HIDEX

Nuclear Medicine Solutions

Application fields

With over 3 decades of expertise in detecting alpha, beta, and gamma emitters, Hidex excels in liquid scintillation counting, gamma counting, microplate reading, and provides solutions for PET radiochemistry and sample preparation.

Radiopharmaceuticals

Radiopharmaceuticals play a pivotal role in non-invasive diagnostics and targeted cancer therapies. Hidex instrumentation is essential in discovery, development, production and testing of these groundbreaking theranostic tools.

Nuclear medicine

Nuclear medicine applications are supported by various advanced Hidex technologies. From quantifying antigen or antibody concentrations with radioimmunoassays, supporting kidney function studies, ensuring the quality control of $^{68}Ge/^{68}Ga$ generators and utilizing ^{15}O labeled water as a blood flow radiotracer in PET, Hidex offers multiple solutions.

Life sciences

In life science applications, Hidex instruments deliver precise measurements and streamline workflows. The Hidex Sense and Sense Beta Plus enable accurate DNA, RNA, and protein quantification, as well as ADME and receptor-ligand binding studies. For preclinical biodistribution studies, the Hidex Automatic Gamma Counter enhances efficiency with automated weight measurements and comprehensive data traceability.

Radiation protection

Handling of radioactive materials requires monitoring surface contamination, measuring waste release and minimizing internal contamination. With applications ranging from urine testing to wipe tests for alpha, beta, and gamma emitters, our liquid scintillation and gamma counters offer precise solutions for regulatory compliance and safety of employees and the environment.

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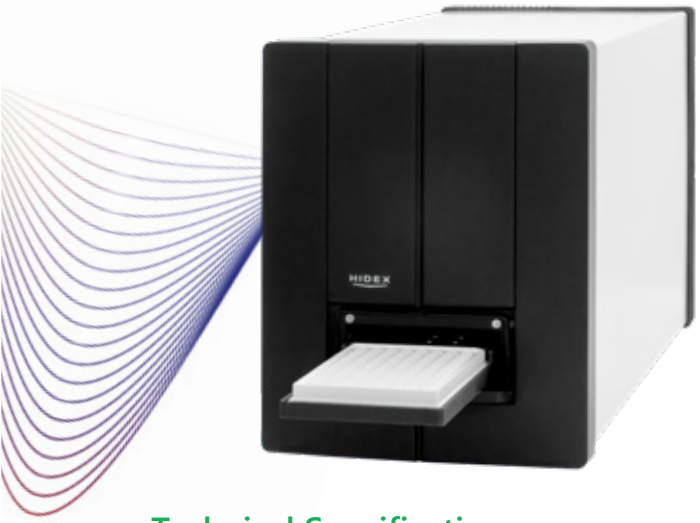
Hidex Sense microplate readers
Multimode reader with radiometric detection

The Hidex Sense Beta Plus microplate reader integrates radiometric detection with high-sensitivity luminescence and other non-radioactive technologies.

The Hidex Sense Beta models enable precise counting of alpha, beta, and gamma emitters, while the standard Hidex Sense offers the same non-radioactive technologies as the Sense Beta Plus. The Sense supports SBS standard microplates, solid scintillators, filter plates, filter mats, and 1.5 mL Eppendorf tubes.

The Hidex Sense plate reader is a powerful yet compact device, measuring just 20 cm wide, making it an excellent space-saving solution for any desktop.

Its versatile software also features an offline mode, allowing users to prepare new runs and analyze results on a separate computer while the instrument continues running another assay.



Wide range of options

- Microplate stacker with capacity of up to 25 pieces of 96 well microplates.
- Barcode reader enables plate identification and versatile mix of assays in the same batch.
- Automation service with industry standard .NET interface offers easy integration with most robotic systems available.

