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PRODUCT SPECIFICATIONS

Evolution 350 UV-Vis Spectrophotometer

Precision performance for advanced analysis

The Thermo Scientific™ Evolution™ 350 UV-Visible (UV-Vis) Spectrophotometer is designed to meet the challenges and requirements of pharmaceutical, industrial QA/QC, chemical, environmental, materials science, academic, life science, and food and beverage laboratories.

The Evolution 350 Spectrophotometer is the newest version of the highly regarded Evolution 300 platform. The instrument's stable double-beam optical design delivers high-quality data for the complete lifetime of the instrument. Thermo Scientific™ Smart Accessories™, powerful Thermo Scientific™ INSIGHT™ Software, and user configuration choices provide an unmatched solution to fit your budget.

Innovative sampling

Evolution Spectrophotometers support an extensive selection of accessories for the measurement of almost any sample. Smart Accessories offer a plug-and-play design with automatic connection for power and data. When a Smart Accessory is installed, the instrument automatically recognizes it by serial number, assisting with meeting GLP and regulatory requirements. Peltier thermostatted cell holders controlled by INSIGHT Software add a new level of precision temperature control and support for temperature ramping kinetics.

Less downtime, more data

The Evolution 350 Spectrophotometer is designed for labs requiring high performance, outstanding reliability and a minimum of down-time.

- Instant-on performance—there is no need to wait for the lamps to warm up and stabilize. Get accurate, stable measurements from the moment that the instrument is turned on.
- No time lost changing lamps—the xenon flash lamp typically lasts for 5 years or more.
  - Three-year lamp warranty insulates you from operating expenses
  - Save time—no need to burn in new lamps or to re-qualify your instrument after each lamp change
  - No routine service costs for system qualification and verification following lamp replacement
- Choose an optional Calibration and Validation Carousel (CVC) to automate all your routine performance verification tasks. Just insert the CVC, select your method and walk away. The report is ready for inspection and filing in your log when you return.

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Software support

Comprehensive and powerful software completes your Evolution 350 System.

- INSIGHT Software offers sophisticated tools for data acquisition, analysis and reporting in general research and quality control environments.
- INSIGHT Security Software offers advanced security options and complete tools for achieving 21 CFR Part 11 compliance.
- INSIGHT Bio Software adds pre-programmed methods for performing routine assays, such as nucleic acid tests and protein concentrations. Additional kinetics capabilities include temperature-based rate and DNA melting experiments.

Evolution 350 UV-Vis Spectrophotometer Specifications		
Optical Design		Modified Ebert Double beam with sample and reference cuvette/accessory positions
Spectral Bandwidths		Selectable 0.5, 1.0, 1.5, 2.0, 4.0 nm
Light Source		Xenon flash lamp Typical lifetime: >5 years; longer if not using live display Warranty period: 3-year source replacement warranty
Detector		Detector dual-matched silicon photodiodes
Grating		Holographic, 1200 lines/mm, blazed at 240 nm
Beam Separation		210 mm
Scan Ordinate Modes		Absorbance, % Transmittance, % Reflectance, Kubelka-Munk, Log(1/R), Log(Abs), ABS × Factor, Intensity, 1st–4th Derivative
Wavelength	Range	190–1100 nm
	Accuracy	±0.20 nm (546.07 nm Hg emission line), ±0.30 nm, 190–900 nm
	Repeatability	Standard deviation of 10 measurements <0.05 nm
	Scanning Speeds	Variable, up to 6000 nm/min
	Data Interval	10, 5, 2, 1, 0.5, 0.2, 0.1, 0.05 nm
Photometric	Range	>4 A
	Display	±6 A
	Accuracy – Instrument*	1A: ±0.004 A 2A: ±0.004 A 3A: ±0.006 A
	Noise	0A: <0.00018 A 1A: <0.00022 A 2A: <0.00050 A 500 nm, 2.0 nm SBW, RMS
	Repeatability	1A: ±0.0025 A
	Drift	<0.0005 Abs/hour, 500 nm, 2.0 nm SBW, 2 hour warm-up
Stray Light		198 nm: 2.4 A KCl 220 nm: 3.5 A NaI 340 nm: 4.0 A $NaNO_2$
Baseline Flatness		±0.0015 A (200–800 nm) 2.0 nm SBW, smoothed
Dimensions (W × D × H)		61 × 53 × 38 cm
Weight		22 kg
Electrical Supply		100–240 V, 50–60 Hz

* Measured at 546 nm using neutral density filters traceable to NIST. When testing instrument performance, the specification used for pass/fail determination is the sum of the instrument specification listed here and the uncertainty in the calibration data for the filter, listed on the calibration certificate.

Pharmacopoeia Compliance Testing		
Test	**Performance**	**Pharmacopoeia Requirement**
Wavelength Accuracy	±0.3 nm 190–900 nm	EP:±1 nm @ <400 nm; ±3 nm @ >400 nm USP: ±1 nm @ <400 nm; ±2 nm @ >400 nm JP: ±0.3 nm 190–900 nm
Wavelength Repeatability	SD 10 meas. <0.1 nm	USP: <0.5 nm (SD ≥ 6 meas.)
Absorbance Accuracy	<±0.010A at 1A <±0.010A at 2A	EP: <±0.010A @ 1A (in force) EP: <±0.010A @ <2A (proposed) USP: <±0.010A @ <1A; ±1%A @ >1A
Absorbance Repeatability	±0.0025A @ 1A	USP: <±0.010A @ <1A; <1%A @ >1A
Stray Light	198 nm with KCl >2A 220 nm with NaI >3A 300 nm with acetone >3A 340 nm with $NaNO_2$ >3A	EP: >2A @ 198 nm with KCl (in force) EP: >3A @ 220 nm with NaI (proposed) EP: >3A @ 340 nm with $NaNO_2$ (proposed) USP: >2A in all listed tests
Resolution	Peak/trough ratio >1.8 @ 1 nm SBW setting	USP: 2 nm SBW (Peak/trough ratio >1.3); < one eighth natural half height/width for very narrow peaks in select benzenoid compounds EP: Peak/trough ratio >1.6 (select monographs)

Find out more at **thermofisher.com/evolution350**

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