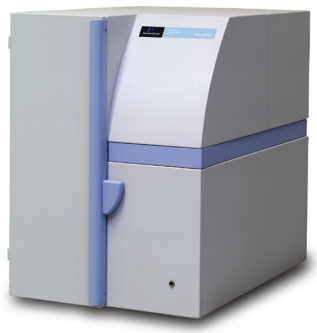
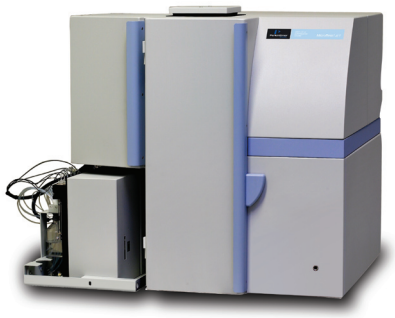
MicroBeta² and MicroBeta² LumiJET Microplate Counters



MicroBeta² Plate Counter



MicroBeta² LumiJET

Description

MicroBeta®2 and the MicroBeta² LumiJET are microplate counters which measures radioactivity as well as luminescence. The instrument is available in 1, 2, 6 and 12 detector configurations with optional 16 or 32 shelf loading capacity. A robotic loading option will allow efficient integration into robotics systems. Each instrument model also supports different plate matrices and is capable of running samples in either "96-well + 384-well plate" format or in "96 + 24-well plate" format. The samples can be contained on microtiter plates, 4 mL tubes, Eppendorf® tubes or on filtermats.

The MicroBeta² LumiJET model is available with a choice of single or dual injectors per detector and is also available with 1, 2, 6 and 12 detector configurations. Both 96- and 384-well plates can be used. The injector configuration of the MicroBeta² LumiJET enables flash luminescence studies.

Standard Features for MicroBeta² Plate Counters

Hardware

- 1, 2, 6 or 12 detectors
- 1 and 2 detector systems run 24- and 96-well plates, 6 and 12 detector systems run 96- and 384-well plates
- Sample types for radioactivity:
  - Liquid scintillation counting in microtiter plates
  - Filterplates, e.g. UniFilter® Plates
  - Filtermats
  - FlashPlates®
  - Solid scintillator, e.g. MeltiLex®
  - Scintillation proximity assay
- Sample types for luminescence:
  - Microtiter plates, e.g. OptiPlate™ or CulturPlate™
- Counting modes include single and dual label CPM, single and dual label DPM, ParaLux™ count mode and luminescence counting.
- Proprietary Time-Resolved Liquid Scintillation Counting (TR-LSC) mode improves counting capabilities significantly with opaque plates and low energy isotopes. TR-LSC mode can generate close to dual-PMT coincidence counting performance by using top PMTs only.
- Unique detector design consists of two photomultiplier tubes (PMT). One is located below the sample, the other above the sample. These count the sample simultaneously, in coincidence, which allows the best possible counting geometry, superior counting efficiency and the most efficient reduction of background.

- PMT positioning for the measurement is automatic. Maximum height of the sample for 16 and 32 shelf MicroBeta^2 is 45 mm and for the instrument having robotic loading shelf is 20 mm.
- Robust cassette sample changing mechanism provides a flexible system for varying sample types. Microtiter plates, micro-centrifuge tubes, 4 mL liquid scintillation counting (LSC) vials and Filtermats can be loaded simultaneously into the instrument.
- Standard bar code reader allows recognition of 100 protocols and other counting commands. An optional microplate bar code reader can read the front as well as right-hand side of a plate.
- Luminescence option includes a cooling device, which assures a stable temperature for the PMTs for superior luminescence sensitivity.

Computer specifications

- User interface: Windows® XP SP3
- Processor: 1.6 GHz
- RAM: 1 GB
- Hard Disk Drive: 60 GB
- LCD display: 17″
- Keyboard and mouse
- LAN connectivity
- USB connected CD-DVD drive
- Extra USB ports

Manager Software

- Factory preset labels exist in software. User may manually add new isotopes to the library.
- Plate library contains SBS standard plate settings. The user may specify non-standard plate settings in the system.
- Repeat, replicates and cycles can be programmed into the protocol.
- Delays can be set before the measurement, between cycles and between plates.
- Plate mapping is used to define the positions of the measurable samples. Protocol specific "auto-fill" features allow quick and easy set up of sample positions in a plate map.
- Optional Enhanced Security functionality to support 21 CFR Part 11 requirements. Includes audit trails, access control and data security features.

Data collection

- Live display includes instrument status and allows the user to follow the measurement while running the assay.
- Numeric or color intensity display for 96- and 24-well plate formats.
- Counting commands, such as next position, next assay and stop are available while the counter is operating.
- Count termination is determined by fixed time or counting precision.
- Up to 100 normalizations can be performed and linked into 100 counting protocols to provide detector efficiency corrections, background corrections and crosstalk correction for the final data.
- ParaLux count mode for scintillation proximity assays fully utilizes the advantage of twin photomultiplier tubes. Compared to all other methods, counting efficiency is increased by up to 500%. The ultra-sensitive, high dynamic range Asymmetric Quench Parameter AQP(I) provides superior disintegrations per minute (DPM) calculations.
- Easy DPM includes pre-stored quench data that is modified by measuring only two standard samples. This allows quick access to DPM data without quench correction.
- DPM monitor reports samples outside the range of the quench curve.
- Up to 100 quench corrections can be performed and linked into 100 counting protocols. Quench corrections will also include detector efficiency corrections, background corrections and crosstalk corrections.
- Password protection for counting, normalization and quench correction protocols are included.

