

GUARDIAN™ 501 SERIES

Rapiscan®

DATASHEET

HANDHELD RADIONUCLIDE IDENTIFICATION DEVICE

KEY FEATURES AND BENEFITS

Ultra-compact, rugged, and
sensitive Radionuclide
Identification Device (RID)

Single-hand operation

Intuitive and user-friendly
operation with built-in web
interface for easy reach-back

Gamma and thermal neutron
detection



THE GUARDIAN 501 SERIES
Fast, efficient radionuclide
identification devices

The Guardian 501 series of handheld Radionuclide Identification Devices (RIDs) excels at detecting gamma, beta, neutron, and cosmic radiation emitted by both natural and man-made sources. With exceptional precision, it can identify special nuclear material as well as industrial, medical, and naturally occurring radioactive sources.

Additionally, the Guardian 501 line enables accurate measurement of X-ray and gamma exposure, making it an indispensable tool for multiple applications. By delivering unwavering performance in various conditions and environments, the Guardian 501 RID ensures the utmost accurate results, which minimizes false positives and expedites decision-making in the field. The Guardian 501 series is available in the following variants: BGO, NaI, NaICN, and LaBr.

SPECIFICATIONS

GUARDIAN 501™ SERIES

SYSTEM VARIANT	BGO	Nal	NalCN	LaBr
Material	Bi ₄ Ge ₃ O ₁₂ (Gd ₂ O ₃)	Nal:Tl	Nal:Tl	LaBr ₃ :(Ce,Sr)
Operating Range Detection	Gamma, fast and thermal neutrons	Gamma	Gamma, fast and thermal neutrons	Gamma
Size	51 Ø x 25 mm ³ (2 in x 1 in)	51 Ø x 51 mm ³ (2 in x 2 in)	51 Ø x 51 mm ³ (2 in x 2 in)	38 Ø x 38 mm ³ (1.5 in x 1.5 in)
PHR @ 662 keV	9.0 ± 1.5 %	6.0 ± 0.5 %	6.0 ± 0.5 %	2.4 ± 0.3 %
Max Input Count Rate in ID Mode (Cs-137)	1,000,000 cps	1,000,000 cps	1,000,000 cps	1,000,000 cps
Gamma Sensitivity (Cs-137)	1,850 cps/μSv/h	1,750 cps/μSv/h	1,750 cps/μSv/h	950 cps/μSv/h
Neutron Sensitivity	~5 cps/nv	N/A	~3 cps/nv	N/A

TECHNICAL DATA

- **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 rate or ambient dose equivalent.

PERFORMANCE

- **Power-Up Time:** Operative in less than one minute
- **Identification Time:** Identification of 1 μCi Cs-137 in 3 s (5 cm to crystal center)
- **Linearisation:** Real-time linearization of gamma energy
- **User-Interface Update Frequency:** 0.5 s
- **Nuclide Library:** > 70 nuclides (exceeding IEC 62327, ANSI N42.34)

PHYSICAL

- **Weight:** 1,200 to 1,350 g (2.65 to 3 lbs) depending on detector type
- **Dimensions (L x H x W):** 235 mm x 88 mm x 92 mm (9.3 in x 3.5 in x 3.6 in)

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

POWER MODULE PM18650

- **Capacity:** 3.7 V / 6.7 Ah / 24 Wh
- **Run Time at 20 °C (68 °F):** > 6 h regular use (non-alarm state)
- **Run Time at -20 °C (12 °F):** > 1 h regular 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:** 32 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 GPS, 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
- **Rapid-Finder:** Convenient directional finder mode for locating gamma sources
- **Session Data:** Continuous tracking of GPS position, dose rate, alarms, and identification results
- **Replay Tool:** Optional; available upon request

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

All technical data are subject to change without further notice.

CVIsales@rapiscan.com

rapiscan.com



Rapiscan®

The performance characteristics and photos in this document are indicative and for information only and do not represent any specific system configuration. Specifications and features of individual systems will vary based upon customer requirements, operation, supplied options, and other factors. Customers must refer to the relevant quote, proposal, or contract for the definition of a system configuration, including specifications and optional items. Due to continual development of our products, we reserve the right to amend any of the information listed here without notice. Please note that due to U.S. laws and regulations, not all products are available for sale in all countries without restriction.

© 2024 Rapiscan Systems, Inc.
GRD501SRS_20241210