Technical Specifications

	Sense Beta	Sense Beta Plus
Radioactive detection	LSC, α-, β- and γ-counting	LSC, α-, β- and γ-counting
Plate types	1-384	1-1536
Counting efficiency $^{3}H/^{14}C$ (%) *	50/90	50/90
High-sensitivity Luminescence	< 6 amol ATP	< 6 amol ATP
Filter Luminescence		< 20 amol ATP
Fluorometry Top/Bottom		< 0.01 fmol / < 0.05 fmol
Photometry (spectral read)		220 – 1000 nm
Time Resolved Fluorescence		< 0.25 amol
Fluorescence Polarization		< 1 mP SD
Dimensions W/D/H (cm)	20/49/28	20/49/28
Weight (kg)	10	15

* 96 B/W plate, organic sample + MaxiLight cocktail

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Hidex AMG Automated Gamma Counter
User friendly counter with onboard balance

The Hidex Automated Gamma Counter has a modern approach and is suitable for nuclear medicine, PET, and theranostic applications. With the onboard balance, samples can automatically be weighed and results reported as activity per mass. This saves valuable time for the operator while assuring correct results.

In nuclear medicine, our AMG streamlines the control of ^{68}Ge breakthrough with an easy assay, enhancing compliance and safety.

Radiation protection measures are simplified with the ready-to-use wipe test assay, which facilitates contamination monitoring and provides results for regulatory reporting.

Routine work is optimized with a simple metadata import option, improving workflow efficiency. Metadata can be customized as needed, ranging from a basic sample ID to a more detailed description of the sample's origin and time point.

Optional features

- Automated sample balance
- 2D vial ID reader
- 21 CFR Part 11 software support package
- RIA application software for research use only
- MCA extension up to 4000 keV
- Compatibility with Laura™ (LabLogic software)

Technical Specifications

Detector type	3 inch well type NaI (Tl) detector
Counting efficiency (isotope peak window)	^{137}Cs 18%, ^{129}I 58%
Resolution (FWHM)	^{137}Cs < 9.5%
Energy range	15-2000 keV
Lead shield thickness	55 mm with up to 80 mm on conveyor side
Sample capacity	Ø 13 mm max 230 pcs and Ø 28 mm max 72 pcs
Power requirement	100-240 V / 50-60 Hz
Balance	Sartorius analytical grade balance
Dimensions W/D/H (cm)	62/70/60 (w/o balance) 62/83/60 (with balance)
Weight (kg)	198 (w/o balance) 205 (with balance)

Hidex AMG
Technical solutions

Sophistication for radiation protection

The 3 inch NaI crystal provides superb counting efficiency. Optimized lead shielding ensures a low background and minimal interference from high activity samples waiting to be counted.

Software usability and result exporting

With our touchscreen operated software and application focused design, we guarantee effortless workflow with results at your fingertips. The software provides full energy spectrum storage and data export to a user definable location. The gamma counter is always ready to use with quick setup process.

Biodistribution studies with minimal manual work

In biodistribution studies, tissue weight is critical for calculating the percentage of administered dose uptake and biodistribution. This typically involves manual work with a traditional analytical balance, which can be a time-consuming and error prone process.

With our onboard balance, the Hidex AMG is perfectly suited for biodistribution studies. This innovative solution streamlines workflows, saves time, automatically records results, and enhances the traceability of sample data.

Sample traceability

With increased regulatory demand for sample traceability, the Hidex AMG offers an optional 2D vial ID reader to identify samples and combine results throughout the sample workflow and ensure minimal manual interference and secure results.

Extended MCA

Hidex Automatic Gamma Counter is also equipped with a powerful multichannel analyzer for detailed spectrum analysis with the capability of measuring up to 4000 keV.

Hidex Radiowater Generator
Precision and safety in every dose

^{15}O-water production system for PET

The Hidex Radiowater Generator (RWG) is an automated production system for ^{15}O labelled water in PET blood flow studies. The RWG is designed for increased patient safety and reduced radiation exposure for clinical staff. The Hidex RWG delivers high patient throughput and repeatable production results. The system allows for the completion of a cardiac perfusion rest and stress protocol within 30 minutes time.

^{15}O-water

^{15}O labelled water is used as a radiotracer for measuring and quantifying blood flow notably in the heart, brain, and tumour. ^{15}O-water is metabolically inert and freely diffusible. It is considered the non-invasive in-vivo gold standard reference for myocardial blood flow measurement.

Operational since 2005

The first Hidex Radiowater Generator has been operational since 2005. Since then, we have made Hidex RWG installations for ^{15}O-water research and routine cardiac perfusion patient studies.

