



SpectraMax i3x

Multi-Mode Microplate Reader

Explore a wealth of applications in one future-ready system



SpectraMax i3x

The SpectraMax® i3x Multi-Mode Microplate Reader evolves with your future needs and offers an unlimited breadth of application possibilities.

Future ready

The SpectraMax i3x reader measures spectral-based absorbance, fluorescence, and luminescence with the added functionality of modular upgrades for western blot, imaging, and fast kinetics with injectors. It allows you to explore cellular pathways and protein activation and expression in one system. The SpectraMax i3x reader provides the flexibility to add novel detection capabilities without the need for service engineers or costly downtime—it grows with you as your research areas expand.

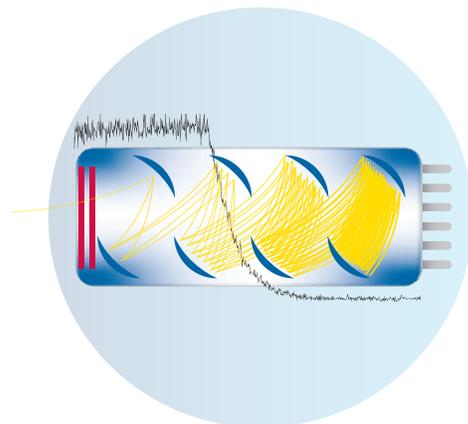
Key benefits

- User-upgradeable application modules including cellular imaging
- Sensitivity across spectrum with Spectral Fusion™ Illumination
- Expanded dynamic range with cooled PMT
- Control and analytics provided by SoftMax® Pro Software

Engineered to perform

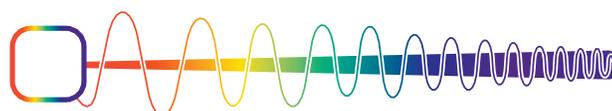
Expanded dynamic range

The SpectraMax i3x reader is engineered to perform with Spectral Fusion Illumination for increased sensitivity across the entire wavelength range, and a cooled photomultiplier tube (PMT) for improved detection in extremely low light. Generate more data points without the need to dilute.



Quantitative low-light measurement

Cooled PMT reduces background noise allowing for more sensitivity and a wider dynamic range.



Increased fluorescence performance

Spectral Fusion Illumination is a powerful combination of xenon flash lamp and LEDs that provides unmatched signal strength and superior sensitivity across the full spectrum.



New applications in seconds

Adding modes and functionality is just seconds away. Simply insert a cartridge to expand your application capabilities.

User-upgradeable applications

User-exchangeable detection modules expand the system's detection capabilities to include time-resolved fluorescence, AlphaScreen, fluorescence polarization, HTRF, fast kinetics with injectors, and western blot detection.

One complete solution

With available options such as the SpectraMax® MiniMax™ 300 Imaging Cytometer, ScanLater™ Western Blot Detection Cartridge, reagents optimized for high performance, and the industry-leading data acquisition and analysis tool SoftMax Pro Software, the SpectraMax i3x reader is the total solution for all your research needs.



