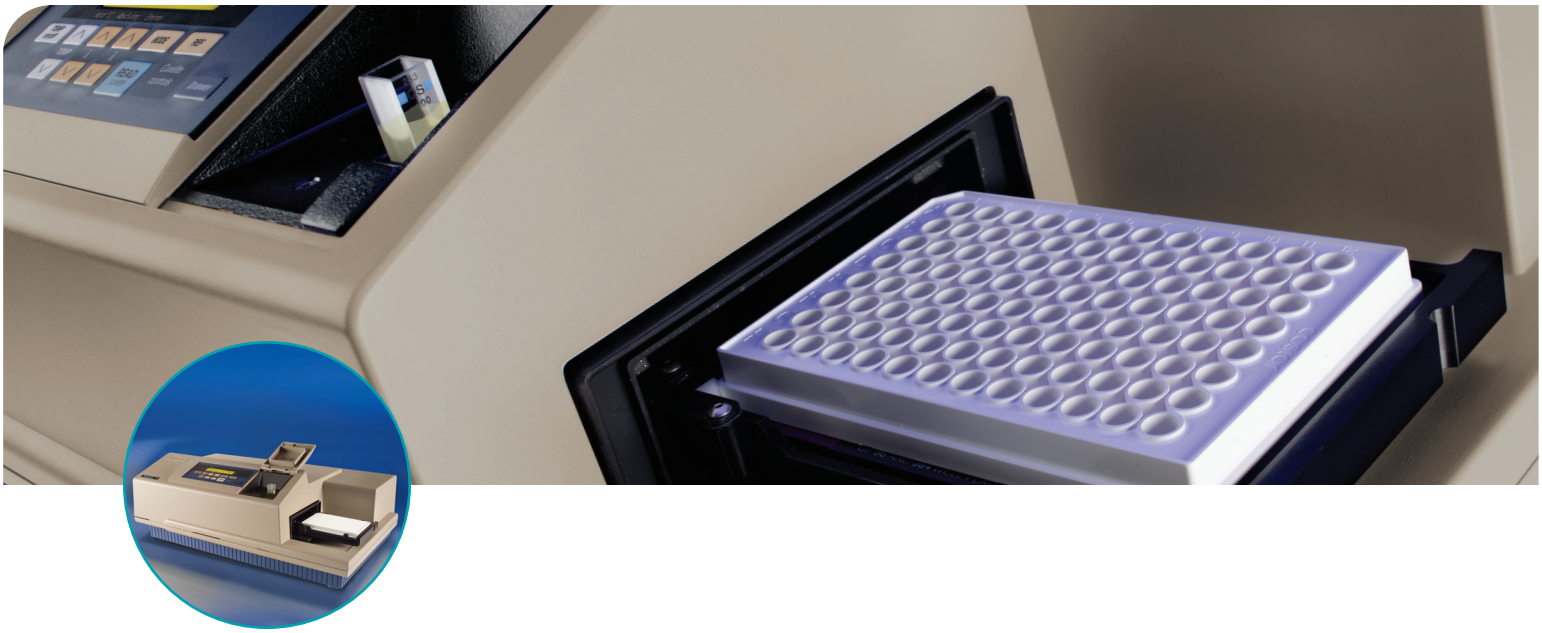
Molecular Devices

SpectraMax Multi-Mode Microplate Readers

YOUR APPLICATIONS, YOUR MODES, YOUR CHOICE



- UPGRADEABLE PLATFORM FOR CHANGING LAB NEEDS
- THREE-MODE CUVETTE PORT FOR ASSAY DEVELOPMENT
- DUAL MONOCHROMATOR TUNABILITY
- AUTOMATED ABSORBANCE PATHLENGTH CORRECTION
- ENDPOINT, KINETIC, SPECTRAL AND WELL-SCANNING READ TYPES
- COMPREHENSIVE DATA ANALYSIS WITH SOFTMAX PRO SOFTWARE
- VALIDATION & COMPLIANCE
- ROBOTICS COMPATIBILITY

