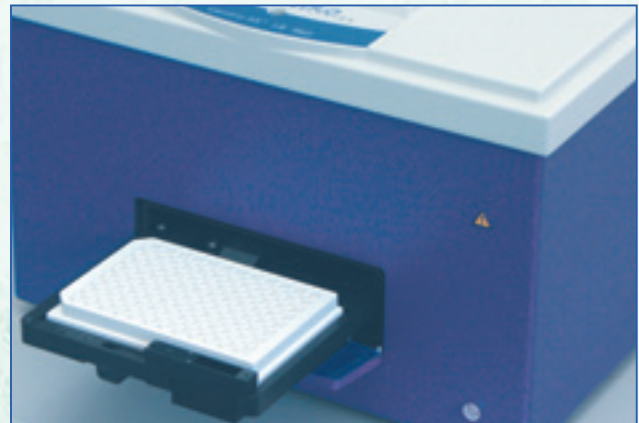


detect and identify



Centro
Centro XS³
LB 960
Microplate Luminometers

Centro / Centro XS³ LB 960

Microplate Luminometer



The Centro and Centro XS³ meet all currently known requirements for versatile, robust and sensitive microplate luminometers. The selected detectors and the proprietary design of the optical system guarantee lowest background and negligible cross-talk. Centro XS³ has an optimized optics for even higher demands on sensitivity.

DLReady™

Fulfilling and even exceeding the requirements to qualify as DLReady™, the Centro XS³ LB 960 is the ideal instrument for luciferase reporter gene assays especially Promega's Dual-Luciferase® reporter gene assay system.



High precision and efficiency of the injectors provide the opportunity to perform the assays rapidly – making it more applicable for screening environments.

BERTHOLD TECHNOLOGIES offers 5 different, pre-defined application oriented Centro models:

- **Centro 96**
designed for luminescence glow applications in 96 well microplates
- **Centro Research**
meets the common needs for a versatile luminometer in general research incl. reporter gene assays, enzyme studies, etc.
- **Centro HTS**
equipped with all options required in screening environments, e.g. injectors, 384 well reading and robot integration module
- **Centro Phago**
equipped with temperature control and injectors to perform cellular luminescence applications like Phagocytosis monitoring
- **Centro XS³ Reporter Gene**
specifically configured enabling reporter gene applications like the Dual-Luciferase® reporter gene assay with utmost sensitivity due to the optimized optics



Additionally there are two flexible Centro models that allow upgrades with different options according to your demands:

- **Centro Basic**
all luminescence applications and possibility to add the following options: 384 well format, up to 3 injectors, temperature control
- **Centro XS³ Basic**
all luminescent applications with enhanced sensitivity and the possibility to add up to 3 injectors

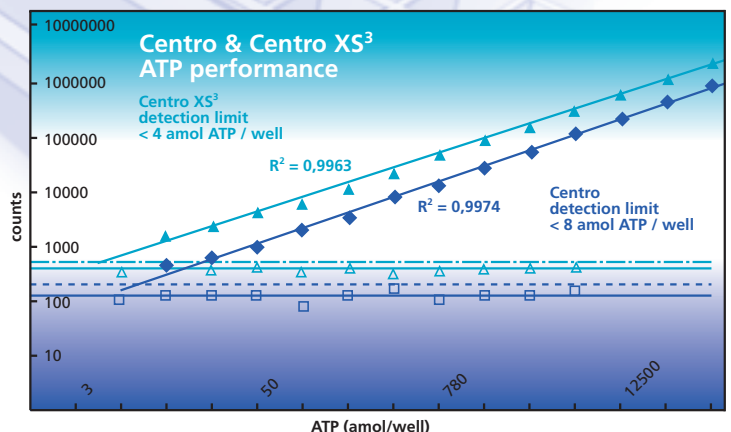




Plate formats

Any opaque microplate in either 96 or 384 well format can be measured. There is no need for any mechanical adjustment – just select the plate type in the operating software.



Temperature control

The Centro can be equipped with plate heating for applications where the assay must be measured at elevated and constant temperatures as common in cell based assays.

The sandwich-type heating plate design reduces evaporation effects and ensures homogeneous temperature distribution.



