

**Observer 220**  
Art.-No.: W 220 WW

## Operationsmanual

### 1 Safety instructions

**Electrical equipment may only be installed and fitted by electrically skilled persons.**

**Failure to observe the instructions may cause damage to the device and result in fire and other hazards.**

**Danger of electric shock. Device is not suitable for disconnection from supply voltage.**

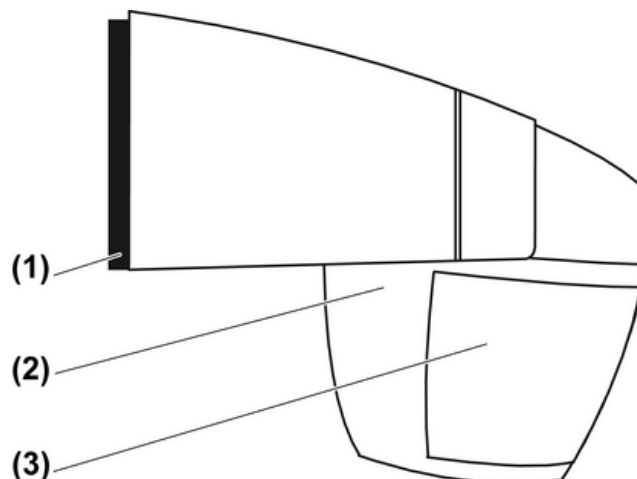
**Danger of electric shock. Always disconnect before carrying out work on the device or load. At the same time, take into account all circuit breakers that supply dangerous voltage to the device or load.**

**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.**

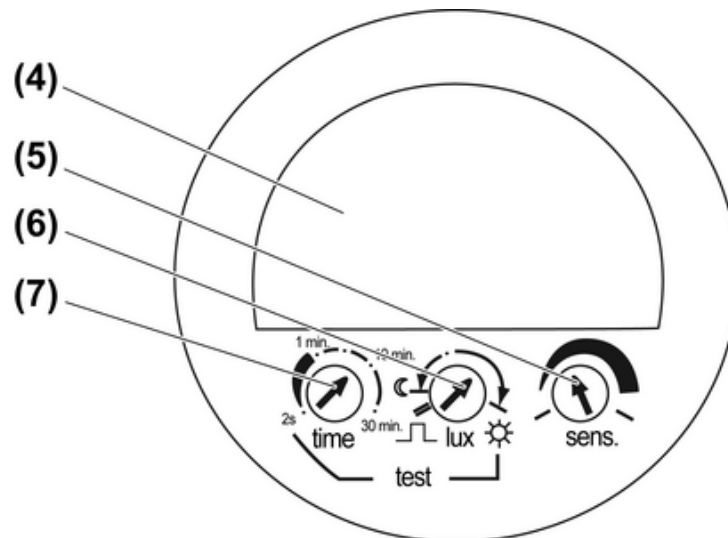
**These instructions are an integral part of the product, and must remain with the end customer.**

### 2 Device components



picture 1: Page view

- (1) Connection box
- (2) Sensor head
- (3) Sensor window



picture 2: View from below

- (4) Sensor window below, protection against crawling under
- (5) **sens** adjuster for sensitivity, green LED
- (6) **lux** adjuster for brightness yellow LED
- (7) **time** adjuster for run-on time, red LED

### 3 Function

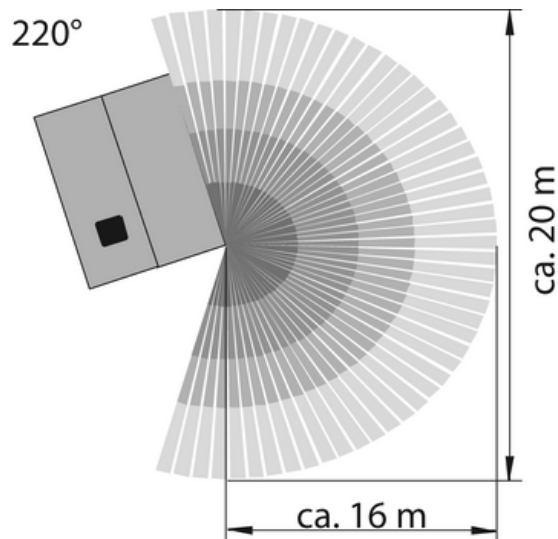
#### Intended use

- Automatic switching of lighting depending on the heat motion and ambient brightness.
- Surface-mounting in indoor and outdoor areas

#### Product characteristics

- Digital signal evaluation
- Protected against spray water
- Follow-up time, sensitivity and brightness value settable
- Test operation for checking the detection area
- Switch light on or off for 4 hours
- Short-time operation to control signal encoders
- Sensor head adjustable in 2 axes
- Self-adhesive cover plate elements for limiting the detection area
- High protection against ambient light
- 580 switching segments in 4 layers
- Separate protection against crawling under
- Parallel connection of multiple motion detectors possible
- Manual switch-on possible with installation button, NC contact

## Automatic operation



picture 3: Detection area, motion detector

The motion detector detects heat motions of people, animals and objects.

