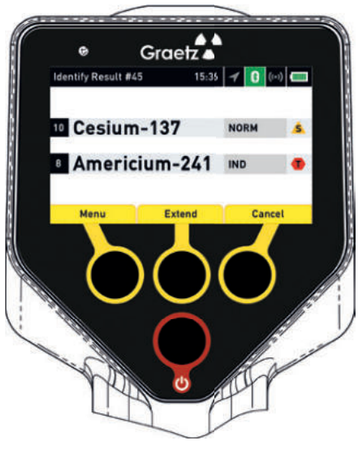
Dose rate mode



Finder mode



Identification mode



Identified nuclides

Connectivity and Documentation

All measurements are stored on the device‘s internal memory (30 GB storage capacity) and can be easily transferred without special software. Its numerous interfaces and the built-in web interface allow easy remote data transmission as well as secure remote maintenance and remote control of the device. For example, not only can the current display be seen in the command vehicle, but the device can also be operated or configured.

The digital user manual is an integral part of the web interface and is therefore always available and always up to date.

info

Image 1:
The recording of a spectrum with the web interface.

Image 2:
The password protected area for the expert settings.

Image 3:
The user manual, an integral part of the web interface.



Image 1



Image 2



Image 3

Features of the RadXplore-ident at a glance

- 2“ x 1“ BGO ($Bi_4Ge_3O_{12}$) detector with outstanding efficiency in the standard version - optionally further detectors with a higher measuring efficiency are possible
- Improved overall robustness with non-hygroscopic BGO detector
- Novel sourceless gain stabilization (Pat. US 9,864,076)
- High dose rate capability and neutron detection with one detector
- Nuclide identification at up to 1 million Ip/s
- Directional radiation detection
- Waterproof up to 33 feet (10 meters) - IP68 rating
- Easy system integration through HTTP REST interface and universal API
- N42.42 data format for easy remote data transmission
- Remote control and configuration via web interface or app
- Nuclide library (> 70 nuclides) exceeds IEC-62755- and ANSI 42.34 requirements



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PRODUCT DATA SHEET

10-2024
Subject to change

HIGH EFFICIENT RADIONUCLIDE IDENTIFYING DEVICE (RID)
GRAETZ RADXPLORE-IDENT

Product features

The GRAETZ RadXplore-ident is an ultra-compact, robust and sensitive radionuclide identifier (RID), which features a wide energy range, high throughput and excellent stability with outstanding application possibilities.





System Overview	
Technology	Radionuclide Identification Device (RID)
Scope	Detection of gamma, beta, neutron, and cosmic radiation emitted from natural and man-made sources. Identification of special nuclear material, industrial, medical, and natural radioactive sources. Measurement of x-ray and gamma exposure.

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Detector-Options	
BGO	Gamma and thermal neutron detection Material: $Bi_4Ge_3O_{12}$ (Gd_2O_3) Size: 51 Ø x 25 mm³ (2“ x 1“) PHR: 9.0 ±1.5 % @ 662 keV
NAI	Gamma, fast and thermal neutron detection Material: NaI:Tl Size: 51 Ø x 51 mm³ (2“ x 2“) PHR: 6.0 ±0.5 % @ 662 keV
CLLBC	Gamma and thermal neutron detection Material: $Cs_2LiLa(Br,Cl)_6$:Ce Size: 36 Ø x 38 mm³ (1.4“ x 1.5“) PHR: 3.8 ±0.3 % @ 662 keV
LABR	Gamma detection (neutron detection optional) Material: $LaBr_3$:(Ce,Sr) Size: 38 Ø x 38 mm³ (1.5“ x 1.5“) PHR: 2.4 ±0.3 % @ 662 keV
M600	Gamma and fast neutron detection Material: Tissue equivalent plastic scintillator M600 Size: 51 Ø x 51 mm³ (2“ x 2“)

Physical	
Weight	950 - 1,250 g (2 - 2.7 lbs) depending on detector type
Dimensions (L x H x W)	235 x 88 x 92 mm (9.3“ x 3.5“ x 3.6“) with rubber enclosure
Housing material	Machined aluminum

Operating Conditions	
Operating temperature	-20 °C to 50 °C (-4 °F to 122 °F)
Operating humidity	Up to 93 % at 40 °C (104 °F) non-condensing
Protection rating	IP68 according to IEC 60529 submersible, up to 10 m (33 ft) 30 min

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Operating Modes	
Dose Rate	Gamma dose rate and neutron count rate display
Finder	Rate history display
Directional Finder	Source strength and direction
Identification	Gamma spectrum measurement and identification

Performance	
Energy range	10 keV_{ee} – 1000 MeV_{ee} (Total) 10 keV – 10 MeV (Gamma and X-rays) 10 MeV_{ee} – 1000 MeV_{ee} (cosmic radiation, muons, charged particles)
Dose rate range (Cs-137)	10 nSv/h – 10 mSv/h (1 µrem/h – 1 rem/h) ±30 %
Dose rate range ID Mode (Cs-137)	10 nSv/h – 200 µSv/h (1 µrem/h – 20 mrem/h)
Dose rate overload range (Cs-137)	0.2 mSv/h – 500 mSv/h (0.02 rem/h – 50 rem/h)
Maximum input count rate in ID mode	1 million cps (Cs-137)
Gamma sensitivity	1,850 cps/µSv/h (Cs-137)
Neutrons	According to ANSI N42.34
Neutron sensitivity	~5 cps/nv (BGO)
Power-up time	Operative in less than one minute
Identification time	Identification of 1 µCi Cs-137 in 3 s (5 cm to crystal front)
Linearisation	Real-time linearization of gamma energy
User-interface update frequency	0.5 s
Nuclide library	> 70 Nuclides (exceeding IEC 62755, ANSI N42.34)