Reagent dispensing

3 independently controlled injectors with variable volume give entire freedom in the selection of assay type and assay sequence.

The volume is adjustable from 10 to 100 μL – perfectly fitting the demands for reagent addition into 96 and 384 well plates.

In Centro dispensing can even be performed during a kinetic measurement, e.g. to watch the effects of added agonists / antagonists.

JET injection technology stands for precision and accuracy – better than 99 % and 98 % respectively – and the only reliable way of properly mixing the added reagents.

Robot access

Specially designed for, but not restricted to, use in HTS departments of drug discovery companies, the Centro as well as the Centro XS³ robot access module allows for easy integration of the unit into any type of lab automation system.

Software and hardware easily interface into existing robot, stacker or liquid handling systems. A barcode reader may be used for positive plate identification.

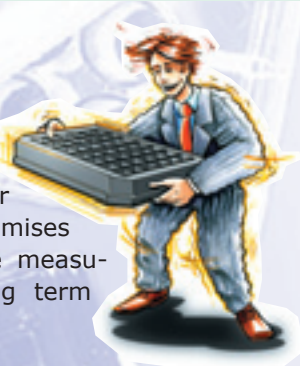


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Shaking

With three modes, each with variable speeds to select, the integrated shaker enhances mixing and optimises sample distribution before measurements especially in long term kinetics.



Small footprint

The ergonomic design of the LB 960 Centro models requires minimal bench space. All the important features are built in optimising the use of available bench space.

The reagent injectors are housed within the small footprint, providing the advantage of short tubing and thus a low dead volume.

Software

MikroWin 2000

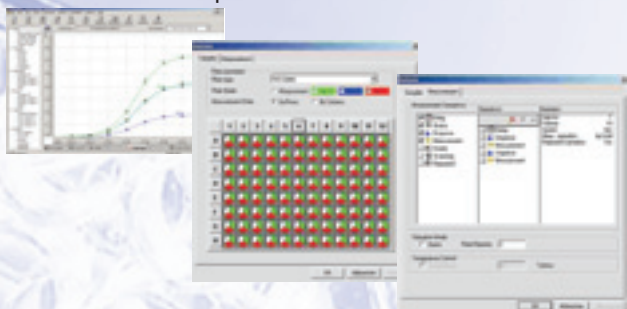
The Windows® based software combines operation and definition of instrument settings as well as data reduction and evaluation.

The wells for measurement and injection can be selected independently. Various operations can be selected and placed in any order to accommodate the different requirements of the assay.

Kinetic data reduction and graphical display of the respective curves helps the user to analyse the results. Any type of ratio calculation, e.g. DLR, or other mathematical formulas can be linked to each individual well.

Standard curve fitting and calculation of unknown samples is available for those users looking for quantification of their results.

All data can be exported in EXCEL® or ASCII formats.



Accessories

QC luminescence test kit

With the QC luminescence test kit the performance of your luminometer can be checked. This is the ideal quality control (QC) method as performance of both injection and detection systems can be monitored. The test kit follows a fast flash-type kinetics. The test kit contains a „label“ and two types of starter reagents.



Injector Cleaning Solution

For proper maintenance of the injection system the Cleanit solutions are recommended for regular cleaning. Daily cleaning ensures that accuracy and precision as well as long life cycle of the injectors will be maintained.



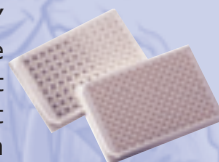
QC testplate for luminescence

With the luminescence testplate you can check easily performance of your Centro luminometer. Selection of 96 or 384 well format and overload signal is possible.



Microplates

BERTHOLD TECHNOLOGIES' microplates for luminescence applications will provide you best quality, low background and lowest crosstalk. They are available in different plate formats and optionally with clear bottom.

