



SpectraMax Gemini EM Microplate Reader

A dual-monochromator spectrofluorometer system

BENEFITS

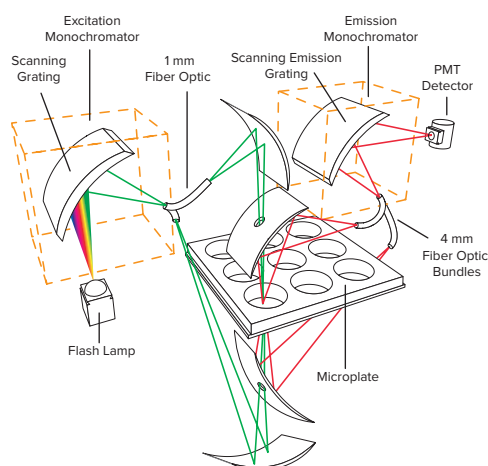
- **No filters needed**
- **Top- and bottom-read capability**
- **Higher sensitivity**
- **Validation tools**
- **Robotics compatible**

Introduction

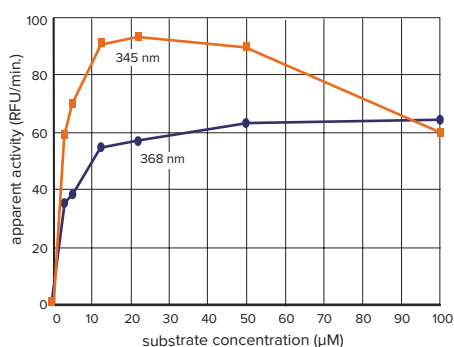
The SpectraMax® Gemini EM Microplate Spectrofluorometer from Molecular Devices provides a flexible environment to determine the optimal excitation and emission settings for most fluorescent intensity assays. The Gemini EM Reader with dual monochromators allows researchers to try new and novel dyes without having to purchase expensive filter sets. SoftMax® Pro Microplate Data Acquisition and Analysis Software, which provides convenient data analysis without exporting to another spreadsheet software, is included with every Gemini EM Reader. Software validation, IQ/OQ/PQ and FDA 21 CFR Part 11 compliance tools are also available.

Dual monochromators

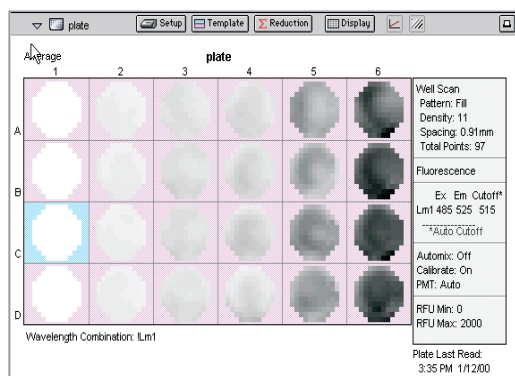
With the Gemini EM Reader, users never have to worry about not having the right set of filters. The reader uses two scanning monochromators to determine the optimal excitation and emission settings for the spectral characteristics of fluorophores when used in an assay. Alternatively, the literature values can easily be input for the monochromator settings. When methods or fluorophores change, it takes only a few software commands to adjust the reader. New fluorophores can be tried without additional filter sets. If the best wavelengths for a fluorophore of interest are unknown, the Gemini EM Reader can scan both excitation and emission spectra and determine the optimal settings.



Gemini EM Reader optics. The optics of the Gemini EM Reader are engineered for superior performance and reliability.



Caspase-3 activity at different excitation wavelengths. Caspase-3 assay using the fluorogenic substrate, Z-DEVD-AMC. When the excitation wavelength is 345 nm (λ_{max}), there is apparent substrate inhibition because the substrate absorbs at that wavelength and quenches the excitation light (upper curve). By selecting a higher wavelength, the interference is avoided and the activity-vs.-substrate plot conforms to the classic Michaelis-Menten model (lower curve).



Gemini EM Reader scans. Well scans from the Gemini EM Reader illustrating serial dilution of CHO cells using the Live Cell assay from Molecular Probes Live/Dead (Calcein AM/Ethidium Homodimer-1) assay kit. A Costar® 24-well tissue culture plate with col1 = blanks and doubling cell concentration left to right starting at Col. 2 with 1000 cells.

Top- and bottom-read optics

The top- and bottom-reading optical design of the Gemini EM Reader allows for measurements of both solution- and cell-based assays. With the click of a button, the Gemini EM Reader can be switched between top- and bottom-reading modes.

Well scanning

With well scanning, multiple points within each well can be read, providing a high level of sensitivity for cell-based assays. Endpoint, kinetic and spectrum scanning assays can also be run. The Gemini EM Reader is also optimized for cell migration assays in microplate format.

Plate stacker and robot integration

The Gemini EM Reader can be integrated with Molecular Devices' StakMax® Microplate Stacker in a matter of minutes and begin reading microplates with seven mouse clicks. For a higher degree of automation, the Automation Vendor Partners Program has streamlined the integration of our microplate readers with all leading partner robots. The "out-of-the-box" automation solution saves up-front integration time and resources.

Leading data analysis software

SoftMax Pro Microplate Data Acquisition and Analysis Software provides flexibility in experimental design, set-up, analysis and reporting, providing the opportunity to customize assays. Choose from nine different curve-fitting routines and use default data reduction, or set up custom formulas for analysis. Data can be analyzed and combined from different plates.

Applications

- Cell migration assays
- Live/Dead viability/ cytotoxicity assays
- Green fluorescent protein
- NanoOrange protein quantitation
- PicoGreen DNA detection
- Molecular beacons
- Caspase-3
- Fluorometric protease assays
- cAMP detection

Specifications

Fluorescence photometric performance specifications

Dual monochromators	1 nm increment selection
EX wavelength range	250–850 nm
EM wavelength range	250–850 nm
Wavelength bandwidth (EX, EM)	9 nm
Top-read detection limit (signal 3X SD of baseline)	3.0 fmol/well FITC 200 µL in 96 wells
Bottom-read detection limit (signal 3X SD of baseline)	8.0 fmol/well FITC 200 µL in 96 wells

Time-resolved fluorescence specifications (secondary mode)

Wavelength range	250–850 nm
Data collection	50–1450 µsec., 200 µsec. increments
Sensitivity	0.5 fmol/well Eu-chelate (obtained with DELFIA reagent from Perkin Elmer using a 384-well plate)

Luminescence specifications (secondary mode)

Detection limit	10 amol/well alkaline phosphatase 200 µL/well (obtained with Emerald II reagent from Applied Biosystems)
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General photometric performance specifications

Plate formats	6, 12, 24, 48, 96, 384 wells
Light source	Xenon flash lamp (1 joule/flash)
Detector	Photomultiplier (R-3896)
Read time*	96 wells < 15 sec., 384 wells < 45 sec.
Shaker time	0 to 999 seconds
Temperature range	Ambient +4°C to 45°C

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

* Measurement type may extend read time.

Ordering information	VWR cat. no.
Gemini EM microplate reader, multi-mode, with current version of SoftMax Pro	MLDVEM

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