

Physical Specifications

Table 1

Physical Specifications

Type	Specification	Comments
Dimensions	34.4 cm (13.5 inches) wide 56.0 cm (22.0 inches) deep 18.5 cm (7.3 inches) high	
Weight	16.5 kg (36.3 lbs)	
Line voltage	90–264 V AC	Wide-ranging capability
Line frequency	47–63 Hz	
Power consumption	220 VA	Maximum
Ambient operating temperature	0–55 °C (32–131 °F)	See WARNING on page 11
Ambient non-operating temperature	-40–70 °C (-4–158 °F)	
Humidity	<95%, at 25–40 °C (77–104 °F)	Non-condensing
Operating altitude	Up to 2000 m (6,500 ft)	
Non-operating altitude	Up to 4600 m (14,950 ft)	For storing the instrument
Safety standards: IEC, CSA, UL	Installation Category II, Pollution Degree 2	

WARNING

If you use the spectrophotometer at environmental temperatures higher than 50 °C (122 °F) the backplane may get hot.

Performance Specifications

Performance specifications are measured after a minimum 1 hour from cold start or from lamp turn-on, with no cell or filter unless specified, see Table 2. Cold start in this context means that the spectrophotometer had been stored for some hours at room temperature.

Table 2

Performance Specifications

Type	Specification	Comments
Wavelength range	190–1100 nm	
Slit width	1 nm	
Resolution	> 1.6	Toluene in hexane, ratio of absorbances at 269 and 266 nm
Stray light	< 1.0 %	At 200 nm, solution of 1.2% KCl, blank scan on air, 5 s integration time; (EP* method)**
	< 0.05 %	At 220 nm, solution of 10 g/l NaI, blank scan on air, 5 s integration time; (ASTM method)
	< 0.03 %	At 340 nm, solution of 50 g/l NaNO ₂ , blank scan on air, 5 s integration time; (ASTM method)
Wavelength accuracy	< ± 0.5 nm	NIST 2034 standard, using transmittance peak minima; wavelength in NIST certificate are interpolated for 1.5 nm bandwidth from the values given for 2 nm and 1 nm bandwidth; uncertainty of standard from NIST certificate (typically ±0.1 nm) is added to the specification; 99-point spline function is used; 0.5 s integration time
Wavelength reproducibility	< ± 0.02 nm	Ten consecutive scans with NIST 2034 standard; 0.5 s integration time
Photometric accuracy	< ± 0.005 AU	NIST 930e standard at 1 AU, at 440.0, 465.0, 546.1, 590.0, and 635.0 nm, the expanded uncertainty from NIST certificate is added to the specification; 0.5 s integration time
Photometric accuracy	< ± 0.01 AU	Potassium dichromate in 0.01 N H ₂ SO ₄ at 235, 257, 313, 350 nm; blank scan on 0.01 N H ₂ SO ₄ ; 0.5 s integration time (EP method)

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Table 2 **Performance Specifications, continued**

Type	Specification	Comments
Photometric noise	< 0.0002 AU rms	Sixty consecutive scans on air with 0.5 s integration time at 0 AU, 500 nm; 11-point moving average: using equation: $\text{Noise(rms)} = \sqrt{(\text{SUM}(X-x)^2)/n}$ where x are measured values, X is a 11-point moving average, n is the number of points
Photometric stability	< 0.001 AU/h	Scan on air at 0 AU, 340 nm, after 1-hour warm up, measured over 1 hour, every 60 s, integration time 5 s; difference between maximum and minimum values are compared to specification; at constant ambient temperature
Baseline flatness	< 0.001 AU rms	Scan on air at 0 AU, 340 nm, 0.5 s integration time
Typical scan time	1.5 s	Full range
Shortest scan time	0.1 s	Full range
Time until next scan	0.1 s	Full range, 0.1 s scan, at least 150 consecutive scans

* EP stands for European Pharmacopoeia

** Apparent absorbance is strongly affected by dissolved oxygen. According to ASTM, bubble pure nitrogen through liquid for several minutes immediately before use. Use only recently distilled water (not demineralized water).