

MODULAR INTEGRATING SPHERE CONCEPT

Individually configurable integrating spheres -
Made simple with the UM construction kit
system from Gigahertz-Optik GmbH.



Gigahertz-Optik

Member of the BERGHOF GROUP

Your individual integrating sphere

Integrating spheres are an important component in many photonic and optical systems. They are used both as detectors for measuring divergent light sources and as sources of light offering uniform luminous fields with diffuse radiation. Additionally, in material characterization work they are used for the measurement of reflection, transmission, absorption, photoluminescence, quantum efficiency and much more. Gigahertz-Optik GmbH offers bespoke integrating spheres configurations with cost effective solutions for the arrangement, size and design of ports as well as a comprehensive range of accessories.

Reference examples - An „ideas guide“ for configuring your own customized integrating sphere

A selection of configuration examples are given here to illustrate the versatility of the UM construction kit. These reference examples are shown to provide you with ideas on the various ways in which you can configure your own measurement system.

ISS-50-LU-FE

Integrating Sphere Source with hemispherical illuminated field for white balance and uniformity calibration of compact digital cameras with fisheye and super-wide angle lenses.

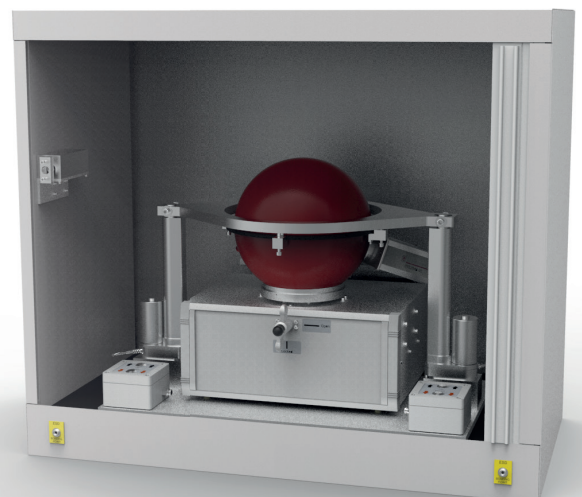
- Individually configured 50 cm integrating sphere.
- Extensive use of modular integrating sphere assemblies.
- Filter wheel with correction filters for sample illumination with standard illuminant types A, D50 and D65.
- Three sources with a 3D baffle sub-assembly for the best possible hemispherical light field uniformity.
- Specimen holder in sphere center with manipulator for precise positioning and contacting of the samples.
- Individually configured electronic unit.
- Traceable calibration.



TPI-21-TH

LED luminous flux measuring system with thermoelectrically controlled LED junction temperature. Interchangeable sample adapters for various LED types.

- Sample mounting stage with thermoelectric element for controlled cooling and heating of the test LEDs.
- 4 - point measuring sockets for common SMD LEDs as well as LED assemblies up to 70mm diameter.
- High-quality Gigahertz-Optik spectroradiometer.
- Integrating sphere with auxiliary lamp configured from UM range.
- Motorized stage for accessing the sample mount.
- Electronics and software for the application.
- Traceable calibration.





ISS-100-LT

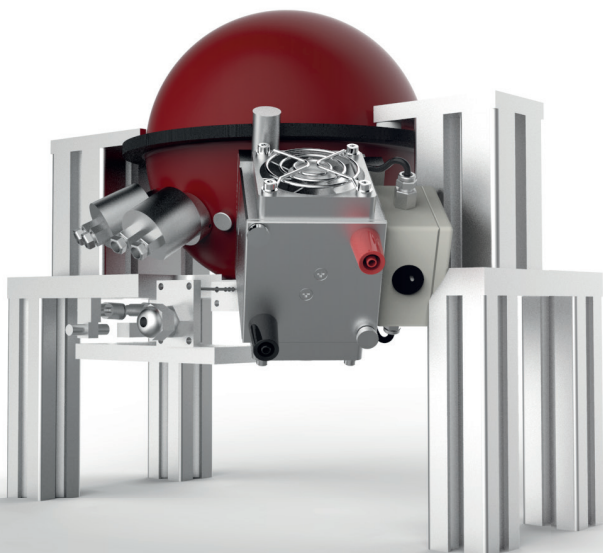
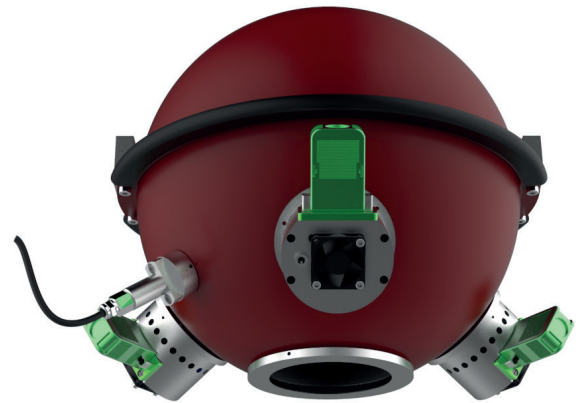
Integrating sphere incorporating highly effective light trap for the determination of veiling glare.

