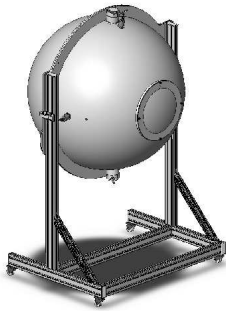


- **For measuring total radiant power and luminous flux of high power LEDs, LED-modules, and lamps**
- **Universal sample stage for mounting LED modules**
- **Optional lamp post to be mounted in hanging or upright position**
- **300 mm side port for mounting LED adapters and modules**
- **1000 mm diameter, integrated auxiliary light source**



WE BRING QUALITY TO LIGHT

## ISP 1000

### Integrating Sphere for Measuring Total Radiant Power and Luminous Flux

The ISP 1000 integrating sphere from Instrument Systems features a diameter of 1000 mm and has been designed for accurate measurement of the total radiant power and luminous flux of LED modules, high-power LEDs, and lamps. Samples can be measured either from the side port, on a sample stage inside

the sphere, or on the internal lamp post. The optical coating of the ISP 1000 consists of BaSO<sub>4</sub> with approx. 97% reflection. A built-in PT-100 sensor allows monitoring of the internal temperature. The ISP1000 is mounted on a stable aluminium frame on rollers.



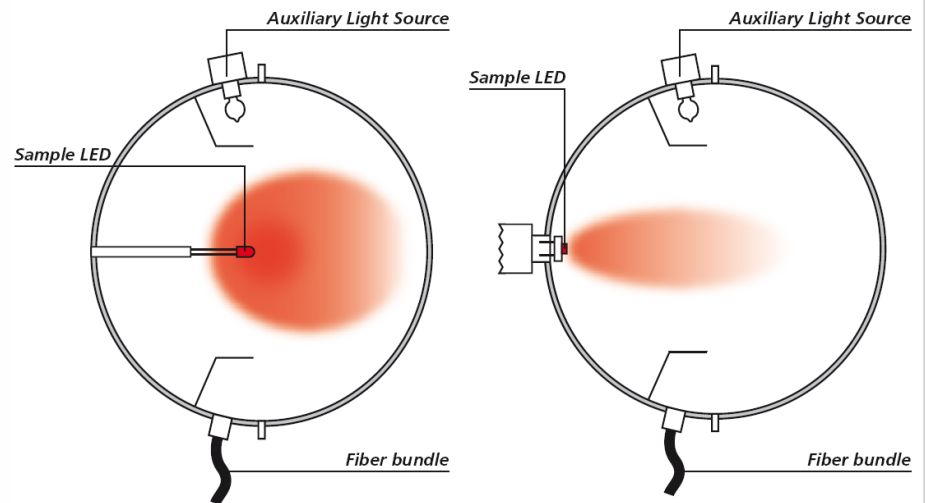
All spectrometers from Instrument Systems can be interfaced with the ISP 1000 by means of their fiber-optic connection on the detector port. Special adapter plates and proven LED test sockets are used to mount LEDs and launch the light radiation

into the sphere. The universal, 300-mm diameter entrance port of the ISP 1000 can be used to test larger samples. Any self-absorption effects, which are caused by the sample itself, can be compensated by the integrated auxiliary light source.

## Measurement in $2\pi$ and $4\pi$ configuration

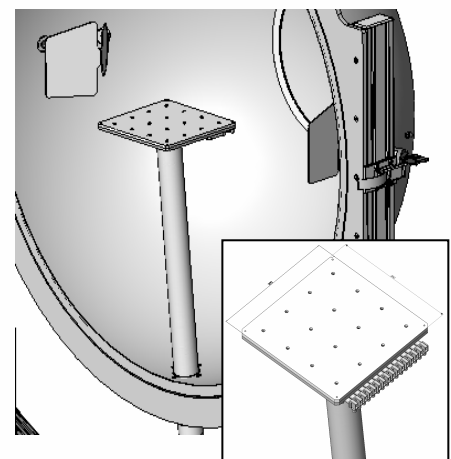
A distinction is made between two different measurement geometries when measuring with integrating spheres. With the  $4\pi$  configuration, the light source to be tested is positioned at the center of the sphere in order to measure the light radiation emitted in all directions (total luminous flux).

With the  $2\pi$  configuration, the test sample is positioned at an opening in the wall of the sphere so that only the light radiated into the front hemisphere is captured during measurement. This configuration is particularly suitable for LED light sources, whose radiation pattern is usually in the forward direction.