The SpectraMax® M3, M4, M5 and M5^e Multi-Mode Microplate Readers are a modular, upgradeable dual-monochromator microplate reader platform offering a wide range of high performance multi-mode capabilities ideal for life science research and drug discovery screening. Choose from a three- (M3), four- (M4), or five- (M5/M5^e) mode reader customized to your specific applications or budgetary needs, while optional capabilities allow you to upgrade with other detection modes at a later time. All configurations offer a triple-mode cuvette port, accurate temperature control, microplate shaking and comprehensive data management using our SoftMax® Pro Software. Detection modes include:

- UV-Visible Absorbance (Abs)
- Fluorescence Intensity (FI)
- Luminescence (Lum)
- Time-Resolved Fluorescence (TRF)
- Fluorescence Polarization (FP)

The SpectraMax M5^e Reader offers the additional benefit of being certified for Cisbio Bioassays' HTRF® Assays.

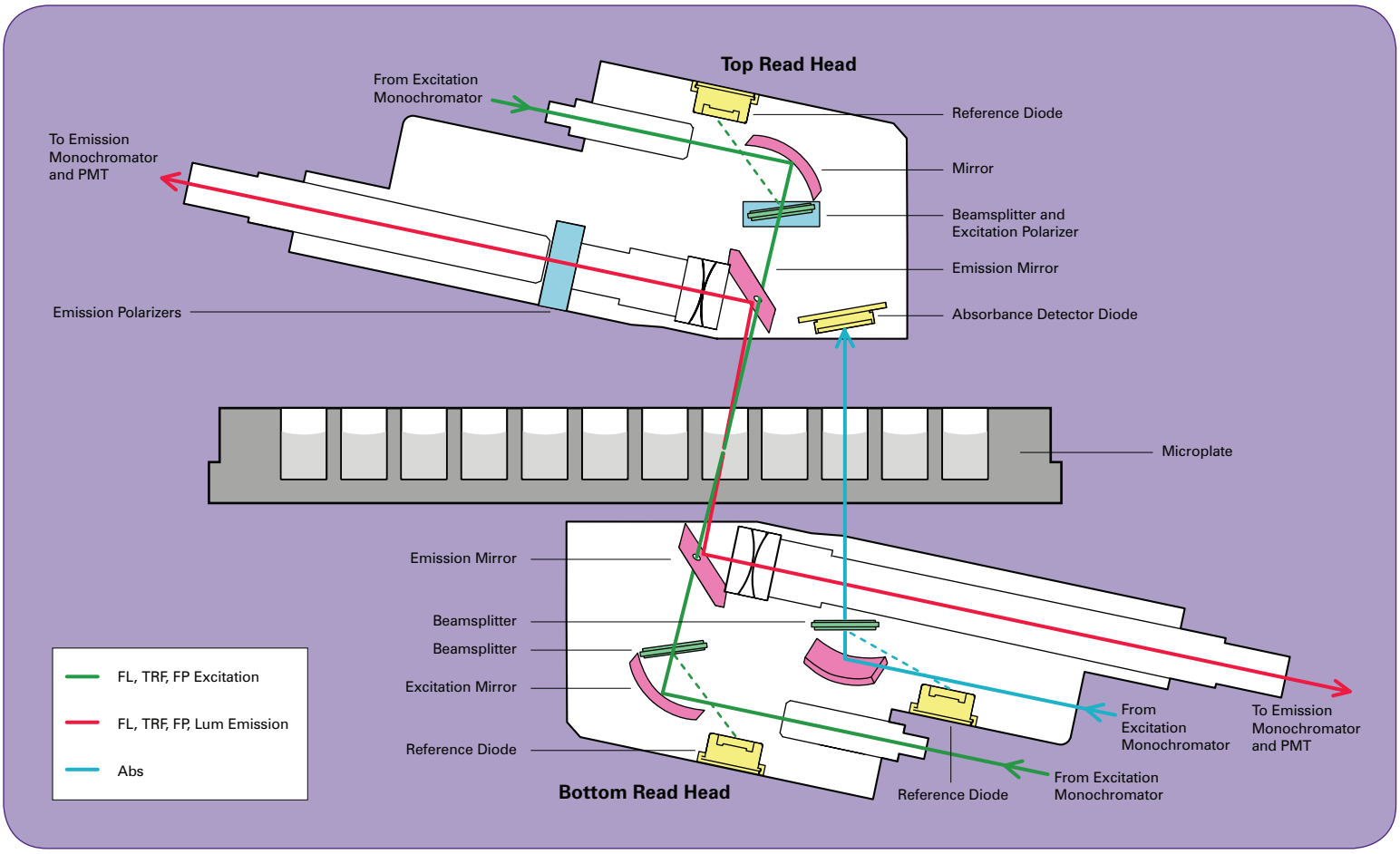
DUAL MONOCHROMATORS FOR ASSAY FLEXIBILITY

