



# SpectraMax M2/M2e Microplate Readers

Multi-detection microplate readers with dual-mode cuvette ports

## KEY FEATURES

- Multi-detection capability
- Top- and bottom-read (M2e only)
- Dual-mode cuvette port
- Dual monochromators
- PathCheck and well volume sensor
- Instrument and software validation
- Robot compatible

## Introduction

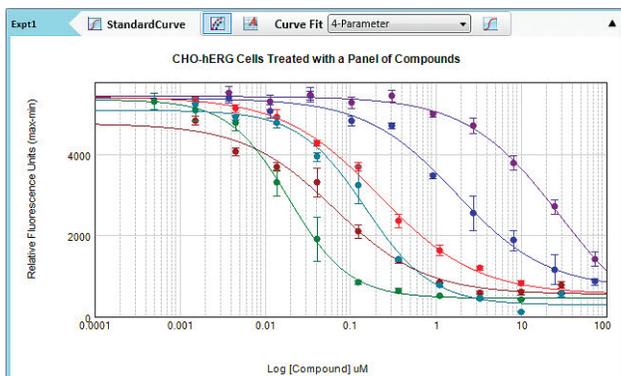
The SpectraMax® M2 and M2e Systems from Molecular Devices are multi-detection microplate readers with dual-monochromators, dual-mode cuvette ports, and top- and bottom-reading capability (top-reading only on the M2). Detection modalities include absorbance (UV-Vis Abs) and fluorescence intensity (FI). Endpoint, kinetic, spectrum and area-well scanning read types and the PathCheck® Sensor allow homogeneous and heterogeneous microplate assays to be performed in one flexible system. SpectraMax M2 readers provide for easy conversion and optimization of very-low-throughput to medium-high-throughput assays, faster, more precise results and reagent savings. In addition, combined absorbance and fluorescence intensity assays can be run by issuing a single read command.

## Dual monochromators

With SpectraMax M2/M2e readers, there is no need for expensive filters. The system uses two scanning monochromators to determine optimal excitation and emission settings. Changing methods or fluorophores requires only a few mouse selections to optimize the system.

## Patented PathCheck sensor

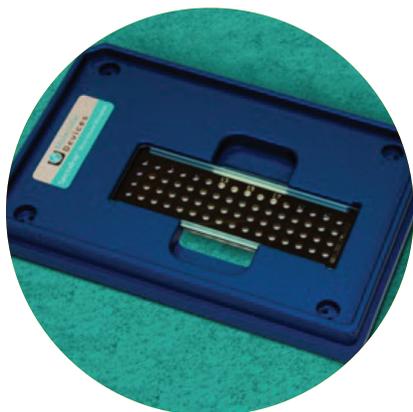
The PathCheck sensor from Molecular Devices is the only patented\* technology available that measures the depth (optical pathlength) of samples in a microplate. With SoftMax® Pro Software, it can automatically normalize the well absorbance to a cuvette equivalent pathlength of 1 cm—similar to using 96 or 384 cuvettes simultaneously. The PathCheck sensor allows standard curves to be eliminated, and for compounds with a known extinction coefficient, concentration can be calculated directly from absorbance.



**Customize data collection and analysis.** With SoftMax Pro Software, choose endpoint, kinetic, spectral scan or well scan; view kinetic and spectrum runs in real time; collect and store data from multiple microplates, cuvettes, graphs, analysis tables and notes sections in the same data file.



**Validation plates for optical performance.** SpectraTest Validation Test Plates for absorbance and fluorescence intensity provide a complete traceable solution for validating optical performance of the SpectraMax M2 reader, automatically.



**A solution for low volume applications.** The SpectraDrop Micro-Volume microplate offers the ability to use as little as 2  $\mu$ L samples with 24 or 64-well plates.

## Applications

- DNA/RNA/protein quantitation and purity
- PicoGreen/NanoOrange/Bradford
- ELISAs/enzyme kinetics (i.e.,  $K_m$ ,  $K_i$ , etc.)
- Drug dissolution profiles
- Live/Dead Viability/cytotoxicity assays
- Caspase-3 and protease assays
- cAMP assays using CatchPoint® Assay Kits
- Low volume applications

## Comprehensive data analysis

SoftMax Pro Software provides data acquisition, analysis and management capabilities, allowing cross-plate analysis and custom calculations. There is no need to export data to a spreadsheet program.

