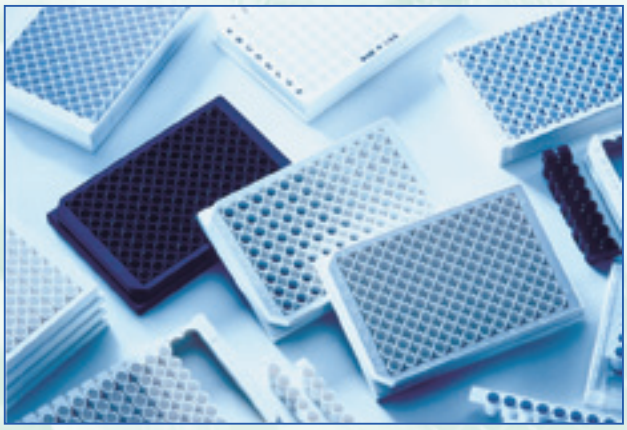
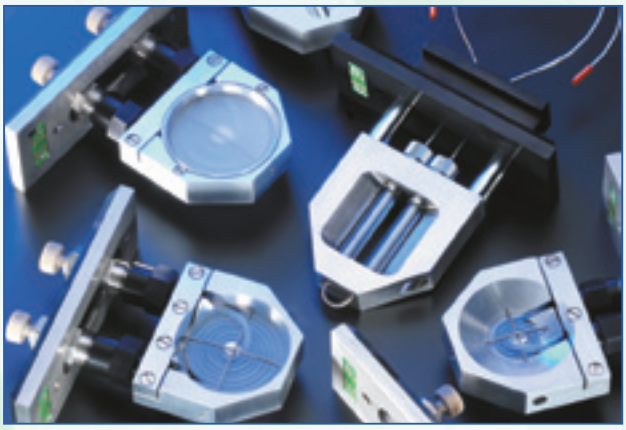
BERTHOLD TECHNOLOGIES

detect and identify





Detect and Identify

Microplate Readers
in vivo Imaging Instruments
Tube Luminometers
Radio HPLC Monitors
Gamma Counters

Microplate Readers

Mithras LB 940

Multimode Reader

Mithras, the extremely versatile multimode reader offers you all comprehensive technologies used in today's research.

- Absorbance
- Luminescence
- Fluorescence (top and bottom)
- Fluorescence Polarisation (FP)
- FRET
- BRET/BRET^2
- AlphaScreen®
- Time-resolved Fluorescence
- HTRF®

The unit combines fluorescence and luminescence modes with the uncompromised performance of dedicated instruments. The sensitivity of the luminescence function exceeds even that of dedicated plate luminometers.
Up to 4 reagent injectors and temperature control are the key features for the instrument´s leadership in functional receptor assays based on BRET or Calcium flux monitoring. HTRF® certified, the Mithras can be used for the screening and investigation of biological interactions such as kinases or second messengers.

TriStar LB 941

Multimode Reader

The TriStar LB 941 multimode reader provides you with outstanding performance and dedicated optical path system as it is known from the Mithras. TriStar offers you the following technologies:

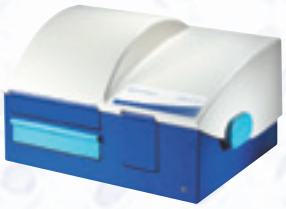
- Absorbance
- Luminescence
- Fluorescence
- FRET
- BRET/BRET^2

The instrument can be equipped with up to 4 injectors for fast kinetics and a temperature control for all cellular assays.

Twinkle LB 970

Fluorometer

The Twinkle LB 970 is based on a dedicated optical system for fluorescence readings from above and below a microplate.



Various formats from Petri dishes to 384 well plates are supported.
The Twinkle can be equipped with temperature control to establish ideal conditions for all cell based applications. The high quality design is well suited for sensitive FRET assays.

Artemis K-101

HTRF® Reader

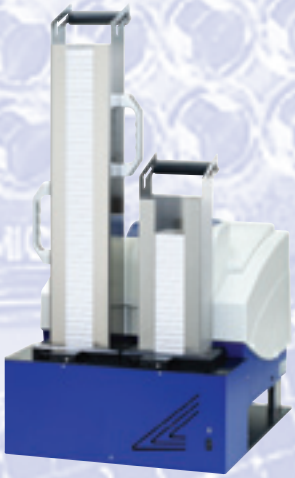
Artemis is a dedicated microplate reader specifically designed and approved for HTRF® applications.

