

Operating instructions

Pushbutton sensor 4.55 Detect, 1-gang
Art. no. 5055 00

Pushbutton sensor 4.55 Detect, 2-gang
Art. no. 5056 00

Pushbutton sensor 4.55 Detect, 3-gang
Art. no. 5057 00



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1 Safety instructions

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



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

Danger of electric shock. Comply with the regulations and standards that apply to SELV circuits during the installation and cable routing.

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



The technical documentation on our web site contains detailed information.



The "Stainless Steel" version of the rocker switch set is not suitable for use with the Detect push-button sensor. Reliable operation cannot be guaranteed.

2 Device components

Front view

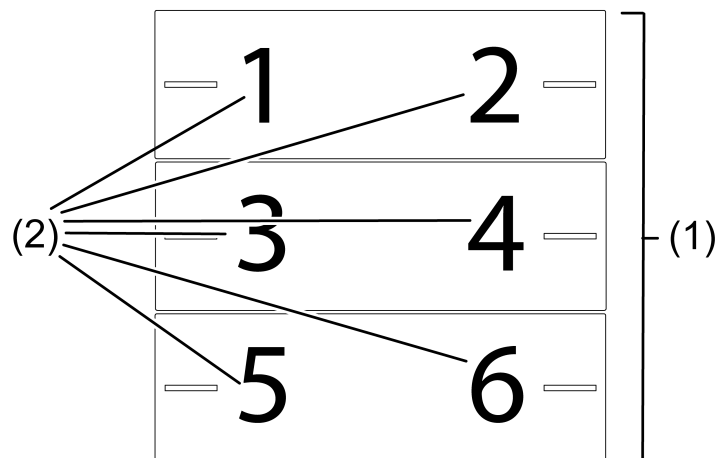


Figure 1: Device components 3-gang

- (1) Operating rockers (accessory)
- (2) Status LED
- 1...6 Push-buttons assignment and status LED

Rear view

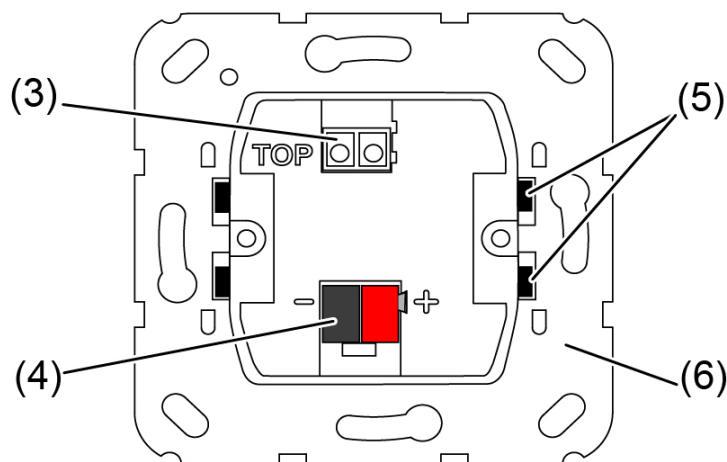


Figure 2: Device components - rear side

- (3) Device connection terminal for remote sensor (optional)
- (4) Device connection terminal KNX
- (5) Retaining clips for device fixation at the supporting frame
- (6) Supporting frame

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. The firmware is easy to update 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 6.4.0.

4 Intended use

- Operation in KNX system
- Operation of loads, e.g. light on/off, dimming and colour temperature control, colour control and brightness, shading up/down, 1-byte values, 2-byte values, 3-byte values and 6-byte values, brightness values, temperatures, colour temperature values, calling up and saving light scenes as scene extension unit
- Calling up and saving device-internal light scenes
- Motion detection using an integrated motion sensor (HF) and brightness analysis
- Measuring brightness
- Measurement of room temperature
- Measurement of room humidity
- Measuring the air quality
- Indication of an alarm
- For use as orientation lighting
- Mounting in appliance box with dimensions according to DIN 49073

5 Product characteristics

- Push-button sensor functions switching, dimming and colour temperature control, colour control and brightness, shading, value transmitter, scene extension unit, 2-channel operation and controller extension adjustable
- Controller extension with operating mode selection, forced operating mode switch over, presence function and setpoint shift
- Status LED - optionally red, green, blue, yellow, cyan, orange, violet, white - adjustable per button
- LED functions orientation lighting, alarm signalling and night reduction can be set separately
- Brightness of status LED adjustable and switchable while in operation
- Disable or function switch-over of all or of individual button functions possible with disabling function
- Scene control of up to 8 scenes with 8 scene outputs each
- Temperature measurements optionally with device internal sensor, wired sensor to the device connection terminal and external sensor connected via communication object
- Air quality measurement with internal VOC sensor
- Room humidity measurement with internal device humidity sensor
- Motion detection using an integrated motion sensor (HF) and brightness analysis
- Integrated bus coupling unit

