

Operating instructions

Presence detector Mini Standard
Art. no. 2221 530

Presence detector Mini Standard
Art. no. 2221 550

Presence detector Mini Komfort
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1 Safety instructions

To avoid potential damage, read and follow the following instructions:



Electrical devices may be mounted and connected only by electrically skilled persons.

Danger of electric shock. During installation and cable routing, comply with the regulations and standards which apply for SELV circuits.

Do not press on the sensor window. Device can be damaged.

The device is not suitable for use as a burglar alarm or other alarm.

Instructions are part of the product. So keep them in a safe place.

2 Device components

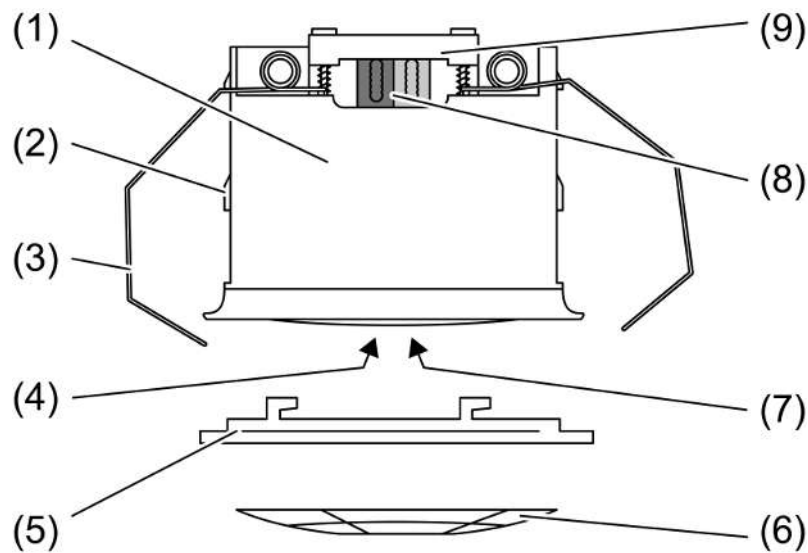


Figure 1: Device components

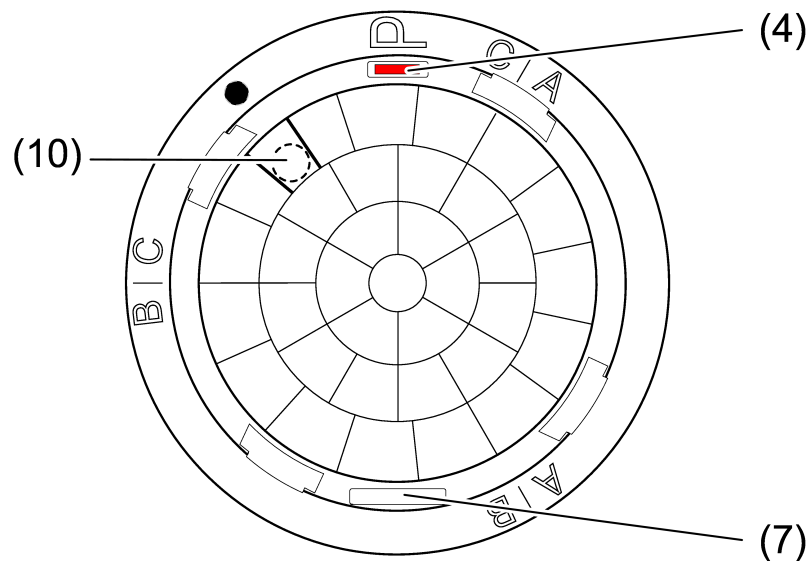


Figure 2: Device components

- (1) Presence detector
- (2) Guide for friction springs
- (3) Spring clamp
- (4) Programming button, red
- (5) Design ring
- (6) Cover
- (7) Humidity sensor opening, "Comfort" version
- (8) Bus connection
- (9) Cable fixation
- (10) Brightness sensor position

3 System information

This device is a product of the KNX system and complies with the KNX directives. Detailed technical knowledge obtained in KNX training courses is a prerequisite for proper understanding.

The function of the device depends on the software. Detailed information on software versions and the respective scope of functions as well as the software itself can be obtained from the manufacturer's product database.

The device can be updated. Firmware can be easily updated with the Gira ETS Service App (additional software).

The device is KNX Data Secure capable. KNX Data Secure offers protection against manipulation in building automation and can be configured in the ETS project. Detailed technical knowledge is a prerequisite. A device certificate, which is attached to the device, is required for safe commissioning. During mounting, the device certificate must be removed from the device and stored securely.

Planning, installation and commissioning of the device are carried out with the aid of the ETS, version 5.7.7 and higher or 6.3.0.