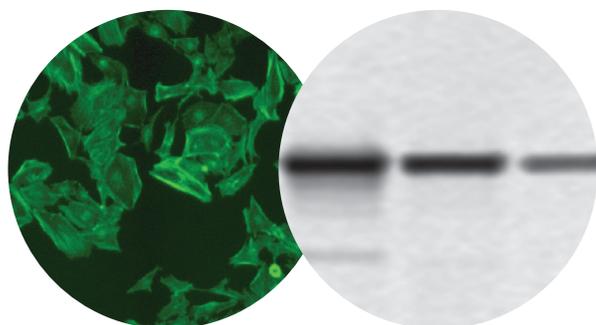
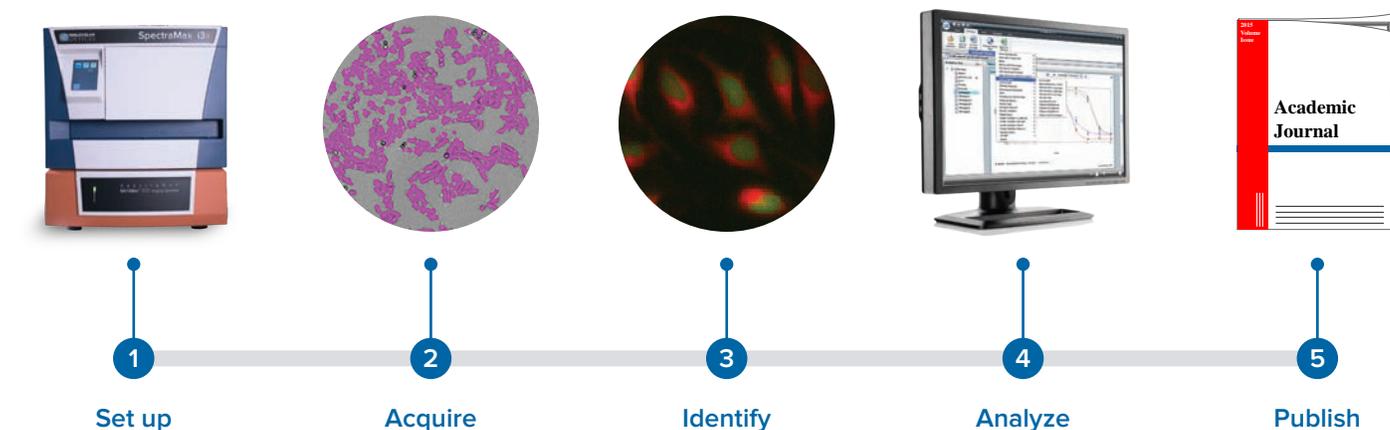
Your total solution

Matched reagents, an imaging cytometer option, user-upgradeable detection modules, and industry-leading SoftMax Pro Software provide you with the ability to explore every pathway.

A wealth of applications in one future-ready system

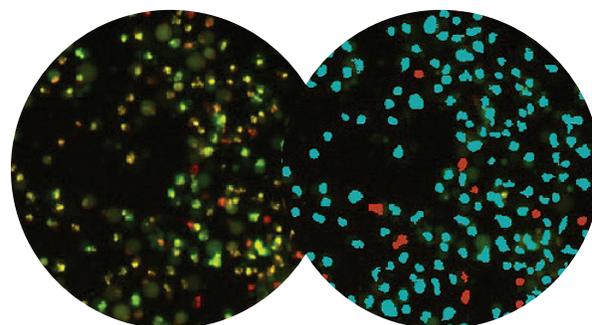
Investigate every aspect of a cellular pathway

From imaging of cell confluence and viability under different treatment conditions to quantitation of nucleic acids and protein to western blot analysis, a wealth of new knowledge is captured on a single instrument. SoftMax Pro Software powers data acquisition and analysis—from raw data to publishable results.



Live cell imaging

The MiniMax cytometer allows for live cell images and analysis (above left). The ScanLater Western Blot Detection Cartridge enables protein detection (above right).



Visualize cells with the cytometer

Imaging with the MiniMax cytometer mirrors the plate reading workflow on the SpectraMax i3x reader. The plate is set up for reading and images are acquired according to specified parameters. Cells in each image are identified by SoftMax Pro Software and cell-by-cell statistics are collected. Data are then analyzed and visualized in different graphical representations.

Optional enhancements

- SpectraMax MiniMax 300 Imaging Cytometer
- ScanLater Western Blot Detection System
- SpectraDrop™ Micro-Volume Microplate
- SpectraTest® Validation Packages (ABS1, FL1, LM1)
- SpectraMax i3x Injector Cartridge
- SoftMax Pro GxP Software
- IQ/OQ protocols
- Additional detection modules

Technical specifications (base system)

General specifications

Dimensions (in.)	12.63 (H) x 15.38 (W) x 23.38 (D)
Dimensions (cm)	42.23 (H) x 39.05 (W) x 59.37 (D)
Weight	68.3 lbs. (31.0 kg)
Power consumption	< 200 watts
Power source	100–240 Vac, 2 A, 50/60 Hz
Robotic-compatible	Yes

General photometric performance

Plate formats	6 to 1536 wells [§]
Light source	Spectral Fusion Illumination (xenon flash lamp + high-powered LEDs or laser diode in detection cartridges)
Reading capabilities	Microplates, cuvettes (via adapter)
Detectors	PMT and/or photodiode
Shaking	Linear and orbital
Dual Auto Injectors	Yes
Temp. control	4°C above ambient to 45°C
Temp. uniformity	± 0.75°C
Temp. accuracy	±1°C at 37°C set point
Environmental control	Gas quick connect
Spectral scanning	Abs, FI, Lum
Endpoint reading	All modes
Kinetic reading	All modes
Well scanning	Over 20 by 20 in all modes
Wavelength selection	1.0 nm increments