The instrument supports 96 and 384 well microplate formats.
Equipped with single photon counting detection system, a highly stable Xenon flash lamp, internal reflection optical unit and well optimized filters the Artemis shows enhanced sensitivity. The software is specifically designed for HTRF® measurements.

Stacker LB 931

Plate Handling System

For medium and higher throughput Berthold Technologies offers the plate handling system Stacker LB 931.
A unique feature of the Stacker is the re-stacking operation mode enabling long-term studies of e.g. reporter gene expression.
For positive plate identification bar-code readers are available.



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www.berthold.com/bio

Monochromator Multimode Reader

Mithras² LB 943*

- double monochromators for excitation & emission
- all measurement technologies
- all microplate formats
- up to 4 reagent injectors

detect and identify

Certain configurations of this product are not available for sale in the U.S.A.

Specifications

Detection Devices	2 low-noise photomultiplier tube operated in single photon counting mode, spectral range up to 850 nm ultra-low-noise photomultiplier tube operated in single photon counting mode, spectral range up to 650 nm (HiSens position) photo diode, spectral range 200 – 1000 nm
Excitation Sources	halogen lamp Xenon flash lamp laser, 680 nm (Alpha Technology option)
Monochromator	f number: 2.7 (high light transmission) variable bandwidth: 6 - 22 nm increment: 1 nm blocking: 10^{-6}
Filters	RFID coded
Sample/Plate Formats	6 – 1536 well plates Terasaki plates Petri dishes filter membranes
Temperature Control	up to 45 °C plate incubation area
Shaking	3 modes, 3 velocities
Scanning	up to 10,000 points per well
Injection	up to 4 JET injectors variable volume 10 – 100 µL variable speed tips can be chosen to be located in 8 positions
Kinetics Operation	minimum resolution 0.05 sec maximum duration up to 7 days
Automation	robot integration
Performance	
Luminescence	<6 amol ATP per well <3 zmol Firefly luciferase per well (equals less than 800 molecules)
Crosstalk	5 x 10-6
Fluorescence	<0.3 fmol FITC per well (filter) <2 fmol FITC per well (monochromator)
Absorbance	accuracy <2 % deviation (@ 2 OD, 405 nm) precision <0.6 % CV (@ 2 OD, 405 nm)
Time-Resolved Fluor.	<2 amol Europium per well
HTRF®	dF high >900 %
Fluorescence Polar.	<5 mP SD (1 nM Fluorescein)
AlphaScreen®	<12.5 ng standard beads
Dynamic range	>6 decades (PMT) 4 decades (photo diode)
Injectors	accuracy better 98 % over entire volume range precision better 98 % over entire volume range
Miscellaneous	
Dimensions	480 x 500 x 550 mm (w x h x d) incl. injectors
Weight	48 kg
OS	Win XP, Win Vista, Win 7
Regulations	CE, UL, CSA

Specifications are subject to change without prior notice

TriStar² LB 942

Multimode Microplate Reader

With TriStar² the multi-technology microplate reader platform has developed into its second generation setting new standards in modularity, performance and user-friendliness.

Offering the reading technologies

- Absorbance
- Fluorescence
- FRET
- Luminescence
- BRET

TriStar² is a perfect fit for life sciences research covering all important assays currently conducted in academic research.

The optical system ONE-4-ALL with a new revolutionary design is the first time a single optical system has been employed in a multi-technology reader that matches the performance of individual dedicated optical devices.

Space for reagent vials is placed at the front of the instrument providing easy access and visibility. A removable trough can be filled with ice to keep the reagents at lower temperatures. A special reagent holder keeps small tubes filled with valuable reagents safely in place and enables using up the volume to the last droplet.

The unit is operated via the proven and intuitive ICE software. Single and multiple endpoint readings are possible as well as kinetic and scanning measurements.

The data are displayed in numerical and graphical formats and may be exported into EXCEL or printed.

Thus, TriStar² microplate reader offers a multitude of possibilities and a wide range of applications. Measurements of enzyme activities, phagocytosis, Calcium flux, cell viability, apoptosis, immuno assays, protein and DNA concentrations and protein-protein interactions are only a few of the many uses of TriStar².

Apollo 11 LB 913

Microplate Absorbance Reader

Based on the proven technology of its predecessors the Apollo 11 sets new targets for microplate absorbance readers by introducing its new unlimited life-time LED light source technology.

The Apollo 11 is ideally suited for all common ELISAs, assay for monitoring enzyme activities and protein and DNA quantification assays.

The easy-to-use self-explaining one-view PhotoRead software lets you get started with the measurements within seconds.