Motion detection

- Motion detection using an integrated motion sensor (HF)
- Integrated brightness sensor
- Use as a presence or motion detector
- Output functions: Switching, staircase function, switching with forced position, dimming value transmitter, light scene extension unit, temperature value transmitter, brightness value transmitter, temperature operating mode
- Detection field extendible by parallel switching of several devices as main unit or extension unit
- Motion detection with focus on accuracy or speed
- 2 function blocks for motion and brightness evaluation with 2 outputs each
- Function blocks switchable, e.g. for day/night operation

6 Operation

Depending on the programming, a rocker can have up to two functions assigned to it. Operation is carried out by a short or long press on the push-buttons and depends on the specific function configured. Depending on the configured function, a recognised movement may be a prerequisite for manual operation.

6.1 Examples for operating various standard applications

- Switch: Short press on button.
- Dim: Long press on button. The dimming process ends when the button is released.
- Move Venetian blind: Long press on button.
- Stop or adjust Venetian blind: Short press on button.
- Set value, e.g. brightness or temperature setpoint: Short press on button.
- Open scene: Short press on button.
- Save scene: Long press on button.
- Execute channel 1: Short press on button.
- Execute channel 2: Long press on button.
- Operate controller extension: Short press on button.

7 Information for electrically skilled persons



DANGER!

Mortal danger of electric shock.

Cover up live parts in the installation environment.

7.1 Installation position

- i** When installing the push-button sensor, read the TOP labelling at the top.
(see figure 3)

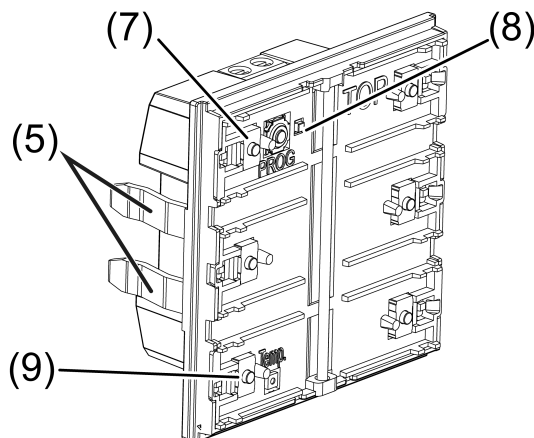


Figure 3: Push-button sensor

- (5) Retaining clips for device fixation at the supporting frame
- (7) Programming button
- (8) Programming LED
- (9) Temperature sensor

7.2 Mounting and electrical connection



DANGER!

Electrical shock on contact with live parts in the installation environment.

Electric shocks can be fatal.

Before working on the device, disconnect the power supply and cover up live parts in the working environment!

Mounting and connecting the device

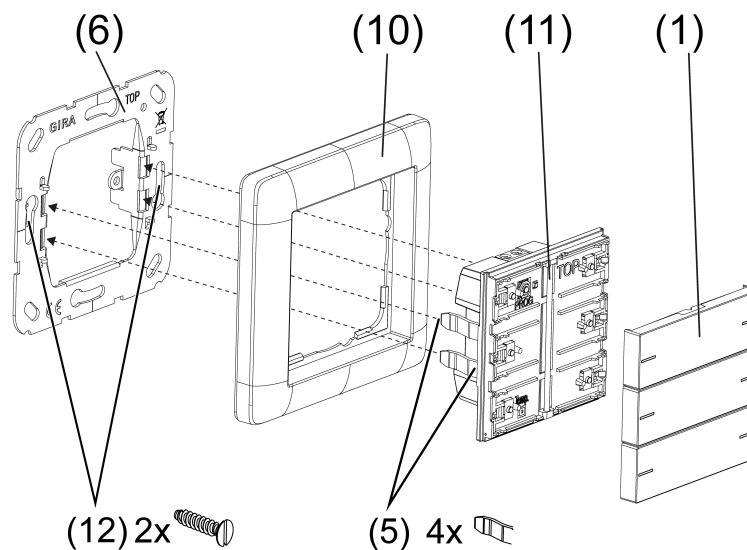


Figure 4: Mount device

- (1) Operating rockers (accessory)
- (5) Retaining clips for device fixation at the supporting frame
- (6) Supporting frame
- (10) Cover frame (accessory)
- (11) Push-button sensor
- (12) Box screws

The device should be used in an air-tight appliance box. Otherwise temperature and humidity reading can be negatively influenced by draughts.

