



Agilent Cary 100/300 Series UV-Vis

Typical specifications



Design overview

Double beam, dual chopper, ratio recording, Czerny-Turner 0.278 m monochromator UV-Vis spectrophotometer, centrally controlled by a computer. Agilent Cary 300 has double dispersion, Agilent Cary 100 has single dispersion. High light throughput optical system with all reflective optical design, high speed accurate scanning. Optional centrally-controlled accessory system. High performance R928 photomultiplier tube, tungsten-halogen visible source with quartz window, deuterium arc ultraviolet source.

Agilent Cary 100/300 Series UV-Vis spectrophotometers are manufactured according to a quality management system certified to ISO 9001. These typical specifications represent the average results of the final acceptance tests performed in the factory. With a sample of over two thousand Cary 100 and 300 UV-Vis instruments, the specifications are indicative of the performance of Cary 100/300 Series UV-Vis instruments. These specifications are not guaranteed. The guaranteed specifications are listed in a separate publication and are based on the ± 4 sigma statistical confidence level.

Performance

	Agilent Cary 100	Agilent Cary 300
Monochromator	Czerny-Turner 0.278 m	Czerny-Turner 0.278 m plus pre-monochromator
Grating	30 x 35 mm, 1200 lines/mm, blaze angle 8.6° at 240 nm	
Beam splitting system	Chopper (30+ Hz)	Chopper (30+ Hz)
Detectors	R928 PMT	R928 PMT
UV-Vis limiting resolution	≤ 0.189 nm	≤ 0.193 nm
Stray light		
At 198 nm (12 g/L KCl, TGA & BP/EP method)	≤ 0.50 %T	≤ 0.32 %T
At 220 nm (10 g/L NaI ASTM method)	≤ 0.0074 %T	≤ 0.00008 %T
At 370 nm (50 mg/L NaNO ₂)	≤ 0.0013 %T	≤ 0.000041 %T
Wavelength range	190–900 nm	190–900 nm
Wavelength accuracy		
At 656.1 nm	± 0.02 nm	± 0.02 nm
At 486.0 nm	± 0.04 nm	± 0.04 nm
Wavelength reproducibility		
Peak separation of repetitive scanning of a UV-Vis line source	< 0.008 nm	< 0.008 nm
Standard deviation of 10 measurements	< 0.02 nm	< 0.02 nm
Photometric accuracy		
Using double aperture method at 0.3 Abs	± 0.00016 Abs	± 0.00016 Abs
Using NIST 930D filters at 1 Abs	± 0.003 Abs	± 0.003 Abs
At 0.5 Abs	± 0.002 Abs	± 0.002 Abs
Standard solution methods:		
At 0.2, 0.5 & 0.75 Abs (14.2% w/v KNO ₃ , TGA method)	± 0.01 Abs	± 0.01 Abs
0.292 to 0.865 Abs (60.06 mg/L K ₂ Cr ₂ O ₇ , BP method)	± 0.01 Abs	± 0.01 Abs
0.955 Abs (600.06 mg/L K ₂ Cr ₂ O ₇ , BP method)	± 0.012 Abs	± 0.012 Abs
Photometric range	4.0 Abs	6.0 Abs
Photometric display	± 9.9999 Abs ± 200.00 %T	± 9.9999 Abs ± 200.00 %T
Photometric reproducibility		
Using NIST 930D filters at 590 nm, 2 nm SBW, 2 s SAT:		
Maximum deviation at 1 Abs	< 0.0008 Abs	< 0.0008 Abs
Standard deviation for 10 measurements	< 0.00016 Abs	< 0.00016 Abs
Using NIST 930D filters, at 546.1 nm, 2 nm SBW, 2 s SAT:		
Maximum deviation at 0.5 Abs	< 0.0004 Abs	< 0.0004 Abs
Standard deviation for 10 measurements	< 0.00008 Abs	< 0.00008 Abs
Photometric stability		
After 2 h warmup, 500 nm, 2 nm SBW, 1 s SAT	< 0.0003 Abs/h	< 0.0003 Abs/h

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Performance

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Photometric noise 500 nm, 2 nm SBW, 1 s SAT		
At 0 Abs	≤ 0.000030 Abs, RMS	≤ 0.000030 Abs, RMS
At 3 Abs, 1.5 Abs RBA	≤ 0.00014 Abs, RMS	≤ 0.00025 Abs, RMS
At 5 Abs, 1.5 Abs RBA	–	≤ 0.0022 Abs, RMS
Baseline flatness 200 to 850 nm, smooth 21 filter applied, baseline corrected	± 0.00022 Abs, RMS	± 0.00025 Abs, RMS
Sample compartment		
Beam separation	110 mm	110 mm
Size (Extended Sample Compartment fitted)	139 x 389 x 129 mm (width x depth x height)	139 x 389 x 129 mm (width x depth x height)
Access	Top and front	Top and front
Purging	Sample compartment	Sample compartment
Instrument dimensions	640 x 650 x 320 mm (width x depth x height)	640 x 650 x 320 mm (width x depth x height)
Instrument weight	45 kg	45 kg

Operational

Spectral bandwidth	0.20–4.00 nm, 0.1 nm steps, motor-driven	0.20–4.00 nm, 0.1 nm steps, motor-driven
Signal averaging	0.033 to 999 s	0.033 to 999 s
Maximum scan rate	3000 nm/min 37 046 cm ⁻¹ /min depending on range 30 000 Å/min	3000 nm/min 37 046 cm ⁻¹ /min depending on range 30 000 Å/min
Slew rate (changing between wavelengths)	3000 nm/min	3000 nm/min
Data interval	0.02-1.67 nm 5.541-20.6 cm ⁻¹ depending on scan range 0.2-16.7 Å	0.02–1.67 nm 5.541–20.6 cm ⁻¹ depending on scan range 0.2–16.7 Å
Repetitive scanning	1800	1800
Maximum number of cycles	999	999
Maximum cycle time	999 min	999 min
Data collection rate (kinetic studies)		
1 cell	1800 points/min per cell	1800 points/min per cell
6 cell	5 points/min per cell	5 points/min per cell
12 cell	5 points/min per cell	5 points/min per cell
14 cell	3–4 points/min per cell	3–4 points/min per cell
6 cells, 0.033 SAT 0.34 s dwell time	50 points/min per cell	50 points/min per cell
12 cells, 0.033 SAT 0.34 s dwell time	40–50 points/min per cell	40–50 points/min per cell
14 cells, 0.033 SAT 0.34 s dwell time	30–40 points/min per cell	30–40 points/min per cell
Temperature monitors	Cell block, up to 4 temperature probes inside cuvettes or elsewhere	