Hidex works jointly with customers for customized site planning to meet the customer's radiopharmaceutical production setup and regulatory needs. For each installation, Hidex works to optimize radiowater production to reach customer's production target.

Features

- Online production of ^{15}O-water in the PET scanner room for patient studies and production control of ^{15}O-water production from PET suite control room.
- Dose control and timely delivery of ^{15}O-water for patient studies.
- CE-marked medical device sterile cartridge for research and routine cardiac perfusion patient study.

Technical Specifications

Dose production range	250 MBq – 1.5 GBq
Production accuracy	±15%
Production mode	Continuous production for deuteron cyclotron or batch production for proton cyclotron
Detector	Photomultiplier tube (PMT) with plastic scintillation fiber
Dimensions W/D/H (cm)	54/54/90
Weight (kg)	560

Hidex Radiowater Generator
Technical solutions

Contact-free ^{15}O-water production process

Hidex Radiowater Generator controls production by external pneumatic piston to pinch infusion line to control the ^{15}O-water flow into the diffusion chamber. The radioactive detectors are externally clipped on to the infusion line to detect and control the radiowater doses.

Closed and sealed infusion process

The diffusion chamber cartridge is based on sealed dual membrane diffusion enclosed with infusion lines allowing ^{15}O-water infusion process. The diffusion chamber cartridges are CE-marked devices sterilized and fitted with biofilters to ensure the sterility of the end product.

Compatible with all cyclotron production

Radiowater generator works with ^{4}N(d,n)^{15}O deuteron cyclotron by continuously infusing and storing the excess radiowater. With heavy lead shielding, Hidex RWG can safely store and decay the radiowater for disposal. RWG works with ^{15}N(p,n)^{15}O proton cyclotron by notifying cyclotron target to release and capture the batch activity for radiowater infusion.

PET/CT and PET/MR compatible

In addition to the standard model of RWG being equipped for PET/CT use, Hidex also offers a PET/MRI compatible system. The Hidex MRI compatible RWG is constructed of paramagnetic material without additional electronics placed inside the RF cage. It can be safely placed up to 25mT in the PET/MR scanners room with minimal noise interference to the PET/MR scanner.

Optional features

Hidex provides radiowater vapour furnace for the conversion of ^{15}O gas to ^{15}O water. In addition, we provide multi-delivery control for multiple RWG systems.

Carimas CE
Visualize, model and analyze

Myocardial perfusion scans use ^{15}O-water to create images which show blood flow to the heart muscle. The resulting myocardial perfusion image can be analyzed and quantified in absolute terms to improve diagnostic accuracy for coronary artery disease.

Carimas CE visualizes and segments volume of interest (VOI) for multiple image data formats, offering flexible 2D and 3D view with colour rendering for both static and dynamic image sets. The software utilizes a validated mathematical model to measure absolute values of myocardial perfusion regionally and globally. Based on these measured perfusion values, normal cardiac perfusion or ischemia can be detected. With Carimas CE, ^{15}O-water perfusion imaging data can be visualised, analyzed, and modelled.

Intended use

Carimas CE is a software application designed to display blood flow in the left ventricle muscle of the heart using dynamic PET images acquired with ^{15}O-water tracer. The blood flow information is used in adult patients and provides information that aids a clinical expert in making a diagnosis.

Features

- Access Carimas CE with a network license or USB license dongle.
- Connect with external data sources such as Picture archiving and communication system (PACS).
- Control workflow with integrated quality control to meet the demand of clinical routine study.
- Export final reports containing patient information, images, segmentation, and modelling results to hospital archives.

Carimas Research

Carimas Research is a medical imaging analysis program for visualising and analysing images. With Carimas Research, image modality from PET, CT and MRI data can be visualised, modelled and analysed.

CarimasCE complies with European Regulation 2017/745 concerning medical devices and is CE marked. Under this regulation, it is regarded as a Class IIb product.

Hidex Triathler
Versatile in radiation protection

Triathler is a manual, single sample, standalone or computer controlled, benchtop or mobile, instrument for determination of alpha, beta and gamma radiation, as well as luminescence. It features a compact design and lightweight construction, and can operate using a power outlet or a 12V battery.