4 Intended use

- Operation in KNX system
- Control of lighting, room thermostats and other electrical consumers
- Measurement of the room temperature
- Comfort version: measurement of room humidity
- Ceiling mounting indoors and outdoors.
- Clamp mounting in suspended ceilings
- Mounting on fixed ceilings in appliance box with dimensions according to DIN 49073 or surface-mounted housing (see accessories)

Motion detector - Lighting

- Detection of motions for passageway security in buildings
- Switch on: Motion detection and brightness threshold not reached
- Switch off: No motion in the detection field and run-on time elapsed

After reacting and switching on, the motion detection works brightness-independent.

Presence detector - Lighting

- Detection of the smallest motions e.g. at a workplace for detecting the presence of persons
- Switch on: Motion detection and brightness threshold not reached
- Switch off: No motion in the detection field and run-on time elapsed or switch-off brightness exceeded

Presence detector – Monitoring (monitoring / alarm / signalling mode)

- Brightness-independent detection of motions in the detection field
- Switch on: After detection of an adjustable number of motions within the set monitoring period
- Switch off: No persons in the detection field and run-on time elapsed

5 Product characteristics

- Integrated bus coupling unit
- Detection field 360°
- Integrated brightness sensor
- Integrated temperature sensor
- Use as a presence detector, motion detector or monitoring device
- Output functions: Switching, staircase function, switching with forced position, value transmitter, light scene extension, operating mode setting for room temperature controller
- Detection field extendible by parallel switching of several devices as main unit or extension unit
- Status LED: Flashes during motion detection; depending on programming in normal operation or only during the walking test mode

"Standard" version:

- 1 PIR sensor
- 3 function blocks for motion or presence detection each with 2 outputs
- Function blocks switchable, e.g. for day/night operation
- Brightness sensor function with limit value

"Comfort" version:

- 3 PIR sensors
- Integrated humidity sensor
- 5 function blocks for motion or presence detection each with 2 outputs
- Function blocks switchable, e.g. for day/night operation
- PIR sensors can be evaluated separately
- Brightness sensor function with 3 limiting values
- Light control with max. of 3 channels, setpoint shift in operation, separate configuration of dimming-up, control and dimming-down phase
- Light control can be combined with presence detector function
- Calculation of the dew point temperature
- Orientation light

6 Information for electrically skilled persons

6.1 Mounting and electrical connection

Motion detection

The device has a detection field of 360°. The diameter of the detection field depends on the installation height and the direction of motion of persons in the detection field.

The detection field becomes larger the greater the installation height, while the detection density and sensitivity are reduced at the same time.

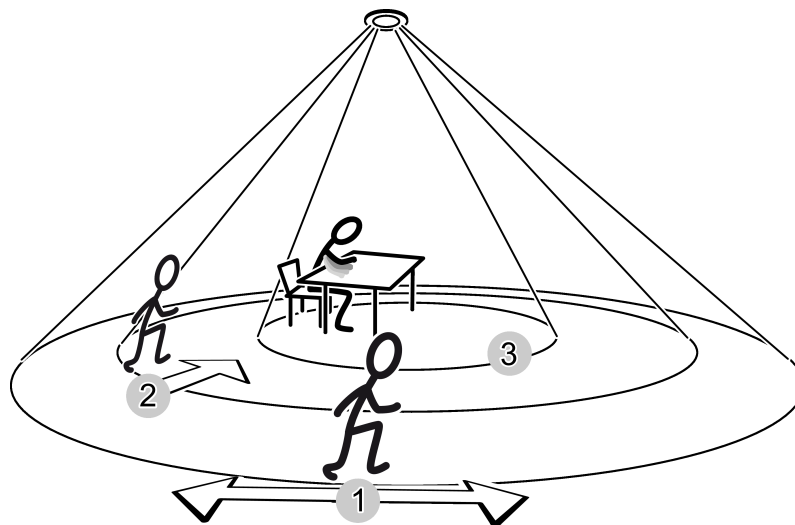
"Standard" version:

Figure 3: Detection range depending on the direction of movement

Diameter of detection field for direction of movement

Installation height	1:	2:	3:
2.20 m	8.30 m	5.10 m	3.10 m
2.50 m	9.40 m	5.80 m	3.50 m
3.00 m	11.30 m	7.00 m	4.20 m
3.50 m	13.20 m	8.10 m	--*)
4.00 m	15.00 m	9.30 m	--*)
5.00 m	18.80 m	11.60 m	--*)

- 1: Range for tangential movement on the ground
- 2: Range for radial movement on the ground
- 3: Presence detection range, e. g. arm movement at the desk
- *) When used as a presence detector: The mounting height must not exceed 3.0 m. Otherwise presence detection will be possible only to a limited extent.

The device works with a sensor.

