Instrument Systems
KONICA MINOLTA Group

LEDGON 100

Goniophotometer for LEDs and small LED modules

We bring quality to light.

LEDGON connected to spectrometer.

The features at a glance

- Accurate determination of the luminous intensity distribution and luminous flux of LEDs and small LED modules
- Angular-resolved analysis of spectral and colorimetric quantities
- Type C configuration with motorized phi & theta axis
- Compatible with all spectrometers manufactured by Instrument Systems
- Data export in IES and EULUMDAT format

\\ LEDGON 100 – Goniophotometer for small LEDs modules

The compact LEDGON 100 Goniophotometer was specially developed for the analysis of angle-dependent spatial radiation patterns from individual LEDs and small LED modules. The entire hemisphere can be measured in the forward direction of the LED. The angular resolution of 0.1° means that exact measured values can be obtained even for narrow-angled LEDs with a high level of reproducibility.

Combined with a spectroradiometer from Instrument Systems, all spectral parameters, for example color coordinates or color temperature can be measured as a function of angle. Particularly in the case of white LEDs, these parameters can undergo significant change depending on the observation angle. Knowledge of this characteristic property is extremely important for using white LEDs in illumination technology.

Equipment setup: Light-tight without dark room

The LEDGON unit comprises a flat optical bench and a goniometer unit with two angular axes that is mounted at one end of the bench. One of the rotation stages has a hollow shaft where an LED test socket (any socket except LED-850) from Instrument Systems can be mounted. An optical probe is positioned at the other end of the optical bench allowing the distance to the LED to be set at between 5 and 50 cm. Two baffles can be variably positioned at any point to eliminate stray light.

The entire setup is located in a light-tight enclosure with a folding lid which eliminates the need for a dark room. If larger measuring distances are required, an opening in the side wall of the LEDGON unit also allows light to be measured from outside.

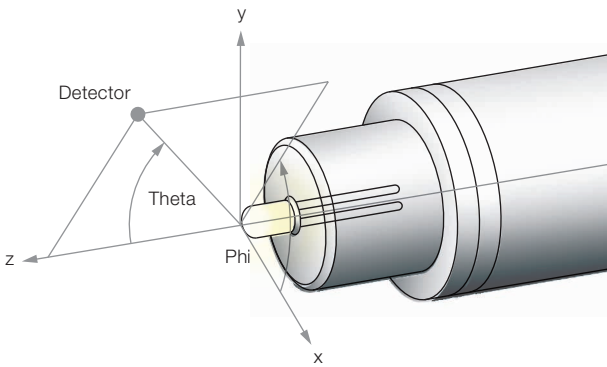
Goniometer unit

The fixed goniometer unit allows the test specimen to be rotated through two axes: the phi and the theta axis. The phi axis permits the specimen to be rotated through a full 360° in the mechanical axis of the test specimen, while the theta axis can be moved perpendicular to this in an angular range of ±100°. The angular accuracy is 1° for the phi axis and 0.1° for the theta axis.

Accessories

An optional sample table permits measurement of LED arrays and small modules. This sample table can be upgraded with an XY translation stage so that e.g. an LED module located off-center can be positioned in the center of rotation.

Optical probes with diffusers, and an optical probe optimized for modules can be supplied for measuring light radiation. The latter is based on a small integrating sphere that allows accurate measurements to be obtained also for test specimens radiating light from an extended surface.



Solid angle definition for phi and theta.

Control and evaluate with SpecWin Pro software

The LEDGON 100 is operated using SpecWin Pro software. Two control modes are available:

- **Sequence mode** allows the adiation pattern of the test specimen to be recorded for the two spatial axes (theta and phi) at equidistant angular increments.
- **Test series mode** permits free definition of test sequences, i.e. measurements at any definable sequences of angular positions.

Other add-ons of SpecWin Pro software and appropriate instrumentation also permit current, voltage and temperature to be included in the goniometric analysis, as well as control and measured variables. For example, Keithley 24xx and Keithley 26xx sourcemeters can be easily installed as an add-on.

