SpectraMax ABS and ABS Plus Microplate Readers

Compact and tunable absorbance microplate readers

BENEFITS

- **Compact design**
- **Minimum volume and maximum throughput with 96- or 384-well microplate compatibility**
- **Powerful data analysis with SoftMax Pro Software**
- **Optimal performance with validation tools**

Introduction

The SpectraMax® ABS Microplate Reader bridges the gap between the affordability of filter-based readers and the flexibility of monochromator-based systems.

The SpectraMax® ABS Plus Microplate Reader can run both cuvette-based and microplate reader applications on the same instrument. Read one sample or up to 384 in a single plate read using any standard cuvette, or 96- or 384-well microplate.

For more sample throughput, both readers can be easily integrated into full robotic systems and can easily adapt to fit sample processing requirements.

Tunable for filterless flexibility

The SpectraMax ABS readers use a grating monochromator to select the exact wavelength needed for every assay. The ABS reader ranges from 340-850 nm in wavelength and the ABS Plus reader ranges from 190-1000 nm, which is equivalent to having 510 or 810 free filters, respectively.

Exceptional performance

The advanced optical and electronic design of the readers give the same high performance with round-bottom, flat-bottom or half-area well plates. Select up to six wavelengths in a single read to maximize the number of data points collected in an experiment. Temperature control up to 45°C allows kinetic assays at ambient and physiological temperatures.

MOLECULAR DEVICES

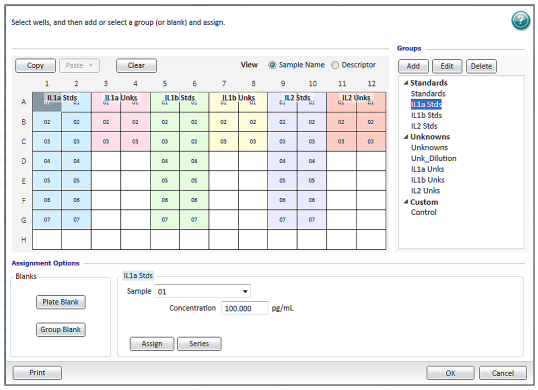

Figure 1. Flexible template assignment. Standards for multiple calibration curves and unknowns can be run on separate plates.

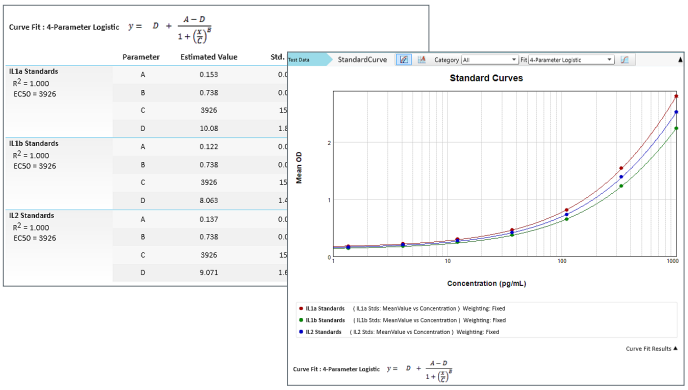

Figure 2. Multiple calibration curves. Multiple calibration curves can be plotted on one graph.

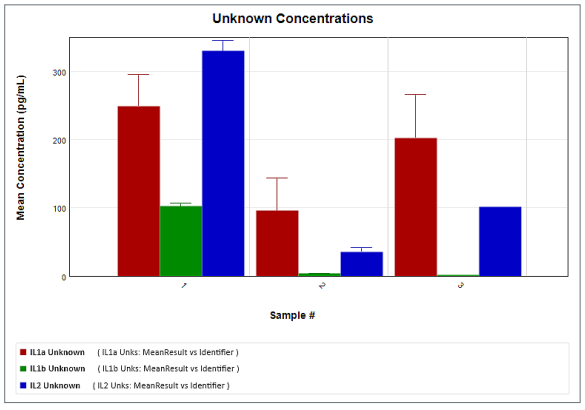

Figure 3. Combined data graphing. Results from unknowns run on different plates and different calibration curves can be plotted on one graph.

Patented PathCheck Sensor

The SpectraMax ABS Plus reader utilizes Molecular Devices PathCheck® Sensor—the only patented technology available that measures the depth (optical pathlength) of samples in a microplate. When used with SoftMax® Pro Data Acquisition and Analysis Software, it can automatically normalize the well absorbance to a cuvette equivalent pathlength of 1 cm. This is equivalent to having 96 or 384 cuvettes.