- 100 cm diameter integrating sphere configured as diffuse illumination source.
- Interchangeable baffles in rear section of sphere.
- An additional integrating sphere with internal coating for use as a light trap.
- Integrating spheres configured with UM Series components.
- Customized sphere stand.
- Traceable calibration.

ISS-21-LED

Integrating sphere with remote controlled red, blue and white LEDs for automated test systems.

- Configuration with standard modules from the modular UM Series.
- LEDs with air-cooled heat sinks.
- Three-channel LED power supply with large dynamic range.
- Monitor detector for intensity adjustment.
- Software development kit for system integration.
- Traceable calibration.



ISS-15-EU-HG

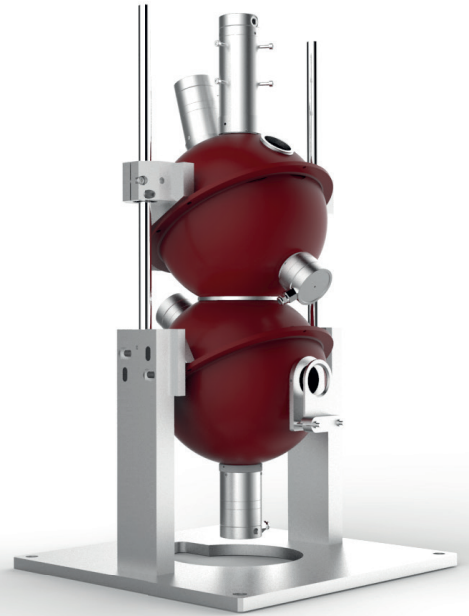
Integrating sphere light source with halogen lamp for the adjustment of automotive rain and headlight sensors.

- 15 cm integrating sphere with stand for direct integration into the customer application.
- NIR monitor detector for the sensitivity adjustment of the rain sensor's detector matrix.
- Additional illumination level monitor for the adjustment of the headlight sensor.
- Halogen lamp with variable aperture for irradiation intensity control at a constant color temperature.
- Traceable calibration.

ISM-15-RT

Integrating sphere set-up for the simultaneous measurement of reflection and transmission of heated samples.

- Samples positioned between two 15cm diameter integrating spheres.
- Port for high-performance, sample heating, FIR laser.
- Sample illumination with interchangeable semiconductor lasers of different wavelengths.
- Detectors for diffuse/specular reflection and diffuse/regular transmission.



UMBB-210

Integrating sphere, 21 cm diameter, with six custom configured ports.

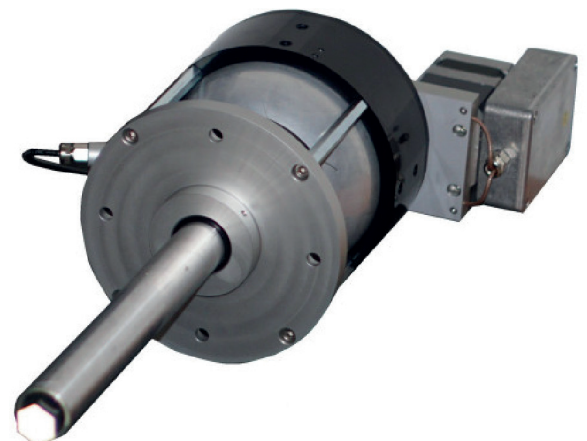
- Example six port sphere configuration - most standard spheres only offer two or three ports.
- With the modular UM Series, custom sphere configurations can be realized cost effectively and quickly.
- Compatible with complete measuring systems.
- Traceable calibration.

