



SpectraMax L Microplate Reader

A flexible, sensitive luminometer for 96- and 384-well microplates

Key Features

- Unsurpassed sensitivity
- Low background and cross-talk
- Multi-channel configurations for a 6-fold improvement in throughput
- Autorinse injectors for robust performance
- 9 orders of dynamic range
- IQ/OQ, software, and FDA CFR 21 Part 11 compliance tools
- Industry-leading SoftMax Pro Software

The SpectraMax® L Microplate Luminometer from Molecular Devices® offers the sensitivity, reliability, flexibility, upgradability, automation options, and validation tools required by today's leading laboratories. The reader is ideal for measuring flash and glow assays, including dual luciferase reporter gene, G protein-coupled receptor (GPCR) via aequorin, bioluminescence resonance energy transfer (BRET), and acridinium ester flash assays, in both 96- and 384-well plates. The SpectraMax L Reader is upgradeable to multi-channel configurations for a 6-fold increase in throughput for medium throughput and secondary screening laboratories. Industry-leading SoftMax® Pro Microplate Data Acquisition and Analysis Software eliminates the need to export data to spreadsheet programs, and manages instrument control and results generation in a GxP environment. SoftMax Pro GxP Software and its software validation package provide comprehensive documentation and extensive data sets in CD-ROM format to meet FDA 21 CFR Part 11 and GxP compliance requirements.

Reduced noise

Ultra-fast photon counting technology amplifies the PMT signal with a fast pulse amplifier. This reduced noise capability enables a higher signal-to-noise ratio and the lowest crosstalk in laboratory assays.

Nine orders of dynamic range

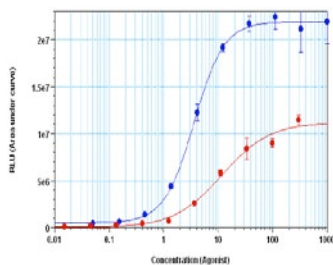
The simultaneous analog and photon counting capability provides a dynamic range of more than nine orders of magnitude, eliminating the need to dilute bright samples while maintaining excellent sensitivity for dim samples.

Up to 6-times faster

The SpectraMax L Reader is available in 1-, 2-, and 6-channel (Photomultiplier Tube) configurations. The 6-channel configuration is available with 0 or 12 injectors for a 6-fold increase in throughput for flash and glow assays including GPCR via aequorin (Figure 1) and dual luciferase reporter gene screening.

The 2-channel configuration is available with 0, 2, or 4 injectors. The 4 injector configuration enables flash and glow BRET assays and a 2-fold improvement in speed for traditional flash and

Figure 1. Multi-channel GPCR agonist screening



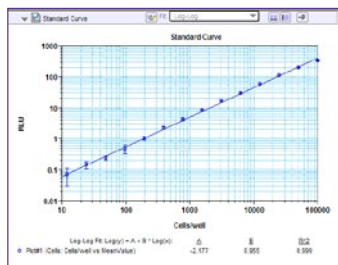
AqueoZen H1 cells expressing histamine H₁ receptor. EC₅₀ curves are shown for histamine (blue) and HTMT (red). Read on a 6-channel SpectraMax L Reader.

Figure 2. Multi-channel precision

	PMT A	PMT B	PMT C	PMT D	PMT E	PMT F
Well G3	1,628,191	1,627,582	1,625,907	1,571,876	1,545,156	1,503,744
Well G4	547,689	556,538	549,591	537,070	520,716	516,914
Well G5	61,233	62,368	60,769	60,142	57,842	58,030
Well G6	7,918	8,238	7,822	7,885	7,824	7,714

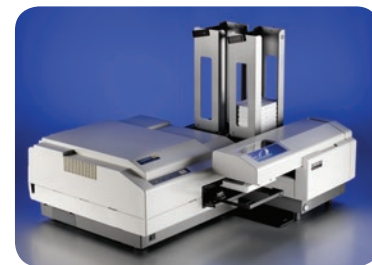
PMT to PMT RLU precision on four wells ranging in brightness from 8,000 to 1,600,000 RLU read on a 6-channel SpectraMax L Reader using the automatic internal LED PMT calibration method.

Figure 3. User-friendly software



SoftMax Pro Software has user-friendly graphing functions and spreadsheet capabilities.

Figure 4. Integrated stacker option



The SpectraMax L Reader is easily integrated with the optional StakMax Microplate Stacker from Molecular Devices for automated multi-plate assays.

glow assays. The 2-injector configuration enables flash and glow BRET assays, a 2-fold increase in speed for traditional glow assays, and normal speed for traditional flash assays. The 0-injector configuration enables BRET assays and a 2-fold increase in speed for traditional glow assays.

Automatic and manual PMT calibration

The SpectraMax L Reader offers two methods to correct inherent PMT spectral response variability in multi-channel configurations. The automatic PMT calibration method is based on readings of 4 internal LEDs at 395, 470, 527, and 570 nm. Figure 2 shows the PMT to PMT precision for wells of various intensities read by 6 individual PMTs calibrated with the LED-based method. The manual PMT calibration method is based on readings of 4 wells from the assay itself.

Precise and reliable autowashing injectors

The SpectraMax L Reader's next-generation injectors enable better results and more robust performance over current offerings. For example, to prevent precipitation from clogging injector lines, the lines must be rinsed of reagents when the instrument is idle overnight. The reader features a unique Auto Wash function that can be programmed to rinse the injectors following each use of the instrument, and the direction of flow can be reversed so

reagents can be recovered before the rinsing is started. Furthermore, the automatic injection counter sends an alert when 75 million µL have been injected to indicate when minor injector maintenance is due.

Easy-to-use, industry-leading software

Instrument control, data collection, and data analysis are managed through SoftMax Pro Software. Data can be analyzed using predefined or custom formulas. Results are displayed in each well of the microplate. Graphs are easily plotted and labeled using the graphing function (Figure 3).

Integrated stacker and robot compatibility

Molecular Devices offers the StakMax Microplate Stacker for use with the SpectraMax L Reader (Figure 4). Landscape and portrait positions provide flexibility for optimum use of deck space when integrating with third-party liquid handling robots.

Ordering information

Contact your Molecular Devices sales representative for configuration options.

Technical specifications

Performance specifications	
Cross-talk	< 3 x 10 ⁻⁵ (96-well)
Read modes	Endpoint, Kinetic, Fast Kinetic, Dual-Read
Injector	2 variable volume injectors
Injector accuracy	±1 µL ±2%
Injector precision	±1 µL ±2%
Sensitivity	< 20 attomol ATP per well
Spectral range	380–630 nm
Dynamic range	> 9 decades
Heater	Temperature range ambient
Auto Mix	Proprietary four-mode mixing
General specifications	
Dimensions (in.)	16.5 (W) x 17 (D) x 8.75 (H)
Dimensions (cm)	42 (W) x 43 (D) x 22 (H)
Weight	36 lbs. (16.4 kg)
Power source	230 VAC 50 Hz, 115 VAC 60 Hz
Detector	Low-noise photomultiplier tube with simultaneous photon counting and analog mode
Plate formats	All 96- and 384-well microplates
Plate orientation	Landscape and portrait
Software	SoftMax Pro Software
Robot integration	Through SoftMax Pro Software

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