The multifunctional goniophotometer machine

Combining various advantages of different conventional goniometer types into one device, the robogonio enables flexible measurements of a number of angle-dependent photo- and radiometric parameters. The solid 6-axis construction of the goniometer supports the positioning of the light sources and luminaires to be tested as well as the manipulation of their angles with high precision and reliability. The high number of mechanical variances allows measurements in the traditional A, B or C planes using one single measurement system, thus combining the goniometer types 1.1, 1.2 and 1.3 according to DIN EN 13032-1 (CIE 70-1987) in one device. Depending on the configuration, the goniometer types 2.x, 3 and 4 can be realized also. The robogonio is able to concretely measure luminous intensity and radiant intensity distributions (EULUMDAT, IES etc.), color distributions as well as luminance distributions (glare, UGR). Near-field goniophotometric measurements to generate ray data for example are also possible. Furthermore, with the robogonio the user is able to scan any geometry. Due to the robogonio’s high flexibility, several applications can be realized by only one device. In addition, the system can easily be upgraded at a later date. All configurations can be run by the goniometer software. Setup routines and cross-laser modules facilitate and speed up a precise setup and adjustment of the sample.
## Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>mrg-6</th>
<th>mrg-10</th>
<th>mrg-16</th>
<th>mrg-30</th>
<th>mrg-60</th>
<th>mrg-120</th>
<th>mrg-240</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum payload [kg]*</td>
<td>6</td>
<td>10</td>
<td>16</td>
<td>30</td>
<td>60</td>
<td>120</td>
<td>240</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>52</td>
<td>54</td>
<td>235</td>
<td>665</td>
<td>665</td>
<td>1,049</td>
<td>1,104</td>
</tr>
<tr>
<td>Work envelope radius [mm] approx.</td>
<td>900</td>
<td>1,100</td>
<td>1,610</td>
<td>2,030</td>
<td>2,030</td>
<td>2,500</td>
<td>2,500</td>
</tr>
<tr>
<td>Position repeatability [mm]</td>
<td>±0.03</td>
<td>±0.03</td>
<td>±0.05</td>
<td>±0.05</td>
<td>±0.05</td>
<td>±0.06</td>
<td>±0.06</td>
</tr>
<tr>
<td>Angle repeatability [']</td>
<td>±0.005</td>
<td>±0.005</td>
<td>±0.005</td>
<td>±0.005</td>
<td>±0.005</td>
<td>±0.006</td>
<td>±0.01</td>
</tr>
</tbody>
</table>

**Detectors**
- frc'3-f radiometer/photometer
- frc'3-f-l high-end photometer (class L)
- frc'3-f-h auxiliary photometer according to EN13032-4 (warm-up phase)
- spec'3 spectrometer
- spr'3 spectroradiometer
- luca luminance camera system (monochrome)
- luca'color luminance camera system (color version)
- img power measuring device (electric)
- kls ambient conditions (temperature, pressure, humidity)

**Detector mounting**
- wall, floor, ceiling or rail system mounting

**Measurement data**
Depending on the configuration: luminous intensity distribution (LID), luminous flux, colorimetric data (COA), luminance, glare rating, ray data, etc.

**Power supply**
A number of high-quality DC and AC laboratory power supplies that can be controlled directly from the software are available with robogonio.

Other sizes with payloads of up to 1,000 kg are available.

*Test pieces with high mass moments of inertia (e.g. very long test pieces) can lead to a reduction of the payload.

## Configurations

- **-f** goniophotometer (far field), class A
- **-l** goniophotometer (far field), class L, fast scan
- **-spr** goniospectroradiometer
- **-spc** goniospectrometer
- **-si** ray data goniophotometer (near field)
- **-sic** ray data goniophotometer (near field, polychromatic)
- **-rr** system add-on for measurement of retro-reflection

Combined possible, e.g.: mrg-f-spc-30 (system with fast scan photometer and spectrometer)

A vertically movable installation of the robogonio as well as of the detectors is possible using our rail system accessory.