



## Light measurement

### Light measurement with B.E.G. KNX detectors of Generation 6 and 7 (mixed light) in regulation mode – detailed description

One advantage of the light measurement and the calibration of the reflection factor with the B.E.G. KNX detectors of Generation 6 and 7 is the accuracy. Due to the setting options, the lighting control can be flexibly adapted to the conditions on site, even if, for example, the room use changes. By precisely setting the reflection factor, the light regulation can be optimised, thus saving more energy. Furthermore, good lighting control can be achieved even in difficult room conditions.

#### **Important:**

In most cases, the default setting Light value ceiling 100 lux / Light value work surface 300 lux, which corresponds to a reflection factor of 1:3.



## Calibrating the reflection factor

First create a group address for communication object (brightness) in order to be able to send the measured lux value to the bus and read it there. Deactivate the parameter "Adjustment of the measured value with the help of external measured values" under "Light measurement" via the existing "Drop-down menu". Furthermore, make sure that the maximum possible value of "2000 LUX" is entered for "A1: Occupancy detector (regulation)" under "Brightness set value", otherwise please set it. Then please load the parameters into the detector.

Use of the smallest measured light value (from up to 3 sources)	<input checked="" type="radio"/> deactivated <input type="radio"/> activated
Weighting light sensor 1 (0 = is not used)	1
Weighting light sensor 2 (0 = is not used)	0
Weighting group object Brightness (0 = is not used)	0
Determination of reflection factor via BLE/IR adapter	<input checked="" type="radio"/> deactivated <input type="radio"/> activated
Adjustment of the measured value using external values	deactivated
Send brightness value	cyclically
Cycle time	00:05 mm:ss

Enter the room or create a movement that causes the lighting to be switched on at 50 % initially. Wait about one to two minutes. The detector automatically regulates the lighting to 100 % – regardless of the current ambient light.

Attach a luxmeter at the place where the light value is to be determined or must be present. For example, if 500 lux is required on a table surface, place the luxmeter on the top of a nearby table in the room. If a lux value of 300 lux is required on the floor, place the luxmeter on the floor directly below the detector that controls the light.

As soon as the light is regulated to 100 %, read the lux value displayed by the luxmeter. The lux value measured by the detector is sent to the group address via the communication object Brightness and displayed in the bus monitor.

Use of the smallest measured light value (from up to 3 sources)	<input checked="" type="radio"/> deactivated <input type="radio"/> activated
Weighting light sensor 1 (0 = is not used)	1
Weighting light sensor 2 (0 = is not used)	0
Weighting group object Brightness (0 = is not used)	0
Determination of reflection factor via BLE/IR adapter	<input checked="" type="radio"/> deactivated <input type="radio"/> activated
Adjustment of the measured value using external values	mixed light
Mixed light - measured value ceiling in LUX	380
Mixed light - measured value desk in LUX	960
Correction value in LUX	0

Activate "Adjustment of the measured value using external values" and select "Mixed light".

For the parameter "Mixed light – measured value ceiling in LUX", note the value measured by the light sensor in the detector and sent to the group address.

For the parameter "Mixed light – measured value work surface in LUX", note the lux value measured with the luxmeter. Please now also enter under "Brightness set value in lux" the minimum maintenance value prescribed for the activity, e.g. 500 lux for "normal" office activities.

The reflection factor is now calibrated and the parameters must be loaded into the detector. The detector will then restart. Since the ratio of the two values to each other is decisive, you can also work with values that cannot actually be entered via the input mask because they lie outside the permitted range. If, for example, the detector on the ceiling has measured a value of 170 lux and you have measured a value of 2740 lux on the work surface, you will not be able to enter this second value. With a little trick, however, it is possible: simply delete the last digit of both values. The ratio to each other remains the same. So enter "17" for "Measured value ceiling" and "274" for "Measured value working surface".

Enter the room or create a movement that causes the lighting to be switched on at 50 %. This can take 1-2 minutes.

Then the detector slowly adjusts the lighting to the value set under "Set value brightness in LUX" on the card LO: Detector configuration/set values Brightness, which can take up to 15 minutes.

When the measured lux values in the room and at the detector's mounting location begin to adjust, it can be observed that the lux value transmitted to the group address roughly matches the physically measured output value.

It is often easier to follow the lux value measured by the detector under "Diagnosis" with the group monitor and filter the current group address, as this lux value is slightly delayed compared to the value measured with the lux meter. This is especially the case with different light incidence through windows. If the values do not match exactly enough, you can slightly adjust the entered value step by step under "Mixed light – measured value ceiling in lux". The lux value in the group address is usually somewhat lower than the measured value.

If the lux value measured by the detector is too low, the "Weighting light sensor 2" can be used for detectors with both an internal and external light sensor. This is done by increasing and adjusting the ratio between sensor 1 and sensor 2 in the parameters.

The "Weighting light sensor 2" parameter is the internal light sensor and should be used with caution as it is more sensitive to changes in light incidence and reflections. As a rule, sensor 1 should have a higher weight than sensor 2 to avoid large fluctuations in the lux measurement result of the detector.

The parameter "Weighting group object brightness" is used if a lux measurement from a slave device is desired. It should be noted that the slave device must also be calibrated.

The parameter "Correction value in LUX" offers the possibility with Generation 7 detectors to provide the value measured by the detector with an additional "tolerance".

