Gamma dose rate monitoring system for real-time radiation monitor

The GAMON D is a gamma dose rate monitoring system series, designed for outdoor and indoor online radiation monitoring, for early environmental warning and emergency response.

The GAMON D can operate in a wide range of scenarios, such as permanent ring monitoring and in-motion monitoring stations. It can be mounted on a tripod to be easily repositioned for typical security or emergency response applications while the GPS monitors the current location.

The GAMON D embeds two energy compensated Geiger–Mueller (GM) detectors to provide a wide detection range for ambient equivalent dose rate H*(10). The high-volume GM is used for low dose rate measurement and can detect small changes in the natural background even in short acquisition cycles.

The control of the two detectors is performed by the internal electronics, which continuously monitors the count rate. Customized extended range dose rate can be provided on request, from 10 nSv/h to 10 Sv/h. It can operate in a wide temperature range from -40 to 60 °C and in adverse weather conditions as it is protected from rain and humidity. The GAMON-D dose rate monitor system has low power consumption and can be powered by common AC-DC converters, additional battery packages or external solar panels.

GAMON Mobile

High efficiency mobile unit for Radionuclides identification

GAMON Mobile is a high-efficiency detection system designed to perform radionuclide identification from a moving vehicle such as e.g., a car, helicopter or boat. The system is very well suited to be operated on-field to assess rapid threats and to monitor large areas via mobile mounting/deployment. It can identify radionuclides and differentiate them by category, e.g., NORM, Medical, Industrial. GAMON Mobile is ideal for scanning sensitive areas, entry points and strategic areas such as embassies, EXPO events, critical infrastructure, airports, railway stations. GAMON Mobile is composed of spectrometric and dosimetric units.

The GAMON Mobile spectrometer performs automatic isotope identification and the

isotope related dose rate evaluation. Real-time data processing and defined isotope-based alarm allow GAMON Mobile to detect the presence of artificial nuclides more effectively and in a shorter amount of time than traditional dose meters.

The system can be used in multiple scenarios for gamma radionuclide identification in case of incident mitigation, for access point security or environmental monitoring.

Operative Application

Radiological threat search

Emergency and first-response application for an easy control of the area

Large area survey and control for public events

Georeferenced measurements for radioactive mapping

Highlights

Mobile system for radiological search and monitoring purposes

High detection efficiency for detecting minimal variation in background radioactivity during survey

Rugged housing for outdoor monitoring in public areas

Web page for an easy system configuration and visualization of the measurements

Georeferenced and real time data visualized by the operator

Embedded dosimeter and spectrometer

Internal database for an easy handling of the acquired data

Count rate alarm and alarm reporting to the operator directly on the notebook

Embedded Gain stabilization of the detector

Wifi, Ethernet, USB communication

Embedded Rechargeable battery

Programmable ROI alarm

Operative Application

Radiological threat search

Emergency and first-response applications for an easy control of the area

Sensitive area (e.g., airports and railway stations) survey and control

Georeferenced measurements for radioactive mapping

Highlights

Discrete housing for outdoor monitoring in public areas

Small and light enough to easily fit within carry-on luggage or backpacks

Spectroscopic and dosimetry probes for the identification of radionuclide gamma emitters

Extended operation with rechargeable battery for more than 8-hour continuous acquisition

Wide data storage with the capability of saving more than 1-month continuous data acquisition

Web interface for fast and easy system and isotope-based alarm configurations

Georeferenced measurement map for real time data visualization

Scintillator detectors NaI(Tl), CeBr3, LaBr3(Ce) or NaIL™ for gamma and neutron detection

GAMON Pack

Portable and discrete radionuclide identifier

GAMON Pack is a portable detection unit allowing detection and identification of radiation sources in crowded or sensitive areas where vehicle access is restricted.

It has been designed to perform discrete measurements in sensitive areas such as airports and railway stations where the probability for a terrorist attack is elevated.

Real-time data are displayed on a visualization device (smart phone or tablet), thus enabling the operator further discretion and anonymity within a crowded environment.