Up to 6 filters can be used with the instrument enabling the performance of all important applications as there are

- DNA quantification
- Protein quantification
- Enzyme activities
- β-Galactosidase (reporter gene)
- Alkaline Phosphatase (ELISA)
- Horseradish Peroxidase (ELISA)

detect and identify

Centro / Centro XS³ LB 960

Luminometers

The Centro and Centro XS³ meet all currently known requirements for versatile, robust and sensitive microplate luminometers. The selected detector and the proprietary design of the optical system guarantee highest efficiency, lowest background and negligible crosstalk. Centro XS³ has an optimized optics for even higher demands on sensitivity.
Fulfilling and even exceeding the requirements to qualify as DLReady™, the Centro XS³ is the ideal instrument for luciferase reporter gene assays. Three independently controlled injectors with variable volume give entire freedom in the selection of assay type and assay sequence.

CentroPRO LB 962

Luminometer

The CentroPRO microplate luminometer is an attractive entry-level instrument in research for all glow-type bioluminescent and chemiluminescent applications.
The instrument is controlled via the easy-to-use ICE software which includes ratio calculation for reporter gene applications.

CentroLIA LB 961

Clinical Luminometer

CentroLIA, the stand–alone microplate luminometer with integrated software, is especially designed for luminescence immunoassays (LIA). The use of softkeys with an interactive display of their associated function makes the CentroLIA an extremely user-friendly instrument. The Software has been designed with the routine clinical laboratory in mind and offers protocols for all types of immunoassays.

CentroLIA*pc* LB 962

Clinical Luminometer

The CentroLIA*pc* is a microplate luminometer especially dedicated to luminescence immunoassays (LIA). The instrument is controlled via the easy-to-use wizard driven ICE software which includes immunoassay data reduction.
The CentroLIA*pc* is an ideal instrument for diagnostic applications and clinical use.

Instrument	Centro	Centro XS³	CentroPRO	CentroLIA*pc*	CentroLIA
Plate formats	96 and 384 wells	96 and 384 wells	96 wells	96 wells	96 wells
Sensitivity	5 amol ATP / well 2 zmol firefly luciferase / well	1.5 amol ATP / well 1.5 zmol firefly luciferase / well	20 amol ATP / well 7.5 zmol firefly luciferase / well	0.002 mIU/L TSH	0.002 mIU/L TSH
Injectors	up to 3 1 in reading position	up to 3	external	external	external
Heating	up to 42 °C	ambient	ambient	ambient	ambient
Shaking	3 modes / 3 speeds	3 modes / 3 speeds	1 mode / 3 speeds	1 mode / 3 speeds	3 modes / 3 speeds
Software & Operation	PC based MikroWin ratio calculation (DLR™), kinetics, curve fit automation support		PC based ICE Research incl. ratio calculation (Dual-Glo™)	PC based ICE Immunoassay incl. immunoassay data reduction	on-board sofIA immunoassay data reduction for LIA & ILMA
Preferred applications	• Aequorin-based Calcium monitoring • Acridiniumester-based immunoassay • cellular luminescence	• reporter gene assay (single and dual) • ATP determination • CALUX® Assays	• reporter gene assay (Dual-Glo™) • ATP determination	• immunoassays (LIA): HRP/ALP labels with luminescent substrates	

Imaging Instruments
Tube Luminometers
Radio HPLC Monitors
Gamma Counters

NightOWL™ II LB 983

In vivo Imaging System

Gene expression can be monitored in living organisms with ultra-sensitive imaging systems.

Berthold Technologies contributed a major breakthrough of this technology with its Luminograph LB 980 introduced in 1989. Today, the third generation of low-light imagers is available, the NightOWL II.

As the NightOWL has been the first imaging instrument, where the camera is moved inside the cabinet, a lot of special applications can be done easily like close-up imaging, plant imaging or animal imaging in specific animal beds for multimodal imaging. Orthogonal 3D-imaging for approximate volume calculation is available.

Additionally NightOWL II offers quantitative fluorescence as the unique optical system from the Mithras multimode reader has been integrated.

NightSHADE LB 985

Plant Imaging System

The NightSHADE is the first imaging system that is fully dedicated to be used in plant research. Even long-term monitoring of luciferase or GFP expression is possible. Housed in an absolutely light tight darkroom the NightSHADE's heart is a cooled CCD camera. It can be mounted on top or at the side of the darkroom to facilitate imaging from above or laterally. A turn table can be applied to take images of a plant from different angles with the side-view camera.

LED panels in the darkroom can be programmed for daylight simulation. The darkroom itself may be temperature or humidity controlled.

