

# ISP 50-UV

## PTFE Integrating Sphere

### Key features at a glance

- ▲ High sensitivity UV measurements from 200 nm
- ▲ High optical throughput for fast production testing
- ▲ PTB traceable calibration

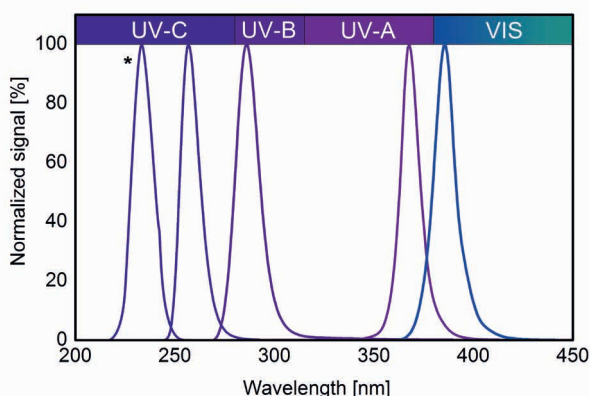


The ISP 50-UV PTFE integrating sphere is particularly designed for highly sensitive UV measurements in production environments. In combination with Instrument Systems' well-proven CAS spectroradiometers the ISP 50-UV facilitates high throughput, high stability and high accuracy measurements down to 200 nm.

### \\ HIGH OPTICAL THROUGHPUT AND SENSITIVITY FOR UV

Instrument Systems' ISP 50-UV integrating sphere with 50 mm internal diameter for UV measurements of radiant flux uses Polytetrafluoroethylene (PTFE) as a reflective material. PTFE is highly reflective in the UV spectral range down to 200 nm. It therefore allows very high optical throughput, even for challenging UV-B and UV-C emitters down to 200 nm.

The combined use of the ISP 50-UV with Instrument Systems' high-end CAS array spectroradiometers permits high sensitivity measurements with high dynamic measuring range in the entire UV spectral region.



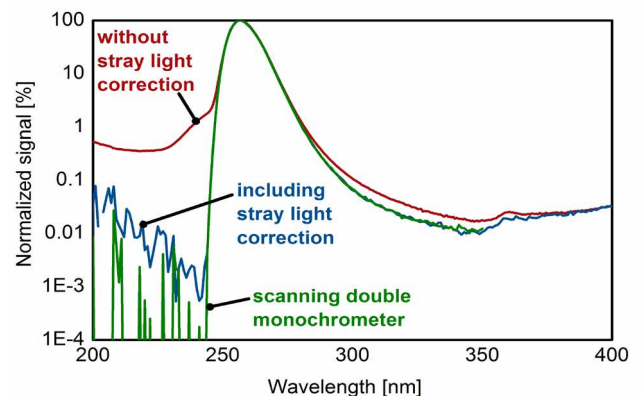
▲ Normalized spectra of different UV-LEDs with peak wavelengths at 235, 255, 285, 365 and 385 nm measured with CAS 140CT/D and PTFE integrating sphere at Instrument Systems.

\*UV-LED spectrum (220-260 nm) used with kind permission from TU Berlin and Ferdinand Braun-Institute Berlin.

### \\ STRAY LIGHT CORRECTION AND PTB TRACEABILITY

In addition to the very low stray light design of the CAS spectrographs state-of-the-art numerical stray light correction is optionally available for CAS 140D spectroradiometers. This routine further improves the stray light performance. It achieves very low noise and high measurement accuracy down to 200 nm which additionally facilitates high accuracy measurements in the UV spectral range.

All Instrument Systems UV measurement solutions with ISP 50-UV integrating sphere are delivered with a PTB traceable calibration.



▲ Numerical stray light correction applied to a 260 nm UV-LED spectrum measured with CAS 140CT. Stray light is significantly suppressed to a level close to a scanning double monochromator.

## \\ TECHNICAL SPECIFICATIONS

ISP 50-UV					
Internal diameter	50 mm				
Measurement port diameter	15 mm				
Measurement port configuration	Protective flat window always included				
Reflective material	PTFE				
Usable wavelength range	200 – 2500 nm				
Minimum measurable radiant power (typical) <sup>1</sup> for spectral ranges of $\pm 15$ nm around typical UV LED peak wavelengths					
Integration time [ms]	(230 $\pm$ 15) nm	(280 $\pm$ 15) nm	(305 $\pm$ 15) nm	(365 $\pm$ 15) nm	(405 $\pm$ 15) nm
10 ms	7.6 $\mu$ W	2.7 $\mu$ W	2.1 $\mu$ W	1.8 $\mu$ W	1.3 $\mu$ W
100 ms	0.76 $\mu$ W	0.27 $\mu$ W	0.21 $\mu$ W	0.18 $\mu$ W	0.13 $\mu$ W
1000 ms	97 nW	32 nW	26 $\mu$ W	22 nW	16 nW
10000 ms	19 nW	6.6 nW	5.7 nW	4.7 nW	3.4 nW

<sup>1</sup> Measured with CAS140D-157 including stray light correction. Minimum measurable radiant power for the corresponding spectral range and integration time at a signal to noise ratio of 10:1 without averaging.

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## \\ ORDERING INFORMATION

Order number	Description
<b>ISP 50-UV PTFE integrating sphere</b>	
ISP50UV-100	Integrating sphere with 50 mm internal diameter for UV measurements; PTFE reflective material; protective quartz window; measurement port 15 mm diameter; connector for fiber bundle; for mounting on a mechanical sorter or prober
<b>Calibrations</b>	
CAL-145	Calibration of the input port of integrating spheres in irradiance; calibration certificate for irradiance; calibration file converted to radiant flux; wavelength range UV and VIS/NIR; e.g. for calibration of ISP50UV, ISP100UV, ISP150UV, and ISP250UV with protective window or dome
CAL-191	Spectral calibration of the UV density filters; spectral range UV/VIS/NIR
CAL-195	Creation of stray light correction matrix for CAS140D; accessory calibration separately