Standard read times (minutes:seconds)*

	96 wells	384 wells
Absorbance	0:30	1:40
Fluorescence intensity	0:25	1:25
Luminescence	0:30	1:15

Absorbance photometric performance

Wavelength range	230–1000 nm
Wavelength bandwidth	4.0 nm
Wavelength accuracy	± 2.0 nm
Wavelength repeatability	± 1.0 nm
Photometric range	0–4.0 OD
Photometric resolution	0.001 OD
Photometric accuracy	< ±0.010 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

Wavelength range	250–850 nm
Wavelength selection	1.0 nm increments
Bandwidth (EX/EM)	Adjustable EX 9 or 15 nm EM 15 or 25 nm
Dynamic range	> 6 decades
Top sensitivity (fluorescein)	Optimized
96 wells	0.5 pM
384 wells	1 pM
Bottom sensitivity (fluorescein)	Optimized
96 wells	2.5 pM
384 wells	2.5 pM

Luminescence performance

Wavelength range	300–850 nm
Wavelength selection	Choice of simultaneous detection of all wavelengths or selection in 1.0 nm increments
Dynamic range	> 6 decades
Cross-talk	< 0.4% in white 96- and 384-well microplates
Sensitivity (ATP-Glow)	Optimized
96 wells	3 pM
384 wells	6 pM

* With 6 flashes in absorbance and 3 flashes in fluorescence mode and 0.1 sec./well integration in 96-well luminescence mode and 0.04 sec./well integration in 384-well luminescence mode

§ 1536 detection available via detection cartridges

Additional cartridges

The SpectraMax i3x reader utilizes a patent-pending design that allows for real-time system configuration in less than two minutes. This revolution in modularity makes no-compromise detection the norm. The broad array of detection cartridges enables you to perform an ever-evolving array of applications. Your detection needs may change but your reader will remain the same—simply add a new detection cartridge.

Cartridge	Description	Part number	Specifications	Optimized sensitivity	Guaranteed sensitivity	Slots used
 Dual Auto Injector	<ul style="list-style-type: none"> SpectraMax i3x Injector Cartridge with SmartInject™ Technology Expand your research capabilities to include flash-based applications, including dual luciferase and ATP assays. 	0200-7029	Wavelength range (LUM): Visible to 650 nm Dead volume: < 10 µL with Reverse Prime function	20 amol ATP (“flash” luminescence using Promega Enliten Assay System)	50 amol ATP (250 fM @ 0.2mL/well, “Flash” luminescence using Promega ENLITEN ATP Assay System) 3 fmol ATP (15 pM @ 0.2mL/well, “Glow” luminescence using PerkinElmer ATPlite 1step Luminescence Assay System)	2
 ScanLater	<ul style="list-style-type: none"> Western blot detection using ScanLater Western Blot Assay Kit TRF-based with 340/80 nm EX and 616/10 nm EM 	0200-7027	EX range: 340/80 nm EM range: 616/10 nm	High fg levels of Streptavidin	High fg levels of Streptavidin	2
 AlphaScreen	<ul style="list-style-type: none"> AlphaScreen and AlphaLISA detection using 1 W 680 nm EX laser diode and a 570 nm (100) EM filter Pick best speed, sensitivity, and price for your needs Guaranteed sensitivity: <100 amol of biotinylated-LCK-P peptide, 25 µL/well in a 384-well plate, using AlphaScreen Phosphotyrosine (PT66) Assay Kit 	0200-7017	Alpha 384 STD 96- and 384-well plates		< 100 amol (384-well)	1
		0200-7018	Alpha 384 HTS 96- and 384-well plates		< 100 amol (384-well)	1
		0200-7019	Alpha 1536 HTS 96, 384, and 1536-well plates		< 100 amol (384-well)	1
 HTRF	<ul style="list-style-type: none"> Cisbio HTRF detection with optimized Xenon light source and 616, 665 nm EM filters 	0200-7011	6- to 1536-well plates	Exceeds Cisbio certification requirements		2
 TRF	<ul style="list-style-type: none"> LED light source EX: 370/80 nm EM: 616/10 nm, 642/10 nm Suitable for assays using europium and samarium chelate labels 	0200-7008	6- to 1536-well plates	96-well: 0.03 pM 384-well: 0.03 pM 1536-well: 0.125 pM *Specifications listed are for europium	96-well: 0.1 pM 384-well: 0.1 pM 1536-well: 0.375 pM	1
 FP	<ul style="list-style-type: none"> Fluorescence Polarization detection for fluorescein- or rhodamine-like labels, using specific LED and EX/EM filters 6- to 1536-well plates 	0200-7009	Fluorescein FP EX 485 nm, EM 535P and 535S nm	96-well: 1.0 mP 384-well: 1.5 mP 1536-well: 2.0 mP	96-well: 3 mP 384-well: 4 mP 1536-well: 6 mP	1
		0200-7010	Rhodamine FP EX 535 nm, EM 595P and 595S nm			