- i** Motion detection: False alarms may occur due to interference. Moving light-weight walls, both as a mounting location and in the field of vision, and moving objects (e.g. houseplants whose leaves are moved by a slight draught, etc.) can lead to false triggering in unfavourable cases.
- i** Several 4 Detect push-button sensors within the same detection field may interfere with one another, which can lead to false triggers. Setting the "Detection Focus" parameter to "Accuracy" is significantly more robust against false triggers than setting it to "Speed".

Secure operation and simplified ETS commissioning

The device certificate is used for secure commissioning and can also simplify the process of programming the physical address. Recommendation: Enter or scan the device certificate to add it to the ETS project. Use a high resolution camera to scan the QR code. Remove the device certificate from the device during mounting. Document all passwords and keep them safe.

- Mount supporting frame on an appliance box.

 Note the TOP marking.

Use the enclosed box screws.

- Pull off commissioning rockers from push-button sensor.

The push-button sensor is delivered with commissioning rockers. The operating rockers suitable for the push-button sensor must be ordered separately (see chapter "Accessories" ► Page 24).

- Connect push-button sensor to the KNX using KNX device connection terminal (red = +, black = -).
- In secure operation: The device certificate must be removed from the device and stored securely.
- Optional: Connect remote sensor (see chapter "Accessories" ► Page 24) to device connection terminal for remote sensor.
- Fit the cover frame flush. The cover frame is fixed via the push-button sensor.
- Attach the push-button sensor with cover frame onto the supporting frame.

Push-button sensor can be put into operation.

Make sure the that the retaining clips properly fit in the supporting frame.

The physical address is programmed (see chapter "Commissioning" ► Page 17) in the next work step. The rockers can then be mounted (see chapter "Mounting the rockers" ► Page 12).

7.3 Mounting the rockers

- Slide the side of the rocker into place (see figure 5).

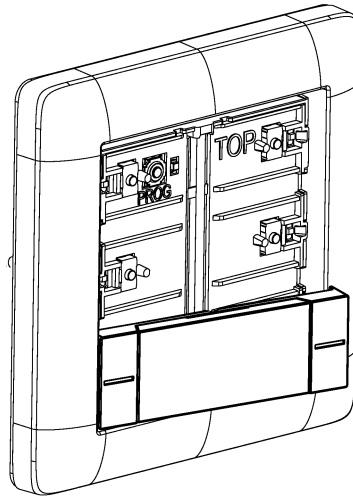


Figure 5: Slide the side of the rocker into place

- Press in the middle of the rocker (see figure 6).

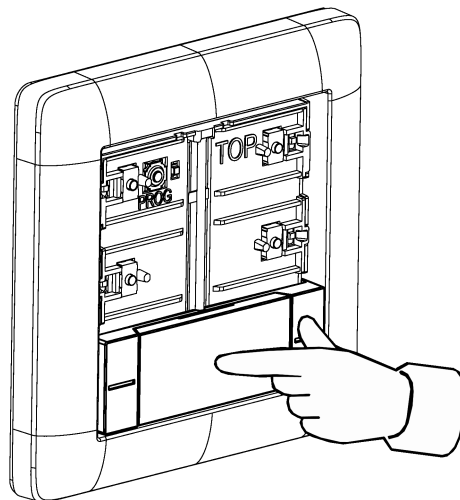


Figure 6: Press lightly in the middle of the rocker

The rocker snaps into place.

Device is ready for operation.

In order to optimise the gap dimensions between the rockers and the cover frame, the rockers can be moved slightly after snapping into place.

7.4 Exchanging the labelling field

The rocker has a labelling field

- Search for a notch in the cover of the labelling field by feeling with a finger (see figure 7).
- Pull on one side at the notch in the cover of the labelling field to separate from the rocker (see figure 8).

The labelling field is uncovered.