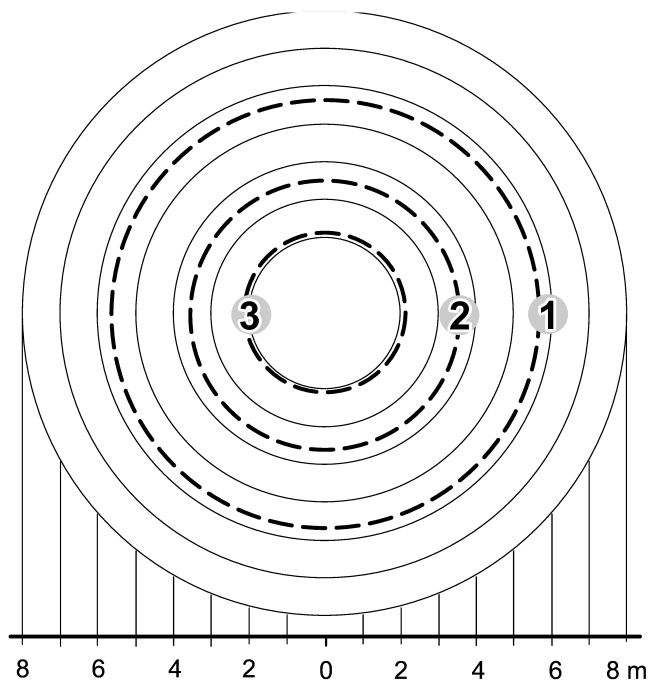


Figure 4: *Detection field mounting height 3.0 m*

"Comfort" version:

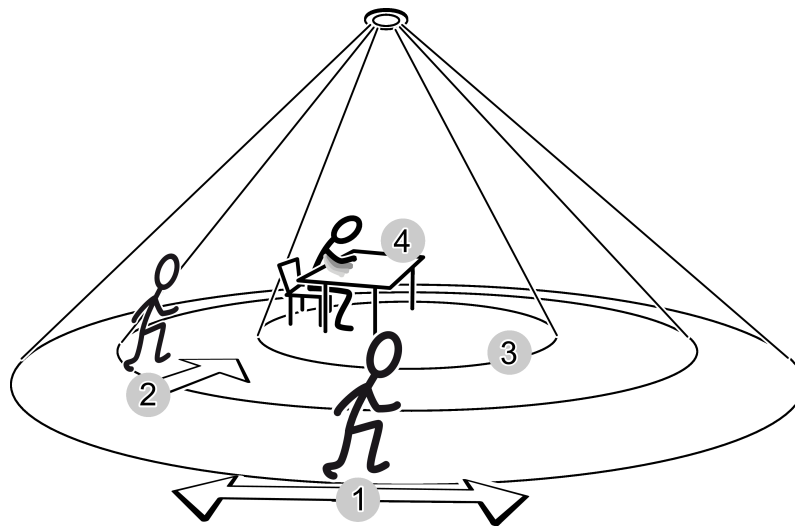


Figure 5: Detection range depending on the direction of movement

Diameter of detection field for direction of movement

Installation height	1:	2:	3:	4:
2.20 m	12.30 m	8.70 m	4.80 m	3 m
2.50 m	14.00 m	9.90 m	5.40 m	3.40 m
3.00 m	16.80 m	11.90 m	6.50 m	4.10 m
3.50 m	19.60 m	13.90 m	7.60 m	4.80 m
4.00 m	22.40 m	15.80 m	8.60*)	*)
5.00 m	28.00 m	19.80 m	10.80 *)	*)

- 1: Range for tangential movement on the ground
- 2: Range for radial movement on the ground
- 3: Presence detection range, e. g. arm movement at the desk
- 4: Range of fine detection at desks, e.g. mouse movements
- *) When used as a presence detector: The mounting hight height must not exceed 3.5 m, otherwise presence detection will be possible only to a limited extend and without fine detection.

The device has three independent sensors for motion detection. The arrangement of the sensor areas A, B and C is clearly evident under the decor ring (see figure 7).

i Due to the fact that the detection fields of the three sensors do not completely overlap, the detection field is only approximately circular. The table shows the mean values for an idealised circular detection field.

If the sensor areas A, B, C are evaluated separately, the project design must take the alignment of the device into account.

