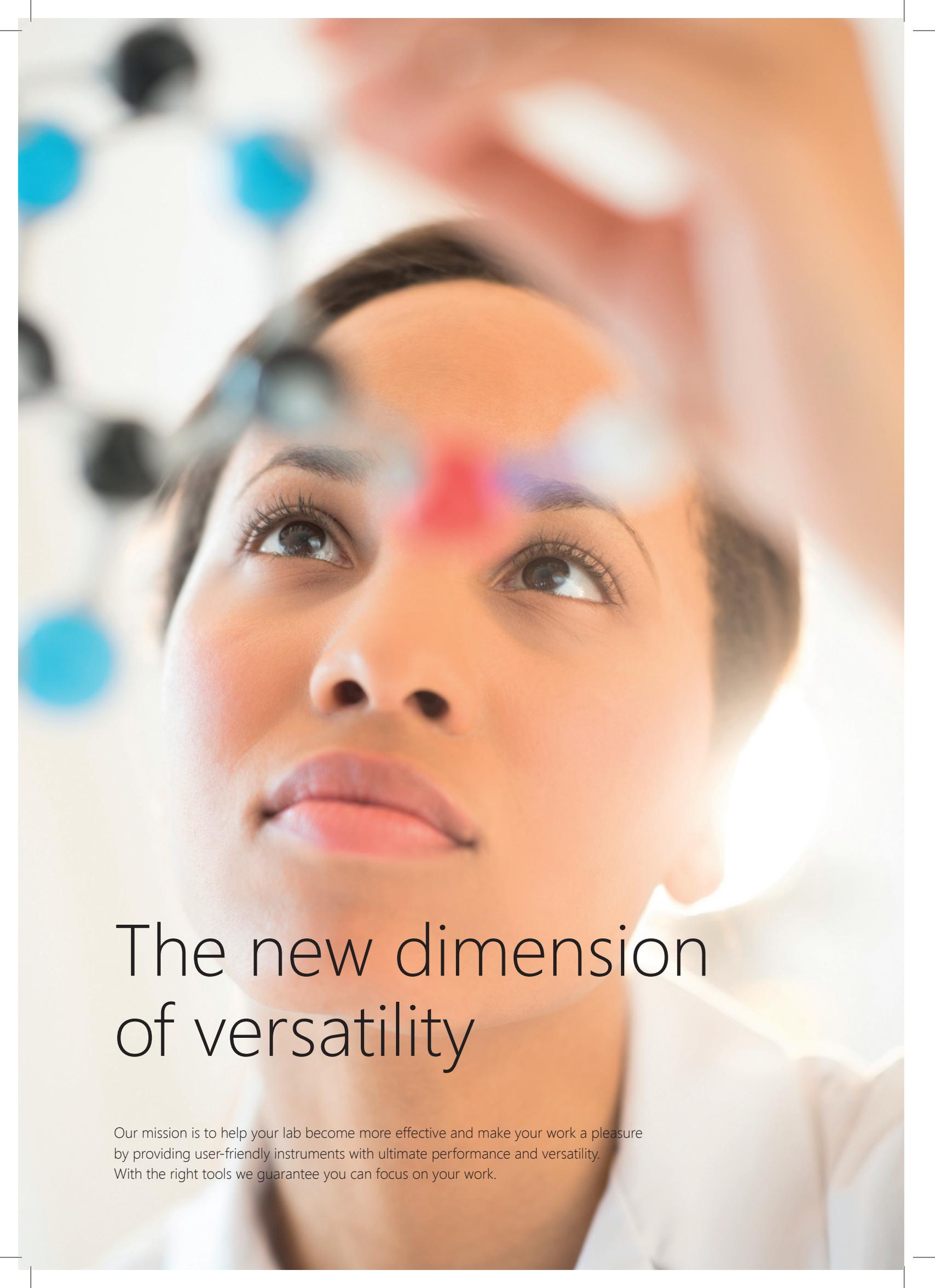




HIDEX

Hidex Liquid Scintillation Counters



# The new dimension of versatility

Our mission is to help your lab become more effective and make your work a pleasure by providing user-friendly instruments with ultimate performance and versatility. With the right tools we guarantee you can focus on your work.