Analysis

- Three counting windows allow the analysis of the signal in three independent counting regions.
- Crosstalk correction for isotopic and optical crosstalk
- Background subtraction enables fixed samples or values obtained from detector normalization to be used for calculations.
- Half-time correction is a correction facility for CPM and DPM values. The zero time may be the start time of the assay or a specified date and time.
- Freely selectable data output options include sample/plate ID, quench parameters (SQP(I)), spectrum plot, date and time, CPM and DPM monitors and statistical analyses. Output data format can be customized to either plate or list format.
- Instrument Performance Assessment (IPA) allows the user to monitor the performance of the instrument with the standard samples. The user may store the data for later analyses.
- Results output:
  - samples in either plate or list format
  - result file may be saved as Excel®, ASCII or CSV file
  - Automatic file run numbers are generated to avoid the loss of data by overwriting.
  - File names can combine several identifiers, such as counter name, protocol owner, protocol name, protocol number, plate index or plate ID.

Additional Features for MicroBeta² LumiJET

Hardware

In addition to all features already discussed in MicroBeta² section, MicroBeta² LumiJET has additional features:

- Standard 1 and 2 detector systems inject into 24- and 96-well plate formats.
- Standard 6 and 12 detector systems inject into 96- and 384-well plates. For 6 detector model, additional option converts plate format into 24- and 96-wells.
- Depending on the dispenser model, up to 2 reagents can be dispensed into a single well. Injection volume and speed are user selectable.

Available Configurations

MicroBeta²

Model	Number of detectors	Plate capacity	Plate format
2450-0010	1	16	24/96
2450-0020	2	16	24/96
2450-0060	6	16	96/384
2450-0120	12	16	96/384
2450-0320	12	32	96/384

*Optional robotic loading system available for 16 plate capacity versions.

MicroBeta² LumiJET

Model	Number of detectors	Plate capacity	Plate format
2460-0010	1	16	24/96
2460-0020	2	16	24/96
2460-0060	6	16	96/384
2460-0120	12	16	96/384

To complete LumiJET system a dispensing device needs to be ordered separately.

Typical Performance Data

Liquid scintillation counting

Unquenched sample with a volume of 150 µL of cocktail unpurged, in a flexible 96-well microtiter plate:

Counting efficiency:	^{3}H Typically 57%
	^{14}C Typically 94%
Maximum count rate:	3,000,000 CPM

Dispensing performance (LumiJET models)

Adjustable dispensing speed and volume

Dispensing volume:	5-250 µL
Dispensing accuracy:	1 µL or 5% (whichever is larger)
Dispensing precision (CV%):	5 µL – 2% 25 µL – 1% 250 µL – 0.5%

Luminescence counting

Luminescence samples in a white 96-well OptiPlate, 200 µL sample volume

Background:	100 CPS
Maximum count rate:	24,000,000 CPS
Crosstalk:	0.002%

Physical Data

Dimensions for MicroBeta²:

Height:	609 mm (24.0 in.), except 2450-0320 which is 1207 mm (47.5 in.)
Width:	433 mm (17.0 in.)
Depth:	645 mm (25.4 in.)
Weight:	85 kg (187.4 lb.) model 2450-0120 – 90 kg (198.2 lbs.) model 2450-0320 – 95 kg (209.4 lbs.)

Dimensions for MicroBeta² LumiJET

Height:	630 mm (24.8 in.)
Width:	700 mm (27.56 in.)
Depth:	660 mm (25.7 in.)
Weight:	90 kg (198.4 lb.)

Electrical requirements (both models):

Main voltage selectable	100, 115, 120, 240 V +/- 10 %
Frequency	50/60 Hz
Power consumption	360 VA max

Safety, Radiated Emissions and Immunity:

MicroBeta^2 and MicroBeta^2 LumiJET have been tested and approved for electrical safety, radiated emissions and electromagnetic compatibility. In the USA, the CSA approval also satisfies the requirements of 29CFR 1910.399.

MicroBeta^2 and MicroBeta^2 LumiJET fulfill the requirements of the following standards:

– IEC 61010-1:2001 (Second Edition)
– CAN/CSA-C22.2 61010-1:2004
– UL 61010-1:2004 R7.05

MicroBeta^2 and MicroBeta^2 LumiJET conform to the following EU directives:

CE marking:

– 2004/108/EC Electromagnetic compatibility

– 73/23/EEC (as amended by 2006/95/EC) Low Voltage

– 98/79/EC In Vitro diagnostics Medical Devices (IVDMD)

PerkinElmer, Inc.
940 Winter Street
Waltham, MA 02451 USA
Phone: (800) 762-4000 or
(+1) 203-925-4602
www.perkinelmer.com

PerkinElmer®
For the Better

For a complete listing of our global offices, visit www.perkinelmer.com/ContactUs

008380_02 Printed in USA