## Instrument and software validation

The SpectraTest® ABS1 Absorbance and SpectraTest FL1 Fluorescence Validation Test Plates provide validation of the system's optical characteristics. The SoftMax Pro Software validation package and IQ/OQ validation protocols include tools for FDA 21 CFR Part 11 compliance.

## Plate stacker and robot integration

The SpectraMax M2 and M2e readers can be integrated with the StakMax® Microplate Stacker from Molecular Devices in a matter of minutes. For a higher degree of automation, the Automation Vendor Partners Program has streamlined the integration of our microplate reader systems with all leading partner robots.

## Highly customizable low volume applications

Molecular Devices' unique SpectraDrop™ Micro-Volume Microplate offers the highest throughput solution for low volume measurement available on the market today. Innovative and flexible design features enable accelerated sample preparation time and increased laboratory productivity in DNA, RNA and protein research. The SpectraDrop microplate assures uniform and reproducible analysis and integrates seamlessly with the StakMax stacker for greater research capacity.

## Technical specifications

### Absorbance photometric performance

Wavelength selection	Monochromator, tunable in 1 nm increments
Wavelength range	200–1000 nm
Wavelength bandwidth	≤ 4.0 nm
Wavelength accuracy	±2.0 nm
Wavelength repeatability	±0.2 nm
Photometric range	0–4.0 OD
Photometric resolution	0.001 OD
Photometric accuracy (microplate)	< ±0.006 OD ±1.0%, 0–2 OD
Photometric accuracy (cuvette)	< ±0.005 OD ±1.0%, 0–2 OD
Photometric precision	< ±0.003 OD ±1.0%, 0–2 OD
Baseline flatness	< 0.001 OD
Stray light	< 0.05% @ 230 nm

### Fluorescence photometric performance

Dual monochromators	1 nm increment selection
EX Wavelength range	250–850 nm
EM Wavelength range	M2: 360–850 nm M2e: 250–850 nm
Wavelength bandwidth (EX, EM)	9 nm
Top-read optimized sensitivity	5 pM (fluorescein) in 96 wells
Top-read guaranteed* sensitivity	15 pM (fluorescein) in 96 wells
Bottom-read optimized sensitivity (M2e only)	10 pM (fluorescein) in 96 wells
Bottom-read guaranteed* sensitivity (M2e only)	25 pM (fluorescein) in 96 wells

## Technical specifications

### Time-Resolved Fluorescence (secondary mode)

EX Wavelength range	250–850 nm
EM Wavelength range	M2: 360–850 nm M2e: 250–850 nm
Data collection	50–1450 µsec., 200 µsec. increments
Guaranteed sensitivity*	7 pM Eu-chelate

### Luminescence (secondary mode)

Wavelength range (M2)	360–850 nm
Wavelength range (M2e)	250–850 nm
Guaranteed sensitivity*	50 fM alkaline phosphatase

### General photometric performance

Plate formats	6, 12, 24, 48, 96, 384 wells
Light source	Xenon flash lamp (1 joule/flash)
Detector	Photomultiplier tube (PMT)
Read time**	96 wells: Abs 18 sec., FI 15 sec. 384 wells: Abs 49 sec., FI 45 sec.
Shaker time	0 to 999 seconds
Temperature control	Ambient +4°C to 45°C
Temperature uniformity	< 1°C at 37°C set point
Temperature accuracy	±1°C at 37°C set point

### General specifications

Dimensions (in.)	8.6 (H) x 22.8 (W) x 15 (D)
Dimensions (cm)	22 (H) x 58 (W) x 38 (D)
Weight	35 lbs. (15.9 kg)
Power consumption	< 125 watts
Power source	100–240 Vac, 3 A, 50/60 Hz
Robot compatible	Yes

<sup>†</sup>The PathCheck sensor is covered under U.S. Patents 5,959,738, 6,188,476, 6,320,662, 6,339,472, 6,404,501, 6,496,260, and 6,995,844. The SpectraMax M2 and M2e readers are also covered under U.S. Patents 6,097,025 (M2e only), 6,232,608, 6,236,456, 6,313,471, 6,316,774, 6,693,709, and 6,825,921.

\* For properly functioning, operated, and maintained equipment.

\*\* Measurement type may extend read time.

## Ordering information

Contact your Molecular Devices sales representative for configuration options.

### Contact Us

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