# Hidex offers the broadest range of liquid scintillation counters available

Hidex offers the broadest range of liquid scintillation counters available.

From portable field deployable single sample counters...

...to high performance super low level systems...

...and high sample capacity automated systems for centralized labs.

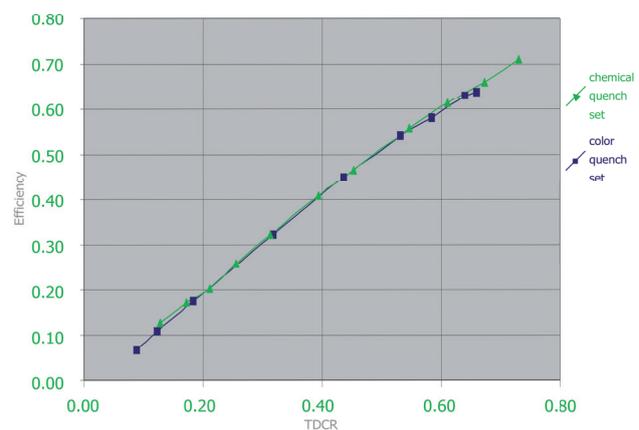


Hidex has served the liquid scintillation counting community for over twenty years. Our pioneering work started with the world's first portable liquid scintillation counter - the Triathler. Over the years Hidex has introduced ground breaking innovations such as graphical 2D alpha beta separation, luminescence free triple coincidence counting, first combined LSC and gamma counter and the worlds first commercial TDCR triple to double coincidence counter.

Our commitment to advancing scintillation counting is today stronger than ever. That is why we bring new innovation, new products and unrivalled service and support world wide.

# Absolute activity counting with TDCR technology

Hidex automatic liquid scintillation counters are equipped with a triple photomultiplier detector. This enables triple to double coincidence ratio TDCR counting, which is an absolute counting method for obtaining counting efficiency of the samples without external or internal standard sources. Unlike external standard methods TDCR is a universal method applicable for both chemical and color quenching, for aqueous and organic samples and for different cocktails and range of isotopes. TDCR method can be used not only for counting of typical beta isotopes like  $^3\text{H}$  and  $^{14}\text{C}$  but also for absolute activity determination of Cerenkov radiation e.g. from  $^{90}\text{Y}/^{90}\text{Sr}$  and monoenergetic isotopes such as  $^{55}\text{Fe}$ .



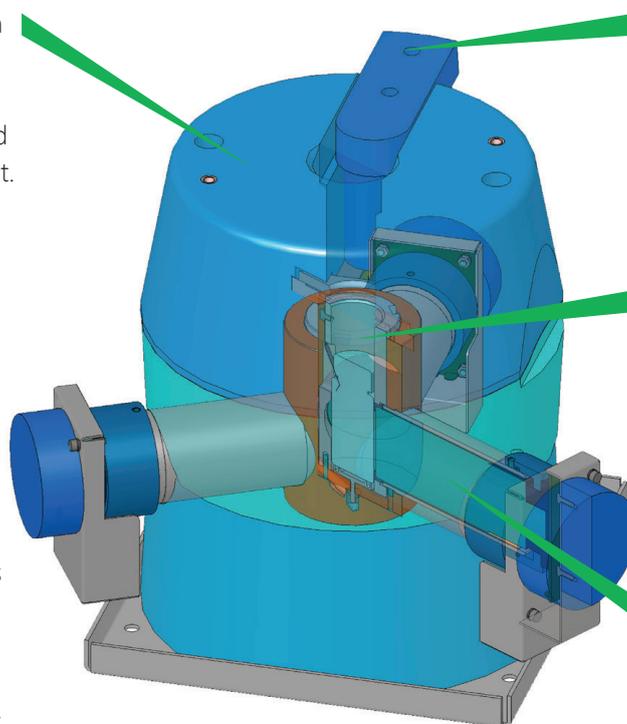
Optimal lead shield design with a minimum of 70 mm shielding in all directions provides good shielding and minimizes instrument weight.

Lead shutter provides optimal shielding from cosmic radiation.

