FOOMON

FULLY INTEGRATED FOOD MONITOR FOR EMERGENCY USE

High sensitivity, short measuring time

Portable, all-in-one solution for quick deployment

Fully-featured spectrometry system

- Laboratory-grade performance in a portable form
- Rugged, high IP-rated design for all-weather operation
- Simple and intuitive user interface
- Automatic activity calculation for multiple isotopes

FOOMON is a compact, fully-integrated instrument specifically conceived for screening of I-131, Cs-134 and Cs-137 accumulated in food samples. Its “on-the-field” design allows deploying the device in any kind of situation, such as routine campaigns or emergency procedures.

The whole device is self-contained in a portable IP67 technical case, for an overall weight < 25 kg. Food samples are placed in 500 ml Marinelli beakers, which are then positioned inside a 1 cm thick lead-shielded well above the detector end cap. The complete setup and deployment of the system takes less than 5 minutes.

The User can manage **FOOMON** through the user-friendly control and analysis software installed on a rugged, high-IP control tablet, automatically calculating the specific activity and the Minimum Detectable Concentration (MDC) of the sample (in Bq/kg). Data are stored locally on the tablet and can be easily reviewed or downloaded for advanced post-processing and analysis.

The measured activity concentration is compared against alarm thresholds specific to each isotope and food group. In case of an alarm, the measurement and alarm status are clearly displayed in the software, which also triggers the acoustic alarm.

The counts-to-activity-concentration conversion coefficients are calculated using dedicated Monte Carlo simulations and validated experimentally.

November 2025 - rev 2

The MDC achievable in 1 minute, with an average indoor background (100 nSv/h), is as low as about 150 Bq/kg for Cs-137 and Cs-134, and about 90 Bq/kg for I-131. Under the same conditions, MDC as low as about 20 Bq/kg for I-131, and about 30 Bq/kg for Cs-134 and Cs-137, can be achieved in about 10 minutes.
An automatic anomalous background detection algorithm continuously compares the background level measured during the food scan with the stored reference background. If deviations exceed the expected statistical range, the system alerts the operator, indicating a potential anomaly such as non-representative background or contamination from non-target radionuclides. This feature maintains simple operation for routine users while ensuring that abnormal conditions can be promptly communicated to expert personnel.

TECHNICAL SPECIFICATIONS

Detector probe

- NaI(Tl) dimension: 2” x 2”
- SiPM-based, compact MCA
- Lead shielding well thickness: 1 cm
- Operative temperature range: -20°C ÷ +50°C

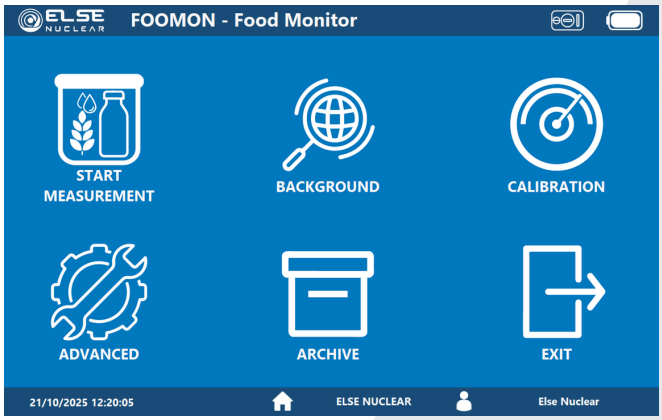
System performances

- Default isotope library: I-131, Cs-134, Cs-137
- Default food groups: Infant food, Dairy produce, Other food, and Liquid food (*)
- MDC: 20-30 Bq/kg in 10 min (depending on isotope)
- Maximum measurable activity: about 1 MBq/kg
- No source needed for energy and efficiency calibration

(*) Following the guidelines given in the EURATOM COUNCIL REGULATION 2016/52

Mechanical info and protection rating

- Overall dimensions: 51.8 × 30.5 × 44.5 cm
- Total weight: ~22 kg
- IP rating:
  - closed lid, transportation: IP67
  - operative setup: IP65



FOOMON software interface

FOOMON overall system with components

OPTIONS

- Monte Carlo efficiency curves for custom food groups/measurement classes and material types

ACCESSORIES AVAILABLE UPON REQUEST

- Cs-137 point source, < 10 kBq, for periodical quality control
- Weighing scale
- Warranty extension from 12 months to 24 months

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