Fluorescent excitation and emission optics enable the measurement of multiple fluorescent reporter genes and dyes.

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detect and identify

Junior LB 9509

Portable Tube Luminometer

The Junior is a lightweight portable luminometer specifically designed for all common glow type bioluminescent and chemi-luminescent applications.
Rechargeable batteries, as well as a mains supply and sturdy transportation case, make the Junior an ideal solution for laboratory and outdoor use in research, diagnostics, food and environmental monitoring.

Lumat³ LB 9508

Single Tube Luminometer

The Lumat³ tube luminometer provides the sensitivity and versatility you expect from a general purpose luminometer. Advanced digital photon counting with selected photo-multipliers ensure superior sensitivity and best match of spectral demands. Equipped with up to 2 reagent injectors the Lumat³ is ideally suited for reporter gene assays as well as other luminescence applications in research and clinical diagnostics.

AutoLumat Plus LB 953

Multi-Tube Luminometer

The universal tube luminometer will be adding a plus to your laboratory. Up to 180 samples placed in a chain can be measured once or sequentially many times over a long period.

Besides reporter gene assays, ATP monitoring and immuno-assays the AutoLumat is the instrument of choice for all cellular luminescence applications as the measuring chamber can be temperature controlled.
Up to 3 reagent injectors emphasise its versatility and power.

FlowStar LB 513

Radioflow Detector

Flow monitoring of radiolabelled compounds separated by chromatographic techniques has been established as one of the most powerful tools for identification of chemical and biochemical metabolites.
The LB 513 radiochromatography detection system contains components for all alpha, beta, gamma and PET isotopes in drug metabolism, pharmacology, environmental and clinical applications.

A user-friendly touch screen, the automatic measuring cell recognition and the two integrated bipolar analogue inputs are only some of the features of the FlowStar.
Berthold Technologies provides a complete system for radio HPLC applications, including cells, splitters, mixers, pumps and software.
A new generation of measuring cells has been designed suitable for technologies such as UPLC®.

HERM LB 500

High Energy Radio Monitor

The HERM is an additional product in the detector range of Berthold Technologies for flow-through measurements.

The highly sensitive Sodium Iodide crystal, in conjunction with a lead shielding and Twin-Cell-Changer, enable the detection of various gamma emitting isotopes.

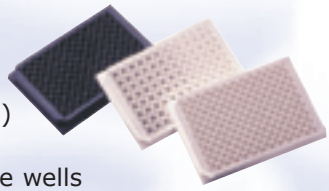
Multi Crystal LB 2111

Gamma Counter

The gamma counter for clinical diagnostics and research with 12 or 24 detectors meets the demands of big sample loads typical in gamma counting laboratories.

Consumables
Accessories
Software

Microplates



- Various plate formats (24, 96 and 384 wells)
- Black or white
- Black plates with white wells
- Clear bottom for cell culture applications
- Sterile, cell culture treated (individually packed)

Choosing the right microplate will help you to achieve the best measurement results:

	White	White clear bottom	Black	Black clear bottom
Luminescence	x	x	(x)	-
Fluorescence	(x)	-	x	x
Absorbance	-	x	-	x
FRET	-	-	x	x
AlphaScreen®	x	-	-	-
Fluorescence Polarisation	-	-	x	-
Time-Resolved Fluorescence	(x)	-	x	-
HTRF®	x	-	x	-

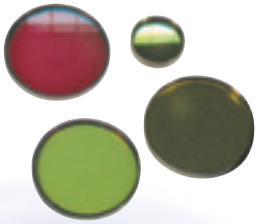
Tubes

- Lumi vials 5 mL, 12x75 mm, 3,000 pieces
- Lumi vials 3 mL, 12x47 mm, irradiated, 1,000 pieces
- Lumi vials 3.5 mL, 12x55 mm, 2,000 pieces

Injector cleaning solutions

For proper maintenance of the injection system, the Cleanit solution is recommended for regular cleaning.
Daily cleaning ensures that accuracy and precision as well as a long life time of the injectors will be maintained.

Filters



Only filters with high transmission characteristics ensure best sensitivity. BRET and other colour luminescens applications are only possible with extremely efficient optical systems.
For the best measurement results we offer high quality optical filters and evaluated best filter combinations.

- Excitation and emission filters for fluorescence applications
- Filters for absorbance applications
- Filters for luminescence applications
- Optimized filter sets for BRET, FRET, AlphaScreen®, Fluorescence Polarisation (FP), HTRF®, Time-resolved Fluorescence and Chroma-Glo™

QC testplates

With the testplates for luminescence and absorbance you can easily check the performance of your microplate reader or your imaging instrument

- Luminescence testplate for quality control
- Absorbance testplate for quality control

QC Luminescence test kit

With the QC luminescence test kit (label and reagents) the performance of your luminometer can be checked. This is the ideal QC (quality control) method as both, injection and detection system, can be monitored.

