Laboratory Spectrometer for Food Monitoring

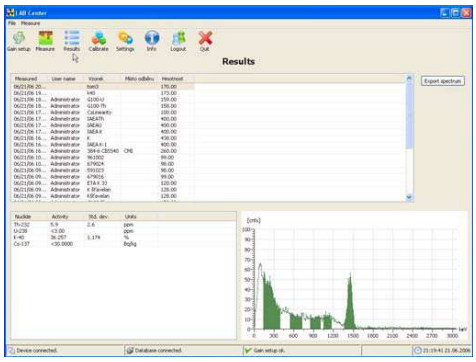
GEORADIS

RT-50M

The RT-50M is a state of the art gamma spectrum analyzer to monitor and detect the presence of radiation in food, feedstuff, environmental commodities and many other materials. New designed shielding allows to use wide variety of beakers of different sizes from 100 ml up to 750 ml of standard cans or 600 ml Marinelli beakers. Floor standing and easy to operate, the RT-50F spectrum analyser is an indispensable part of any analytical laboratory; it rapidly detects and accurately measures extremely low levels of radioactive contamination.

In food samples least detectable activity of the measured contamination is as low as 6 Bq/kg (Cs-137, Cs 134) using a measurement time of only 5 minutes.

New, sophisticated evaluation techniques allow a high sensitivity precision measurement and a complete analysis in less than 5 minutes. A real time graphic displays the spectrum as it is accumulated. Analysis data is viewed on screen, printed (as required), and automatically archived together with all sample information to provide a complete log. All Data is accessible for transfer to an external network as needed.



The RT-50M system assembly comprises three distinct components;

- The multichannel gamma spectrum analyser (MCA) in a high density shielding floor standing cabinet.
- The LabCenter software package.
- A set of calibration standards.

The MCA is a highly reliable self contained 1024 channel pulse amplitude analyser. Internal digital processing performs real time energy linearization and provides a fully linear spectrum. The MCA is controlled by the LabCenter software.

APPLICATIONS

- **Fast monitoring of radioactive contamination in food, water, soil samples.** *Applicable in food processing, water supply, agriculture.*
- **Measurement of radioactive contamination** *Applicable in food and food inspection*

LabCenter is a multiplatform (Windows, Linux) software package which integrates calibration, sample measurement and results archiving. It provides easy database browsing with the possibility of re-evaluation of spectra with different standards. An open source SQL database facilitates flexible and rapid integration into user defined database structures. LabCenter simplifies user input of sample descriptors and output protocols.

Different evaluation methods from simple total count to background count comparisons, a complex multi-component analysis or full nuclide identification can be chosen by the user. With the RT-50M you get high quality data and reliability having completely analysed your sample right in your laboratory.

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Technical data

Detector
NaI(Tl) volume 0.35 l, 76 x 76 mm (3”x3”), with bi-alkali PMT
Resolution better then 7.5% FWHM at 662 keV.

High voltage
Supply range 500 – 1000 V digitally controlled

Output
Positive impulses, rising time better then 0.5 µs
Amplitude linear range max +2.5 V
Bipolar Shaping, time constant 1 µs
Coarse gain HV controlled
Fine gain +/- 3 % in 1000 gain steps

Spectrum stabilization
Two point – offset and gain correction, 662 keV typ. at ch. 220
Precision +/- 0.1 ch.

ADC
Approximation, double buffered, high speed and high linearity
Conversion time 1.5 µs
1024 channels down sampled from 65535
Digitally adjustable ADC zero +/- 80 mV
Digitally adjustable LLD range from 2nd – 30th channel
Automatic Dead time correction, precision better 0.25%

Nonlinearity
Integral max 0.1% of full scale within 95% of range
Differential max 3% of full scale within 95% of range

Communication interface
USB

Reference source
137Cs - 9 kBq (0.25 µCi)

Power consumption
Power over USB, max 100 mA

Shielding
Thickness 85 mm, Lead. Measuring chamber adjusted for beakers up 750 ml or regular type or 600 ml Marinelli beaker.

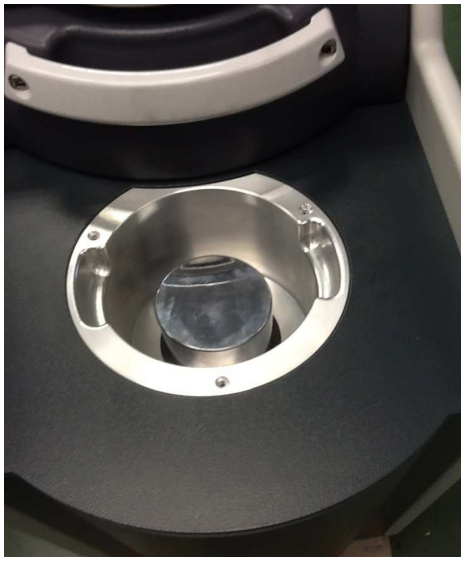
Environmental
Operating temperature range 0°C to +40°C
Storage temperature range -20°C to +70°C

Size and weight
H x W x D 770 mm x 360 mm x 620 mm
Weight 410 kg (580 kg for Lead shield)

Software requirements
Operating System Windows 2K, XP, Vista, Windows 7 or Linux with Kernel 2.6
Firebird SQL 2.0

FEATURES

- **Sensitivity** *Accurately measure the radioactivity in a given sample utilising a high sensitivity NaI(TI) scintillator. Measurement sensitivity 0.02 Bq/g*
- **Marinelli beaker ready** to enhance sensitivity
- **Speed** *Full sample analysis in only 5 mins*
- **Ease of use** *With little training the operator can use the graphic menu driven interface.*
- **Calibration** *Optimised calibration eliminates long calibration times.*
- **Integration** *All data stored in multiplatform open source SQL database to allow easy integration into customer’s own systems*
- **Analysis Data** *May be viewed, printed, archived or transferred to a network*



Specifications are subject to change without notice

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