



LKB Hidex Automatic Gamma Counter

Your research is important to us

Our long standing tradition of user oriented design philosophy gives you a chance to focus on your work.

With our touchscreen operated software and application focused design features we guarantee effortless work flow with results simply at your fingertip.

LKB is proud to introduce a new automatic gamma counter specifically designed to meet the needs of modern laboratories.



Convenience for nuclear medicine and PET

Never before has there existed a gamma counter dedicated to Nuclear Medicine and PET applications. With our optional onboard balance, samples can automatically be weighed and results reported as activity per mass or volume. This saves the operator valuable time and provides additional safety of correct results.

For short lived isotopes we offer an optional foot pedal for precise timing of the sampling. The software automatically calculates decay corrected activities.



Sophistication for radiation protection

The 3 inch NaI crystal provides superb counting efficiency and our optimized lead shielding ensures low background and minimal interference from samples on the conveyor. LKB automatic gamma counter is

also equipped with a powerful multichannel analyzer for detailed spectrum analysis. With our software, users can enter their own calculation functions for automatic reporting of results.



Specification**Hidex Automatic Gamma Counter**

100-240V AC and 24 V DC.

Features Model (425-601) Hidex Automatic Gamma Counter.

General Description

Hidex Automatic Gamma Counter is the premier measurement system for high energy gamma emitters, as well as low level gamma activity and environmental samples, suitable especially well for sophisticated research in nuclear medicine and PET applications.

The counter is equipped with a 3 inch thallium activated sodium-iodine crystal to support gamma counting and a modern MS Windows based touch screen operated interface for user-friendly operation. The design with small footprint and low weight allows integration into small laboratories.

The instrument has 55 mm internal and on conveyor side 80mm Pb shielding design for low background and minimal interference.

An optional automated sample balance with excellent weighing technology and weighing resolutions as low as 0.1 mg provides high precision and efficient measuring.

There is no external radioactive standard needed. Transportation and movement of standard instrument does not require licenses for handling radioactivity and decommissioning is easy and low cost.

The instrument is intended for professional laboratory research use by trained personnel.

Detector

The detector consists of a NaI crystal that provides optimal counting efficiency.

- 1 x 3 inch sodium iodine (NaI) crystal.
- 1 x 3 inch Single Photon Counting Photo Multiplier Tube (PMT).
- The position of the detector provides optimum measurement geometry and low background and minimal interference from samples on the conveyor.

Detector shielding

- Optimal Pb shield design with a 4-pi 55 mm shielding
- Lead shutter provides optimum shielding from cosmic radiation.
- 80 mm shielding on conveyor side to minimize crosstalk.

Sample vials

- No minimum dimensions of the vials.
- Maximum dimensions of the vials: with cap 13mm vs 28mm in diameter.
- Maximum height 95 mm including cap.
- No restrictions in vial shape.
- Vial compatibility must be confirmed with Hidex Automatic Gamma Counter.

Sample racks and vial holders

Two different sample racks can be used. They can be mixed in the conveyor and are automatically identified and processed accordingly. Racks are provided with individual vial holders which can be replaced in case of contamination.

- Rack 1 for Ø13mm vials 10 samples/rack.
- Rack 2 for Ø28mm vials, 6 samples/rack.
- Vial holder for Ø13mm vials.
- Vial holder for Ø28mm vials.

The sample changer has a storage capacity of 13 racks (78 samples, 20ml tubes) or 25 racks (250 samples, 6 or 5 ml tubes)

Sample ID

- Each rack can be provided with an ID code plate to identify specific racks.
- Supported barcode languages is code 39.

Analysis of data

- Linear Multi-Channel Analysis with 2048 channels.
- Several ROIs can be measured simultaneously.

Isotopes

Detection of gamma emitters

- Gamma emitters up to 2000 keV.
- Software assay library with 51 isotopes. Additional isotopes can be added by the user.

Performance Specifications

All the measurements are performed at temperature of $22^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and at normal humidity conditions of Hidex Automatic Gamma Counter laboratory, Turku, Finland (relative humidity not measured). Background may vary locally depending on natural environmental radiation.

Counting efficiency:

- typical 58 % for I-129
- typical 47 % for Cs-137
- typical 6% for Cr-51

Typical background:

- Full window 5-2000 keV 350 CPM.

Resolution:

- < 30 % for I-129
- < 9,5 % for Cs-137

Count Rate

- up to 10 million CPM, with MCA

Performance Assessment

- Using standard samples

Counting time

- 1 second – 1176 h (49 d) /sample.

