Laboratory Gamma Spectrometer

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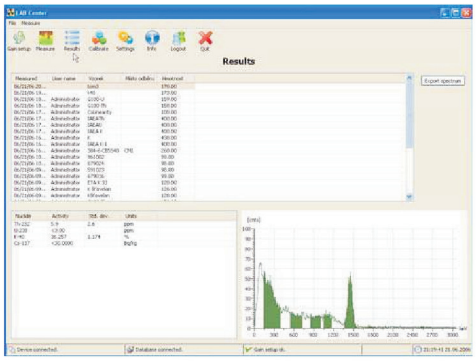
RT-50

The RT-50 is a state of the art gamma spectrum analyzer to monitor and detect the presence of radiation in metals, metals by-products, geological samples, construction materials, environmental commodities, food and many other materials. Floor standing and easy to operate, the RT-50 spectrum analyser is an indispensable part of any analytical laboratory, it rapidly detects and accurately measures extremely low levels of radioactive contamination.

In steel samples the final accuracy of the measured contamination is as low as 0,02 Bq/g 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-50 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 metal, slag and dust**
  Applicable in steel, scrap and other metal industry
- **Measurement of natural radioisotopes concentration**
  Applicable in geology and geophysics
- **Measurement of radioactive contamination**
  Applicable in food and food processing industry

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 or a complex multi-component analysis can be chosen by the user. With the RT-50 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
Steel, minimal thickness 85 mm, optionally Lead

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

Size and weight
HxWxD 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*
- **Multichannel Analyser** *Self contained 1024 channel pulse amplitude analyser*
- **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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