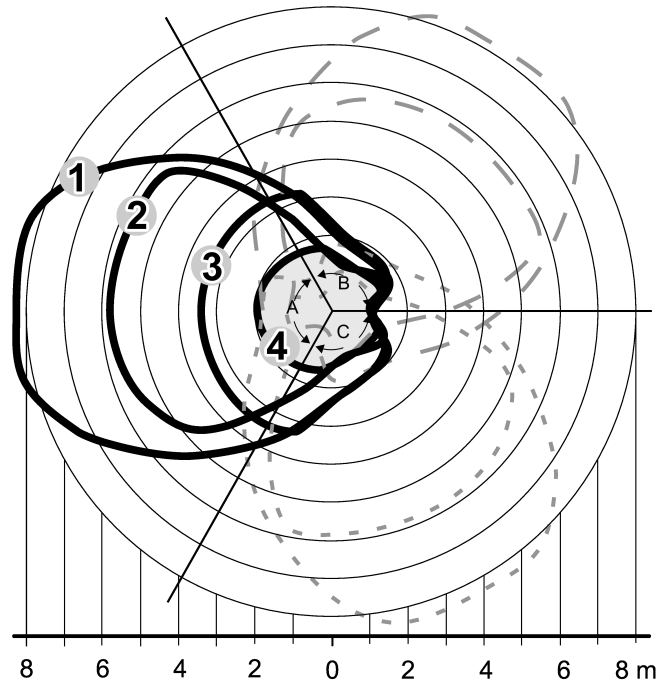


Figure 6: Detection field areas A, B and C; installation height 3.00 m

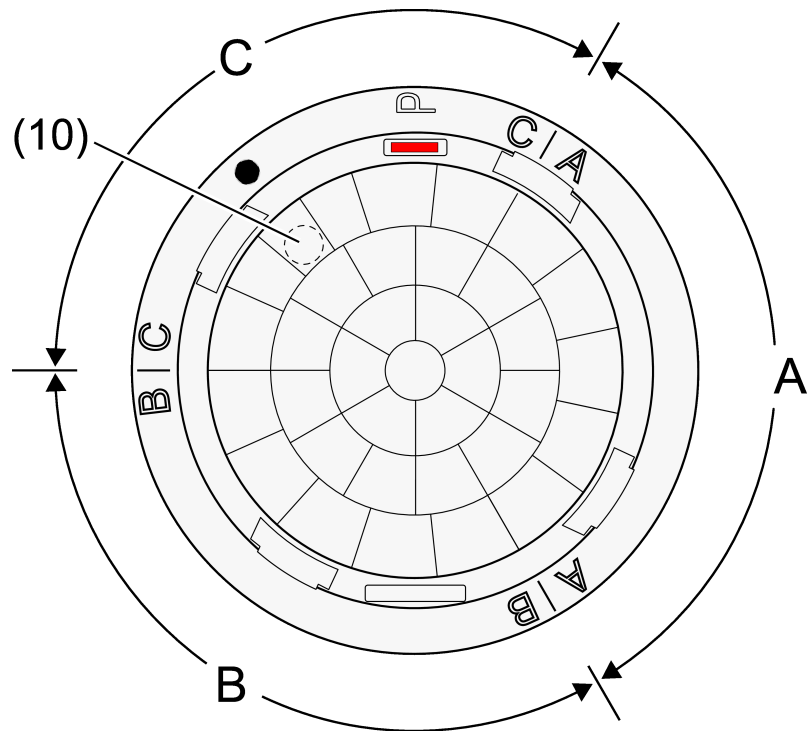


Figure 7: Arrangement of the areas A, B and C

Brightness detection

Light falling directly onto the sensor or reflected by shiny surfaces influences the brightness detection.

"Comfort" version:

The brightness sensor (10) is mounted on the side below the lens, allowing the device to detect brightness with an asymmetrical measuring surface. In this way, for example, it is possible to include several work places in the measurement without any laterally entering light distorting the measurement.

- i** Align the device so that the brightness sensor (10) is not facing the window. Already pay attention to correct alignment when mounting the appliance box and supporting frame.

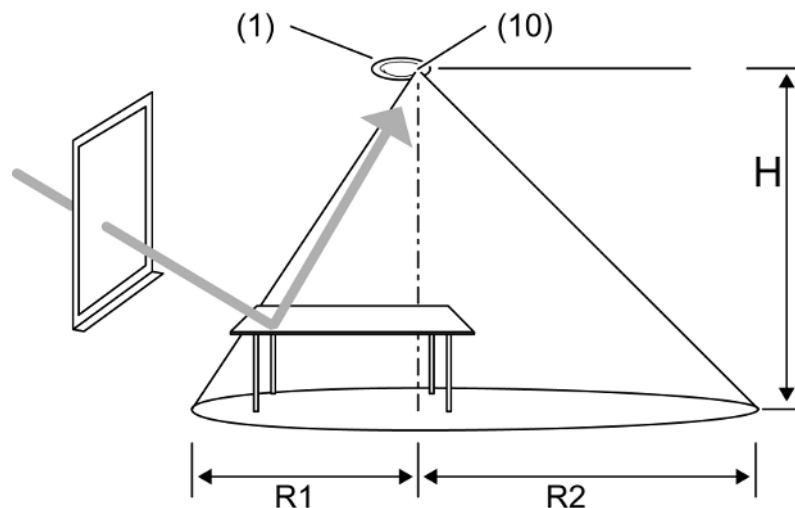


Figure 8

Installation height H	R1	R2
2.20 m	1.50 m	2.30 m
2.50 m	1.80 m	2.60 m
3.00 m	2.00 m	3.00 m
3.50 m	2.50 m	3.60 m
4.00 m	2.80 m	4.20 m
5.00 m	3.50 m	5.20 m

Mounting instructions

When used as a presence detector, the device is installed on the ceiling and monitors the surface below it. When used as a motion detector, the device is installed e. g. in the hallway on the ceiling.

