

detect and identify



Lumat LB 9507

Ultra Sensitive
Tube Luminometer

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Ultra Sensitive Tube Luminometer

The Lumat LB 9507 tube luminometer provides the sensitivity and versatility you need in a general purpose luminometer.

Advanced digital photon counting detection provides an extended dynamic range with linearity over more than six decades.

Validated DLReady™, the BERTHOLD Lumat is ideally suited for reporter gene assays as well as all other important luminescence-based applications in research and diagnostics.



Low noise light detector

The detection unit of the Lumat consists of a state-of-the-art ultra fast single photon counting photomultiplier (PMT) with low noise. A selection procedure for the PMT tubes guarantees optimum performance and reliability of all instruments.

Unique design of measurement chamber

The special geometric design and the use of selected coatings in the measurement chamber provides superior light collection efficiency.

The measurement chamber consists of 2 tube positions in a rotating holder: while one sample is measured a second tube can be placed in the loading position, resulting in a higher throughput comparable to automatic systems.

Variable volume injectors

The Lumat is equipped with reagent injectors providing optimum reliability and simplicity in liquid handling.

Based on the proprietary JET injection technology the injectors combine high speed and reliable mixing of reagents with outstanding precision. The injected volume can be adjusted within the range 25 to 300 µl.

The materials involved are able to withstand even corrosive materials which are often used in chemiluminescence assays. The "Unload" operation helps the user to recover expensive reagents by returning them back to the reagent reservoirs.

Injector cleaning solutions

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.



Software

The software has been developed to provide easy, intuitive operation of the instrument's powerful features. You can choose from a variety of basic measurement protocols.

Raw data protocol

Recommended when the significance of the measurement is the integrated value of light emission over the measurement time – e.g. ATP measurements or reporter gene assays.

Dual label protocol

Allows the automatic injection of reagents, the sequential measurement of two different luminescent signals and the ratio calculation.

Kinetic measurements

Can be performed in three modes:

1. Kinetics of a single sample within a preset time window with a printout of individual values and reaction curve
2. Repeated operation to monitor long term reactions
3. Endless counting of a single sample

Cut-off protocol

Can be used for qualitative characterisation of sample data by flagging result with attributes,

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e.g. "Positive", "Negative" or "Intermediate" according to the preset limits.

Quantitative protocol (LIA, ILMA)

A software option for full and convenient data evaluation is required for luminescent immunoassays. It includes the use of measured standards, master curves and controls. Concentrations of patient samples are calculated according to an automatic smoothed spline function including average calculations of replicates.

Data handling

The measured and calculated sample values can be output to the built-in printer or to a computer via serial interface with the WinTerm software.

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.

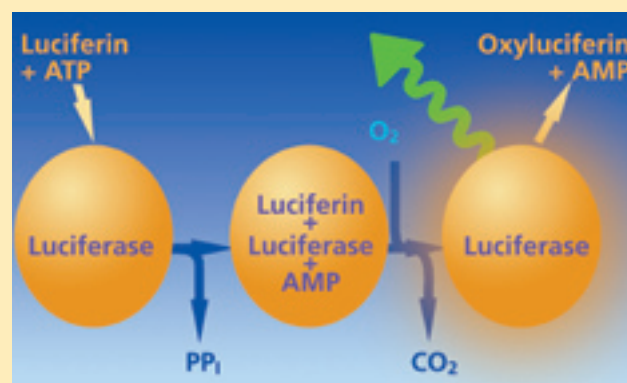
The test kit follows a fast flash-type kinetic. The test kit contains a "label" and two types of starter reagents.



Applications

■ Reporter Gene Assays

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



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

■ ATP determination

A detection limit of less than 1 attomole of ATP per tube makes the Lumat one of the best suited tube luminometers for the determination of cell viability, e.g. in tumour chemosensitivity assays, cell proliferation, antibiotic susceptibility testing or hygiene monitoring.

■ Luminescent immunoassays (LIA, ILMA)

By exchanging colorimetric substrates of horse-radish peroxidase or phosphatases with luminescent ones a 100-fold increase in sensitivity can be achieved. For immunoassay data evaluation the Lumat can be equipped with sophisticated and easy-to-use software.

■ DNA probe assays

Several diagnostic DNA probe assays based on luminescent read-out (e.g. Acridinium esters, Luminol) provide the most sensitive detection and diagnosis of infectious diseases.

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Technical Specification and Order information

Detection unit	State-of-the art ultra fast photo-multiplier in single photon counting mode; spectral range: 380-630 nm
Sensitivity	1 amol ATP; < 1 zmol firefly luciferase, equals less than 550 molecules
Dynamic range	> 6 orders of magnitude
Injection Unit	Up to 2 (variable volume: 25-300 µl); JET injection technology; precision: >98%; accuracy: >98%
Measuring chamber	Motor driven rotating chamber for two tubes (one for measuring and one for loading/unloading)
Tube format	12 x 75 mm (ø x height)
Display	2x40 characters alpha-LCD display
Language	English, French or German (software selectable)
Internal printer	40-character thermal matrix printer with graphic capability
Interface	Serial RS 232
Software	built-in software operated with alphanumeric keyboard; optionally immunoassay evaluation software
Data storage	Internal RAM and flash EPROM
Power supply	110-230 V; 50/60 Hz; 60 VA
Regulations	CE, UL
Temperature range	Storage: 0-40 °C Operation: 15-35 °C
Humidity	10-85 % non condensing
Dimensions	345 x 365 x 180 mm (WxDxH)
Weight	14 Kg

Order information	Order Number
Lumat LB 9507, manual model incl. printer	81957-50
Lumat LB 9507, "Reporter gene" model incl. printer and 2 injectors (25-300 µl)	81957-52
Lumat injector	INJ9507
25-300 µl, (max. 2 injectors)	
Filter, OD 2, for range extension	25121
SofIA immunoassays software for LIA	34951
WinTerm terminal software for data export to PC (Win 98, Win 2000, WinNT, WinXP)	29890
Paper for thermal printer, 20 pcs	05386
Lumivials 5 ml, 12 x 75 mm, 3000 pcs	09778
Reagent filters, 5 pcs	43193
Luminescence test kit	45366
Cleanit Daily, injector cleaning solution	45218

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