Cartridge	Description	Part number	Specifications	Optimized sensitivity	Guaranteed sensitivity	Slots used
Fluorescence Intensity (FI) 	<ul style="list-style-type: none"> Fluorescence Intensity (FI) detection for coumarin-, fluorescein-, or rhodamine-like labels, and FRET Ultra-high-power LEDs for the excitation of various fluorescent labels 	0200-7002	EX: 360/35 nm EM1: 465/35 nm EM2: 535/25 nm	384-well plate (75 µL): 10 fmol/well 1536-well plate (8 µL): 3 fmol/well		1
		0200-7003	EX: 485/20 nm EM1: 535/20 nm EM2: 595/25 nm	384-well plate (75 µL): 0.10 fmol/well 1536-well plate (8 µL): 0.03 fmol/well		1
		0200-7004	EX: 535/25 nm EM1: 595/35 nm EM2: LP 655 nm	384-well plate (75 µL): 0.15 fmol/well 1536-well plate (8 µL): 0.06 fmol/well		1
Glow Luminescence (LUM) Detection Cartridge 	<ul style="list-style-type: none"> Glow Luminescence (LUM) Detection 	0200-7012	96-, 384- and 1536-well plates Wavelength range: Visible to 650 nm	96-well (200 µL) 3 pM 384-well (50 µL) 7 pM 1536-well (8 µL) 20 pM *Specifications listed are for ATP	96-well (200 µL) 15 pM 384-well (50 µL) 30 pM 1536-well (8 µL) 60 pM	1
		0200-7015	384-well plates Wavelength range: Visible to 650 nm	96-well (200 µL) 2 pM 384-well (50 µL) 3 pM	96-well (200 µL) 10 pM 384-well (50 µL) 15 pM	1
		0200-7014	96-well plates Wavelength range: Visible to 650 nm	96-well (200 µL) 2 pM	96-well (200 µL) 8 pM	1
Dual Color Luminescence (LUM) (BRET2) Detection Cartridge	<ul style="list-style-type: none"> Dual Color Luminescence (LUM) (BRET2™) Detection Cartridge that isolates each well to provide optimal performance for chemiluminescence applications 	0200-7016	EM1: 410/35 nm EM2: 515/35 nm			1
Transmitted Light (TL) Detection Cartridge (for use with the SpectraMax MiniMax 300 Imaging Cytometer)	<ul style="list-style-type: none"> Transmitted Light (TL) Detection provides white LED illumination for transmitted-light (brightfield) imaging with the SpectraMax MiniMax 300 Imaging Cytometer 	5022671	Proprietary solid-state illumination, white LED			1
Custom Solutions 	<ul style="list-style-type: none"> Custom cartridges are available and designed to meet your specific research needs 	Ask your local sales representative for more information				

Assay kits compatibility

Our wide range of assay kits is specifically designed for the SpectraMax i3x reader. Each assay kit is optimized for maximum performance and is supported with software protocols and analysis that enables you to go from samples to answers quickly.

For more information, or to purchase assay kits, please visit www.moleculardevices.com/reagents.