Instrument operation and software

Counter can be operated using:

- MS Windows based, Hidex Automatic Gamma Counter user interface software,
- Hidex Automatic Gamma Counter service software.

Data reduction by:

- MS Windows based, spectral analysis Hidex Automatic Gamma Counter UI software
- By user definable export format (txt, xls, csv, etc.) to any other data reduction software or data base.

The assay templates include predefined settings for running the assay and calculation formulas for printing out desired data. Hidex Automatic Gamma Counter software includes capabilities for biological assays, immunoassays, screening type assays, data validation and control history.

Analysis of data includes features such as automatic calculation of activity, normalization of results, background subtraction, precision, error of measurement, minimum detectable activity, half-life correction, etc. Also sample identification with user definable ID is facilitated.

Hidex Automatic Gamma Counter Gamma User interface is compatible with Windows 7 or later.

Results are saved permanently in the Hidex Automatic Gamma Counter -folder in computer memory after counting of each sample. Unlimited installations in customer site for Hidex Automatic Gamma Counter User

Interface

Data recovery

Automatic storing of measured data in Hidex Automatic Gamma Counter software database created before the start of the measurement.

The data of every sample is stored permanently in computer hard disk after completing the measurement of that particular sample.

Vial recovery

Automatic return of sample vials after power failure.

Power up diagnostics

Automatic power up diagnostics of instrument settings.

Physical Dimensions

- Hidex Automatic Gamma Counter : 620 mm (Width) x 700 mm (Depth) x 600 mm (Height).
- With balance: 620 mm (Width) x 830 mm (Depth) x 600 mm (Height).
- Analyzer well dimensions: Ø32mm, 46mm (Depth)
- Table (Optional): 800 mm (Width) x 700 mm (Depth) x 650 mm (Height).
- Total weight 198 kg with balance 203 kg.

Operating conditions

- +10°C – +40°C; maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.
- Indoor use only.
- Dust during operation: The system shall function in normal laboratory environment.
- Light during operation: The system shall function normally in normal ambient laboratory illumination.

Storage and transport conditions

- Transportation conditions -40°C to +70°C, humidity 5 – 90 %, packed in transport packaging.
- Storage conditions -25°C to +50°C, humidity 5 – 90 %, packed in transport packaging.
- Detector unit must be stored a minimum 24h in room temperature for stabilization before installation.

Electrical Connections

- Voltage: 100 ~ 240 VAC
- Frequency: 50 – 60 Hz

Vial transport

- Robotic loading arm with elevator mechanism.

Communication connections

- Connection port using Universal Serial Bus (USB) allows communication with PC.

Safety Standards

- CE marked
- External power UL/CSA approved.

Warranty

- 12 months.

Maintenance

- Extended warranty and maintenance & service program available on request.

Equipment included in the delivery

- 425-601 Hidex Automatic Gamma Counter
- 840-086 Rack for Ø13mm vials, 12pcs
- 840-087 Rack for Ø28mm vials, 6pcs
- 840-088 Vial holder for Ø13mm vials, 120 pcs
- 840-089 Vial holder for Ø28mm vials, 36 pcs
- 840-097 ID code plates, 40pcs
- 431-207 Power supply 100-240V/24V
- 529-011 USB-cable
- Hidex Automatic Gamma Counter User manual (on CD)
- Hidex Automatic Gamma Counter User interface software with isotope templates for most common isotopes and applications
- Hidex Automatic Gamma Counter service software for service use
- QC report

Optional Items

425-640 MCA extension

- High energy gamma emitters up to 4000 keV.
- Linear MCA up to 4000 channels.

425-645 Sample balance

- Automated sample balance with monolithic weighing technology.
- High-precision readability as low as 0.1 mg.
- Reproducibility: standard deviation 0.1 mg with 0.1 mg tolerance.
- Linearity: maximum linearity 0.2 mg with ± 0.2 mg tolerance
- Off-center load: maximum deviation 0.2 mg with ± 0.5 mg tolerance

426-005 PC with touchscreen

- Can be obtained locally.
- Requirements of the PC:
 - Hidex Automatic Gamma Counter runs under Microsoft Windows 7 or later operating systems.
 - The computer requires a minimum of 32 MB available memory (64 MB or more is preferable).
 - Super VGA or higher resolution monitor is required (XGA is recommended).
 - MS Excel is suggested to facilitate results export.
 - Internet connection is suggested to facilitate updates from software manufacturer and remote desktop support from Hidex Automatic Gamma Counter.

525-007 Instrument table,

- Dimensions: 800 mm (Width) x 700 mm (Depth) x 650 mm (Height).
- Maximum supported weight: 300 kg

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