HERMES GSU

MOBILE SAMPLE ANALYSER AND GAMMA SPECTROMETER

Real-time, in-field gamma spectrometry

Portable self-contained fully-integrated solution

Automatic energy calibration (no source needed)

- Detector: 2"x2" NaI(Tl) coupled with SiPM and MCA
- Self-contained in a rugged IP67 technical case
- Built-in lead shielding for low MDC in the field
- 6" touchscreen panel PC with dedicated spectrometry software
- Rechargeable internal battery for ≥ 8 h operation

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.

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TECHNICAL SPECIFICATIONS

- Dimensions (WxLxH): 500 × 310 × 460 mm
- Weight: < 20 kg
- Protection grade: IP67 (closed lid)
- Operating temperature: -20°C ÷ 50 °C
- Power: LiFePo4 batteries
- MCA: up to 2048 channels
- Energy range: 30 keV ÷ 3 MeV
- Resolution at 662 keV (Cs-137): <7.5% (typical)
- Minimum Detectable Concentrations (MDC): see table
- Automatic gain stabilization and energy calibration
- Isotope library examples:
  - Medical isotopes: F-18, Tc-99m, Mo-99, Ga-67, I-131, In-111, Sm-153, Tl-201
  - Naturally Occurring Radioactive Material (NORM): K-40, Ra-226, U-238, Th-232
  - Industrial Isotopes: Mn-54, Co-57, Co-60, Zn-65, Y-88, Ce-139, Ba-133, Cs-137, Eu-152, Eu-154, Ho-166m, Ir-192, Lu-176, Cf-252
  - Special Nuclear Materials (SNM): Na-22, Pu-239, Am-241

Calculated MDC in Bq/kg of the system, at ambient H*(10) rate equal to 100 nSv/h

Isotope	1 minute meas. time	5 minutes meas. time	10 minutes meas. time
^{131}I	85	40	30
^{137}Cs	140	60	45
^{60}Co	230	105	75
^{134}Cs	160	70	50

- Additional features:
  - GPS/WiFi/Mobile connection module
  - Accessory case
  - Marinelli beaker containing natural potassium salt for quick on-site energy calibration
  - Predefined Monte Carlo efficiency curves for water, soil and food matrices
  - Built-in, fully-editable isotope library
  - Multi-threshold alarm management

ACCESSORIES AVAILABLE UPON REQUEST

- Integrated label printer
- Integrated scale
- Additional Marinelli beakers
- IP65 10” screen rugged tablet (replacing the panel PC)
- Custom Monte Carlo efficiency curves for user-provided sample matrices
- Photovoltaic panel power supply system
- Automatic continuous water sampling system with pump and modified Marinelli
- Warranty extension from 12 months to 24 months

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