

12 CO Calibration light sensor 710102**Use of the application program**

Product family: Physical sensors

Product type: Brightness

Manufacturer: Siemens

Name: Brightness sensor GE 252
Order no.: 5WG1 252-4AB02Name: Brightness sensor GE 254
Order no.: 5WG1 254-4AB01**Functional description**

The illuminance at the work place is strongly influenced by spatial conditions (reflection, geometry).

These conditions, which are dependent on the location of the light sensor, are conveyed in the form of a magnification ratio which the other applications of the brightness sensor require in order to function properly. The specification of this magnification is described as "calibration".

The light sensor must be calibrated at its mounting site with a constant lighting level, if possible under the conditions that are prevalent later during operation of the device.

The lux value at the reference point (e.g. work surface) is measured with an illumination meter and is reported to the application via a parameter or object value. The application then automatically specifies the magnification ratio which is required for these conditions and can be queried via a communication object.

If possible, the lighting should be set during the calibration using the lux value that should later be regulated during the operation of the brightness sensor. This produces the highest level of control precision.

The lux value must lie in the measuring range of the sensor between 200 and 1900 lux.

Communication objects

| Phys.Addr. no. | Program | | |
|-------------------|-------------|---------------------------------------|--------|
| | Function | Object name | Type |
| 01.01.002 | | 12 CO Calibration light sensor 710102 | |
| 0 | Calibration | Calibration result | 1 Byte |
| 1 | Calibration | Measured lux value | 2 Byte |

Note:

The view of the objects can be arranged individually i.e. this view may vary.

| Obj | Function | Object name | Type | Flags |
|-----|-------------|--------------------|--------|-------|
| 0 | Calibration | Calibration result | 1 Byte | CRWU |

The calibration result or the magnification ratio can be queried by the user via the group address in this object. If the value "0" is read back, this signifies that the calibration has not yet been completed. The value "255" indicates that the calibration is faulty. This may be due to a sensor that has been incorrectly connected. This also happens if the lux value that has been measured and set via the lighting, differs considerably from the value that was specified during the calibration of the application. The calibration must be repeated with the correct settings. When a telegram is received at this object, the application carries out a calibration. The lux value that is entered in the parameter is used in this case. The telegram content is not significant when sending to this object.

| | | | | |
|---|-------------|--------------------|--------|------|
| 1 | Calibration | Measured lux value | 2 Byte | CRWU |
|---|-------------|--------------------|--------|------|

A new measured lux value can be reported to the application program via the group address in this object. This value must lie within the measuring range of the sensor of 200 and 1900 lux and overwrites the value entered in the parameter "Measured lux value". Once a telegram with the new lux value has been received, the application carries out a calibration. The magnification ratio can then be queried via object 0.

Maximum number of group addresses: 2

Maximum number of associations: 2

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Parameters

Calibration

| | |
|-------------------------------|--------------------------------|
| Calibration | |
| Measured Lux value (200-1900) | <input type="text" value="0"/> |

| Parameters | Settings |
|-------------------------------|----------|
| Measured Lux value (200-1900) | 0 |

The value that is measured with an illumination meter at the reference point is entered here. This value must lie within the measuring range of the sensor of 200 and 1900 lux. Once the application has been loaded, the brightness sensor starts the calibration immediately. The magnification ratio can then be read out via object 0 "Calibration result". The lighting setting may not be changed between measuring the lux value at the reference point and loading the application. Otherwise, the actual lux value differs from the value that was specified during the calibration of the application.

Calibration process

1. Retrieve ETS commissioning program.
2. Program the physical address of the brightness sensor.
3. Define the group address and assign it to object 0 "Calibration result".
4. Set the lighting to the lux value that should later be regulated during the operation of the brightness sensor.
5. Enter the measured and set lux value in the parameter window, whereby the lighting setting may no longer be changed.
6. Load the application program in the brightness sensor. The calibration is then carried out automatically.
7. Select the group address for the calibration result in the group window.
8. Read out the magnification ratio of the brightness sensor via the menu item "Test, groups, read value".
9. Note the received value. It is later entered as a parameter in the corresponding application of the brightness sensor.

The value must lie between 1 and 254.

Value = 0:

Calibration has not yet been completed.

Value = 255:

Calibration is faulty. It must be repeated using the correct settings.

Restart calibration:

The following 3 options are available:

- a) Repeat points 4 - 9.
- b) Send a telegram to the "Calibration result" object with the ETS commissioning program via the menu item "Test, groups, write value". The telegram content is not relevant in this case. The lux value that is present in the parameter "Measured lux value" is used for the calibration.
- c) Send a telegram to the "Measured lux value" object with the ETS commissioning program via the menu item "Test, groups, write value". The lux value that is set via the lighting and is measured at the reference point must be entered.

Note:

If the calibration is carried out several times with the same conditions, there can be a great variation in the calibration results as the magnification ratio is sent as inverted. The least significant bit appears in the telegram at the point with the highest value and vice versa. Therefore, if the magnification ratio is modified by 1, it produces a change in the value of 128.