Optional solar panels (40, 60, or 100W) can be added to create a stand-alone measuring system that is small and light enough to be distributed in multiple positions.

Its setup and control are provided by a web interface supported by all the most common browsers (Chrome, Firefox, Edge). No apps or software installation is required.

A tablet providing control and communication is included with the GAMON Pack system. This tablet can be tailored to the specific application, offering ruggedization options such as MIL-STD-810G and IP65 or IP67. compliance.

The web interface displays the real-time scintillator count rate and the real-time ambient dosimeter equivalent rate (the dosimeter is provided on request).

GAMON Drone

Compact radionuclides Identification mobile unit

The GAMON Drone instrument is specifically designed for UGV/UAV environmental radiation measurement and source detection for border control, public event security, suspicious cargo goods inspection and many other scenarios.

The system can be used as a measurement device for first responders to explore hazardous areas. Its weight and dimensions allow it to easily perform real-time gamma radiation measurements on board UGV/UAV units.

The GAMON Drone spectrometer performs automatic gamma isotope identification and isotope-related dose rate evaluation. Real-time data processing and defined isotope-based alarm allow GAMON-Drone to detect the presence of artificial nuclides in a shorter amount of time and more effectively than traditional dose rate meters. The GAMON Drone system is designed to offer the best combination of portability, low power consumption and performance. The unit is assembled in a lightweight case that contains both the Scintillator Detector and the Digital Signal Processing Electronics that performs spectrum stabilization. The spectroscopy detector is configured to collect gamma interactions in the energy range from 50 keV to 3 MeV.

Operative Application

Emergency and first response applications for a prompt control of the contaminated area

Location survey and control before, during and after public events

Characterization of the NORM accumulated in Oil&Gas extraction and processing facilities, and pipes.

Detection of orphan sources in scrap material of reprocessing plants.

Highlights

Mobile system for radiological search and monitoring purposes

Automatic radionuclides analysis with configurable library

Embedded gamma dose rate and spectrometry measurement units

Programmable isotope based and dose rate alarms

Web page for an easy system configuration and visualization of the measurements

Georeferenced and real time data visualized by the operator

Compatible with NaI(Tl), LaBr3 & CeBr3

Internal database for an easy handling of the acquired data

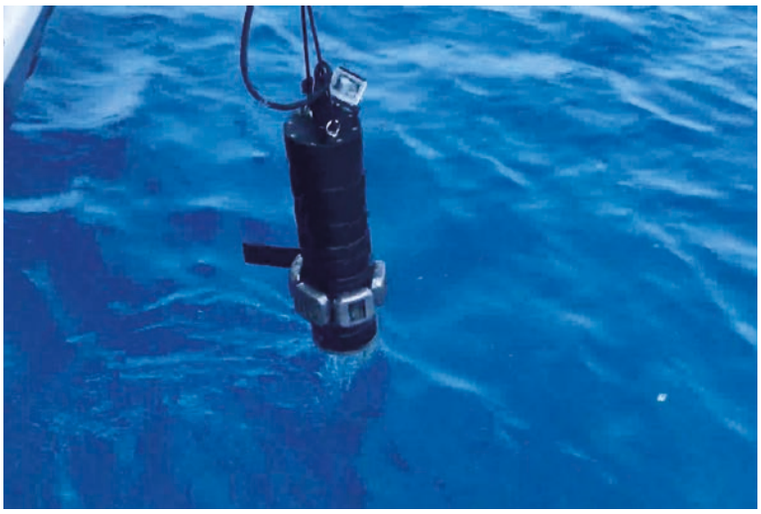
Count rate alarm and alarm reporting to the operator directly on the notebook

Embedded Gain stabilization of the detector

Digital I/O LVTTL available WiFi, Ethernet, USB communication

Embedded PC

Spectra saved in ANSI 42.42 format



Operative Application

Detection and monitoring of water reservoir, lakes, ports or sea

Long term monitoring of the environmental conditions in rivers or after a nuclear power plant or before a water extraction point

Control of the NORM content in the Oil&Gas waste like accumulated sludge from the extraction process