With the PathCheck Sensor, it is acceptable to have different volumes in the wells, so pipetting does not have to be accurate. The PathCheck Sensor will correct for the volume differences in all 96 or 384 wells and automatically report out 1 cm absorbance values.

Extend the dynamic range to 6+ OD. If a well reads out of range (> 4 OD), decrease the volume in that well and re-read the plate using the PathCheck Sensor. A 100 µL sample (optical pathlength ~0.3 cm) that reads 2.8 OD will be corrected to ~9.2 OD.

Pipetting errors in 96- or 384-well microplates can be detected. The PathCheck Sensor measures differences in volume between the wells, so sources of error can be identified and eliminated from data, or absorbance values can be corrected.

Quickly and easily test multi-channel dispensers and pipettors. Measuring the depth of the liquid in the well, the PathCheck Sensor can determine the volume of liquid dispensed. Even 96- or 384-channel dispensers can be tested in a matter of minutes.

Wide range of applications

The SpectraMax ABS readers cover a wide range of applications:

- DNA quantitation (ABS Plus only)
- Microbial Growth/MIC
- IC_{50}/LD_{50}
- Endpoint ELISAs/EIA
- Cytoproliferation/Cytotoxicity
- Colorimetric Protein
- Kinetic ELISAs/Enzyme Assays
- Bacterial Identification
- Immunoassays
- Drug dissolution profiles
- Enzyme kinetics (e.g., Ki, Km, etc.)

Powerful data analysis

Industry leading SoftMax® Pro Data Acquisition and Analysis Software is included with both SpectraMax ABS readers and provides additional flexibility for the user. The software is designed to handle analysis requirements from simple endpoint assays to complex kinetic assays requiring custom calculations, meeting the needs of both basic and power users. The inclusive package of ready-to-run protocols, analysis algorithms, and 21 different curve fit options provides the full solution from data acquisition to analysis to publishing.

Validation made easy

The SpectraTest® ABS1 Absorbance Validation Plate tests optical performance using NIST-traceable standards. Testing can be done in the user's lab on their own schedule.

Plate stacker and robot integration

The SpectraMax ABS readers can be integrated with Molecular Devices StakMax® Microplate Stacker within 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 reader systems with all leading partner robots. The "out-of-the-box" automation solution saves up-front integration time and resources.

Ordering information

Contact your Molecular Devices sales representative for configuration options.

General specifications	SpectraMax ABS/ABS PLUS Microplate Readers
Stray light	< 0.05% @ 230 nm
Light source	Xenon flash lamp (5 Watts)
Average lamp lifetime	1 billion flashes
Illumination	Top down
Photodetectors	Silicon Photodiode
Dimensions (in.) (H x W x D)	8 x 12 x 16.3
Dimensions (cm) (H x W x D)	20.3 x 30.5 x 41.4
Weight	25 lbs. (11.3 kg)
Power consumption	< 250 watts
Power source	100–240 Vac, 4 A 50/60 Hz

Technical specifications	SpectraMax ABS PLUS Microplate Reader with UV-Vis and Cuvette	SpectraMax ABS Microplate Reader
Photometric performance		
Wavelength range	190 nm – 1000 nm	340 nm – 850 nm
Wavelength selection	Monochromator, tunable in 1.0 nm increments	Monochromator, tunable in 1.0 nm increments
Wavelength bandwidth	2 nm	2 nm
Wavelength accuracy	±1.0 nm	±1.0 nm
Wavelength repeatability	±0.2 nm	±0.2 nm
Photometric range	0.000 OD – 4.000 OD	0.000 OD – 4.000 OD
Photometric resolution	0.001 OD	0.001 OD
Photometric accuracy (microplate)	< ±0.006 OD ±1.0%, 0–3 OD	< ±0.006 OD ±1.0%, 0–3 OD
Photometric accuracy (cuvette)	< ±0.005 OD ±1.0%, 0–3 OD	N/A
Photometric precision	< ±0.003 OD ±1.0%, 0–2 OD	< ±0.003 OD ±1.0%, 0–2 OD
Microplate read time (normal mode)	96 wells in 9 seconds 384 wells in 29 seconds	96 wells in 9 seconds
Microplate read time (speed read mode)	96 wells in 5 seconds 384 wells in 16 seconds	96 wells in 5 seconds
Temperature regulation		
Temperature range	+5°C to 45°C	+5°C to 45°C
Temperature uniformity (microplate)	±0.5°C at 37°C	±0.5°C at 37°C

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