
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: $\text{Noise(rms)} = \text{SQRT}(\frac{\text{SUM}(X-x)^2}{n})$ 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).

Specifications

The multicell transport generally operates under the same environmental conditions as those specified in the *Reference Handbook* for the Agilent 8453 spectrophotometer. A maximum water pressure of approximately 3.5 bar (50 psi) can be supplied to the thermostatted cell holder and to the water-driven stirrer.

Table 1

Multicell Transport Performance Specifications

Item	Specification	Comment
Time to move between adjacent cell positions	< 1 second	
Position repeatability	± 0.1 mm	Linear position error in moving to a cell position within 1 hour
Step resolution	0.060 mm	
Temperature range for thermostating (cell holder only)	5–90 °C	
Temperature difference between any two cell positions	0.3 °C	With a water bath at 37 °C