Highlights

Underwater system for radiological search and monitoring purposes

Web page for an easy system configuration and visualization of the measurements

Georeferenced and real time data visualized by the operator

System available for salted and fresh water

Reliable and robust structure for oil & gas applications

Internal database for an easy handling of the acquired data

Count rate alarm and alarm reporting to the operator directly on the notebook

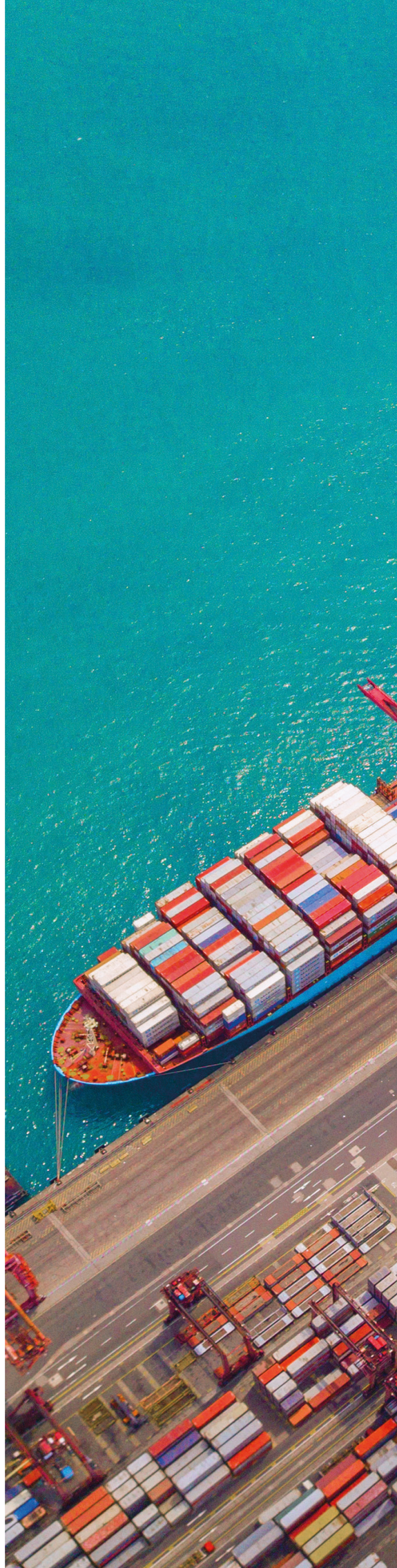
Embedded Gain stabilization of the detector

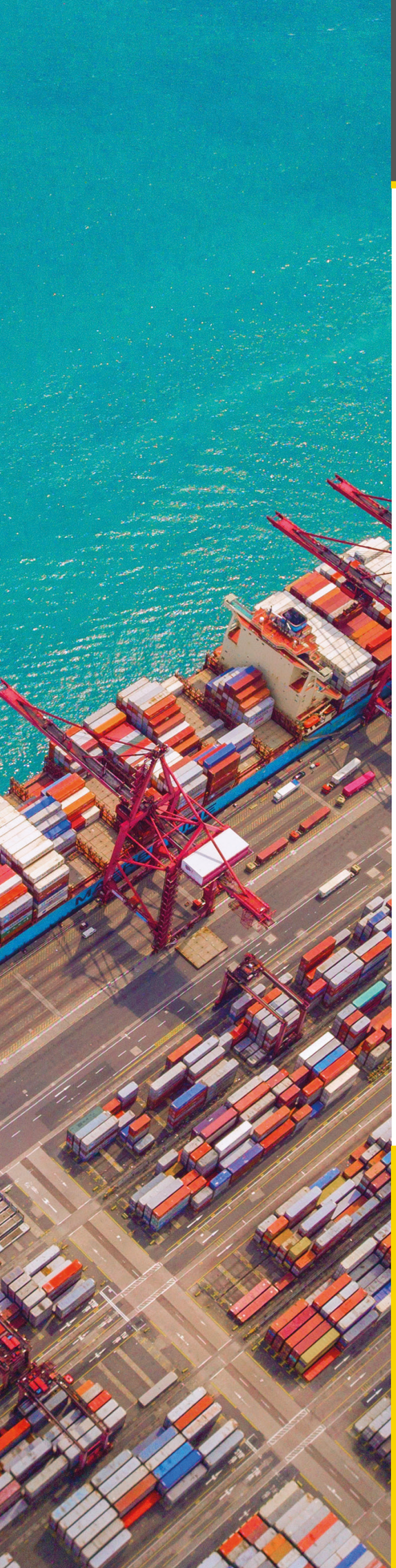
Hermetic housing for underwater and oil & gas waste operation and for an easy cleaning