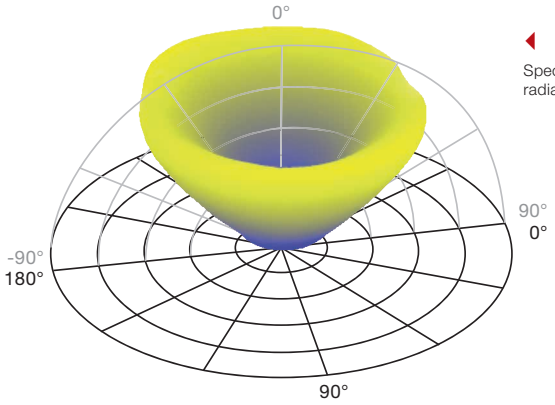
Accurate measurements of luminous flux and radiant power

The LEDGON 100 Goniophotometer is also ideal for precise measurement of radiant power and luminous flux. Potential measuring errors that can be caused by the geometry of integrating spheres are not encountered with goniometric measurement of luminous flux. Instrument Systems has developed an appropriate function for SpecWin Pro software that allows fully automated measurement. However, it should be noted that the angular range for the theta axis is ±100° and hence a measurement is not possible in 4π.

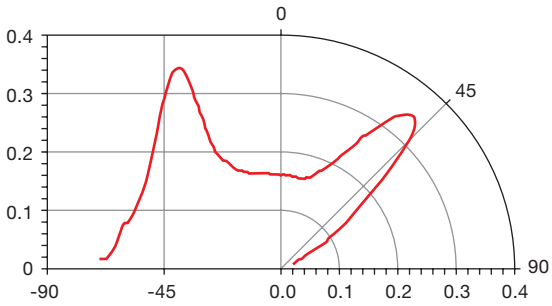
Display options and output formats

The graphics window used to visualize the measurements is the central element of the user interface in the goniometer mode of SpecWin Pro. Five different displays are available for the radiation pattern: a radial, a semiradial and a cartesian view, a two-dimensional spherical display, and a 3D view.

Display of the luminous intensity distribution curve is also important for general lighting. The measured data can be exported in the IES and EULUMDAT format for use in simulation programs.



SpecWin Pro 3D radiation pattern.



Semi-radial display of the luminous intensity distribution curve.

\\ Technical specifications

LEDGON Goniophotometer	
LEDGON 100 basic unit	
Angular range	Theta axis : approx. ±100°; phi axis: 360°
Angular accuracy	Theta axis : 0.1°; phi axis: 1°
LEDGON 130 sample table (optional)	
Clamping distance	2 x 15 mm
Sample dimension (max.)	112 x 112 x 48 mm (W x L x H)
Maximum sample weight	700 g
Voltage supply	10 mm x 0.1 mm max. 1A; 2 mm x 0.75 mm max. 6A
LEDGON 131 XY translation stage (optional)	
Travel range	49 mm per axis
Sample dimension (max.)	64 x 85 x 25 mm (W x L x H)

\\ Ordering information

Order number	Description
LEDGON-100	Goniometer for LEDs and small LED modules; light-tight setup with optical bench (without measuring head); includes stepper motor controller
LEDGON-105	Slit at the side panel of the LEDGON for fiber cable gland
LEDGON-122	Measuring head with diffuser (1 cm² area); incl. OFG-414 fiber bundle and PLG-411 fiber plug adapter; spectral range 380 - 1600 nm
LEDGON-123	Measuring head with diffuser (1 cm² area); incl. OFG-424 quartz fiber bundle and PLG-422 fiber plug adapter; spectral range 190 - 1350 nm
LEDGON-124	Rail carrier for mounting the LED25-100 integrating sphere in the LEDGON
LEDGON-126	Complete measuring head comprising ISP25 integrating sphere with 1 cm² measurement aperture, rail carrier LEDGON-124, OFG-424 and PLG-422; spectral range 220 - 1350 nm
LEDGON-130	Sample table for LED modules and mini displays
LEDGON-131	XY translation stage for assembly on the LEDGON-130 sample table
LEDGON-136	Alignment laser for optical bench in the LEDGON

Instrument Systems
KONICA MINOLTA Group

Instrument Systems GmbH
Kastenbauerstr. 2
81677 Munich, Germany
ph: +49 (0)89 45 49 43-58
fax: +49 (0)89 45 49 43-11
info@instrumentsystems.com
www.instrumentsystems.com

We bring quality to light.