Measurement chamber with high reflective opaque paint maximises light collection.

Robotic loading arm removes the need for a complex elevator mechanism. Vertical shielding both on top and bottom of detector chambers provides biggest reduction of background effects.

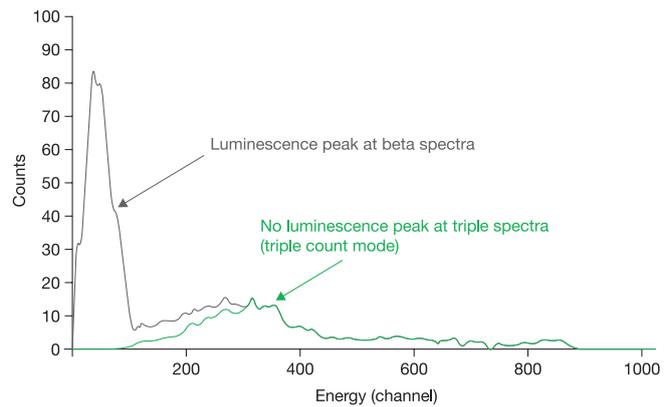
Three PMTs with highly reflective measurement chamber design provide optimal measurement geometry and facilitate TDCR counting.



## Technical innovations

### Luminescence free counting

Hidex 300 SL can be used in triple coincidence mode only, which removes interference from chemiluminescence. Samples with long luminescence decay such as  $^{14}\text{C}$  in NaOH can be counted immediately without the need to dark adapt. Method is applicable also for detection of  $^3\text{H}$  detection in water.



### Exceptionally high counting efficiency

The 300 SL utilizes three PMTs aligned at  $120^\circ$  from each other. Optimum detection geometry yields in better detection geometry than conventional double coincidence detector. And the more there is quenching, the greater the advantage of triple coincidence detector

### Example: Efficiency for $^3\text{H}$ (in 20 ml vials)

	Hidex 300 SL	Traditional Double Coincidence Counters
Unquenched	> 70 %	65 %
$^3\text{H}$ in water	> 35 %	25 %
$^3\text{H}$ in water, high quench	10 %	5 %

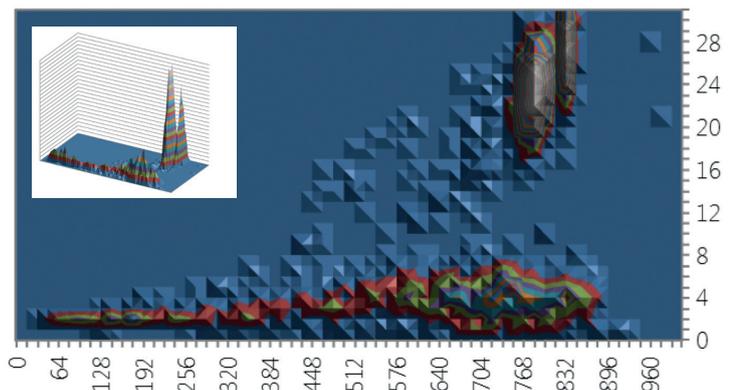
### Alpha/beta separation

Most advanced alpha beta separation is available as an option on the Hidex 300 SL. It facilitates extremely sensitive detection of alpha isotopes in presence of high beta radiation. Calibration and results validation can be done using convenient and reliable 2D/3D spectrum analysis tool without laborious and isotope specific misclassification run. Separation works even for

unknown mixture of alpha and beta isotopes. Typical applications include detection of  $^{222}\text{Rn}$ ,  $^{226/228}\text{Ra}$ ,  $^{241}\text{Am}$  and gross alpha/beta. Calibration and verification of results using the 2D/3D graph tool improves reliability of the results by avoiding uncertainty caused by conventional calibration using different isotopes than the actual samples.

### TDCR Cerenkov counting

Conventional External standard quench correction methods cannot be used for quench correction of Cerenkov radiation. TDCR, however, correlates linearly with Cerenkov-efficiency. The method is simple and can be used e.g. for absolute activity determination of  $^{90}\text{Y}/^{90}\text{Sr}$ , reducing the total detection time even by several days.





