



HIGH-PERFORMANCE UV-MWIR SPECTROPHOTOMETERS FOR ADVANCED OPTICAL COATINGS

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PHOTON RT

WAVELENGTH RANGE • 185 - 5200 nm



PHOTON RT

THE ONLY INSTRUMENT DESIGNED SPECIFICALLY FOR QUALITY INSPECTION OF OPTICAL COATINGS



UNIQUE DESIGN

- Unique optical design measurement from 185 nm up to 5200 nm in one instrument
- Multi-axis movement of the measurement channel - testing of flats and sophisticated cemented prisms at any angles of incidence with variable off-set or arbitrary direction of the outgoing beam
- Special low-noise detectors are selected to qualify coatings with extreme specifications
- Optional sample stages designed for fast, complex or batch measurement
- Improved monochromator generates a highly collimated beam, produces low stray light and ensures a high signal-to-noise ratio

Auto-detect motorized stages

Z STAGE



Offers baseline calibration and subsequent test without user intervention

XY-MZF STAGE. MOTORIZED



Designed for testing a sample at multiple surface points

MULTIPLE SAMPLE STAGE



Designed for fully automatic testing of multiple samples including baseline calibration

UNIQUE RESULTS*

MEASUREMENT OF COMPLEX PRISMS WITH BEAM OFFSET





CEMENTED PRISM WITH BEAM OFF-SET



Measurement of beams B and C in one run without moving the sample *The example results shown are ONLY obtainable by using the PHOTON RT

1392 nm BROADBAND NEAR IR LASER MIRROR



Max measured absolute specular reflectance:

99,9953%

BEAM SPLITTER MEASUREMENTS AT VARIABLE AOI





+30°

Designed specifically for optics used in AR and VR devices

SPECIFICATIONS

PHOTON RT Spectrophotometer					
MODEL	0217	0226		0252	
OPTICAL CONFIGURATION					
Photometric functions	%T, %R				
Effective wavelength range, nm	185 - 1700	185 - 2600		185 - 5200	
Built-in polarizer, nm	220 - 1700	220 - 2600		220 - 5200	
Optical scheme of monochromator	Czerny-Turner				
Optics	Mirror, MgF ₂				
Reference channel	Yes				
Wavelength sampling pitch, nm	0,1 - 100				
Spot size on the measured sample, mm	$6 \times 2 \rightarrow 2 \times 2$				
Turning pitch angle of sample stage	0,01 deg				
Turning pitch angle of photodetectors	0,01 deg				
Beam displacement compensation	-60,0 mm 0 +60,0 mm (actual value depends on detector position)				
Variable angle measurements	 0 - 75 deg for transmittance (up to 85 deg with 7085 sample stage) 8 - 75 deg for absolute reflectance (up to 85 deg with 7085 sample stage) 				
	 Detector rotation range: 300 deg 180 deg 16 deg Sample stage rotation range: -85 deg 0 deg +85 deg 				
Wavelength subranges, nm	Ultimate spectral resolution, nm (non-polarized light)	Wavelength accuracy, nm		Wavelength repeat accuracy, nm	
185 - 990 nm	0,6	+/- 0,5		+/- 0,25	
990 - 1700 / 2450 / 2600 nm	1,2	+/- 1,0		+/- 0,5	
2450 - 5200 nm	2,4	+/- 2,0		+/- 1,0	
Stray light level, % at 532 nm	<0,1				
Angle of beam divergence	+/-1 deg				
Photometric accuracy	(VIS)	s (MWIR)			
	NIST SRM 930e: +/-0,003 Abs (1Abs) NIST SRM 1930: +/-0,003 Abs (0,33Abs);	e: +/-0,003 Abs (1Abs) NRC NG11): +/-0,003 Abs (0,33Abs); (0,49 Abs)		, VG11 SRM: +/-0,0013 Abs (0,13 Abs); +/-0,0053 Abs Abs); +/-0,0011 Abs (0,82 Abs); +/-0,005 Abs (1,0 Abs)	
	+/-0,006 Abs (2Abs)				
	Determined using 0,1 second accumulation, maximum deviation for 10 subs		lation for 10 subsequent me	equent measurements	
Photometric repeat accuracy (VIS range)	(VIS) NIST SRM 930e: +/-0,0004 Abs (1 Abs) NIST SRM 1930: +/-0,0001 Abs (0,33 Abs); +/-0,005 Abs (2 Abs)				
			NRC NGTT SRIVE +/-U,UUU3 ADS (U,I3 ADS); +/-U,UUU8 ADS (0 49 Abs): +/-0 0022 Abs (0 82 Abs): +/-0 0031 Abs (1 0 Abs)		
			(0,40,400,10,100,000,27,000,17,00,000,100,000,100,000,100,000,100,0000		
	Determined using 0,1 second accumulation, maximum deviation for 10 subsequent measurement				
Stability of baseline %/hour (VIS range)	<01 (one hour warm-up time)				
Unattended polarization measurements	S P (S+P) / 2				
with built-in polarizers					
Zero order / Green beam	Built-in, automatic				
Light sources, preinstalled	1. Deuterium lamp: 1 ea				
	2. Halogen lamp: 1 ea				
	3. IR source: 1 ea (model 0252)				
	4. HgAr wavelength calibration lamp: 1 ea				
Light sources, spare	Halogen lamp: 2 ea (included with shipment). Other spare light sources can be ordered additionally				
SAMPLE COMPARTMENT					
Dovetail baseplate for sample stages	Designed for mounting of motorized and non-motorized sample stages. Integrated controller ensures instant detection of the motorized stage				
Planar sample stage	For measurement of transmission and reflection of planar samples with size bigger than 12,0 × 10,0 mm				
Independent positioning	Independent computer controlled positioning of sample stage and photodetectors unit				
Synchronized positioning	Synchronized computer controlled positioning of sample stage and photodetectors unit depending on the selected photometric function				
Size of samples	Min. 12,0 × 10,0 mm - for measurement at 0 - 10 deg incidence angles				
	Min. 12,0 × 25,0 mm - for measurement at 10 - 75 deg incidence angles				
	Max. sample size: • up to 152,4 mm (6") with closed lid for standard sample stage • up to 140.0 mm (5.1/2") with closed lid for 7 sample stage				
Comple stage for DBC subse					
Sample stage for PBS cubes	50,0 × 50,0 × 50,0 mm sample stage with two additional cube holders I" X I" X I" and I/2" X I/2" X I/2"				
	I. MP Stage. Multiple sample measurement				
sample stage	3. XY-MZE Stage. Measurement of multi-zone filters and linear variable filters				
	4. Z Stage. Sequential baseline calibration and sample measurement without opening the lid				
	5. QW Stage. Testing of waveplates				
	6. R Stage. 360 deg rotation of the sample around the beam axis				
	7. 7085 Stage. Measurement at extreme a	angles of incide	ence up to 85 deg		
INTERFACE, DIMENSIONS AND WEIGHT					
Interface	USB 2.0, Windows-based, English				
File saving formats	res (txt), xls, pdf, csv				
Power consumption, Watt	110				
Power input	TIU - 220 V (+/-10%), 50 - 60 Hz				
Width x Depth x Height, mm (inches)	425 × 625 × 285 (16 3/4" x 24 2/3" x 10 1/5")				
Net weight, kg (lbs)	50 (110)				

Distribution in the UK & Ireland

\lambda Lambda

Characterisation, **Measurement &** Analysis

Lambda Photometrics Limited Lambda House Batford Mill Harpenden Herts AL5 5BZ United Kingdom E: info@lambdaphoto.co.uk

- W: www.lambdaphoto.co.uk
- +44 (0)1582 764334 T:
- F: +44 (0)1582 712084