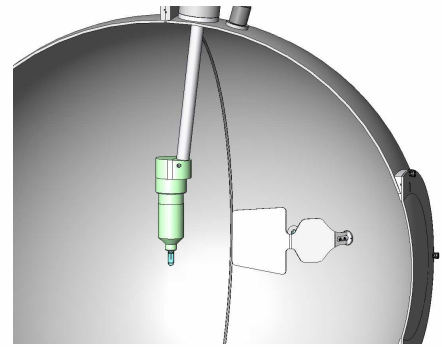
## Internal sample stage for large LED modules

The easy-to-open ISP 1000 is equipped with an height adjustable sample stage allowing the user to position his sample exactly in the center of the sphere. The sample mount is used to hold the test specimen when measuring with the  $4\pi$  configuration. It is equipped with a 16 pole connector used to supply power to the sample module and for measuring lines. A 25mm thread pattern allows easy and flexible mounting of all kinds of modules.



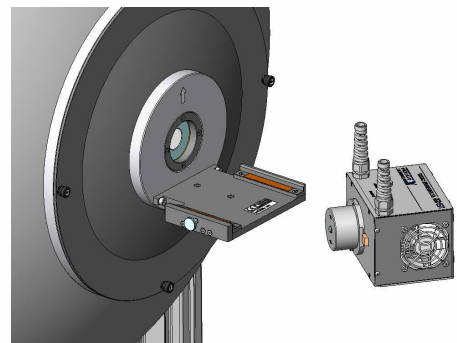
### Lamp post for true $4\pi$ measurement

Instrument Systems supplies an optional internal lamp post for traditional measurements of light bulbs. Lamps can be mounted either in hanging or standing position. This way true  $4\pi$  measurements can be realized. Spectral and absolute calibrations of the ISP 1000 are performed with a 50 W halogen lamp. In combination with the calibration lamps and highly stabilized power supplies provided by Instrument Systems onsite recalibration of the ISP 1000 can be easily performed by the user without moving the sphere.



### 300mm side port for easy access

The side port of the ISP1000 allows to mount samples without opening the sphere. This port is recommended for all samples having only forward emission. The 300mm aperture is surrounded by a flange with mounting threads to easily mount all different kinds of modules. An adapter plate with an aperture flange 50 mm in diameter has been developed for the LED-850 High-Power LED Test Adapter with TEC temperature control. A solid base plate with clamping jaws provides for reliable positioning of



the LED-850LED test adapter. The measurement port is defined by a 25 mm aperture.

### Auxiliary light source compensates self absorption

Even with the innovative design of the ISP 1000, it may still be necessary to take the influence of the test sample itself into account during measurement. This 'self-absorption' effect depends on the size and color of the test object. It leads to an attenuation of the light radiation and therefore to a reduction in the measurement signal. This reduction can be considerable, especially with large, dark-colored samples. To compensate this effect, the ISP 1000 is equipped with an auxiliary light source. This light source is used to define the spectral absorption characteristics of the test sample. These characteristics are then set against the actual measurement results. The



auxiliary light source of the ISP 1000 comprises a 50 W halogen lamp that is connected to a power supply unit from outside. The power supply unit must be very stable in order to ensure the auxiliary light source operates reliably.

## Data and specifications

	ISP1000-100
Inside diameter	1000 mm
Inner coating	Barium sulfate (BaSO <sub>4</sub> )
Spectral range	240 – 2600 nm
Measurement port diameter	300 mm
Spectrometer connection	Via fiber bundle
Outside dimensions (W, D, H), closed	1200 x 1025 x 1790 mm
Outside dimensions (W, D, H), open 90°	1665 x 1710 x 1790 mm
Outside dimensions (W, D, H), open 180°	2350 x 845 x 1790 mm
Auxiliary light source operating voltage	12 V / 50 W
Weight	Approx. 76 kg

## Ordering information

Order No.	Description
<b>ISP 1000 Integrating Sphere</b>	
<b>ISP1000-100</b>	Integrating sphere with 1 m diameter; for measuring luminous and radiant flux of lamps, LEDs and LED modules <ul style="list-style-type: none"><li>▪ pivoting arrangement for opening and closing of the sphere</li><li>▪ barium sulphate coating</li><li>▪ measurement port with 300 mm diameter, for mounting the sample from outside of the sphere; the port can be closed</li><li>▪ halogen auxiliary lamp with socket</li><li>▪ Thermometer</li><li>▪ adapter for fiber bundle (without fiber bundle)</li></ul>
<b>Options</b>	
<b>ISP1000-211</b>	Adapter for the 300 mm measurement port; includes flange for LED test sockets with 25 mm diameter and baffle with 7, 10, 15 and 20 mm aperture
<b>ISP1000-220</b>	Adapter for the 300 mm measurement port; includes flange for LED test sockets with 50 mm diameter and baffle with 25 mm aperture
<b>ISP1000-300</b>	Internal lamp post for mounting the sample in the center of the sphere; hanging or upright position possible; including socket for halogen lamp type G4/GX5.3/G6.35
<b>ISP1000-400</b>	Height adjustable sample stage (200 x 200 mm) for mounting larger samples inside the sphere; including 16 pole strip terminal for electrical connection

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