### External Standard

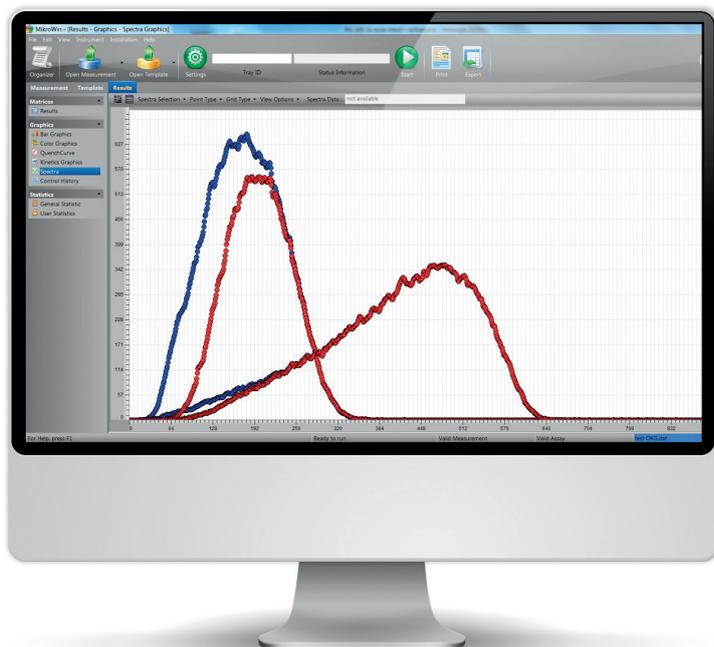
External  $^{152}\text{Eu}$  standard source can be provided as an optional item. This provides more conventional quench correction using external quench parameter. It is also recommended for multiple isotope studies with variable quenching.

### Temperature control unit

Both the Hidex 300 SL and 600 SL can be equipped with an external cooling unit. This compressor based unit cools the inside of the instrument specifically the detector and the sample waiting areas to a controlled level. Sample temperature stability is especially important in low level applications and improves the reproducibility of results and cocktail sample mixing properties.

## User friendly software

The 300 SL is operated using an external PC with Windows 7, 8 and 10 compatible MikroWin 300 SL or 600 SL software, featuring an easy-to-use graphical interface and extensive data reduction capabilities including quench curve analysis and half-life correction. The software is designed for multiuser environment, enabling unlimited number of methods for different isotopes and easy data export to Excel or other programs. Users can add samples with new methods, and high priority samples while the instrument is counting. MikroWin is also 21 CFR Part 11 compliant.





## Hidex 300 SL

# The most advanced transportable and user friendly LSC on the market

The Hidex 300SL is a revolutionary instrument which incorporates the most advanced triple-PMT detector technology facilitating

- exceptionally high counting efficiency,
- luminescence free counting mode
- absolute activity counting without external radioactive source using triple-to-double coincidence ratio (TDCR) method.

Hidex 300 SL is ideal for all routine scintillation counting applications. For example routine monitoring of beta emitters in nuclear power stations is easy to perform with the Hidex 300 SL. Results can be printed out with required uncertainty calculations providing hassle free operation with no further data analysis needs.

### Compact and transportable

The 300 SL has a modern and compact design measuring half the size and weight of some of its long standing rivals. It is therefore much easier to install and fit it into smaller, more space conscious laboratories, such as research vessels or mobile labs.



## Ordering information

	Hidex 300 SL #425-201	Hidex 300 SL Super Low Level #425-020	Hidex 300 SL Metrology #425-202
Sample capacity, 20mL/7mL	40/96	40/96	40/96
Counting efficiency $^3\text{H}/^{14}\text{C}$ (%)	70/96	70/96	70/96
Background $^3\text{H}$ in water (CPM)	12	3	12
Dimensions, W/H/D (cm)	52/68/63	52/68/63	52/68/63
Weight (kg)	125	180	125

### Optional features

525-003 alpha/beta separation	462-019 External $^{152}\text{Eu}$ std source
425-2001 Cooling	425-018 LL PM tubes

# Hidex 600 SL

## Automatic TDCR

## Liquid Scintillation

## Counter



Demands in centralized laboratories require high sample load capacity. Several multiuser labs require possibility to load samples and leave them queuing.