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Power Module PM1 Li-Ion 240	
Run time at 20 °C (68 °F)	> 6 h continuous use (non-alarm state)
Run time at -20 °C (12 °F)	> 1 h continuous use (non-alarm state)
Operating temperature	-20 °C to 50 °C (-4 °F to 122 °F)
Charging temperature	0 °C to 40 °C (+32 °F to 104 °F)
Storage temperature	-20 °C to 50 °C (-4 °F to 122 °F)

Hardware	
Data Storage	30 GB internal memory
Wi-Fi	Wi-Fi access point 2,4 GHz 802.11 g, encryption WPA-PSK AES
BlueTooth	BlueTooth LE for connection to the Mobile App
GPS	Navstar, Galileo, Glonass, Beidou
USB-C	Power and data port

Software	
Web server	Web Interface for setup, data download and remote control
Data streaming	Support of the Sigma streaming API via BT tethering
Data reporting	Support of the Sigma reporting API via BT tethering
Easy finder	Convenient directional finder mode for locating gamma sources
Session data	Continuously tracking of GPS position, dose rate, alarms and identification results

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Mobile App	
Supported operating systems	Apple iOS, Android
Remote setup	Adjustment of all instrument settings
Remote operation	Remote operation and observation of the instrument
Reachback	Reachback functionality (e-mail with attached ANSI N42.42 data)

Standards Compliance	
RID	IEC 62327, ANSI N42.34
Environmental tests	IEC 62706
Data format	ANSI N42.42, IEC 62755

For more information on this product, please visit our website:
https://graetz-strahlungsmesstechnik.com/radxplore-en
or scan the following QR code.

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Nuclide List

The RadXplore-ident is able to detect and identify the following nuclides:

#	Displayed Name	Short Name	Possible Sources
1	Actinium-225	Ac-225	Ac-225
2	Americium-241	Am-241	Am-241
3	AnnihilationRadiation		F-18, Ge-68/Ga-68, Na-22, Sr-82/Rb-82
4	Antimony-124	Sb-124	Sb-124
5	Antimony-125	Sb-125	Sb-125
6	Barium-133	Ba-133	Ba-133
7	Beta Emitter		Beta Emitter, Sr-89, Sr-90/Y-90
8	Bismuth-207	Bi-207	Bi-207
9	Cadmium-109	Cd-109	Cd-109
10	Cesium-131	Cs-131	Cs-131
11	Cesium-134	Cs-134	Cs-134
12	Cesium-137	Cs-137	Cs-137
13	Chromium-51	Cr-51	Cr-51
14	Cobalt-56	Co-56	Co-56
15	Cobalt-57	Co-57	Co-57
16	Cobalt-58	Co-58	Co-58
17	Cobalt-60	Co-60	Co-60
18	Europium-152	Eu-152	Eu-152
19	Europium-154	Eu-154	Eu-154
20	Europium-155	Eu-155	Eu-155
21	Fluorine-18	F-18	F-18
22	Gadolinium-153	Gd-153	Gd-153
23	Gallium-67	Ga-67	Ga-67
24	Germanium-68	Ge-68	Ge-68
25	Holmium-166m	Ho-166m	Ho-166m
26	Indium-111	In-111	I-131
27	Iodine-123	I-123	I-123
28	Iodine-125	I-125	I-125
29	Iodine-131	I-131	I-131
30	Iridium-192	Ir-192	Ir-192
31	Iron-59	Fe-59	Fe-59
32	Lanthanum-138	La-138	La-138
33	Lutetium-176	Lu-176	Lu-176

#	Displayed Name	Short Name	Possible Sources
34	Lutetium-177	Lu-177	Lu-177
35	Lutetium-177m	Lu-177m	Lu-177m
36	Manganese-54	Mn-54	Mn-54
37	Manganese-56	Mn-56	Mn-56
38	Molybdenum-99	Mo-99	Mo-99
39	NORM		Thorium, Radium
40	Neptunium-237	Np-237	Np-237
41	Neutrons		Hydrogen Neutron Capture, Neutrons
42	Niobium-94	Nb-94	Nb-94
43	Niobium-95	Nb-95	Nb-95
44	Not Identified		
45	Palladium-103	Pd-103	Pd-103
46	Plutonium	Pu	Pu, WGPu, RGPu, Pu-239
47	Plutonium-238	Pu-238	Pu-238
48	Potassium-40	K-40S	K-40S
49	Radium-223	Ra-223	Ra-223
50	Radium-226	Ra-226	Ra-226
51	Samarium-153	Sm-153	Sm-153
52	Scandium-46	Sc-46	Sc-46
53	Selenium-75	Se-75	Se-75
54	Silver-110m	Ag-110m	Ag-110m
55	Sodium-22	Na-22	Na-22
56	Strontium-82	Sr-82	Sr-82
57	Technetium-99m	Tc-99m	Tc-99m
58	Thallium-201	Tl-201	Tl-201
59	Thallium-202	Tl-202	Tl-201
60	Thallium-204	Tl-204	Tl-204
61	Thorium-228	Th-228	Th-228
62	Thorium-232	Th-232	Th-232
63	Tungsten-187	W-187	W-187
64	Unknown		All nuclides that are not part of the instrument library
65	Uranium	U	U-Nat, LEU
66	Uranium-232	U-232	U-232
67	Uranium-233	U-233	U-233
68	Uranium-235	U-235	HEU, U-235

#	Displayed Name	Short Name	Possible Sources
69	Uranium-238	DU	DU, U-238
70	Xenon-133	Xe-133	Xe-133
71	Yttrium-88	Y-88	Y-88
72	Zinc-65	Zn-65	Zn-65
73	Zirconium-95	Zr-95	Zr-95