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# Device Configuration App



# DCA for Detectors and Sensors

## Application description

**ETS6 app (DCA) for B.E.G. KNX presence detectors**
**Version 1.3**

Subject to technical changes

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# 1 General

## 1.1 Scope of functions

The “B.E.G. DCA for Detectors and Sensors” is an ETS6 app (Device Configuration App, DCA) for B.E.G. KNX presence detectors. This application description applies to version 1.3 of the app.

The app shows the parameters of the light measurement and the logic graphically. It edits the same parameters as the ETS parameter pages. Both can be used in parallel.

The app only shows the functions that the application of the selected device provides. If the device has both functions, they are shown as the tabs “Light measurement” and “Logic”.

## 1.2 Supported applications

| Application | Devices (excerpt) | Functions |
|---|---|---|
| 2104-30 | PBM-KNXs-DX-4W | Logic |
| 2720-71 | PD Gen 7.1 DX (e.g. PD2N, PD4N, PD9, PD11, Indoor, RC-plus next N, PICO) | Light measurement, logic |
| 2721-71 | PD2N/PD4N/PD11/Indoor/PICO KNXs-ST | Light measurement |
| 2722-71 | PD2N/PD4N KNXs-BA | Light measurement |
| 2723-71 | Aleum Glow WB/AD KNXs | Light measurement, logic |
| 2730-71 | PD2N-KNXs-OCCULOG-DX | Light measurement, logic |
| 2740-71 | PD2N-RF-KNXs-DX | Light measurement, logic |

## 1.3 Related documents

The meaning of the individual parameters is described in the application description of the respective device, for the Generation 7 presence detectors in the application description “KNX Generation 7”.

# 2 General operation

## 2.1 Opening the app and changing parameters

1. Select exactly one device in ETS and open the app “B.E.G. DCA for Detectors and Sensors”.
2. Change the values. **Enter** applies an entry in a text field, **Esc** discards it.
3. **Apply** writes the changes to the project.
4. Then download the application to the device as usual.

The buttons of the app:

| Button | Effect |
|---|---|
| Apply | Writes the changes of the tab to the project. |
| Discard | Reverts all changes of the tab that have not been applied yet. |
| Reset to default | Resets the values of the light measurement to the default values. |
| Reset block to default | Resets the selected logic block to the default values. |

| NOTE | |
|---|---|
|  | An apply can be undone in ETS with “Undo” as a single step. The entry is named “Light measurement (DCA)” or “Logic (DCA)”. |

## 2.2 Input fields

- Fields that cannot be changed on the ETS parameter page are shown greyed out (tooltip “Fixed, cannot be changed.”).
- As in ETS, which fields are shown depends on the application of the device and the selected settings.
- The tooltip of an input field shows the permitted value range.

| Field type | Permitted input |
|---|---|
| Integer | Integer within the specified range |
| Number | Number within the specified range, decimals allowed |
| Time | Enter as mm:ss or in seconds, e.g. 1:30 or 90 |
| Text | Maximum number of characters as specified, only characters of ISO 8859-1 (e.g. no €) |
| Selection | Selection from the values offered |

# 3 Light measurement

The “Light measurement” tab guides you through the determination of the reflection factor and sets the brightness sources. “Further settings” contains further parameters of the light measurement, as on the ETS parameter page.

## 3.1 Reflection factor

The detector measures the light reflected from the work surface at the ceiling. The ratio between the light value at the ceiling and the light value on the work surface is the reflection factor. The app shows it as the ratio 1 : x.

The default setting of 100 lx (ceiling) to 300 lx (work surface), i.e. 1 : 3, is suitable for most rooms. If the room conditions differ, the reflection factor is determined by a light measurement (see chapter 3.2).

## 3.2 Light measurement in three steps

The type of measurement is selected with the parameter “Adjustment of the measured value using external values”:

- **Mixed light:** one measurement with the lighting switched on and daylight present.
- **Artificial light and daylight:** two measurements, one with artificial light only and one with daylight only.

### 3.2.1 Step 1: Send the measured light value

1. Set “Adjustment of the measured value using external values” to “deactivated”. The app shows “Adjustment deactivated”: the detector sends its own measured value.
2. Set “Operation mode” to “Regulation mode” (page “Detector configuration” or “Settings”).
3. Set “Set value brightness in LUX” to 2000 (page “Set values brightness”) so that the lighting is controlled to full output.
4. Activate “Send brightness value”, e.g. “cyclically” with a “Cycle time” of 5 seconds.
5. Apply and program the device.
6. Read the value of the group object Brightness in the group monitor. This is the value at the ceiling.

The app shows the operation mode and the set value directly in the “Step 1” box.

| | NOTE |
|---|---|
|  | Constant light control is typically slow. It can take up to 15 minutes until the lighting has settled. Only measure then. |

### 3.2.2 Step 2: Measure on the work surface

Place a luxmeter on the work surface and proceed according to the type of measurement:

- **Mixed light:** enter the room and wait until the lighting is controlled to 100 % (up to 15 min.), then measure.
- **Artificial light and daylight:** measure artificial light with the blinds closed and the light on, and daylight with the blinds open and the light off.

In each measuring situation, note the value at the ceiling (group monitor, see step 1) and the value of the luxmeter.

