



PHOTON RT

**UV-VIS-MWIR
SPECTROPHOTOMETERS FOR COATERS**

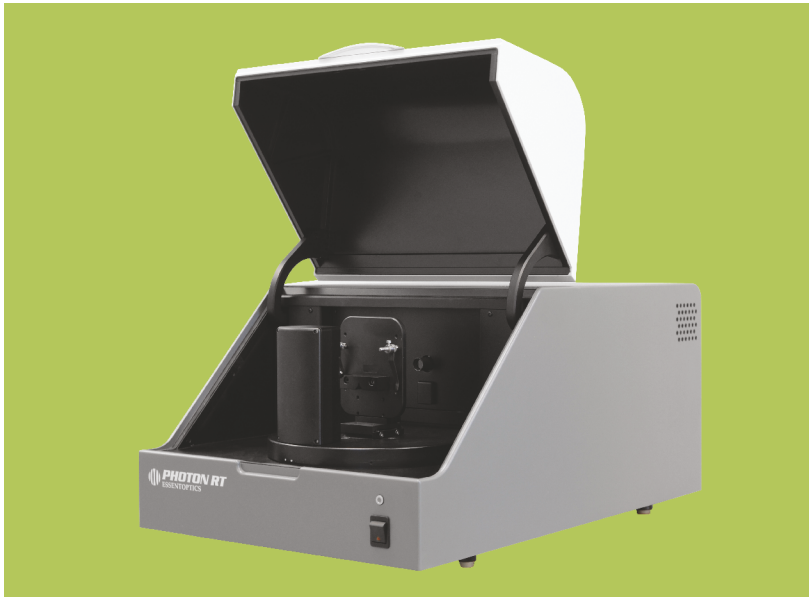


ADVANCED SOLUTIONS FOR TESTING OF OPTICAL COATINGS

PHOTON RT

THE ONLY INSTRUMENT DESIGNED SPECIFICALLY TO TEST OPTICAL COATINGS

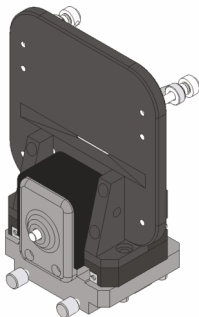
UNIQUE DESIGN



- ➔ Unique optical design – measurement from 185 nm up to 5200 nm in one instrument
- ➔ Multi-axis movement of the measurement channel - testing of 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 measurements
- ➔ Improved monochromator generates a highly collimated beam, produces low stray light and gives a high signal-to-noise ratio

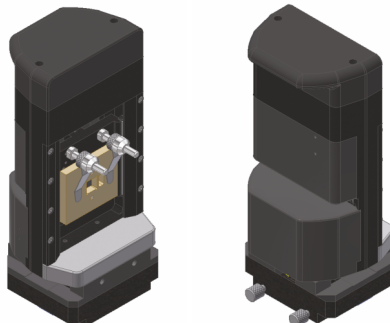
AUTO-DETECT MOTORIZED STAGES

Z STAGE



Offers baseline calibration and subsequent test without user intervention

XY STAGE



Designed for testing a sample at multiple surface points

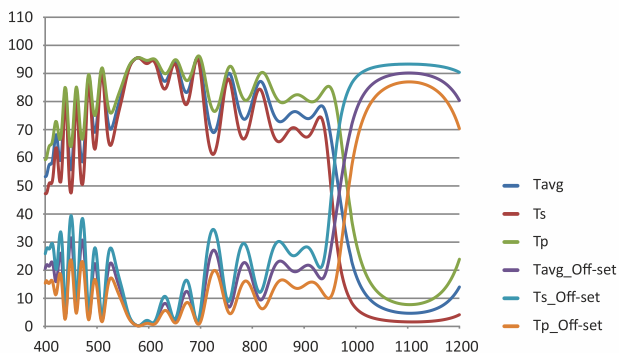
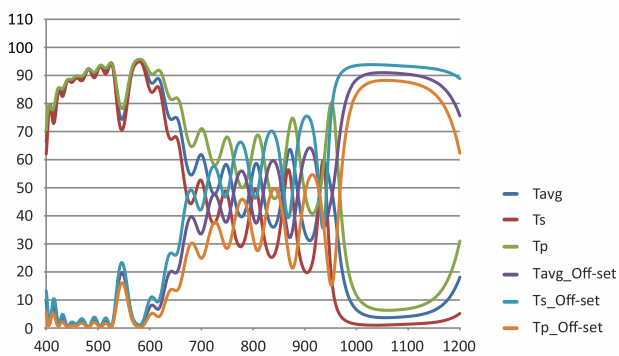
MULTIPLE SAMPLE STAGE



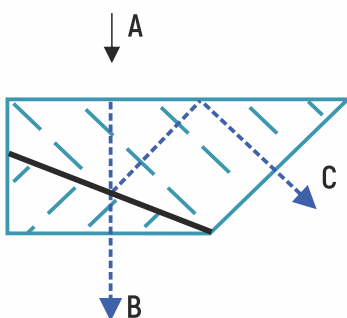
Designed for fully automatic testing of 7 samples (1" or 30 mm OD size) including baseline calibration