Rechargeable battery for daily measurements

Integrated GPS used for an easy visualization of the measurements

Wired communication during the measurement session and also wireless capability for the configuration of the system





GAMON Diver

Compact underwater unit for radionuclides identification

The GAMON Diver instrument is specifically designed for submerged radiometric measurement and radiological alerts (e.g. water reservoirs, lakes, ports, etc.). The system can be used as a fast response measurement device, or can be installed as a long term monitoring device for sensitive underwater locations or for oil & gas application. It's weight and dimensions allow it to easily perform real-time Gamma Spectroscopic measurements while being dragged behind a small boat or watercraft.

The unit is assembled in a special hermetic submersible case which contains both the Scintillator Detector and the Digital Signal Processing Electronics that perform a specialized spectrum stabilization. This allows the instrument to operate at depths of up to 50 meters (5 ATM) in both fresh or salt water.

Thanks to the use of proprietary spectrum analysis algorithms, GAMON Diver can perform simultaneous identification of multiple radiological sources. The GAMON Diver system is designed to offer the best combination of portability, low power consumption and performance.

Each GAMON system run an application on its intelligent unit used to configure the system and take measurements.

GAMON Operative Applications

Nuclear Industrial Facilities

GAMON S	GAMON D	GAMON MOBILE	GAMON PACK	GAMON DRONE	GAMON DIVER
•	•				•

Access Point

GAMON S	GAMON D	GAMON MOBILE	GAMON PACK	GAMON DRONE	GAMON DIVER
•	•	•	•		

First Responder

GAMON S	GAMON D	GAMON MOBILE	GAMON PACK	GAMON DRONE	GAMON DIVER
		•	•	•	

Environmental Monitoring

GAMON S	GAMON D	GAMON MOBILE	GAMON PACK	GAMON DRONE	GAMON DIVER
•	•				•

Event Protection

GAMON S	GAMON D	GAMON MOBILE	GAMON PACK	GAMON DRONE	GAMON DIVER
		•	•		

Critical Infrastructure

GAMON S	GAMON D	GAMON MOBILE	GAMON PACK	GAMON DRONE	GAMON DIVER
•	•			•	•

CAEN SyS in a nutshell

CAEN SyS, the new Systems & Spectroscopy Division of CAEN SpA, is a worldwide leader in development of Radiation Measurements Systems and Spectroscopy Solutions, engaged with high performance operations involving Nuclear Facilities, Measurements Laboratories, Security and Safeguards Applications.

CAEN SyS Systems & Spectroscopy Division is built upon CAEN traditions of teamwork and partnership.

The CAEN Network Companies is a cluster of Companies with excellence know-how. Decades of collaboration and co-development with very large international research projects have maximized CAEN SyS capability to translate customer's needs and expectations into cost-effective and reliable solutions.

CAEN SyS enormously benefits from its foundational relationship with CAEN, a world leader in designing multi-input electronics for a wide range of radiation detectors, and nowadays is involved in several leading-edge R&D collaborative projects, to continue expanding and developing expertise in high-level electronic design, and to extend competence and skills into complementary and relevant applications for the benefit of the community.

CAEN SyS is committed to delivering exceptional nuclear measurement instrumentation, expertise and technical support, offering radiation detection instrumentation and integrated turn-key solutions with added value and operational benefit for customers, enhancing safety and security through nuclear measurements in the SECURITY, SAFETY and LABORATORIES areas.

For more information visit: www.caensys.com

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