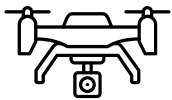


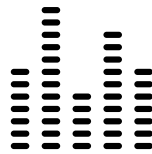


HERMES DRONE

GAMMA SPECTROMETRY AND RADIATION MAPPING PAYLOAD FOR UAVs



Integrated, self-contained
payload for UAV



High-sensitivity gamma
spectrometric detector



Positioning and
communication subsystems

Gamma spectrometer for
nuclide identification

Optional GM detector for
dose rate measurements

On-board processing and
control unit

Independent power supply

Industrial-grade
communication router

Compact, lightweight,
vibration-resistant and IP65
enclosure

HERMES DRONE is a compact, autonomous and fully integrated aerial gamma monitoring and mapping payload designed for professional UAV platforms. It enables radiological surveys in large, inaccessible or hazardous areas, including time-critical scenarios such as emergency response and environmental assessments.

HERMES DRONE provides gamma dose rate measurement and gamma spectrometric identification of radionuclides, as well as georeferenced radiological mapping, with capabilities defined by the selected configuration.

The system is modular and can be configured according to operator requirements and specific scenarios. The type and combination of detection elements can be optimized to meet performance, sensitivity, weight and mission constraints. Each configuration includes a gamma-ray spectrometer, optionally complemented by a Geiger-Müller detector for accurate dose rate measurement across an extended dynamic range.

The payload operates autonomously and does not require electrical power or data interfaces with the UAV platform. Radiometric and spectrometric data are synchronized with geographic position and altitude information. Data are stored locally on board for post-flight download and analysis and can be transmitted to a ground control station in real time or near real time via Wi-Fi or cellular communication links. Onboard recording continues during temporary communication outages.

TECHNICAL SPECIFICATIONS

- Gamma spectrometer: NaI(Tl) scintillator with crystal sizes up to 3" x 3"
- Digital multichannel analyser with up to 2048 channels
- Optional dose rate detector: MERCURY energy-compensated dual Geiger-Müller
 - Dose rate range: 10 nSv/h–1 Sv/h
 - Energy range: 40 keV–3 MeV
- Industrial router for onboard data management and LTE/4G transmission
- GNSS positioning and altitude data synchronized with radiometric measurements
- Independent onboard battery, with autonomy depending on configuration
- Local database for measurement storage, including during communication outages
- Web interface for acquisition control and data analysis from a network-connected PC or tablet
- Compact, vibration-resistant enclosure with IP65 protection

TYPICAL SPECIFICATIONS

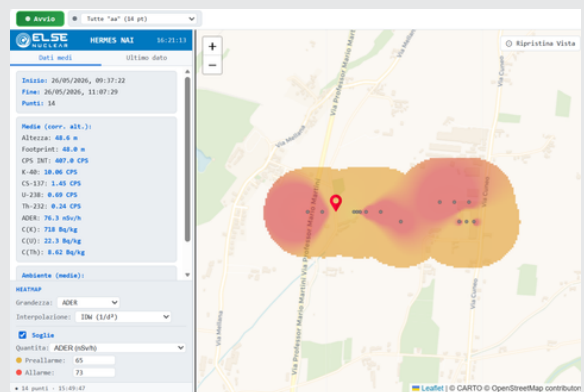
2" x 2" NaI(Tl) CONFIGURATION

- Energy range: 50 keV–3 MeV
- Energy resolution: $\leq 7.5\%$ FWHM at 662 keV
- Overall dimensions: approx. 300 x 150 x 150 mm
- Weight: about 2.5 kg



SW & OPERATIONAL FUNCTIONS

- Gamma spectral analysis of natural and artificial radionuclides
- Manual, timed and distance-based acquisition modes
- Adaptive acquisition based on count rate or target statistical uncertainty
- Live spectra, integral count rates and preset radionuclide ROIs
- Dose rate estimation with selectable normalization to 1 m above ground level
- Estimation of soil concentrations of ^{40}K , ^{238}U and ^{232}Th using configured calibration parameters
- Georeferenced heatmaps with adjustable prealarm and alarm thresholds
- Time trends and waterfall spectrum visualization
- Spatial interpolation and kriging, with NASVD spectral noise reduction
- Campaign archiving and post-processing, with offline map support
- Data export in CSV and standalone HTML formats for analysis on a separate PC



HERMES DRONE SW Screens



Rugged tablet with live data

OPTIONS

- MERCURY detector for extended-range gamma dose rate measurements
- Alternative detector materials, crystal geometries and MCA configurations upon request

ACCESSORIES AVAILABLE UPON REQUEST

- Rugged tablet for system operation and data analysis
- Warranty extension from 12 to 24 months