- Select a vibration-free installation location. Vibrations can lead to unwanted switching.
- Avoid interference sources in the detection field. Interference sources, e. g. heaters, ventilation, air conditioners, and cooling lamps can lead to unwanted detections.

- i** If necessary, the detection field can be limited using the push-on cover in order to minimize the influence of interference sources.

- Mounting near electric consumers, radiators, cooling systems or outside walls can have a negative effect on the temperature measurement.

In secure operation:

- Activate secure commissioning in the ETS.
- Enter/scan the device certificate or add it to the ETS project. A high resolution camera should be used to scan the QR code.
- Document all passwords and keep them safe.

Connecting and fitting the device in the suspended ceiling

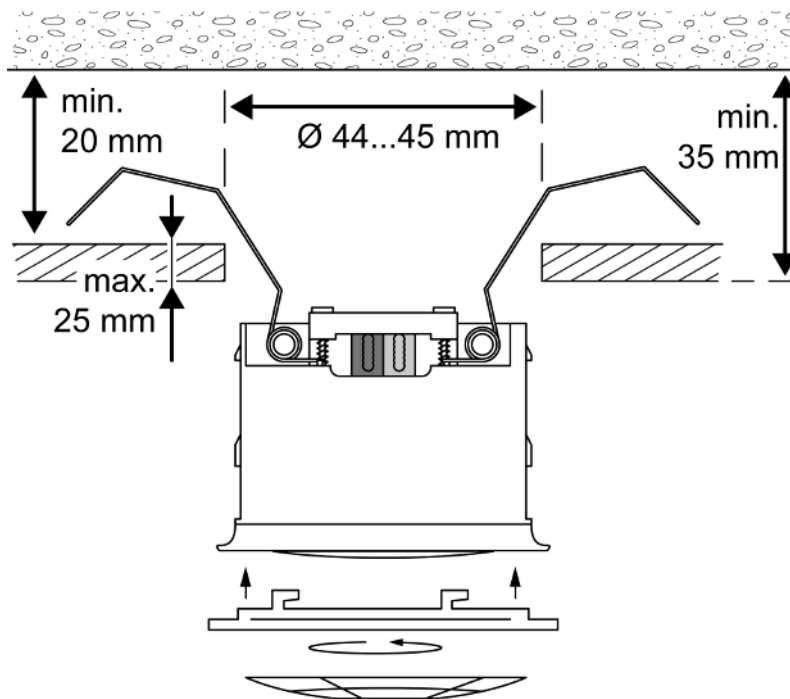


Figure 9

The environment in the suspended ceiling must be dry.

Max. thickness of the suspended ceiling approx. 25 mm. Installation depth min. 35 mm. Distance between concrete ceiling and suspended ceiling min. 20 mm.

Ceiling cut-out 44...45 mm.

- Connect bus line.
- Clamp bus line with cable fixation (9).
- Bend back the spring clamps (3) and push the presence detector (1) into the suspended ceiling.
- Attach the design ring (5) and rotate it in clockwise direction.
- If required: Cut out the cover (6) and clip it into the design ring (5).

