

Varian Cary® 100, 300 UV-Vis spectrophotometers

GUARANTEED SPECIFICATIONS

Introduction

Cary spectrophotometers are manufactured according to a quality management system certified to ISO 9001. The guaranteed specifications are listed below and are based on the ± 4 sigma statistical confidence level of the final acceptance tests performed at the factory. Typical specifications are not reported in this document.

Design overview

Double beam, dual chopper, ratio recording, Czerny-Turner 0.278 m monochromator UV-Vis spectrophotometer, centrally controlled by a PC. Cary 300 has double dispersion, 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 ultra violet source. Centrally controlled by PC with Windows® interface.

	Cary 100	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 (nm)	≤ 0.24	≤ 0.24
Stray light (%T)		
At 198 nm (12 g/L KCl, TGA & BP/EP method)	≤ 1%	≤ 1%
At 220 nm (10 g/L NaI ASTM method)	≤ 0.02%	≤ 0.0005%
At 370 nm (50 mg/L NaNO ₂)	≤ 0.005%	≤ 0.0002%
Wavelength range (nm)	190–900	190–900
Wavelength accuracy (nm)	± 0.2	± 0.2
Wavelength reproducibility (nm)		
Peak separation of repetitive scanning of a UV-Vis line source	< 0.08	< 0.08
Standard deviation of 10 measurements	< 0.02	< 0.02



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	Cary 100	Cary 300
Photometric accuracy (Abs)		
Using double aperture method at 0.3 Abs	± 0.0006	± 0.0006
Using NIST 930D filters at 1 Abs	± 0.003	± 0.003
At 0.5 Abs	± 0.002	± 0.002
Standard solution methods:		
At 0.2, 0.5 & 0.75 Abs (14.2% w/v KNO ₃ , TGA method)	± 0.01	± 0.01
0.292 to 0.865 Abs (60.06 mg/L K ₂ Cr ₂ O ₇ , BP method)	± 0.01	± 0.01
Photometric range (Abs)	3.7	5.0
Photometric display		
(Abs)	± 9.9999	± 9.9999
(%T)	± 200.00	± 200.00
Photometric reproducibility (Abs)		
Using NIST 930D filters, at 590 nm, 2 nm SBW, 2 s SAT		
Maximum deviation at 1 Abs	< 0.0008	< 0.0008
Standard deviation for 10 measurements	< 0.00016	< 0.00016
Using NIST 930D filters, at 546.1 nm, 2 nm SBW, 2 s SAT		
Maximum deviation at 0.5 Abs	< 0.0004	< 0.0004
Standard deviation for 10 measurements	< 0.00008	< 0.00008
Photometric stability (Abs/hour)		
After 2 hour warm up, 500 nm, 2 nm SBW, 1 s SAT		
	< 0.0003	< 0.0003
Photometric noise (Abs, RMS)		
500 nm, 2 nm SBW, 1 s SAT		
At 0 Abs	< 0.000085	< 0.00006
At 1 Abs	< 0.0002	< 0.0002
At 2 Abs	< 0.0008	< 0.0008
At 3 Abs, 1.6 Abs RBA	< 0.00037	< 0.00037
At 4 Abs, 1.6 Abs RBA	–	< 0.003
At 5 Abs, 1.6 Abs RBA	–	< 0.008
Baseline flatness (Abs)		
200 to 850 nm, smooth 21 filter applied, baseline corrected		
	± 0.001	± 0.001
Sample compartment beam separation (mm)		
	110	110
Compartment size (WxDxH)		
	139 mm x 389 mm x 129 mm Extended Sample Compartment fitted	139 mm x 389 mm x 129 mm Extended Sample Compartment fitted
Access		
	Top and front	Top and front
Instrument dimensions (WxDxH)		
	640 mm x 650 mm x 320 mm	640 mm x 650 mm x 320 mm
Purging		
	Sample compartment	Sample compartment
Instrument weight		
	45 kg	45 kg

Recommended environmental conditions

Instrument storage	Cary 100 and Cary 300 5–45 °C at 20–80% relative humidity, non-condensing, altitude < 2133 m.
Instrument operation	Cary 100 and Cary 300 Below 853 m altitude: 10–35 °C, 8–80% relative humidity, non-condensing. Between 853 and 2133 m altitude: 10–25 °C, 8–80% relative humidity, non-condensing.
Instrument electrical requirements	Cary 100 and Cary 300 Mains supply of 100/120/220/240 volts AC \pm 10%, 50 or 60 Hz \pm 1 Hz with 400 VA power consumption.

Operational

	Cary 100	Cary 300
Spectral bandwidth (nm)	0.20–4.00 nm, 0.1 nm steps, motor driven	0.20–4.00 nm, 0.1 nm steps, motor driven
Signal averaging (seconds)	0.033 to 999	0.033 to 999
Maximum scan rate (nm/min)/(cm ⁻¹ /min*)(Å/min)	3000/37046/30000	3000/37046/30000
*Maximum rate is dependent upon range		
Slew rate (changing between wavelengths, nm/min)	3000	3000
Data interval		
(nm)	0.02–1.67	0.02–1.67
cm ⁻¹ *	5.541–20.6	5.541–20.6
Å	0.2–16.7	0.2–16.7
*Interval range is dependent upon scan range		
Repetitive scanning	1800	1800
Maximum number of cycles	999	999
Maximum cycle time (min)	9999	9999
Data collection rate (kinetic studies) points per min per cell		
1 cell	1800	1800
6 cell	5	5
12 cell	5	5
14 cell	3 to 4	3 to 4
6 cells, 0.033 SAT 0.34 s dwell time	50	50
12 cells, 0.033 SAT 0.34 s dwell time	40 to 50	40 to 50
14 cells, 0.033 SAT 0.34 s dwell time	30 to 40	30 to 40
Temperature monitors	Cell block, up to 4 temperature probes inside cuvettes or elsewhere	

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Varian customer support policies

Warranty	Twelve (12) months, though this may vary according to locations.
Hardware support period	Five (5) 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 fix nonconformances or safety problems will be issued free of charge. Software upgrades to add additional functionality will require an additional fee.

Further details

For further details on the following:

- PC configurations
 - GLP, 21 CFR Part 11 and Validation functionality
 - Accessory specifications and application information
 - Part numbers and other ordering information
- please consult your Varian office or supplier, or our Web site at www.varianinc.com

Varian, Inc. reserves the right to revise these specifications without notification.



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