UNIQUE RESULTS*

MEASUREMENT OF COMPLEX PRISMS WITH BEAM OFFSET



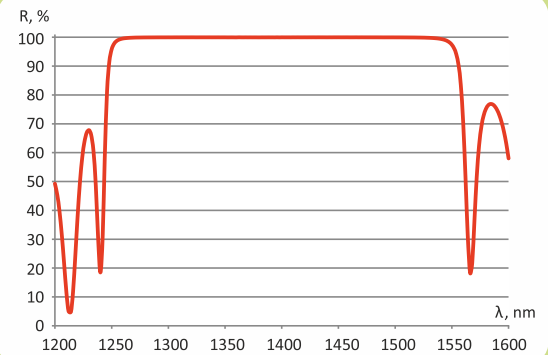
CEMENTED PRISM WITH BEAM OFF-SET



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

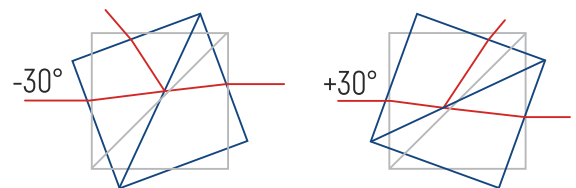
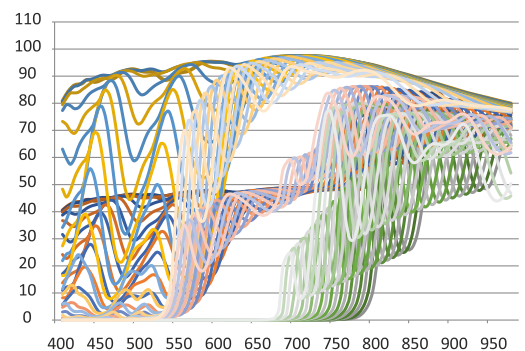
1392 nm BROADBAND NEAR IR LASER MIRROR



Max measured absolute specular reflectance:

99,9953%

BEAM SPLITTER MEASUREMENTS AT VARIABLE AOI



Designed specifically for optics used in AR and VR devices

SPECIFICATIONS

PRODUCT SPECIFICATIONS	PHOTON RT Spectrophotometer					
	185 - 1700	185 - 3500	185 - 5200	380 - 1700	380 - 3500	380 - 5200
Optical scheme of monochromator	Czerny-Turner					
Optics	Mirror, MgF2					
Reference channel	Yes					
Wavelength sampling pitch, nm	0,1 - 100					
Wavelength scanning speed, nm/min	3 000 [at 5 nm wavelength sampling pitch]					
Spot size on the measured sample, mm	6 x 2					
Turning pitch angle of sample stage	0,01 deg					
Turning pitch angle of photodetectors	0,01 deg					
Beam displacement compensation	-60 mm ... 0 ... +60 mm (actual value depends on detector position)					
Variable angle measurements	1. 0-75 deg for transmittance (up to 85 deg with 70-85 sample stage) 2. 8-75 deg for absolute reflectance (up to 85 deg with 70-85 sample stage) 3. Detector rotation range: 300 deg... 180 deg... 16 deg 4. 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 - 350 nm	0,3		+/- 0,25		+/- 0,12	
350 (380) - 990 nm	0,6		+/- 0,5		+/- 0,25	
990 - 1700 nm	1,2		+/- 1,0		+/- 0,5	
1700 - 2450 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] NIST SRM 930e: +/-0.003 Abs (1 Abs) NIST SRM 1930: +/-0.003 Abs (0.33 Abs); +/-0.006 Abs (2 Abs) [MWIR] NRC NG11 SRM: +/-0.0013 Abs (0.13 Abs); +/-0.0053 Abs (0.49 Abs); +/-0.0011 Abs (0.82 Abs); +/-0.005 Abs (1.0 Abs)					
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) [MWIR] NRC NG11 SRM: +/-0.0003 Abs (0.13 Abs); +/-0.0008 Abs (0.49 Abs); +/-0.0022 Abs (0.82 Abs); +/-0.0034 Abs (1.0 Abs) Determined using 0,1 second accumulation, maximum deviation for 10 subsequent measurements					
Stability of baseline, %/hour [VIS range]	< 0,1 (One hour warm-up time)					
Unattended polarization measurements with built-in polarizers	a. S, P, (S+P)/2, Random b. User defined S:P ratio for incident beam (20/80, 30/70 etc)					
Built-in polarizers, nm	220 - 1700	220 - 3500	220 - 5200	380 - 1700	380 - 3500	380 - 5200
Zero order / Green beam	Built-in, automatic					
Light sources, preinstalled	1. Halogen lamp: 1 ea 2. HgAr wavelength calibration verification lamp: 1 ea					
	Deuterium lamp: 1 ea	Deuterium lamp: 1 ea	Deuterium lamp: 1 ea			
			IR source: 1 ea			IR source: 1 ea
Light sources, spare	Halogen lamp: 2 ea (included into shipment). Other light sources can be ordered as spares as well.					
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 12x10 mm.					
Independent positioning	Independent computer controlled positioning of sample stage and photodetectors unit					
Synchronized positioning	Synchronized computer controlled positioning for sample stage and photodetectors unit depending on the chosen photometric function					
Size of samples	Min. 12 x 10 mm – for measurement at 0 - 10 deg incidence angles. Min. 12 x 25 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 Z sample stage					
Sample stage for PBS cubes	50 x 50 x 50 mm sample stage with two additional cube holders 1" x 1" x 1" and 1/2" x 1/2" x 1/2"					
Optional motorized and non-motorized sample stages	1. Multiposition Stage base, motorized, auto-detect 11 1" / 8 position disk for multiposition stage base 12 30 mm / 8 position disk for multiposition stage base 2. XY Stage. +/- 12,5 mm travel. Sample size 40x44 mm 3. Z Stage 4. 70-85 deg AOI Sample Stage, not motorized (Photon RT 1) 5. 70-85 deg AOI Sample Stage, not motorized (Photon RT 2)					
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	110-220 V (+/- 10%), 50-60 Hz					
Purging	Sample compartment, light sources, monochromator					
Width x Depth x Height, mm (inches)	422 x 656 x 285 (16 3/5" x 25 4/5" x 11 4/5"), including handle and feet					
Net weight, kg (lbs)	50 (110)					