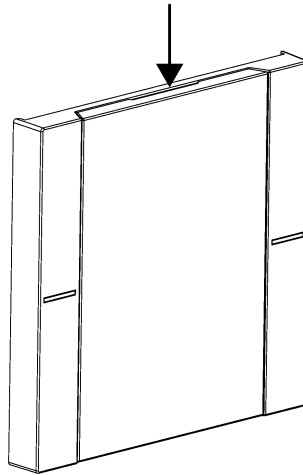


Figure 7: Feel for a notch in the labelling field cover

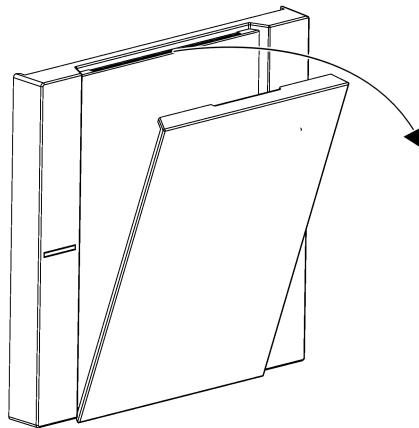


Figure 8: Remove the labelling field cover

- Exchanging the labelling field.
- Press the cover of the labelling field onto the rocker so that it snaps into place.

The labelling field is exchanged.

7.5 Dismantling

- Carefully pull the push-button sensor forward together with the cover frame.
- Pull the rockers on one side to loosen them from the push-button sensor.

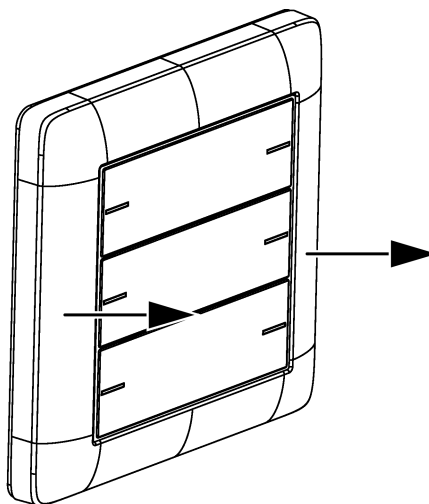


Figure 9: Dismantle the push-button sensor

7.6 Material penetration

Propagation and attenuation of high-frequency signals in buildings

The device operates using high-frequency signals within the designated frequency range. These signals can pass through ceilings and walls inside buildings. Depending on the properties of the material, this results in energy losses. Key influencing factors include, in particular, the thickness of the material and its electrical conductivity (e.g. metal content and moisture content).

The loss of energy during signal propagation is known as **attenuation**. It describes the ratio between the radio power emitted by the device and that received by the receiver. High-frequency signals are attenuated during transmission by various factors relating to the structure and materials involved. To ensure correct operation, it is essential to ensure that the high-frequency signals still have sufficient signal strength at the receiver to enable reliable processing. Virtually ideal propagation conditions exist in what is known as **the free field**. This refers to an environment free from structural obstacles, in which high-frequency signals can propagate largely unimpeded and no disruptive reflections or absorption occur.

Inside buildings, high-frequency signals often have to pass through walls and ceilings. The resulting attenuation – and thus the achievable operating range – depends in particular on:

- the number of components to be penetrated
- the type and nature of the building materials used
- the effective wall and ceiling thickness.

At material interfaces, part of the incident high-frequency radiation is reflected, whilst another part is absorbed by the material. Materials with high moisture content, such as those typically found in new buildings or recently renovated rooms (e.g. freshly plastered or wallpapered surfaces), cause greater attenuation of high-frequency electromagnetic signals.

The following overview shows examples of attenuation values for various building materials and serves as a guide for positioning equipment.

Material/Objects	Penetration
<ul style="list-style-type: none"> – Thin hardboard – Single glass pane (front) – Single laminated glass 	<ul style="list-style-type: none"> – Low attenuation Motion detection hardly restricted
<ul style="list-style-type: none"> – Lightweight doors – Thin lightweight walls – Double-glazed windows – Satinised glass 	<ul style="list-style-type: none"> – Medium damping Limited motion detection
<ul style="list-style-type: none"> – Structured glass – Pressboard, wood (>15 mm) – Reinforced concrete wall, concrete slab 	<ul style="list-style-type: none"> – High damping No motion detection

Material/Objects	Penetration
<ul style="list-style-type: none">– Solid wood doors– Triple-glazed windows– Multi-panelled lightweight walls	

There may be deviations due to structural features, surface conditions and detection angles.