Mounting friction springs for box mounting

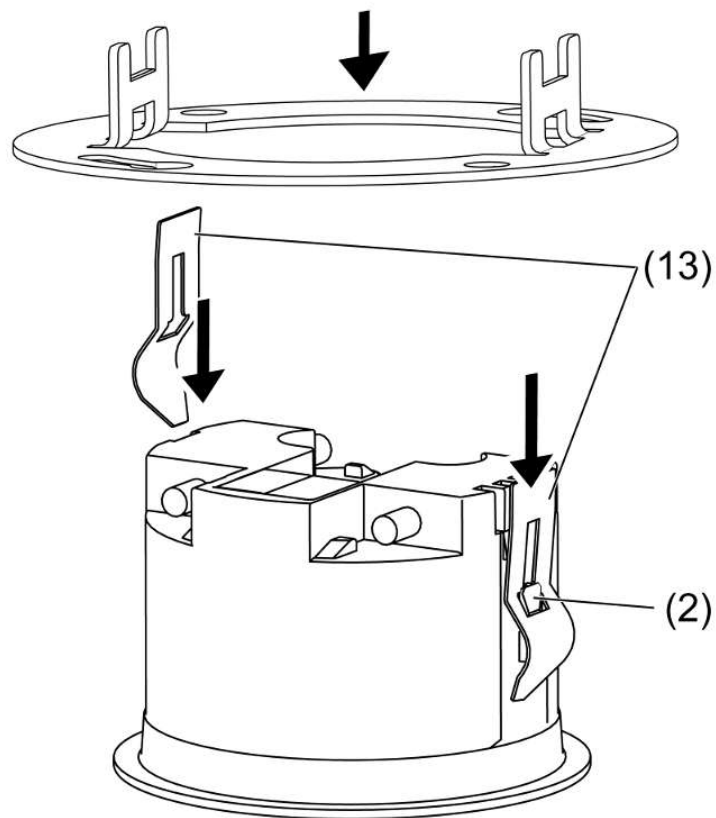


Figure 10

For mounting in appliance box or surface-mounted housing.

- Remove spring clamp (3) (see figure 1).
- Push the friction springs (13) as illustrated on the guides (2) from behind until they snap into place (see figure 10).

Connecting and fitting the device in an appliance box

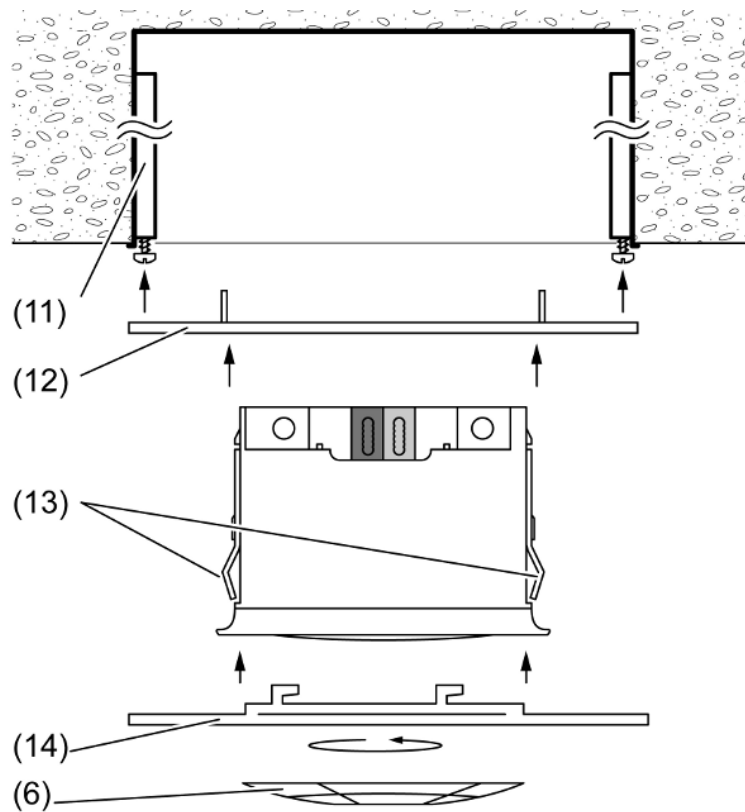


Figure 11

Appliance box (11) is mounted on the ceiling at the designated installation location.

Spring clamps (3) are removed and friction springs (13) are mounted.

- Mount the supporting frame (12) on the appliance box (11).
- Connect bus line with device connection terminal.
- Snap the device into the supporting frame (12).
- Attach the large design ring (14) and rotate it in clockwise direction.
- If required: Cut out the cover (6) and clip it into the design ring (14).