To fulfill such needs Hidex is proud to introduce a high throughput automatic TDCR liquid scintillation counter.

The Hidex 600 SL uses the robust and convenient triple to double coincidence ratio TDCR counting well known from the 300 SL series. With the added sample capacity of over 500 small vials or 200 large vials even the most crowded labs can rely on this work horse. Samples are loaded in racks with barcode template identifier which

makes multi user environment with different needs extremely easy.

With the high sample capacity and convenient multi user interface the Hidex 600 SL is ideal for example drug metabolism and pharmacokinetic studies using radioisotopes.

### Optional features

The Hidex 600 SL is available with all the options you get in a standard Hidex counter. Hidex' powerful alpha/beta separation, low level PMT detectors, cooling unit, external <sup>152</sup>Eu standard are all options in the Hidex 600 SL.

## Ordering information

	Hidex 600 SL #425-206	Hidex 600 SL Super Low Level #425-220	Hidex 600 SL Metrology #425-207
Sample capacity, 20mL/7mL	200/500	200/500	200/500
Counting efficiency 3H/14C (%)	70/96	70/96	70/96
Background 3H in water (CPM)	12	3	12
Dimensions, W/H/D (cm)	125/69/64	125/69/64	125/69/64
Weight (kg)	200	255	200

### Optional features

525-006 Alpha/beta separation	425-019 External <sup>152</sup> Eu std source
425-2002 Cooling	425-018 LL PM tubes



# Hidex Super Low Level Liquid Scintillation Counter Models

- For Challenging Low Level Applications

Based on the tremendous success of the Hidex 300 SL Automatic TDCR liquid scintillation counter Hidex has developed instruments for challenging low radioactivity applications. The Hidex 300 SL and 600 SL super low-level scintillation counters are equipped with additional lead shielding, low level PMT detectors, and active guard detectors for further background reduction. Hidex Super Low Level instruments are ideal for  $^3\text{H}$  in water measurements as well as other low-level environmental monitoring, radiocarbon dating and biofuel verification applications.



## Active Guard

The Active Guard is a separate scintillator detector which detects and subtracts real-time background radiation. The guard can be turned off for high energy samples and does not interfere with alpha/beta separation.

## Digital Pb shield

Is a proprietary Hidex spectral fitting algorithm that decreases the background and improves the uncertainty of the results by utilizing spectrum information for active sample tritium counts and background counts.

## Applications

Low level environmental measurements:

- $^3\text{H}$  &  $^{14}\text{C}$  in natural waters
- ground water dating ( $^3\text{H}$ )
- $^{90}\text{Y}/^{90}\text{Sr}$  (TDCR - Cerenkov quench correction method can be applied)
- gross alpha/beta
- biobased  $^{14}\text{C}$
- low level alphas
- $^{55}\text{Fe}$ ,  $^{66}\text{Ni}$
- $^3\text{H}$  &  $^{90}\text{Sr}$  radiobioassays

# 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 laboratory, Turku, Finland (relative humidity not measured). Background may vary locally depending on natural environmental radiation. Temperature control module is recommended for the most challenging low activity level applications.

## Counting efficiency

- Counting efficiency typical  $> 70\%$  for  $^3\text{H}$  and typical  $> 96\%$  for  $^{14}\text{C}$  with unquenched samples.
- $> 35\%$  for  $^3\text{H}$  quenched (8 mL water sample + 12 mL AquaLight cocktail)
- $\alpha$ 's ( $^{210}\text{Po}$ ,  $^{234}\text{U}/^{238}\text{U}$ ,  $^{241}\text{Am}$ ,  $^{222}\text{Rn}$ ,  $^{226}\text{Ra}$ )  $> 95\%$

## Typical background

- $< 3.5$  CPM with 8 mL water + 12 mL AquaLight Low Level cocktail.
- \*Background value measured using window with 25 % counting efficiency.
- $< 0.3$  CPM for alphas (with a/b separation option)

