

Technical Specifications for the LAMBDA 650 UV/Vis Spectrophotometer

Introduction

PerkinElmer UV/Vis spectrophotometers are built to the highest ISO-9001 manufacturing standards. This document presents confirmed performance specifications based on factory tests. All instruments will meet or achieve better than the confirmed specifications, under normal conditions of use as described in the user manual.

Technical Description and Specifications

LAMBDA 650

Principle	Double beam, double monochromator, ratio recording UV/Vis spectrophotometer with microcomputer electronics, controlled by DELL PC or compatible personal computer.
Optical System	All reflecting optical system (SiO ₂ coated) with holographic grating monochromator with 1440 Lines/mm UV/Vis blazed at 240 nm, Littrow mounting, sample thickness compensated detector optics.
Beam Splitting System	Chopper (46+ Hz, Cycle: Dark/Sample/Dark/Reference, Chopper Segment Signal Correction CSSC).
Detector	R955 Photomultiplier, giving high energy throughout the whole UV/Vis range.
Source	Pre-aligned tungsten-halogen and deuterium.
Wavelength Range	190 – 900 nm
UV/Vis Resolution	≤ 0.17 nm
Stray Light	
At 200 nm (12 g/l KCl USP/DAP Method)	> 2 A
At 220 nm (10 g/l NaI ASTM Method)	≤ 0.0001 %T
At 340 nm (50 mg/l NaNO ₂ ASTM Method)	≤ 0.0001 %T
At 370 nm (50 mg/l NaNO ₂ ASTM Method)	≤ 0.0001 %T
Wavelength Accuracy	+/- 0.15 nm
Wavelength Reproducibility	
Deuterium Lamp Lines	≤ 0.06 nm
Photometric Accuracy	
Double Aperture Method 1 A	+/- 0.0012 A
Double Aperture Method 0.3 A	+/- 0.0006 A
NIST 1930D Filters 2 A	+/- 0.003 A
NIST 930D Filters 1 A	+/- 0.003 A
NIST 930D Filters 0.5 A	+/- 0.002 A
K ₂ Cr ₂ O ₇ Solution USP/DAP Method	+/- 0.01 A
Photometric Linearity	
(Addition of Filters at 546.1 nm, 2 nm Slit, 1-sec. integration time)	
At 3.0 A	+/- 0.02 A

**Technical Description
and Specifications (cont'd)****LAMBDA 650**

Photometric Reproducibility

1 A with NIST 930D Filter at 546.1 nm	
Standard Deviation for 10 measurements	≤ 0.0008 A
0.3 A with NIST 930D Filter at 546.1 nm	
Standard Deviation for 10 measurements (2 nm Slit, 1-sec. integration time)	≤ 0.0004 A

Photometric Range	6 A
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Photometric Display	Unlimited
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Bandpass	0.17 nm–5.00 nm in 0.01 nm increments UV/Vis range Fix resolution, constant energy or slit programming.
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Photometric Stability

After warm-up at 500 nm, 0 A, 2 nm Slit, 2-sec. integration time, best-fit line	≤ 0.0003 A/h
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Baseline Flatness

200 nm – 850 nm, 2 nm Slit, 0.2-sec. integration time, best-fit line	+/- 0.0008 A
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Photometric Noise RMS

0 A and 190 nm	≤ 0.00010 A
0 A and 500 nm	≤ 0.00005 A
2 A and 500 nm	≤ 0.00020 A
4 A and 500 nm	≤ 0.002 A

(2 nm Slit, 1-sec. integration time)

Primary Sample Compartment Dimensions

(W x D x H)	200 mm x 300 mm x 220 mm
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Secondary Sample Compartment Dimensions

(W x D x H)	480 mm x 300 mm x 220 mm
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Instrument Weight	76 kg
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Digital I/O	RS 232 C
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Instrument Dimensions	1020 mm x 630 mm x 300 mm
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Light Beam	90 mm above the base plate 120 mm beam separation 3 mm–12 mm beam height
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Instrument Requirements

Power	90 VAC–250 VAC, 50/60 Hz; 400 VA
Temperature	10°C–35°C
Recommended Humidity	10–70% relative humidity, non-condensing

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