Fitting and connecting device in a surface-mounted housing

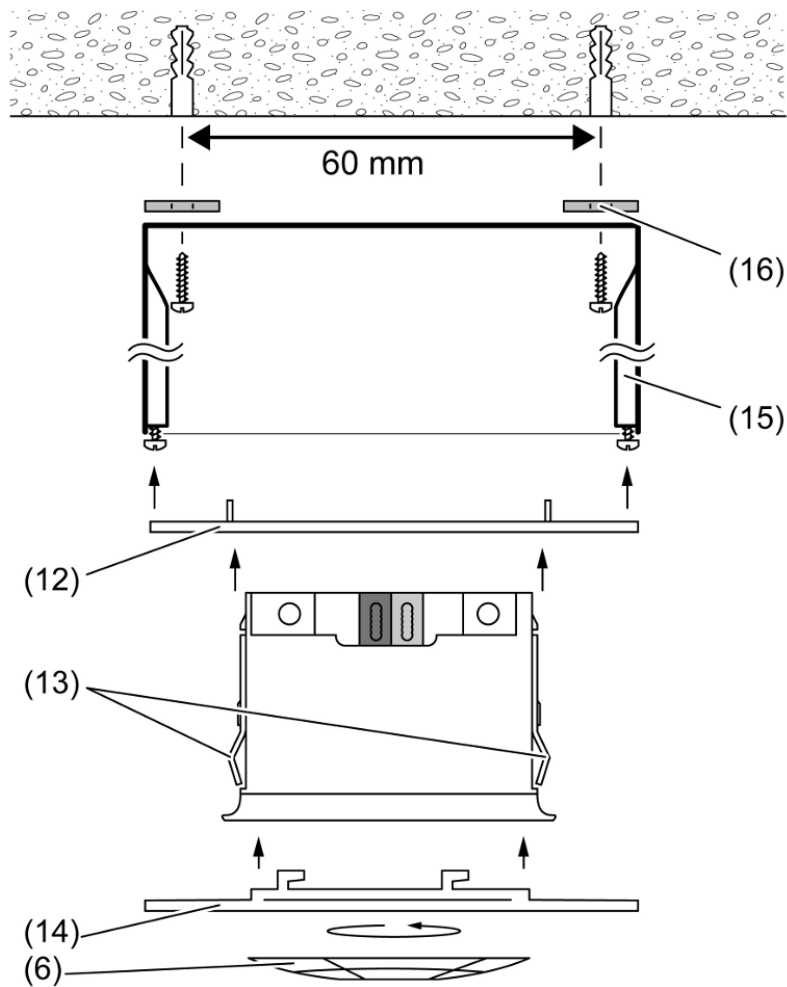


Figure 12

Using a surface-mounted housing (15) (see accessories).

In a humid environment and for IP44 mounting: Provide screw holes of the surface-mounted housing with the supplied seals (16).

Seal the cable entry with the supplied rubber grommet. Cut the rubber grommet appropriately for the bus cable. Route the bus line into the surface-mounted housing.

- Mount the surface-mounted housing (15) on the room ceiling at the designated installation location. Hole spacing 60 mm.
- Mount the supporting frame (12) on the surface-mounted housing (15).
- Connect bus line with device connection terminal.
- Snap the device into the supporting frame (12).
- Attach the large design ring (14) and rotate it in clockwise direction.
- If required: Cut out the cover (6) and clip it into the design ring (14).

6.2 Commissioning

Loading the address and the application software

- When mounted, remove the design ring.
- Switch on the bus voltage.
- Actuate the red programming button (4).
The status LED in the sensor window lights up.
- Assign a physical address.
The status LED goes out.
- Label device on the side with physical address.
- Load the application software into the device.

In secure operation:

- Activate secure commissioning in the ETS.
- Enter/scan the device certificate or add it to the ETS project. A high resolution camera should be used to scan the QR code.
- Document all passwords and keep them safe.

Testing the detection field

In the case of presence detectors connected in parallel, check the detection fields individually.

The presence detector is ready for operation.

- Activate the walking test.
The presence detector operates brightness-independent. All sensors are active according to their programmed sensitivity.
- Move across the detection field.
Any motions detected are displayed by the blue status LED.
- If necessary, restrict the detection field, preferably by changing the programming or alternatively using a cover (6).
- Deactivate the walking test.

In case of active temperature measurement, compare the temperature measurement.

Limiting the detection field using the push-on cover

As an alternative to restricting the detection field via ETS, the cover (6) can also be used by reducing the sensitivity or switching off individual sensors.

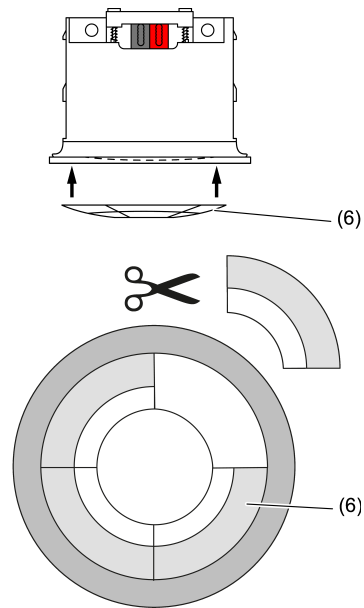


Figure 13: Cover mounting

- Pull off push-on cover.
- Using scissors, cut out push-on cover along the marked lines as required.
- Push on push-on cover.

6.2.1 Safe-state mode

The safe-state mode stops the execution of the loaded application program.

If the device does not work properly - for instance as a result of errors in the project design or during commissioning - the execution of the loaded application program can be halted by activating the safe-state mode. The device remains passive in safe-state mode, since the application program is not being executed (state of execution: terminated).

- i** Only the system software of the device is still functional. ETS diagnosis functions and programming of the device are possible.

