

## PHOTON RT UV-VIS-NIR Universal Scanning Spectrophotometer

### 2011 Best Innovative Product Medal

7th International Forum "Optics-Expo 2011"  
October 25-28, 2011, Moscow, Russia

### 2012 Laser Association Best Product Award

7th International Exhibition "Photonics, World of Lasers and Optics 2012"  
April 17-20, 2012, Moscow, Russia.

The **PHOTON RT UV-VIS-NIR** scanning spectrophotometer is a universal instrument designed specifically for **unattended** measurement of optical parts with coatings. The instrument is produced in six configurations relative to effective spectral range meeting individual customer measurement needs - from 380-1700 nm up to 190-4500 nm.

The configuration of the PHOTON RT spectrophotometer in many respects changes the approach to the simplicity, versatility and speed of measurements. The measurement of absolute reflectance and transmittance at variable angles and polarization modes are carried out unattended and without any additional assemblies.

Original optical scheme of the spectrophotometer includes a reference channel and provides for study of optical parts from 10mm up to 120mm in diameter.

Extensive QA/QC analyses, research and development of advanced thin film materials is supported with the built-in determination of  $n$ ,  $k$ , and  $d$  parameters in the UV-Vis-NIR range with spectrophotometric reverse engineering.

The PHOTON RT spectrophotometer ensures trustful measurements with a spectral resolution up to 1.2 nm, photometric accuracy to 0.0050 and repeat accuracy up to 0.0025 in transmission mode meeting the modern requirements for various research studies.

The instrument is very compact and convenient for everyday use. The body with a large lid offers easy and unobstructed access to the measuring compartment allowing the optical parts to be placed quickly and securely.

The 2 year warranty is provided as standard.



### Features and Capabilities

- Transmittance  $T$ ,  $T_s$ ,  $T_p$  (for angles 0-75°)
- Absolute reflectance  $R$ ,  $R_s$ ,  $R_p$  (for angles 8-75°)
- Unattended measurement and calculation of  $T(s+p)/2$  and  $R(s+p)/2$  for selected angle of incidence
- $nkd$  determination in UV-VIS-NIR range with spectrophotometric reverse engineering
- Measurement of polarizing beamsplitters
- Optical density of the sample, 0 – 4 (D)
- Integral values for  $R$  and  $T$  for selected spectral range
- Light scattering indicatrix for transmittance and reflectance
- Kinetic measurements
- Color coordinates

## Specifications

PARAMETER	DESCRIPTION
<b>OPTICAL CONFIGURATION</b>	
Optical scheme of monochromator	Cherny-Turner
Optics	Mirror, Al + SiO <sub>2</sub> , Al+MgF <sub>2</sub>
Reference channel	Yes
Wavelength sampling pitch, nm	0,5 to 100
Wavelength scanning speed, nm/min	3 000 (at 5 nm wavelength sampling pitch)
Spot size on the measured sample, mm	6x1
Photometric functions	%T, %R
Tuning pitch angle of sample table	0,1°
Turning pitch angle of photodetectors	0,1°
Positioning accuracy of the tuning pitch angle of sample table	0,05°
Effective spectral range, nm (instrument configuration options)	190-1700, 190-2700, 190-4500, 380-1700, 380-2700, 380-4500
Spectral resolution, nm *	
190-1000 nm	Up to 1,2
1000-2700 nm	Up to 2,4
2500-4500 nm	Up to 4,8
Wavelength accuracy, nm	+/- 0,24
Wavelength repeat accuracy, nm	+/- 0,12
Scattered light level, % max (@ 532 nm)	< 0,05
Angle of beam divergence	2°
Photometric accuracy	0,0050 x T
Photometric repeat accuracy	0,0025 x T
Stability of baseline, %/hour **	0,1 (30 minutes warm-up time)
Light source	Deuterium lamp, Halogen lamp
Built-In Polarizers	S-polarization, P-polarization Standard: 380 - 2200 nm. Optional: 220 - 2200 nm, 220-4500 nm, 380-4500 nm.
<b>SAMPLE COMPARTMENT</b>	
Sample table	For measurement of transmission and reflection of plane samples with size bigger than 12x10 mm
Independent setting	Independent positioning for sample table and photodetectors unit
Synchronized setting	Synchronized positioning for sample table and photodetectors unit depending on the chosen photometric function (R or T)
Size of samples	Min. 12x10 mm – for measurement at 0-10 deg incidence angles. Min. 12x25 mm - for measurement at 10-60 deg incidence angles Max. sample size – up to Ø120mm
<b>INTERFACE, DIMENSION AND WEIGHT</b>	
Interface	USB 2.0
Power consumption, Wt	110
Power input	110/220 V, 50/60 Hz
Width x Depth x Height, mm	420 x 610 x 270
Net weight, kg	35
Supply set	PHOTON RT Spectrophotometer, Operation Manual, USB cable, power cable, software package, spare halogen lamp.
* measured at optimum signal/noise ratio	
**after 30 minutes warm-up time	

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