With SpectraMax Multi-Mode Readers, there is no need to utilize expensive filters to optimize detection levels and background. The optical systems use two scanning monochromators so the user can determine optimal excitation and emission settings, resulting in assay performance similar to that of dedicated single-mode readers.

PATENTED PATHLENGTH CORRECTION FOR BETTER ABSORBANCE ACCURACY

Only Molecular Devices microplate plate readers offer the capability to measure the depth (optical pathlength) of samples with no termperature dependency using the patented PathCheck® Sensor technology. With SoftMax Pro Software, the PathCheck Sensor automatically normalizes the well absorbance. This eliminates the need for standard curves, and, for compounds with known absorptive properties, enables users to calculate concentrations directly from absorbance.

Superior Optics for Optimal Assay Performance



UNIQUE OPTICAL CHARACTERISTICS

1. The reference diodes enable elimination of measurement noise due to slight fluctuations in excitation light intensity.

2. The angled emission beam improves signal-to-noise,especially in narrow Stokes shift fluorophores, by reducing stray light.

3. Elliptical mirrors are used instead of lenses for maximum transmission with minimal wavelength distortion.

4. Top-quality UV-grade fibers give the highest light transmission down to even the lowest wavelengths.

ASSAY COLLABORATION FOR EASE OF SETUP

Molecular Devices has collaborated with various assay partners to optimize and validate homogeneous and heterogeneous biochemical- or cell-based assay performance on the SpectraMax platform. To support these assays, we provide application notes as well as ready-to-run protocols in our SoftMax Pro Software. Some of our featured partner assays include HTRF assays from Cisbio Bioassays and LanthaScreen® TR-FRET assays from Invitrogen.

IMAP® PLATFORM VALIDATED

LanthaScreen® Certified
invitrogen

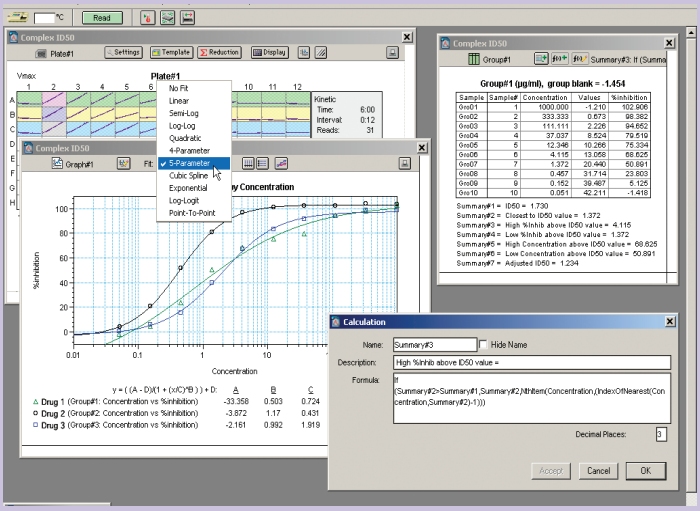
htrf
This reader is HTRF® compatible.

Which SpectraMax Microplate Reader Do You Need?