Activating safe-state mode

- Switch off the voltage.
- Press and hold down the programming button.
- Switch on voltage.

Safe-state mode is activated. The programming LED flashes slowly (approx. 1 Hz).

- i** Release the programming button only after the programming LED starts flashing.

Deactivating safe-state mode

- Switch off the voltage or carry out ETS programming.

6.2.2 Master reset

The master reset restores the basic device settings (physical address 15.15.255, firmware remains in place). The device must then be recommissioned with the ETS.

- i** In secure operation: A master reset deactivates device security. The device can then be recommissioned with the device certificate.
- i** Devices can be reset to factory settings with the ETS Service App. This function uses the firmware contained in the device that was active at the time of delivery (delivery state). Restoring the factory settings causes the devices to lose their physical address and configuration.

If the device - for instance as a result of errors in the project design or during commissioning - does not work properly, the loaded application program can be deleted from the device by performing a master reset. The master reset resets the device to delivery state. Afterwards, the device can be put into operation again by programming the physical address and application program.

Performing a master reset


Precondition: The safe-state mode is activated.

- Press and hold down the programming button for > 5 seconds until the programming LED starts flashing quickly.
- Release the programming button.

The device performs a master reset. The programming LED is switched on.

The device restarts and is in delivery state.

7 Technical data

Ambient temperature	-25 ... +55 °C
Storage/transport temperature	-25 ... +70 °C
Relative humidity	10 ... 100% (no moisture condensation)
Protection class	III
Degree of protection	IP44
Motion detection	
Detection angle	360°
Detection field	see Motion detection chapter
Brightness sensor	
Measuring range	10 ... 2000 lx
Accuracy > 80 lx	± 20%
Accuracy ≤ 80 lx	± 10 lx
Temperature sensor	
Measuring range	Approx. -20 ... +55 °C
Accuracy	± 1 K
Humidity sensor (comfort version only)	
Measuring range	10 ... 95 % rel. humidity.
Accuracy	≤ 3.5%
 Within the range of 30 ... 80% and 17°C ... 24°C, the accuracy is ≤ 2.5%.	
Dimensions	
Dimensions Ø×D	53.5 x 38 mm (with design ring)
Ceiling cut-out Ø×D	44 x 35 mm
KNX	
KNX medium	TP256
KNX commissioning mode	S mode
Rated voltage KNX	DC 21 ... 32 V SELV
Current consumption KNX	
2221 530, 2221 550	4 ... 10 mA
2222 530, 2222 550	5 ... 15 mA
Connection type for bus	Device connection terminal

8 Troubleshooting

Light does not switch on despite motion detection and low lighting

Cause 1: Wrong function block active.

- Change function block switch-over.

Cause 2: Brightness threshold set is too low.

- Increase the brightness threshold with the parameter setting.

Light switches on despite sufficient ambient brightness

Cause 1: Signal function is active and the device therefore operates brightness-independent.

- Check programming.

Cause 2: Device operates brightness-independent.

- Adjust parameter setting for brightness threshold.

Light switches off briefly and then on again immediately

Cause 1: Lamps in the detection field.

Set the configuration barrier parameter so that cooling lamps are not detected.

Cause 2: The brightness threshold set is not reached after switching off. Device switches on again immediately during motion detection.

Increase brightness threshold.

Light switches off early despite presence and low lighting

Cause 1: The set time is too short.

- Increase the time with the parameter setting.

Cause 2: Detection problem, the surface to be monitored is not in the detection field, or furniture or pillars are in the way.

- Check detection field, extend presence detector extension unit if necessary.

Device responds even without any motion in the detection field

Cause: Interference sources in the detection field or device settings are too sensitive.

- Limit detection field, remove interference sources.
- Reduce sensitivity in parameter setting.

Light does not switch off despite sufficient ambient brightness

Cause 1: Device is set as motion detector and therefore does not evaluate the ambient brightness after reacting.

- Check programming. Set and program device as presence detector.

Cause 2: Brightness threshold set is too high.

- Reduce the brightness threshold with the parameter setting.

Light does not switch on or switches on too late despite motion in the detection field

Cause 1: Device is set for alert operation and does not evaluate the first motion impulse detected.

- Check programming. Set and program the device as motion detector or presence detector.

Cause 2: Evaluation delay is activated so that anyone briefly entering the detection field, for example, is not evaluated.

- Correct the programming, shorten or deactivate evaluation delay.

9 Accessories

Flush-mounted installation kit

Art. no. 2226 5..

Surface-mounted installation kit

Art. no. 2227 5..

10 Warranty

The warranty is provided by the specialist trade in accordance with statutory requirements. Please submit or send faulty devices postage paid together with a fault description to your responsible salesperson (specialist trade / installation company / electrical specialist trade). They will forward the devices to the Gira Service Center.

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