Selecting installation location

If possible, the mounting locations of the device must be evaluated during the planning of the electrical installation. Concrete ceilings with metal reinforcements attenuate high-frequency signals to a greater extent than wooden ceilings. The same applies for mineral plasters or hollow walls on the basis of a metallic stand. Room use should also - if known - be taken into account, because a living room in an existing building offers fewer obstacles to radio radiation than an office with metallic cabinets.

7.7 Commissioning

Programming the physical address and application program

The programming button is located under the first rocker.

- Switch on the bus voltage.
- Perform commissioning with the ETS.

i As soon as the programming process has been successfully completed, the device switches on and the status LEDs carry out their parameterised function.

When the application program is discharged and the bus voltage is connected, all status LEDs initially light up white. Whenever a button is actuated, the respective illuminated status LED changes colour (white → red → green → blue → yellow → cyan → orange → violet → white → ...).

Detection areas and range

With a total detection field of up to 120°, the **high-frequency signal technology** used in the Detect push-button sensor for motion detection allows for flexible adjustment between detection accuracy and detection speed. The optimum operating point depends heavily on the specific application; for example, on whether the priority is on precise presence detection or rapid motion detection.

The Detect push-button sensor distinguishes between nearby and more distant motion zones. The detection limits depend on the installation height and the direction of movement of people within the detection area.

Movements in the immediate vicinity of the sensor are detected via proximity detection. Close-range detection can be parameterised for various application scenarios. A distinction is made between stair detection right, centre and left.

When close-range detection is enabled, the brightness measurement is interrupted. In this state, no current brightness values are available. This prevents highly distorted measured values from being recorded during device operation due to shadowing.

Gesture control

When gesture control is enabled, the Detect push-button sensor can be controlled by interpreting gestures and movements. Depending on the commands sent, the device reacts differently during and at the end of gesture recognition. The operating distance for gesture control is approximately 10 cm.

Pressing the push-button sensor does not trigger a gesture.

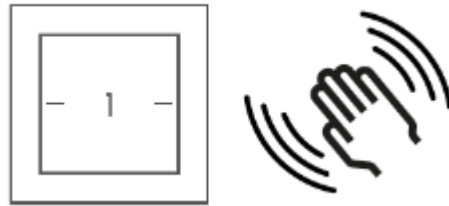


Figure 10: Gesture control

Staircase survey

The sensor is suitable for use in stairwells. With staircase detection (right, centre, left), motion detection is limited to an area of approx. 1 m² to the right, centre or left of the push-button sensor Detect.

Optimal results can be achieved when the tracking is set to prioritise 'accuracy' and the maximum tracking distance is set to 2 m or 4 m.

The proximity sensor only reacts to movements in the immediate vicinity (to the right, in the centre or to the left). This function is used, for example, to switch on the staircase lighting automatically when the stairs are in use. People are detected when they enter the stairwell. When 'Stair detection left' or 'Stair detection right' is selected, the detection field can be shifted to the left or right relative to the device to optimise people detection.

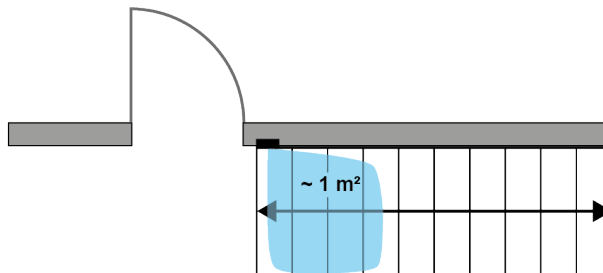


Figure 11: Example of a staircase survey

Detection areas

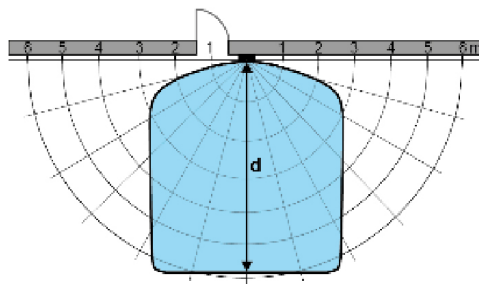


Figure 12: Detection areas

You use detection areas to define the spatial area in which the sensor can detect movement. The achievable ranges vary depending on the specific focus of the motion detection (whether the focus is on speed or accuracy).

The maximum detection range is 6 m to the front and up to 3 m to each side.

Testing the detection field

Check the detection field when motion detection is activated.

The device is installed and connected. Physical address is loaded.

Prerequisite: "Use walking test" parameter is selected in the ETS and programmed into the device. Commissioning rockers have been replaced by design rocker set.