## FOM (E2/B)

- $^3\text{H}$  in water, optimized window  $> 220$
  - $^3\text{H}$  in water, with Digital Pb shield  $> 300$
  - $^3\text{H}$  unquenched Low Level standards, optimized window  $> 350$
  - $^{14}\text{C}$  unquenched Low Level standards, optimized window  $> 1150$
  - $^{14}\text{C}$  Benzene 3.5 ml in a mini glass vial  $> 2000$
- (71 % window / 2.5 CPM background)

# Triathler Multilabel Counter

Triathler has been thoroughly tested and proven under extreme conditions. More than 1500 units have been delivered and they are used in all kinds of laboratories and in some of the planet's most demanding environments – in the desert and jungle, as well as on ocean-going vessels and oil platforms.

## Ideal for:

- Homeland Security
- Radiation Safety
- Wipe Tests
- Life Sciences
- Molecular Biology
- Ecology
- Environmental Testing

## Features

Triathler is a single-sample counter, which provides fast and accurate results for several life science and environmental applications. It can count all radioisotopes including tritium in a variety of sample formats. Due to its very small size and light weight, Triathler can be taken



into the field to measure samples on the spot. Although compact, Triathler has many advanced features such as advanced spectrum analysis using a multichannel analyzer (MCA), Instant DPM results, single-photon luminescence counting, and optional alpha beta separation.



## Ordering information

Code No	Triathler
425-014	Triathler Luminometer
425-024	Triathler Gamma Counter
425-034	Triathler LSC
425-004	Triathler Multilabel Tester
425-010	Triathler NaI System

## Optional items

525-001	Alpha/Beta Separation
525-110	Internal Lead Shield for LSC
525-100	Internal Lead Shield for MLT
431-302	Equipment Case
525-203	Field Case with Battery
431-303	Field Case with Wheels

## Additional products and services

### Standards

Hidex offers a range of standards for instrument calibration and validation. Unquenched and quenched standards are NIST traceable. Internal standards are also available for validating cocktails, vials and sample preparation procedures.

### Validation

Hidex offers instrument installation and training with full validation services for GMP laboratories. IQ and OQ methods and scripts are available as additional service for the validated laboratories.