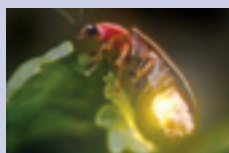




Applications

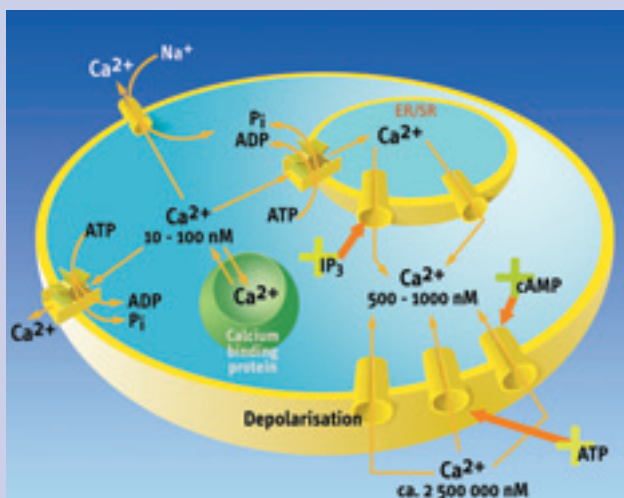
Reporter Gene Assays

In basic research of gene regulation as well as in drug discovery the use of luciferases, β -galactosidases, β -glucuronidases and secreted alkaline phosphatases have become a standard tool offering the highest sensitivity.



Especially the dual luminescence type assays, e.g. Dual-Luciferase[®] Reporter Assay, have become a favourite means as they provide an internal control for transfection efficiency or general expression level.

Aequorin based Calcium monitoring



The monitoring of the changes in intracellular Ca^{++} levels by the means of aequorin in a flash-type luminescent reaction is highly efficient. Assays for both, the activation of G-protein coupled receptors (GPCRs or 7TM receptors) inducing inositol phospholipid degradation and the activity of voltage gated Ca^{++} ion channels – the latter causing a rather slow influx – can easily be performed with the use of the Centro's reagent injectors.

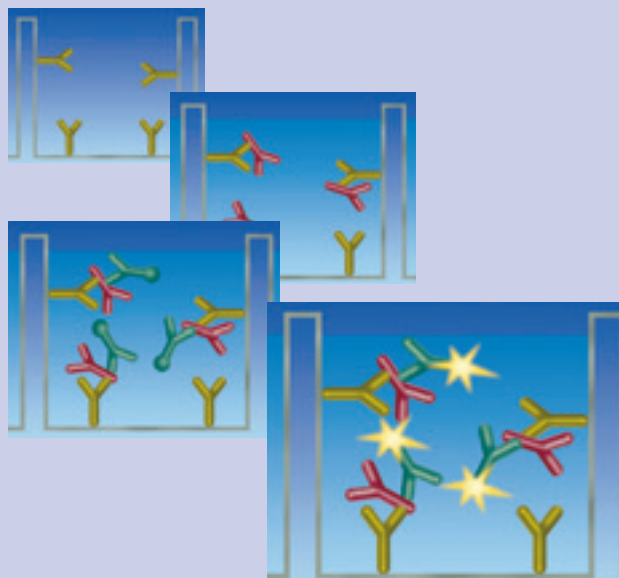
ATP determination

A detection limit of less than 4 attomoles of ATP per well makes the Centro XS³ one of the best suited microplate instruments for the determination of cell viability, e.g. in tumour chemosensitivity assays, cell proliferation, antibiotic susceptibility testing or bacterial detection.

Luminescent Immunoassays (LIA, ILMA)

By replacing colorimetric substrates of horse-radish peroxidase or phosphatases with luminescent ones an increase in sensitivity up to 100-fold can be achieved.

MikroWin software with the curve fitting option adds convenient and extensive data evaluation capabilities to the superb instrument performance. Even the fastest flash-type Acridinium ester based immunoassays can be measured with the Centro.



DNA probe assays

Several diagnostic DNA probe assays based on acridinium ester labelled oligo-nucleotides are commonly used providing the most sensitive detection and diagnosis of infectious diseases.

SNP determination

SNPs are the most common type of human genetic variability playing a key role in the diversity of development of diseases and response to therapeutic treatments.

Adenylate Kinase assays

These assays are using Adenylate Kinase (AK) as a highly sensitive marker to enumerate bacterial or mammalian cell numbers. Unlike ATP, AK is present at constant levels in all cells, irrespective of the organism's metabolic state and can be used to detect cells at much lower levels due to the $\text{ADP} \rightarrow \text{ATP}$ amplification process. The rapid AK assay is up to 100 times more sensitive than standard ATP bioluminescence.