- Luminescent label
- Luminescent reagents
- Flash-type reaction

BERTHOLD TECHNOLOGIES

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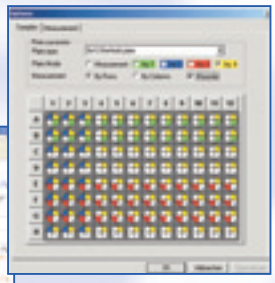
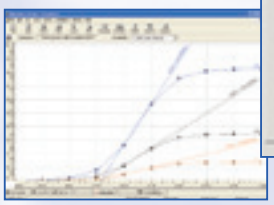
MikroWin 2000

The sophisticated software for microplate readers offers extensive possibilities for instrument operation and data evaluation (kinetics, curve fit, ratio etc.).
The wells for measurement and injection can be selected independently.





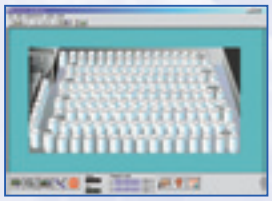
Various operations can be picked and placed in any order to accommodate for all different requirements of the assays to be performed.
Kinetic data reduction and graphical display of the respective curves help the user to judge the results.
User access and audit trail systems in the Advanced versions are the basis for MikroWin 2000´s 21 CFR part 11 compliancy.

WinTerm

WinTerm is a computer–based communication software for a variety of Berthold Technologies instruments enabling data download and conversion into spreadsheet formats.

Tubemaster

For the AutoLumat Plus LB 953 Tubemaster is a sophisticated though easy-to-use software for instrument operation and data evaluation with GLP documentation functions.

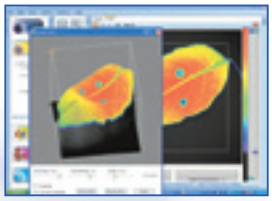


LBIS

Berthold Technologies´ proven immunoassay data evaluation software can be used with the Multi Crystal Gamma Counter LB 2111 and the AutoLumat Plus LB 953 including the control of respective instruments.

IndiGO™

This highly integrated image analysis software offers full functionality for instrument control, image capture and subsequent image analysis for all NightSHADE and NightOWL II systems.
In the comfortable and time-saving analysis part contrast, transparency and signal threshold can be easy set with sliders. Afterwards all settings from one image can be applied to all images of a whole measurement series. Maintaining original images the software can be used in GLP regulated environments.



RadioStar

The dedicated radio chromatography software meets all needs for flow monitor control and sophisticated analysis of chromatograms including full DPM calculation and contains extensive report generation functions.

ICE Software

Instrument Control and Evaluation

The extremely intuitive software for use with the CentroLIA*pc*, CentroPRO and Lumat^3 has been designed with the demands of today's researchers as well as the routine clinical laboratory in mind.
Three software versions are avaible:

- ICE Research supports ratio calculation for dual reporter gene and ADP/ATP assays as well as kinetics for enzyme activities
- ICE Immunoassay includes multiple curve fitting algorithms (spline, linear regression, point-to-point) and options (master and reference curves)
- ICE Advanced combines all functions of ICE Research and ICE Immunoassay versions.

The ease of use during protocol creation, measurement and data export has been achieved with a wizard-driven and clearly structured software.

BERTHOLD TECHNOLOGIES

detect and identify

Company profile

Berthold Technologies is considered a worldwide leader in luminescence measuring technology and has provided thousands of luminometers for research and diagnostics.
The Centro XS³ luminometer for academic and pharmaceutical research has been developed with an optimized optics for even higher demands on sensitivity. The CentroLIA*pc* is an ideal instrument for diagnostic applications and clinical use, while the new CentroPRO is an attractive alternative for research.

In recent years we have expanded the development of microplate instruments which support new modern measuring methods. Our multimode reader Mithras demonstrates exceptional performance in BRET technology, which is mainly used in research of G-protein coupled receptors.
HTRF® certified, the Mithras can be used for the screening and investigation of biological interactions such as kinases or second messengers.

In gene expression studies, reporter genes have become an invaluable tool. Using our extremely sensitive imaging instruments the NightOWL, and the new NightSHADE, the gene expression can be examined in living organisms.

BERTHOLD TECHNOLOGIES

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