



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

Agilent Cary 100/300 Series UV-Vis

Performance

	Agilent Cary 100	Agilent Cary 300
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	

Recommended environmental conditions

Agilent Cary 100/300	
Instrument storage	5–45 °C at 20–80% relative humidity, non-condensing, altitude < 2133 m.
Instrument operation	Below 853 m altitude: 10–35 °C, 50–80% relative humidity, non-condensing. Between 853 and 2133 m altitude: 10–25 °C, 50–80% relative humidity, non-condensing.
Instrument electrical requirements	Mains supply of 100/120/220/240 ± 10%, 230 +14% -6%, 230 +6% - 14% volts AC, 50 or 60 Hz ± 1 Hz with 400 VA power consumption.

Support policies

Type	Policy
Warranty	12 months, though this may vary according to location.
Hardware support period	Seven (7) years from date of last unit manufacture. After this time, parts and supplies will be provided if available.
Software support	Telediagnostic capability is available for some instrument models. Availability of Telediagnostic support may vary according to location. Software upgrades to add additional functionality will attract a fee.

Further details

More information

For further information, consult your Agilent office or supplier, or our website at www.agilent.com

www.agilent.com/chem

Agilent shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance or use of this material.

Information, descriptions, and specifications in this publication are subject to change without notice.

© Agilent Technologies, Inc. 2011

Published May 6, 2011

Publication number: 5990-8112EN