	SpectraMax M3 Reader	SpectraMax M4 Reader	SpectraMax M5 Reader	SpectraMax M5^{e} Reader
Detection Modes				
Absorbance	✓	✓	✓	✓
Fluorescence Intensity	✓	✓	✓	✓
Luminescence	✓	✓	✓	✓
Time-Resolved Fluorescence		✓	✓	✓
Fluorescence Polarization			✓	✓
HTRF				✓
Upgrade Options	TRF,HTRF,FP	HTRF, FP	HTRF	N/A
Plate Formats				
6-, 12-, 24-, 48-, 96-, 384-Well Microplates	✓	✓	✓	✓
Certification & Validation				
IMAP Validation		✓ (TR-FRET only)	✓ (TR-FRET/FP)	✓ (TR-FRET/FP)
HTRF Certification				✓
LanthaScreen Certification			✓	✓
Key Applications				
ELISAs	✓	✓	✓	✓
DNA/RNA Quantitation	✓	✓	✓	✓
Protein Assays	✓	✓	✓	✓
Enzyme Kinetics	✓	✓	✓	✓
Protease Assays	✓	✓	✓	✓
Fluorescent Proteins and FRET	✓	✓	✓	✓
Cell Viability and Cytotoxicity Assays	✓	✓	✓	✓
Reporter Gene Assays	✓	✓	✓	✓
Cell Migration Assays	✓	✓	✓	✓
QBT Fatty Acid Uptake Assay	✓	✓	✓	✓
Neurotransmitter Transporter Uptake Assay	✓	✓	✓	✓
ADME-Tox	✓	✓	✓	✓
Membrane Permeability	✓	✓	✓	✓

Software for Data Aquisition and Analysis

Powerful, Easy-to-Use Software



SoftMax Pro Software features easy-to-set-up protocols for data acquisition, customizable spreadsheet functionality for analysis, and powerful graphing tools for data presentation.

COMPREHENSIVE DATA ANALYSIS AND GxP SOLUTIONS

SoftMax Pro Software provides data acquisition, analysis and management capabilities, allowing cross-plate analysis and custom calculations. For users operating in a FDA 21 CFR Part 11 compliant environment, SoftMax Pro GxP Software is available, allowing user permissions, audit trails, e-signature and reporting tools.

Tools for Validation and Compliance

Validation Test Plates for Abs, Fl, Lum Optical Performance

SpectraTest ABS1 Absorbance Plates, FL1 Fluorescence Plates, and LM1 Luminescence Plates are used to validate optical performance of SpectraMax M3, M4, and M5/M5^e Microplate Readers.

VALIDATION AND COMPLIANCE OF OPTICAL CHARACTERISTICS

SpectraMax Readers have the most complete level of product validation and compliance. Molecular Devices provides the complete solution covering the instrument and software:

- → SpectraTest® ABS1, FL1, and LM1 Validation Plates for hardware validation of absorbance, fluorescence, and luminescence modes
- → IQ/OQ/PQ for all microplate readers
- → SoftMax Pro Software Validation Package
- → Software tools for FDA 21 CFR Part 11 compliance

Automation Solutions

StakMax Microplate Handling System

Integrate any SpectraMax Multi-Mode Reader with the StakMax Microplate Handling System from Molecular Devices. The system provides automation for up to 50 microplates for easy walkaway automation. System setup and calibration are controlled from within SoftMax Pro Software.

Compatible Automation Solutions for SpectraMax Readers

SoftMax Pro 5 Software has been integrated by many leading robotics and LIMS providers, enabling both data analysis and instrument control in automated environments.

ROBOTICS COMPATIBILITY FOR INCREASED THROUGHPUT

SpectraMax Multi-Mode Microplate Readers can be easily integrated with our optional StakMax® Microplate Handling System for walk-away processing. Operated from within SoftMax Pro Software, the StakMax System can hold up to 50 plates and facilitates barcode reading.

For more advanced automation needs Molecular Devices interacts with all of the major lab automation providers, and is one of their leading choices.

