# Nuc Scout

## Portable Gamma Identifier – Quantifier – Dose Rate Meter

The NucScout monitors the local dose rate as well as the activity of up to 28 user selectable nuclides. The results are available as time distribution over the whole sampling period. The sampling interval can be adjusted by the user. A complete energy spectrum is saved for each interval on the internal memory card. The unit is equipped with an integrated GPS receiver which allows the local assignment of the acquired data. The NucScout can be calibrated by the user, so by the way it is possible to determine the detector efficiency for any sampling geometry which can be used later on. The instrument comes with a ZigBee wireless network interface to transfer recent data over several hundred meters to a "base station" computer.

Typical applications are searching for hidden radioactive sources, screening of large contaminated areas based on GIS solutions, process monitoring, tests of building materials or food, and nuclear medicine.

The robust and handsome 2" x 2" NaI detector is fixed to the ergonomic handle while the electronic box can be removed from the handle by a bayonet catch. This allows the user to place the detector in any position to the radioactive source. A sampling table for operation with Marinelli beakers is available. The large detector volume results in a low detection limit so that even week sources can be found. The wide touch screen makes the operation of the unit comfortable.

The NucScout offers two different algorithms for the activity calculation of the several nuclides. The user may decide between the powerful PSV (peak shape verification) algorithm and the well-known trapezoid method (e.g. for calibration purposes).

Included in the delivery is a comprehensive software package for data download, result presentation, data export, and instrument configuration. A number of tools offer a fast, easy and intuitive detector calibration based on reference sources (energy, peak-width, efficiency) as well as the complete library management. Remote control of the unit is possible via the integrated USB or wireless network.

# Technical Data

| **Gamma probe** | |
|---|---|
| Detector | NaI(Tl) with integrated photo multiplier and high voltage supply<br>Cylindrical scintillation crystal 2" x 2"<br>Energy range 25keV - 3MeV (optional from 10keV to 1.6 MeV)<br>Resolution < 7.5% (typ. 7%) @ 662keV |
| Efficiency | Net count rate > 1100cps / (µSv/h) for Cs-137 |
| Max count rate | 100,000 cps |
| Range NaI detector | 15µSv/h (Cs-137) |
| Spectrum | 512 channels |
| Results | Single shot or time distribution<br>Identification of up to 28 emission lines in four nuclide lists;<br>Nuclide-lists can be either created by user (based on a library)<br>or loaded as pre-defined list<br>Calculation of net activity based on pre-defined or user created<br>efficiency calibrations.<br>Energy compensated local dose rate measurement |
| Stabilization | Electronic temperature stabilization, peak-pickup by PSV<br>analysis algorithm |

| **Common** | |
|---|---|
| Sampling cycles | Storage of up to 16 different measurement programs (defined<br>or infinite repetition) with intervals from 1 second to weeks<br>Predefined cycles: 10s, 30s, 60s continuous and  5min, 15min<br>single shot |
| Memory | SD to store more than 780,000 data records |
| Control | Touch screen 6cm x 9cm with back light, good readable even<br>in direct sun light, shows status, results and spectra<br>Interface: USB and NetMonitors (ZigBee) |
| Power supply | NiMH battery with internal charger or wall adapter (18V)<br>Operation: min. 8 hours (14h typ.) |
| Size / Weight | 270mm x 195cm x 210mm / 2.5kg<br>Probe may be removed from the electronics |
| Software (included in delivery) | dVISION: device control and data transfer, visualization, data<br>management, calibration, library management, export of KML |

| | |
|---|---|
| | files for direct opening by Google Earth ™ |
| | dCONFIG: system configuration, creation of sampling cycles |
| NetMonitors wireless network interface (ZigBee standard) | Frequency 2.4 GHz, power rate 100mW Protocol IEEE 802.15.4 (range >200m in case of intervisibility) |
| GPS | SIRF 3 (12 channels), GPS coordinates are recorded and stored together with the measurement results. GIS compatible KML files can be exported (can be opened by Google-Earth ™). |
| Alert indication | Buzzer 85dB, red LED, display turns on automatically |
| Accessory | Sampling table for usage with Marinelli beaker (standard or version with lead shield and scale), charger, USB cable, transportation case, NetMonitors network coordinator (connected via USB to PC) |