In radiation protection, Triathler is an affordable choice with easy-to-use operation, for alpha, beta, and gamma contamination wipes and swabs. The option for high volume external gamma detector enables effluent testing up to 1000 mL containers.

When working in standalone mode, results can be viewed on the screen in CPS or DPS. When connected to a computer with HCS software, further data reduction, custom calculations and spectral acquisitions are possible.

Optional consumables

- Plastic scintillation adapter for direct non-destructive analysis of ^{32}P
- LSC vials, cocktails, and tissue solubilisers
- Filter paper for wipe testing

Technical Specifications

Detector type	All	PMT with 1024 channel MCA
	Internal gamma	32 mm x 32 mm NaI(Tl) well type detector
	External gamma	50 mm x 50 mm NaI(Tl) well type detector 50 mm x 50 mm NaI(Tl) planar type detector
Energy range	LSC	0-2000 keV betas, all alphas
	Internal gamma	0-1000 keV
	External gamma	0-2000 keV
Preset nuclides	^{3}H, ^{14}C, ^{32}P, ^{33}P, ^{35}S, ^{51}Cr, ^{125}I	
Sample containers	LSC	Microtubes, Eppendorfs, 7 mL vials, 20 mL vials
	Internal gamma	Ø 14 mm max
	External gamma	Well type: Ø 25 mm max Planar type: 450 or 1000 mL Marinelli beakers
Power requirement	Triathler	12 V battery or 100-240 V / 50-60 Hz
	External gamma	100-240 V / 50-60 Hz
Dimensions W/D/H (cm)	Triathler	25/33/19
	External gamma	Well type: 270/270/380 Planar type: 290/350/425
Weight (kg)	Triathler	9
	External gamma	Well type: 49 Planar type: 105

HIDEX

Additional services and products

Services

IQ/OQ validation

Hidex offers IQ/OQ validation services to ensure that our instruments are not only installed properly (IQ) but also operate as expected (OQ). Our team of Hidex trained experts conduct validation testing, performed with appropriate standards and control samples with traceability to national certification laboratory standards.

Preventive maintenance

Hidex offers preventive maintenance to ensure optimal device performance. Services include cleaning, inspection, and replacement of worn out components. Detectors are checked and recalibrated as needed. Maintenance is conducted on-site with minimal disruption, and a detailed GMP-compliant report is provided, ensuring compliance, reliability, and extended device lifespan.

Service contracts

Hidex offers service contracts that include preventive and corrective maintenance, replacement of parts and repairs. Service contracts also provide service support via email, telephone or remote guidance, and detailed instrument service reports.

Products

Standards

Validation is one of the most important aspects of any laboratory. To comply with quality management systems, Hidex provides tools for verifying functional checks of instrument performance. To ensure absolute reliability, Hidex provides NIST traceable high-performance standards.

Vials

A wide variety of different vials are available with your instrument. From low volume plastic vials to high performance frosted glass vials – get the most out of your instrument with the right consumables.

Microplates

Hidex offers consumables for our Sense microplate reader product line, including microplates and filtermat adapters for filtration liquid scintillation assays in 24 and 96 well formats.

Automated analyzers

Hidex offers the broadest range of liquid scintillation counters available on the market. Our solutions range from portable, field-deployable single-sample counters to high-performance, ultra low level systems and high sample capacity automated systems for centralized laboratories.

Sample preparation

We provide sample preparation solutions for liquid scintillation counting, including a sample combustion instrument and a liquid chromatography instrument for radionuclide extraction.

LSC Cocktails

Hidex offers a broad range of high performance cocktails for vial-based counters, microplate readers, oxidizers, and flow counters, including a comprehensive selection of NPE-free options for enhanced environmental safety and user convenience.

About Hidex

Hidex is a family owned high technology company that develops and manufactures high performance analysis equipment for life science research, radiation measurement and nuclear medicine. Our products utilize modern technology and excellent tradition of workmanship. With strong links to the scientific community, we continue to innovate and develop to improve the research of medicine, safety of nuclear industry, sustainability of the environment, and purity of our food and water supplies.

Hidex Oy | Lemminkäisenkatu 62 FIN-20520 Turku, Finland | info@hidex.com

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