Technical Note 14

DRAFT

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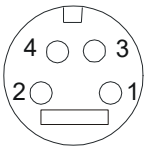
Measurement of flashlights with standard specbos 1201

Specbos 1201 flash is designed for comfortable pulsed lamp measurement, but also the standard version of specbos 1201 can be used for some of these applications.

Possible light sources are bare flash lamps (single and continuous pulses) and emergency lamps based on LEDs or flash lamps.

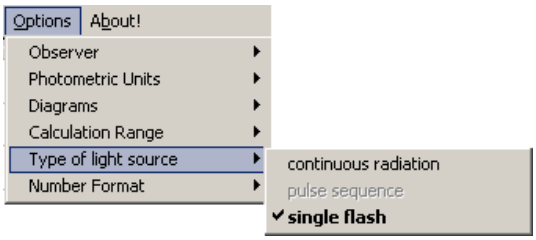
Single pulses

In case of single pulses, it is necessary to trigger the light source with specbos 1201. This is done with the TTL trigger at the connector on the rear side of the instrument. The necessary connector is included in the scope of delivery, the pinout is as follows (use pin 1 and 4):



1	Lamp out 5 V CMOS signal (flash lamp trigger)
(2	Meas. trigger input)
4	Ground

Place the instrument in a distance of approx. 50 cm from the light source. It is possible to use the laser from luminance mode to adjust the instrument precisely oriented to the light source.
The measurement has to be done in illuminance mode. Attach the diffusor cap to the instrument, then it is possible to switch on the Single flash modus in the software (menu: Options/ Type of light source/ single flash).



Proceed a first measurement. The instrument initiates the flash and measures the spectrum. It uses a fixed integration time of 200 ms, an adaption to balance the exposure is not possible in case of single flashes. Therefore, increase the measuring distance in case of overexposure until you get a well driven spectrum. In case of under exposure you get data, which are valid, but the signal to noise ratio can be improved if the measuring distance will be decreased. The photometric and radiometric values will be displayed in exposure units.
Attention: The distance range between over and under exposure is not very large.

The effective intensity I_{eff} [cd] of a single flash (with neglectable pulse length) can be calculated from the measured Luminous exposure H_v [lx·s] by the following equation (d – measuring distance [m]):

$$I_{eff} = \frac{H_v}{\Omega 2} \cdot d^2$$

The measuring distance has to be obtained from the front surface of the diffusor to the light source.

Continuous pulses

It is also possible to measure continuous pulses if their repetition rate is known. Place the instrument in front of the light source as described before and attach the cosine diffusor. Use Continuous radiation as Type of light source (menu Options, switching to pulse sequence is not possible with the standard unit).
Apply a fixed integration time [ms] of one pulse period by CTRL T. Start the flash lamp pulses and initiate a measurement in the break between two flashes. If the spectrum is over exposured increase the measuring distance d. If there occurs under exposure increase the measuring time in steps of the pulse period and/ or reduce the measuring distance.
The measuring result are displayed in Illuminance/ Irradiance values. Convert the data into exposure values using the integration time. Divide the result by the included pulse periods to get the data for one pulse.

It is more convenient to use specbos 1201 flash for such measurements. The additional detector synchronizes the adaption of integration time to the pulse sequence of the light source.