Assay Kit	Description	Applications
EarlyTox™ Cell Viability Assay Kits	These assay kits are a family of fluorescence-based reagents for the assessment of cell viability, cell proliferation, and various apoptosis events using mammalian cells. Optimized for use with microplate readers, these assay kits employ a no-wash, homogeneous assay protocol that enables characterization of a full concentration-response profile of test compounds.	Detect cell viability and cell proliferation on fluorescence microplate readers
EarlyTox Cardiotoxicity Kit	The EarlyTox™ Cardiotoxicity Kit provides a fast, simple, and reliable fluorescence-based method for identifying cardiotoxic compounds in a biorelevant assay. Using cultured cardiomyocytes and a kinetic plate reader, researchers can prioritize leads and direct medicinal chemistry efforts sooner, improving productivity and reducing costs associated with extensive safety testing downstream.	Cell-based assays screen more compounds and identify toxicity earlier in drug discovery
EarlyTox Cell Integrity Kit*	The EarlyTox™ Cell Integrity Kit enables the differentiation of live cells from dead cells via fluorescent labeling. This is useful for the rapid quantification of cell viability when used with the SpectraMax MiniMax 300 Imaging Cytometer or other fluorescence-based cellular imaging instruments.	Differentiates live cells from dead cells via fluorescent labeling
SpectraMax Quant dsDNA Assay Kits	The SpectraMax® Quant™ dsDNA Assay Kits are designed for fluorescence-based dsDNA quantitation across a broad range of concentrations. Tailored to your different needs, these kits are configured and optimized for SpectraMax® microplate readers with preconfigured protocols provided in SoftMax Pro Software for simplified data acquisition and analysis.	Optimized DNA measurement for your microplate reader assay
SpectraMax Glo Steady-Luc Reporter Assay Kit	The SpectraMax® Glo Steady-Luc™ Reporter Assay Kit provides a highly sensitive assay for the quantitation of firefly luciferase expression in mammalian cells. This kit is optimized for SpectraMax microplate readers with a preconfigured protocol provided in SoftMax Pro Software for simplified data acquisition and analysis.	Luciferase measurement for your microplate reader assay
CatchPoint cAMP and cGMP Fluorescent Assay Kits	The CatchPoint® cAMP and cGMP Fluorescent Assay Kits' high-affinity reagents are optimized for sensitivity and precision in applications where cAMP and cGMP levels are low. A single wash step removes unbound material prior to the development step, so the assays are very resistant to interference from colored or fluorescent test compounds.	Measures cAMP levels via a competitive immunoassay format
IMAP Kinase, Phosphatase, and Phosphodiesterase Assays	IMAP® technology provides a homogeneous assay for the assessment of kinase, phosphatase, and phosphodiesterase (PDE) activity. The assay is a simple "mix-and-read" procedure utilizing free phosphate-binding nanoparticles directly reporting converted product, not enzyme reaction components or by-products.	Homogeneous assays or accurate determination of kinase, phosphatase, and phosphodiesterase activities
QBT Fatty Acid Uptake Assay Kit	The QBT™ Fatty Acid Uptake Assay is a homogeneous assay amenable to high-throughput screening. The kits deliver pre-optimized, fluorescence-based formulations to expedite assay development and screening of fatty acid transporters.	Single-step, homogeneous, fluorescent assay for monitoring the activity of fatty acid transport proteins
Neurotransmitter Transporter Uptake Assay Kit	The ability to monitor serotonin, norepinephrine, and dopamine neurotransmitter uptake is key to a better understanding of diseases such as Alzheimer's and Parkinson's. With the Neurotransmitter Transporter Uptake Assay Kit, researchers now have a tool to study these three key neurotransmitters with a live-cell, fluorescent, plate reader-based assay.	Live-cell kinetic assay to measure uptake of serotonin, norepinephrine, and dopamine neurotransmitters
ScanLater Western Blot Assay Kit**	The ScanLater™ Western Blot Assay Kit is a time-resolved fluorescence (TRF)-based assay optimal for quantitating as little as femtogram protein samples. Eliminate time-dependent substrate addition steps, sustain blot signal stability for at least one month, enhance assay sensitivity using TRF method to reduce background noise, and maintain femtogram to picogram protein sensitivity similar to traditional western blot detectors.	Substrate-free immunoblot assay for extended signal stability

*Requires optional MiniMax 300 Imaging Cytometer

**Requires optional ScanLater Western Blot Detection Cartridge

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Check our website for a current listing of worldwide distributors.

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