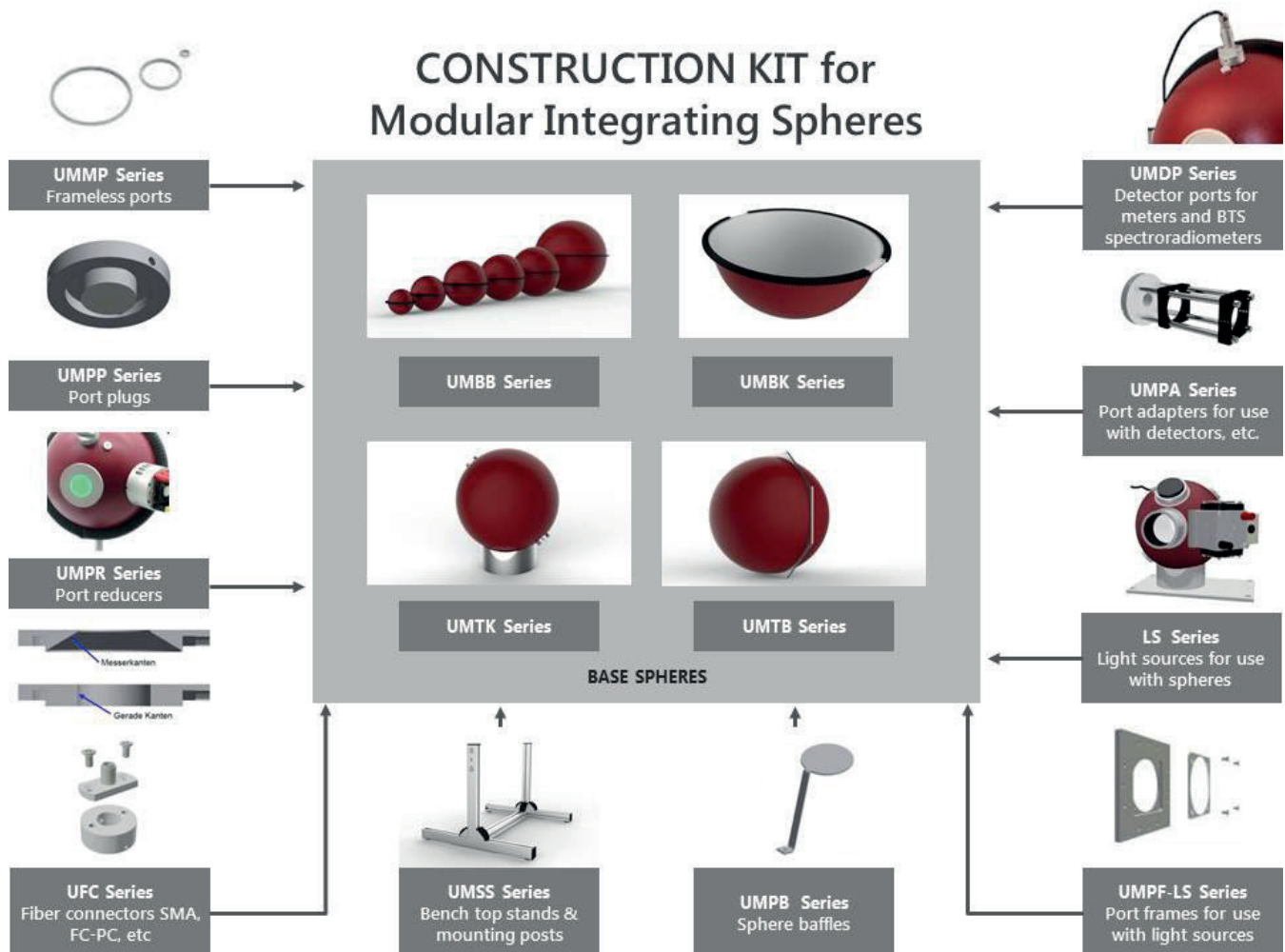


ISS-8P-RVA-ROD

Integrating Sphere Light Source for Applications in Climatic Chambers.

- Used for limited space applications in climate chambers a projected illuminance area in front of the test object.
- 200 mm Long, 24 mm diameter light guide.
- 15 mm diameter light field.
- LED source (red, green, blue, white)
- Remote controlled aperture for intensity adjustment
- System with Control electronics and precision power supplies.





Individually configured integrating spheres in 10 steps.



The UM modular system from Gigahertz-Optik GmbH offers you a wide range of options for the configuration planning of your integrating sphere. For this reason, we have compiled all the important notes, tips and tricks for you in our „Modular Integrating Sphere concept“ article which can be found in the information portal of our website: www.gigahertz-optik.de/en-us/service-and-support/knowledge-base/modular-integrating-sphere-concept/ or by using the QR code alongside.





With its innovative and high-quality products as well as application solutions, Gigahertz-Optik enjoys a high regard from its international customers within the field of optical radiation measurement technology. As a manufacturer, Gigahertz-Optik offers standard and custom-made solutions. Regular investments in new technologies ensure that Gigahertz-Optik is able to offer modern measuring solutions to its customers in industry and science.

Broadband light measurement devices

- UV radiometers
- Photometers
- Light hazard meters

Spectral light meters

- Handheld devices
- High-end devices
- UV-VIS-IR Spectroradiometer
- Weather-proof devices
- Light transmission

Complementary products

- Integrating spheres
- Integrating sphere light sources
- Calibration standards
- Electronics, optomechanics
- Optically diffuse materials

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V2 Modular Integrating Sphere Concept - 2022

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