Centro / Centro XS³ LB 960



Technical Specification and Order Information

Order Information	Order Number
Centro LB 960	
LB 960 Centro 96	38100-05
for glow applications, 96 well - not upgradeable, MikroWin Lite*	
LB 960 Centro Basic	38100-10
96 well – upgradeable, MikroWin Lite*	
LB 960 Centro Research	38100-50
96 well, 2 reagent injectors, waste pump, MikroWin Lite*	
LB 960 Centro HTS	38100-51
96 & 384 well, 3 reagent injectors, waste pump, robot integration module, MikroWin Adv. II*	
LB 960 Centro Phago	38100-52
96 well, 3 reagent injectors, waste pump, temperature control, MikroWin Lite*	
Options for Centro	
Injector 1 pre-position 2, 10 - 100 µL	37772-01
Injector 2 pre-position 1, 10 - 100 µL	37772-02
Injector 3 meas. position, 10 - 100 µL	37772-03
384 well upgrade	38211
Temperature control 96 well version	41064
Temperature control 96/384 well version	41063
Centro XS³ LB 960	
Centro XS³ Basic	46970-10
enhanced sensitivity, 96 well, upgradeable with injectors, MikroWin Lite*	
Centro XS³ Reporter gene	46970-50
enhanced sensitivity, 96 well, 2 reagent injectors, MikroWin Lite*	
Options for Centro XS³	
Injector assembly with 3 injectors (#3, #2, #1), 10 - 100 µL each	48532
Injector assembly with 2 injectors (#3, #2), 10 - 100 µL each	48533
Injector assembly with 1 injector (#3), 10 - 100 µL	48775
Injector 1 pre-position 3, 10 - 100 µL	37772-21
Injector 2 pre-position 2, 10 - 100 µL	37772-22
Options & Accessories for all Centro models	
Waste pump	38216
Robot integration module	39368
Luminescence testplate for QC	40105-10
Luminescence test kit for QC	45366
Cleanit Daily, injector cleaning solution	45218
Microplates 96 well, white, 100 pieces	23300
Microplates, 96 well, white, clearbottom, cell culture, 100 pieces	24910
Microplates 384 well, white, 40 pieces	32505
*Upgrade (MikroWin Advanced versions I or II) and additional licences available	

Detection Unit	Low-noise photomultiplier tube in single photon counting mode
Sensitivity	< 10 amol ATP (Centro) < 4 amol ATP (Centro XS ³)
Dynamic range	> 6 orders of magnitude
Crosstalk	Low crosstalk through crosstalk reduction design: 10 ⁻⁶
Injection unit	Up to 3 injectors variable volume: 10-100 µL, JET Injection technology
Plate formats	All 96 and 384 well microplates with outer dimensions: 86.0 x 128.2 x 14.7 mm (WxLxH)
Robotic integration	Optional
Interface	Serial RS232, 9 pin
PC operating system	Win 98, Win 2000, Win NT, Win XP
PC requirements	Pentium processor, 500 MHz (or better), CD ROM drive, display 1024 x 768 (or better), serial port
Software	MikroWin 2000
Power supply	110 – 240 V; 50/60 Hz; 70 VA
Regulations	CE, UL, CSA
Temperature range	Storage: 0 ° – 40 °C Operation: 15 ° – 35 °C
Humidity	10 – 85 % non condensing
Dimensions	330 x 430 x 270 mm (WxDxH)
Weight	17 Kg

Operation modes

Integral	0.1 - 600 sec
Kinetics	total time up to 24 h
Repeated	total time up to 24 h
Plate repeats	up to 999
Dispensing	3 independent variable volume injectors
Shaking	3 modes, variable amplitude and speed
Delay	up to 3600 sec
Default parameter files, e.g. Dual-Luciferase®, and Dual-Glo™ reporter gene, Kinetics and Repeated type (Cellular Luminescence), etc.	

Patents: EP 1 279 948 A 1 (pending), DE 101 36 866 A 1 (pending)



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