



## Specifications

Thermal specifications for the SPECTRAmax 250 apply to flat-bottom microplates with isolated wells. All other specifications apply to standard 96-well polystyrene flat-bottom microplates.

**NOTE:** Technical specifications are subject to change without notice.

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### Photometric Performance

<b>Wavelength range</b>	250–750 nm
<b>Wavelength selection</b>	Monochromator tunable in 1-nm increments
<b>Wavelength bandwidth</b>	5 nm
<b>Wavelength accuracy</b>	$< \pm 2.0$ nm, referenced to Hoya V30 Didymium Multiband Calibration Filter
<b>Wavelength repeatability</b>	$< \pm 0.2$ nm
<b>OD indication range</b>	0.000 to 4.000 OD
<b>OD resolution</b>	0.001 OD
<b>OD accuracy (linearity)</b>	0–2.5 OD: 250–750 nm $< \pm 1.0\%$ and $\pm 0.010$ OD 2.5–3.0 OD: 250–750 nm $< \pm 3.0\%$ and $\pm 0.010$ OD
<b>OD precision (repeatability)</b>	0–2.5 OD: 250–750 nm $< \pm 1.0\%$ and $\pm 0.005$ OD 2.5–3.0 OD: 250–750 nm $< \pm 3.0\%$ and $\pm 0.005$ OD
<b>Photometric stabilization</b>	Instantaneous
<b>Photometric drift</b>	None—continuous referencing of monochromatic output
<b>Calibration</b>	Automatic before first Kinetic read and before every Endpoint reading
<b>Optical alignment</b>	None required during lifetime of instrument
<b>Light source</b>	Xenon flash lamp (10 watts maximum)
<b>Average lamp lifetime</b>	$> 5$ years ( $1 \times 10^6$ plate readings)
<b>Illumination</b>	Top down
<b>Interference filter capacity</b>	Two 1-nm narrow-bandwidth interference filters (optional for special applications)
<b>Stray light control</b>	<ul style="list-style-type: none"><li>• Single-well sequential illumination</li><li>• Lenses above and below microplate</li><li>• Light-tight reading chamber</li></ul>
<b>Photodetectors</b>	Silicon photodiode




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### Photometric Analysis Modes

- Single wavelength, optical density
- Multiple wavelength ( $\lambda_1$ - $\lambda_2$  in stand-alone mode; up to six using SOFTmax PRO) optical density
- Kinetic; Kinetic graphics using SOFTmax PRO
- Spectral sweep using SOFTmax PRO (250–750 nm)

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### Measurement Time

- Read time (Endpoint)** • 96 wells in 9 seconds (single wavelength)  
 • 96 wells in  $11 * N$  seconds (N wavelengths)
- Kinetic read intervals** • 96 wells, 9-second minimum interval between readings  
 • 1 column, 2-second minimum interval between readings  
 • M columns, 1 second \* (M columns,  $M \geq 2$ )  
 • Multiple wavelength, 9 seconds \* (N wavelengths)
- Calibration time** < 1 second per wavelength
- Wavelength selection** < 2 seconds

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### Temperature regulation

- Reading chamber** Isothermal when temperature regulation is not enabled, < 1°C
- Range** (Ambient + 4°C) to 45°C
- Resolution**  $\pm 0.1^\circ\text{C}$
- Accuracy**  $\pm 1.0^\circ\text{C}$
- Well-to-well uniformity at equilibrium**  $\pm 0.5^\circ\text{C}$
- Chamber warm-up time** 30 minutes (measured on air)
- Temperature regulation** 3 sensors
- Variation** < 0.3°C (regulated)
- Temperature regulation diagnostics** Temperature regulation system is continuously monitored and updated
- Evaporation** Plate lid required to minimize evaporative cooling
- Recommended microplate** Flat-bottom microplates with isolated wells and lid



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**Plate Mixing**

- Plate mixing modes** Selectable: off, once prior to any reading, and once prior to and between Kinetic readings
- Plate mixing duration** Selectable: 1 to 999 seconds (three-second default) using external software

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**General Instrument**

- Display** 2-x-40-character backlit LCD with adjustable contrast
- Operating panel** 15-key (plus **[Shift]** key functions) membrane keypad
- Memory back-up** Stored protocols (nine maximum) and instrument calibration parameters
- Self-diagnosis** Continuous on-board diagnostics
- Spill control** Drawer mechanism/reading chamber assembly is protected from accidental spillage by drainage ports
- Calculated mean time between failures (MTBF)** > 20,000 hours
- Data buffer** Memory downloading of data buffer (100-plate maximum)
- Computer interface** 8-pin DIN RS-232 serial (double shielding required)
- Printer interface** Parallel 25-pin to Centronics (double shielding required)
- Microplates supported** 96-well and strip-well microplates including lids

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**Environmental**

- Operating temperature** 15 to 40°C
- Operating humidity** 0 to 85%, non-condensing
- Storage temperature** -20 to 65°C

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**Physical**

- Size (h x w x d)** 8.6 in. (22 cm) x 22.8 in. (58 cm) x 15 in. (38 cm)
- Weight** 29 lb (13.2 kg)
- Power consumption** < 250 watts
- Line voltage** 100-240 VAC, auto-ranging
- Line frequency** 50/60 Hz