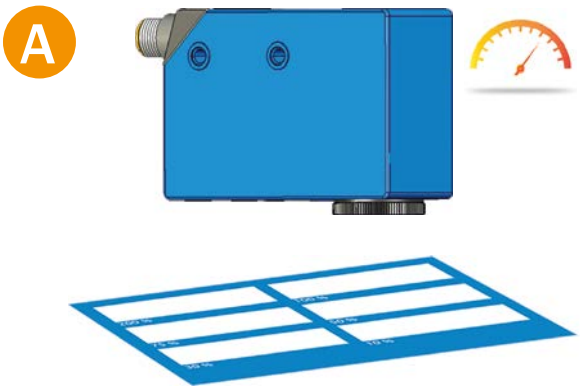
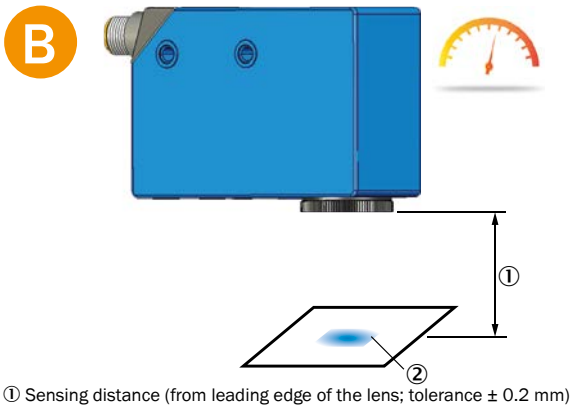
WORKING WITH MEASURED VALUES FROM SICK LUMINESCENCE SENSORS

The output of measured values from SICK luminescence sensors (LUT) is subject to tolerances, meaning that the measured value can vary slightly from sensor to sensor. These variances can be attributed to the tolerances of the components used as well as the user-defined sensor settings.
A correction factor needs to be calculated in order to ensure that stable measurement results can be achieved for a single device using LUT sensors. In order to do this, a reference target (for instance the long-term stability SICK luminescence scale, part no. 8008840) can be used. The value of the measurement to the reference target can be used as a basis to establish a relative reference for the signal intensity of the luminescent sensing material.

Design





① Sensing distance (from leading edge of the lens; tolerance ± 0.2 mm)
② Light spot size

A Measurement to reference

B Measurement in the application

Please consult the relevant operating instructions for information regarding the connection, commissioning, and use of the sensor.

Prerequisites

Position the sensor so that in the nominal sensing distance the light spot is in the middle of the reference target.
In order to achieve representative measurements for comparison, it is important to be aware of the external factors that can affect the measured value from the sensor:

- The measurements to the reference target must be carried out at the exact same sensing distance for every sensor in question.
- The sensing distance tolerance should not be exceeded or undershot.
- With regards to LUT9, LUT8, and LUT3 only:
  The analog output is scaled according to a teach-in process or in line with the sensitivity adjustment.
  Before the reference measurement is carried out, the sensor must therefore always be taught in using the same reference target.
- The output of measured values is limited. For this reason, it is important to ensure that the measured value is within the dynamic area:
  - analog output < 10 mA
  - digital measured value < 1023 dec / < 0x3FF
- If this is not the case, a reference target must be selected with a lower intensity and the sensitivity must be adjusted or taught in accordingly.

Procedure

- Connect and switch on the sensor. Once switched on, the sensor must warm up for at least three minutes before a stable measured value can be output.
- Determining the reference target measured value
- This measured value in the application can be used as a guide value e.g. reference target measured value ≙ 100%
- Use the sensor according to normal practice in the application. However, always draw comparisons between the measured value and the determined reference value e.g. calculate the measured value as a percent value in relation to the predetermined 100%.

Storing the reference target

Avoid direct sunlight or intense artificial light. Otherwise there is a risk that the reference will bleach and the intensity of the luminescence will decrease. When not using the target, please store in a light-tight container.