

## Display-Meter

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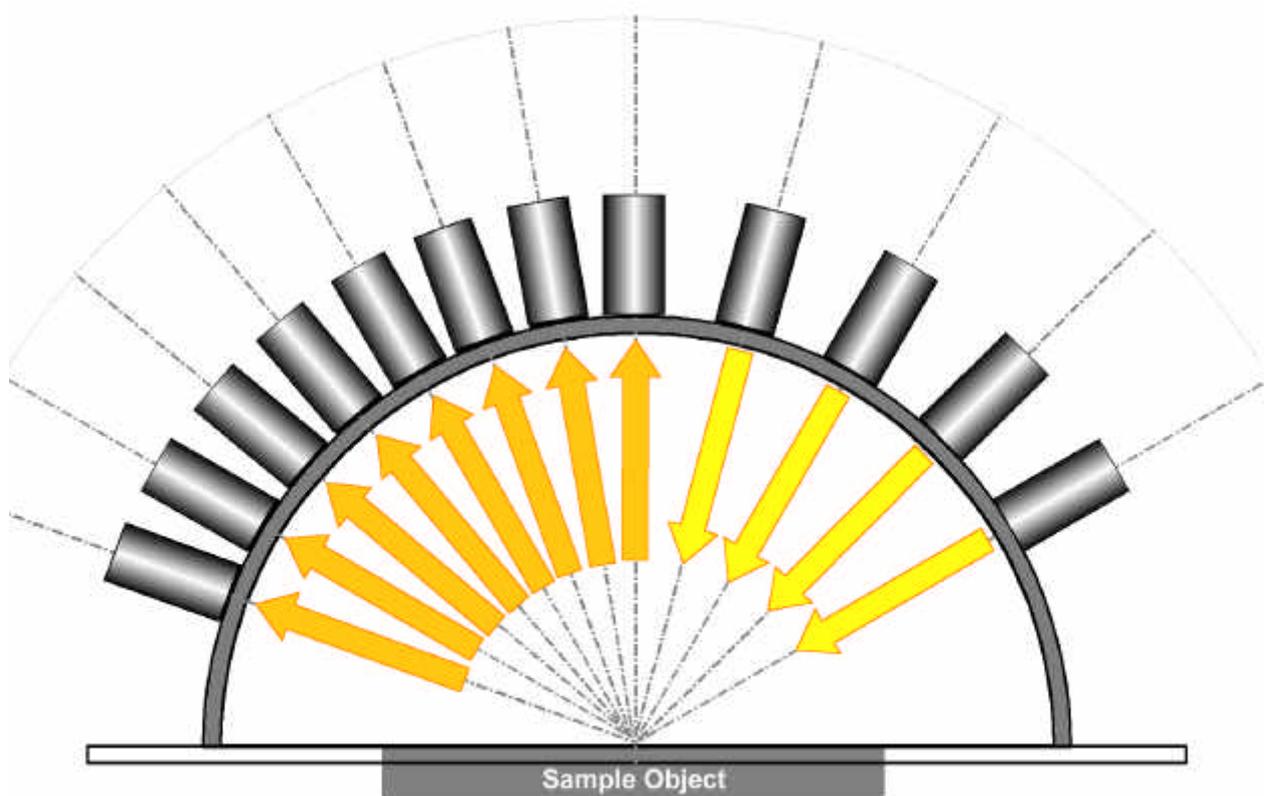


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directional spectral analysis & evaluation



Based on the multichannel spectrometer MultiSpect-8 a variety of geometries can be realized for simultaneous chromatic evaluation of both light emitting, transmitting and reflecting objects.



**Figure 1:** Typical example for a measurement head with 4 illuminating and 8 reflected beams at various inclinations, in-plane configuration, light-guiding fibers not shown (see Fig. 2).

### Reflective objects

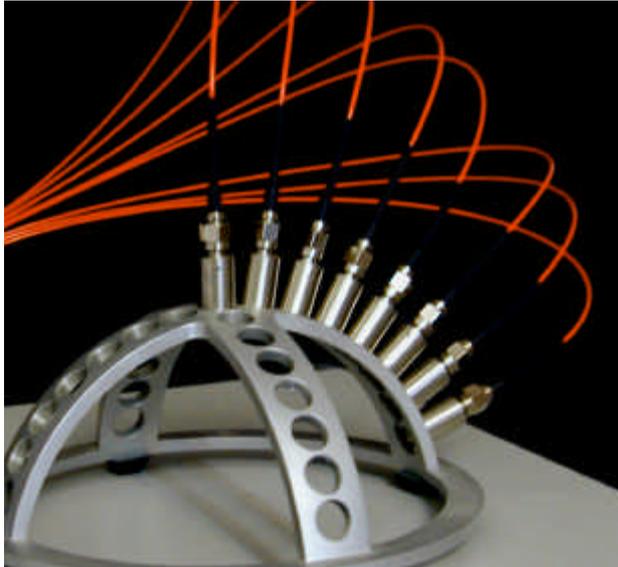
With 8 collimators (receiver optics), covering the range of inclination angles between  $0^\circ$  (surface normal of object) and  $70^\circ$  as shown in Fig. 1 above, the sample object can be illuminated from directions (e.g. within the plane of the receiver optics) that are selected according to the features and characteristics to be evaluated (e.g. including or excluding specular components). The illuminating beams can be turned ON and OFF when our computer controlled light sources are used (incandescent and discharge lamps are available).

For immediate evaluation of the spectra of reflectance (surface color), a reference channel can be used to monitor and measured the spectrum of the light source at exactly the same time the object is measured.

For **bi-spectral analysis** the illuminating light beams can be spectrally tuned with our special light sources (with integrated monochromator).

**Variations of luminance with time** (e.g. response times of display devices) can be measured with our range of luminance meters (with both silicon-diode and PMT detectors, a range of sensitivities and bandwidths).

Circular **measuring spots** are available with 2.5 mm and 6.8 mm diameter, other dimensions are available on request.



### example for the realization of a measurement head

Measurement head with 8 collimators (receiver optics) for analysis of viewing-directions from 0° to 70° inclination (with an increment of 10°) at constant azimuth.

Illuminating optics and fibers are not shown.

**Figure 2**

As an alternative to assigning the individual channels of the MS-8 to different directions of light propagation (*directional analysis*), the receivers can also be arranged to measure several individual samples at the same moment in time or to measure different locations on the same sample (e.g. for simultaneous evaluation of chromatic uniformity).

Cosine-corrected receivers are optionally available for measurement of the *illuminance* (lux) instead of the *luminance* (cd/m<sup>2</sup>).

### application example: measurement of the transmission of an LCD computer monitor

Multichannel-measurement head with 8 collimators (receiver optics) for viewing-directions from 0° to 70° inclination at constant azimuth.

With only four azimuth settings, the variations with viewing-direction in the horizontal and vertical plane of observation can be measured.

**Figure 3**