ORDERING INFORMATION

Acquiring a SpectraMax Multi-Mode Microplate Reader is extremely easy:

1. Decide what modes you need and choose the specific configuration option that suits you best. All systems include SoftMax Pro Software for Windows® and Macintosh® Operating Systems.
2. Choose the additional options you want:
   - → Software validation tools
   - → SpectraTest ABS1, FL1, LM1 Validation Plates
   - → SoftMax Pro GxP Software
   - → StakMax Microplate Handing System
3. Contact your Molecular Devices sales representative to discuss the details.

Technical Specifications

General Specifications

Dimensions (in.):	8.6 (H) x 22.8 (W) x 15.3 (D)
Dimensions (cm):	22 (H) x 58 (W) x 39 (D)
Weight:	36 lbs. (16.4 kg)
Power consumption:	< 420 watts
Power source:	100–240 VAC, 3.5 A, 50/60 Hz
Robotic-compatible:	Yes

General Photometric Performance

Plate formats:	6, 12, 24, 48, 96, 384 wells
Light source:	Xenon Flash Lamp (1 joule/flash)
Detectors:	2 photomultiplier tubes (PMT)
Shaker time:	0 to 999 seconds
Temp. control:	2°C above ambient to 60°C
Temp. uniformity:	< 1°C at 37°C set point
Temp. accuracy:	±1°C at 37°C set point
Endpoint reading :	All modes
Kinetic reading :	All modes
Spectral scanning:	All modes
Well scanning:	Abs, FI, TRF, Lum

Typical Read Times (minutes:seconds)*

	96 wells	384 wells
Absorbance	0:18	0:49
Fluorescence Intensity	0:17	0:48
Fluorescence Polarization	0:42	2:03
Time-Resolved Fluorescence	0:17	0:48
Luminescence	2:00	7:00

*With 3 flashes/well in absorbance and fluorescence modes, and 1 sec./well integration in luminescence.

Absorbance Photometric Performance

Reading capabilities:	Cuvette or microplate
Wavelength range:	200–1000 nm
Wavelength selection:	Monochromator, tunable in 1.0 nm increments
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
Stray light:	< 0.05% @ 230 nm

Fluorescence Intensity Performance

Reading capabilities:	Cuvette or top or bottom of a microplate
Wavelength range:	250–850 nm
Wavelength selection:	Monochromators, tunable in 1.0 nm increments
Bandwidth (EX, EM):	9 nm, 15 nm

Sensitivity: < 5 pM fluorescein in 96 wells or cuvette, < 20 pM in 384 wells

Luminescence Performance

Reading capabilities:	Cuvette or top or bottom of a microplate
Wavelength selection:	Choice of simultaneous detection of all wavelengths or selection via monochromator, tunable in 1.0 nm increments
Wavelength range:	250–850 nm

Sensitivity: < 2 fg/well lower detection limit for firefly luciferase in 96- and 384-well top read

Dynamic range:	> 6 decades
Cross-talk:	< 0.3% in white 96- and 384-well microplates

Time-Resolved Fluorescence Performance (M4, M5, M5^e only)

Reading capabilities:	Top or bottom of a microplate
Wavelength range:	250–850 nm
Wavelength selection:	Monochromators, tunable in 1.0 nm increments
Bandwidth (EX, EM):	9 nm, 15 nm

Precision data collection: 1–100 flashes, delay of 0–600 µsec. before read, integration time selectable between 50–1500 µsec.

Sensitivity: 100 fM europium in 96 or 384 wells with top-read

SpectraMax M5^e reader only: Certified to Cisbio Bioassays' HTRF assays performance specifications

Fluorescence Polarization Performance (M5/M5^e only)

Wavelength range:	400–750 nm
Wavelength selection:	Monochromators, tunable in 1.0 nm increments
Bandwidth (EX, EM):	9 nm, 15 nm

Precision: < 5 mP standard deviation at 1 nM fluorescein in 96 and 384 wells

Patents

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. SpectraMax M3, M4, M5, and M5^e readers are also covered under U.S. Patents 6,097,025 6,232,608, 6,236,456, 6,313,471 and 6,316,774 6,693,709, and 6,825,921.

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