### Vials

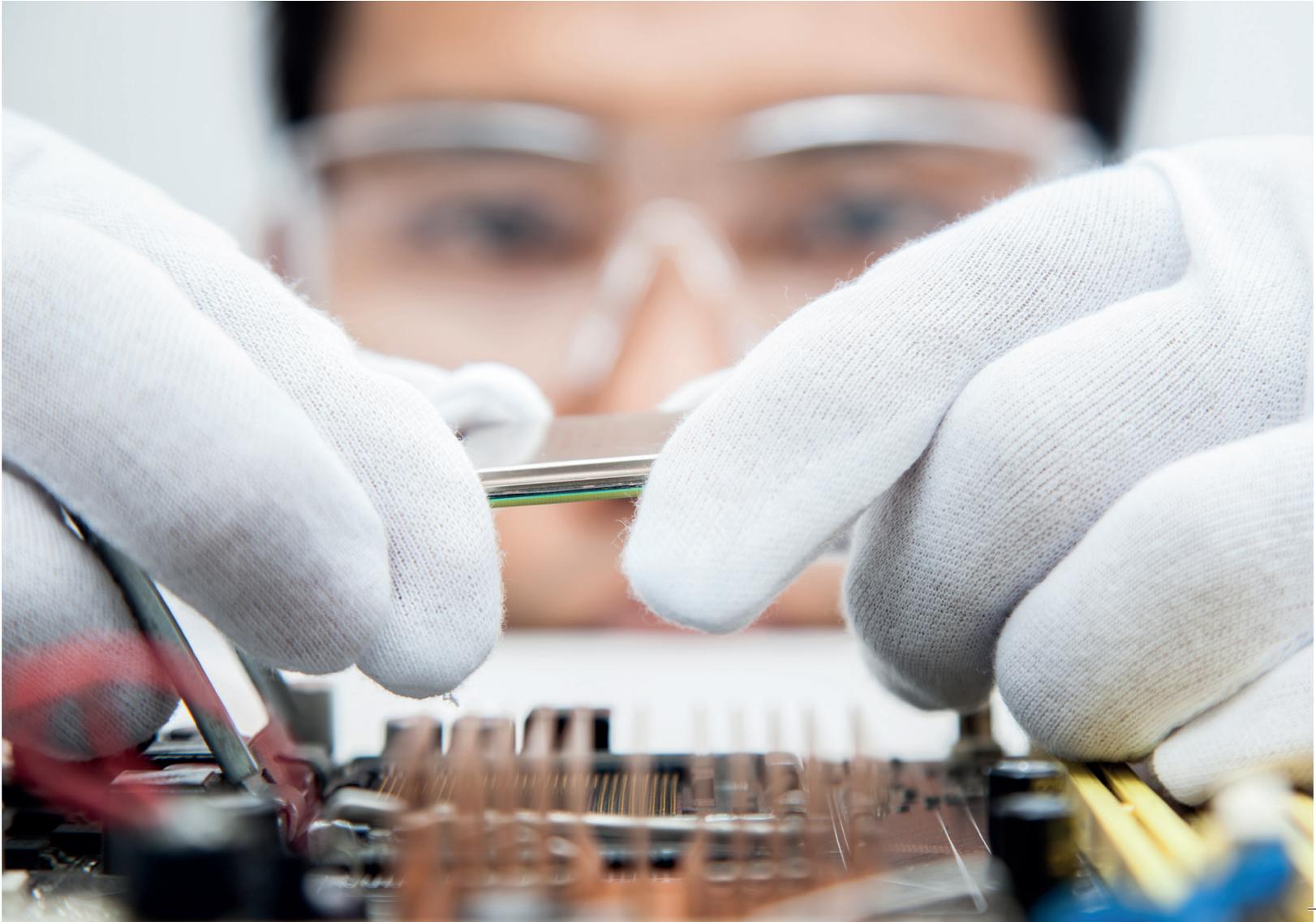
A large variety of different vials are available together with your instrument. From low volume plastic vials to high performance frosted glass vials – get the best out of your instrument with the right consumables.

### Service contracts

To ensure optimal performance and guarantee zero down time Hidex offers service contracts after warranty period.

### Cocktails

Broad range of aqueous and non aqueous cocktails with extremely high performance and optimised alpha beta separation characteristics.





# Detect. Determine. Define.

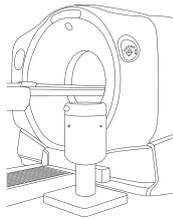
At Hidex scientific development is at the core of our values. We believe in the scientific advancement and continued improvement of our products. Our passion is to develop and optimise instrument sensitivity, streamline measuring operation and make usability as smooth as possible.

To ensure the continued operation with our instruments we commit to unrivalled support. Our customers can unleash the full potential of our instruments with the support of our application specialists and field support engineers.

Hidex guarantee you the state-of-the-art tools so you can focus on your research.

## RADIOWATER GENERATOR

An automated production system for  $^{15}\text{O}$ -labelled  $\text{H}_2\text{O}$  for Positron Emission Tomography studies.



## HIDEX SENSE

The Hidex Sense microplate reader is loaded with several unique innovative features to provide full flexibility at top performance. With touchscreen operated software and the compact application ready microplate reader, we turn your applications into results, simply at your fingertip.



## HIDEX AUTOMATIC GAMMA COUNTER

The compact design and superior user experience of our touch screen software makes the Hidex Automatic Gamma Counter ideal for nuclear medicine applications.



## About Hidex



**Hidex is a family owned high technology company** which 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 scientific research and safety of everyday life.

Today more than 3000 Hidex precision instruments are at service in leading laboratories worldwide as well as in some of the hardest conditions on the planet. Jungles and deserts, oil platforms and ocean going vessels – even submarines are no challenge for Hidex instruments.

## Contact Hidex

### Call us

Tel. +358 10 843 5570

### Address

Lemminkäisenkatu 62  
FIN-20520 Turku  
Finland

### E-mail

info@hidex.com  
firstname.lastname@hidex.com

[www.hidex.com](http://www.hidex.com)