- Switch on the walking test.

The motion sensor is active according to the programmed focus of the detection (accuracy or speed).

- Pace off the detection field, paying attention to reliable detection and interference sources.

When the walk test is active, all status LEDs of the push-button sensor light up blue when a movement is identified.

- If necessary, adjust the focus of the detection in the ETS.
- Switch off the walk test.

7.7.1 Sensor calibration

Measuring sensors

The design of the rockers determines the quality of the brightness measurement. In low brightness, the LEDs switch off briefly.

The sensor can be preset either using the colour of the rear panel of the rocker set design line used or via an object with a separately measured brightness value. The pre-assembled commissioning rockers must be replaced with the final rocker set to be used for correct brightness measurement.

- When activating the parameter for sensor calibration via rocker set design line, define the colour of the back of the rocker set used (light / dark).

In addition, depending on the parameterisation, adjust the activated measuring functions (temperature measurement, room humidity measurement, air quality, ...).

Following initial commissioning, the air quality sensors must calibrate continuously for at least 24 hours before valid readings are transmitted.

7.7.2 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).

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).

Release the programming button only after the programming LED starts flashing.

Deactivating safe-state mode

- Switch off the voltage or carry out ETS programming.

7.7.3 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.

In secure operation, a master reset will deactivate the device security. The device can then be recommissioned with the device certificate.

Devices can be reset to factory settings with the Gira ETS Service App. This function uses the firmware included 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

Prerequisite: 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.

8 Technical data

KNX

KNX medium	TP256
Commissioning mode	S mode
Rated voltage	DC 21 ... 32 V SELV
Current consumption KNX	8 ... 18 mA
Connection mode KNX	Standard device connection terminal
Connecting cable KNX	EIB-Y (St)Y 2x2x0.8

Motion detection

Detection angle	Up to 120°
Range	6 m

Brightness sensor

Measuring range	10 ... 2000 lx
Accuracy > 80 lx	± 5%
Accuracy ≤ 80 lx	± 10 lx

Temperature sensor

Measuring range	-5 ... +55 °C
Accuracy	± 1 K

Humidity sensor

Measuring range	10 ... 95 % rel. humidity.
Accuracy	≤ 3.5%

Installation dimensions (see figure 13)

Construction height	A = 11.9 mm A = 12.5 mm (stainless steel rocker set)
Installation depth	B = 13.8 mm

Connection cable remote sensor (see accessories)

Cable type extension	NYM-J 3×1.5 or J-Y(St)Y 2×2×0.8
Total length remote sensor line	max. 30 m

Ambient conditions

Ambient temperature	-5 ... +45 °C
Storage/transport temperature	-20 ... +70 °C
Protection class	III

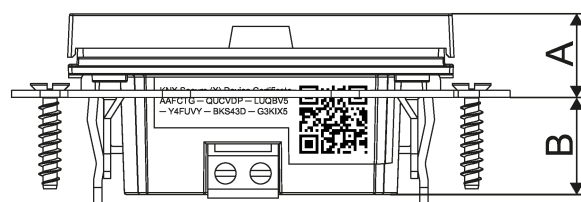


Figure 13: Installation dimensions

9 Troubleshooting

Light does not switch on despite motion detection and low lighting

Cause: Brightness threshold set is too low.

- Increase the brightness threshold with the parameter setting.

Light switches on despite sufficient ambient brightness

Cause: Device operates brightness-independent.

- Check programming.
- Adjust parameter setting for 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: Sources of interference within the detection field, or the detection range is set too wide.

- Limit detection field, remove interference sources.

Light does not switch off despite sufficient ambient brightness

Cause: 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: 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.

10 Accessories

-  Individually labelled rocker sets are available from the Gira inscription service www.beschriftung.gira.de.
-  The "Stainless Steel" version of the rocker switch set is not suitable for use with the Detect push-button sensor. Reliable operation cannot be guaranteed.

	Art. no.
Rocker set, 1-gang	5751 ..
Rocker set, 1-gang, inscribable	5761 ..
Rocker set, 1-gang, inscribable	5771 ..
Rocker set, 2-gang	5752 ..
Rocker set, 2-gang, inscribable	5762 ..
Rocker set, 2-gang, inscribable	5772 ..
Rocker set, 3-gang	5753 ..
Rocker set, 3-gang, inscribable	5763 ..
Rocker set, 3-gang, inscribable	5773 ..
Remote sensor	1493 00

11 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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