### 3.2.3 Step 3: Enter the light values

1. Under “Adjustment of the measured value using external values”, select the type of measurement: “mixed light” or “artificial light and daylight”.
2. Enter the values: “Ceiling (value of the detector)” = value from step 1, “Work surface (luxmeter)” = value from step 2. For “artificial light and daylight”, enter one pair of values each for artificial light and daylight.
3. Apply.

The reflection factor is shown immediately, for “artificial light and daylight” separately as “Reflection factor artificial light” and “Reflection factor daylight”.

| | NOTE |
|---|---|
|  | After the light measurement, set the brightness set value back to the value intended for the installation. Important: then program the device! |

## 3.3 BA detectors

BA detectors (application 2722-71) always use mixed light. The app shows “This device always uses mixed light.” and hides the selection of the type of measurement.

The steps are shown without deactivating the adjustment (step 1) and without the measurement with artificial light and daylight.

## 3.4 Measured values outside the permitted range

If a measured value exceeds the permitted range, both values can be divided by 10. The ratio, and therefore the reflection factor, remains the same.

Example: 170 lx and 2740 lx become 17 lx and 274 lx.

## 3.5 Brightness sources

Up to three sources are available for the light measurement. In the graphic of the app, the light sensors are named “Sensor 1” and “Sensor 2”.

| Source | Meaning |
|---|---|
| Light sensor 1 | On detectors with two light sensors in the outer ring, on detectors with one light sensor behind the lens. |
| Light sensor 2 | Only on detectors with two light sensors, behind the lens. |
| Group object brightness | The group object Brightness receives the value of a further detector (slave). This detector must be calibrated as well. |

Without “Use of the smallest measured light value (from up to 3 sources)”, a weighted average is formed. The weighting is set for each source, e.g. “Weighting light sensor 1 (0 = is not used)”.

With “Use of the smallest measured light value (from up to 3 sources)”, the smallest value of the sources set to “use” is used, e.g. in rooms with windows on two sides.

| | NOTE |
|---|---|
|  | On detectors with one light sensor, do not use light sensor 2 (weighting 0 or “do not use”). |

# 4 Logic

## 4.1 Structure

The logic blocks are set on the “Logic” tab. The devices have 2 logic blocks (L1, L2) with 3 inputs and one output each. Input 3 can be added (“Use input”).

In the block diagram of the app, the elements are colour-coded:

- **Inputs:** yellow
- **Logic gate:** grey
- **Output:** blue

Active inputs are connected to the gate by a blue line.

## 4.2 Setting a logic block

1. Select the logic block (L1 or L2) in the block list on the left and enable it.
2. Select the “Logic gate” in the block diagram: OR, AND, XOR, NOR, NAND or XNOR.
3. Set the inputs and the output (see chapters 4.3 and 4.4).
4. Apply.

## 4.3 Inputs

| Parameter | Setting |
|---|---|
| Use input | Input 3 only: adds the input |
| Object type | Data type of the input (see chapter 4.5) |
| Logic input after bus voltage return | State of the input (0 or 1) after bus voltage return |
| Logic input is “0” / “1” | Threshold: if “less than or equal” or “greater than or equal” “Value”; depends on the object type |

## 4.4 Output

| Parameter | Setting |
|---|---|
| Object type | Data type of the output (see chapter 4.5) |
| Send | upon modification, upon modification from 0 to 1, upon modification from 1 to 0, upon input update |
| Send upon bus voltage return | deactivated, activated |
| Logic output “0” / “1” | “Value” sent for logical 0 or 1 |

## 4.5 Object types

| Object type | Datapoint type |
|---|---|
| 1 Bit | DPT 1.001 |
| 1 Byte percent | DPT 5.001 |
| 1 Byte counter | DPT 5.010 |
| 1 Byte counter signed | DPT 6.010 |
| 2 Byte counter | DPT 7.x |
| 2 Byte counter signed | DPT 8.x |
| 2 Byte Float | DPT 9.x |
| 4 Byte counter | DPT 12.x |
| 4 Byte counter signed | DPT 13.x |
| 4 Byte Float | DPT 14.x |

For the applications 2720-71, 2723-71 and 2740-71, threshold values and output values are integers only (“Value (without decimal places)”).

# 5 Messages

## 5.1 Messages when opening and applying

| Message | Meaning / remedy |
|---|---|
| Please select exactly one device. | Select exactly one device in ETS and open the app again. |
| The application of the device (<application>) is not supported by this DCA. | The app only supports the applications listed in chapter 1.2. |
| No parameters for light measurement or logic blocks were found on the device. | The application of the device does not contain any of these functions. |
| Parameter <name> does not exist on the device. | The parameter named is missing in the application of the device. |
| Apply failed: <cause> | The changes were not written to the project. The message states the cause. |

## 5.2 Messages during input

| Message | Meaning / remedy |
|---|---|
| Only integers are allowed. | Enter an integer without decimals. |
| Invalid number. | Enter a valid number. |
| Permitted range: <min> ... <max>. | Enter a value within the range stated. |
| Maximum <n> decimal places. | Enter fewer decimal places. |
| Invalid selection. | Select one of the values offered. |
| Maximum <n> characters. | Shorten the text. |
| Character not permitted (only characters of ISO 8859-1, e.g. no €). | Remove the character that is not permitted. |
| Format mm:ss or seconds. | Enter the time as mm:ss or in seconds, e.g. 1:30 or 90. |

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