

# Technical Specifications for the LAMBDA 750 UV/Vis/NIR

## Technical description and specifications - LAMBDA 750

All instruments will meet or achieve better than the confirmed specifications, under normal conditions of use as described in the user manual.

Principle	Double beam, double monochromator, ratio recording UV/Vis/NIR spectrophotometer with microcomputer electronics, controlled by a DELL PC or compatible personal computer.	
Optical System	All reflecting optical system (SiO <sub>2</sub> coated) with holographic grating monochromator with 1440 Lines/mm UV/Vis blazed at 240 nm and 360 Lines/mm NIR blazed at 1100 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	Photomultiplier R955 for high energy in the whole UV/Vis wavelength range. Peltier cooled PbS detector for NIR.	
Source	Pre-aligned tungsten-halogen and deuterium.	
Wavelength Range	190 nm - 3300 nm	
UV/Vis Resolution	≤ 0.17 nm	
NIR Resolution	≤ 0.20 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 <sub>2</sub> ASTM method)	≤ 0.0001 %T
	At 370 nm (50 mg/l NaNO <sub>2</sub> ASTM method)	≤ 0.0001 %T
	At 1420 nm (H <sub>2</sub> O 1-cm pathlength)	≤ 0.0004 %T
	At 1690 nm (CHCl <sub>3</sub> 4-cm pathlength)	≤ 0.0015 %T
	At 2365 nm (CHCl <sub>3</sub> 1-cm pathlength)	≤ 0.002 %T
Wavelength Accuracy	± 0.15 nm UV/Vis	
	± 0.5 nm NIR	
Wavelength Reproducibility	UV/Vis (Deuterium Lamp Lines)	≤ 0.06 nm
	NIR (Deuterium Lamp Lines)	≤ 0.1 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 <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> -Solution USP/DAP method	± 0.010 A

Photometric Linearity	At 3.0 A (Addition of filters UV/Vis at 546.1 nm, 2 nm Slit, 1-sec. integration time) (Residual from filter addition method)	$\pm 0.020$ A
Photometric Reproducibility	1 A with NIST 930D Filter at 546.1 nm Standard Deviation for 10 measurements	$\leq 0.0008$ A
Photometric Range	6 A (using reference-beam attenuation)	
Photometric Display	Unlimited	
Bandpass	0.17 nm - 5.00 nm in 0.01 nm increments UV/Vis range 0.20 nm - 20.00 nm in 0.04 nm increments NIR range Fixed resolution, constant energy or slit programming.	
Photometric Stability	After warm-up at 500 nm, 0 A, 2 nm Slit, 2-sec. integration time, Peak to Peak	$\leq 0.0002$ A/h
Baseline Flatness	190 nm - 3100 nm, Slit (UV/Vis) 2 nm, Slit (NIR) Servo Mode, NIR Gain = 1, integration time 3100-860.8 nm: 0.24 sec., integration time 860.8-190 nm: 0.20 sec., no smoothing applied	$\pm 0.0015$ A
Photometric Noise RMS	0 A and 190 nm 0 A and 500 nm 2 A and 500 nm 4 A and 500 nm 3 A and 1500 nm (2 nm Slit, 1-sec. integration time, Gain 1 NIR)	$\leq 0.0001$ A $\leq 0.00005$ A $\leq 0.0002$ A $\leq 0.002$ A $\leq 0.003$ A
Primary Sample Compartment	200 mm x 300 mm x 220 mm (W x D x H)	
Secondary Sample Compartment	480 mm x 300 mm x 220 mm (W x D x H)	
Instrument Dimension (W x D x H)	1020 mm x 740 mm x 300 mm	
Instrument Weight	~ 77 kg	
Digital I/O	RS 232 C	
Light Beam	90 mm above the base plate 120 mm beam separation 3 mm - 12 mm beam height	
Instrument Requirements	Power Temperature Recommended Humidity	90 VAC - 250 VAC, 50/60 Hz; 400 VA 10 °C - 35 °C 10 - 70% relative humidity, non-condensing

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