- The light is switched on if a person enters the monitored detection area and the brightness is below the set threshold.
- The light is switched off if no more movement is detected in the detection area and the follow-up time has elapsed.

In order to avoid light oscillations due to the cooling of a bulb, the motion detector does not evaluate any signals for approx. 2 seconds after switch-off.

When the ambient brightness increases, the motion detector switches the motion detection off only when the brightness has dropped below the set brightness for 10 minutes. That prevents attempts to tamper with the motion detector, e.g. by illuminating it with a torch to prevent switching-on.

When the ambient brightness drops the motion detection is only evaluated only when the brightness has dropped below the set brightness threshold for 2 minutes.

## 4 Operation

### Notes on setting the operating mode

The operating mode can be changed using an installation button, NC contact. Depending on the desired operating mode, the installation button has to be pressed 1 to 4 times for about 0.5 to 1.5 seconds. The pause between two button-presses must not be more than 2 seconds. If the installation button is pressed more than four times, the automatic mode becomes active.

Behind the adjusters **time**, **lux** and **sens.** (picture 2) there are three coloured LEDs. These LEDs indicate the selected operating mode.

### Operating mode: switch on light for the run-on time, automatic mode

- Press installation button 1 x.

The motion detectors switches on independently of the brightness. Each detected movement restarts the run-on time again. The motion detector is in automatic mode.

When the load is switched off the yellow LED lights up if a motion is detected. When the load is switched on the yellow LED lights up continuously.

### Operating mode: switch on light for 4 hours

- Press installation button 2 x.  
Light switches on for 4 hours.  
The green LED lights up.

After 4 hours the motion detector switches to automatic mode.

#### Operating mode: switch light off for 4 hours

- Press installation button 3 x.  
Light switches off for 4 hours.  
The red LED lights up.  
After 4 hours the motion detector switches to automatic mode.

#### Operating mode: switch on test operation

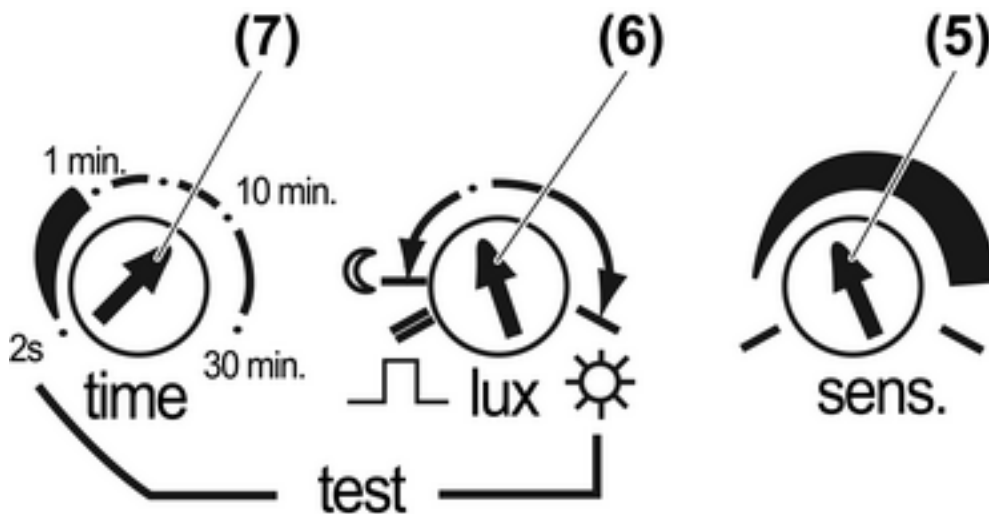
- Press installation button 4 x.  
The red and green LEDs light up.  
The test mode is active. Each time motion is detected, the motion detector switches on for approx. 3 seconds independently of the brightness.  
The yellow LED lights up briefly each time a motion is detected.

#### Performing a reset

- Press installation button longer than 4 seconds.  
A reset is performed. The motion detector is in automatic mode.

#### Configuring the motion detector

The three adjusters can be used to set the run-on time, the brightness, the sensitivity and a short-time operation.



picture 4

#### Set follow-up time

The light remains switched on for this time after the last movement detection. The run-on time is set in a range from approx. 2 seconds to 30 minutes.

- Turn the **time** adjuster (7) to the required position (picture 4).

**i** The motion detector switches off after 90 minutes at the latest even when there is constant motion in the detection area. Switch-on only takes place again if the brightness is below the preset value and there movement is again detected in the detection area.

#### Setting the brightness threshold

Only when the brightness drops below the threshold will the light be switched on when there is motion in the detection area. The brightness threshold is steplessly adjustable in a range from approx. 1 to 1000 lux.

In so doing, the ☀ symbol stands for brightness-independent switching and the ☾ symbol for switching in case of darkness. Recommendation: A setting of approx. 10 lux – as shown in (picture 4) – activates the device at the start of twilight.

- Turn the **lux** adjuster (6) to the required position (picture 4).

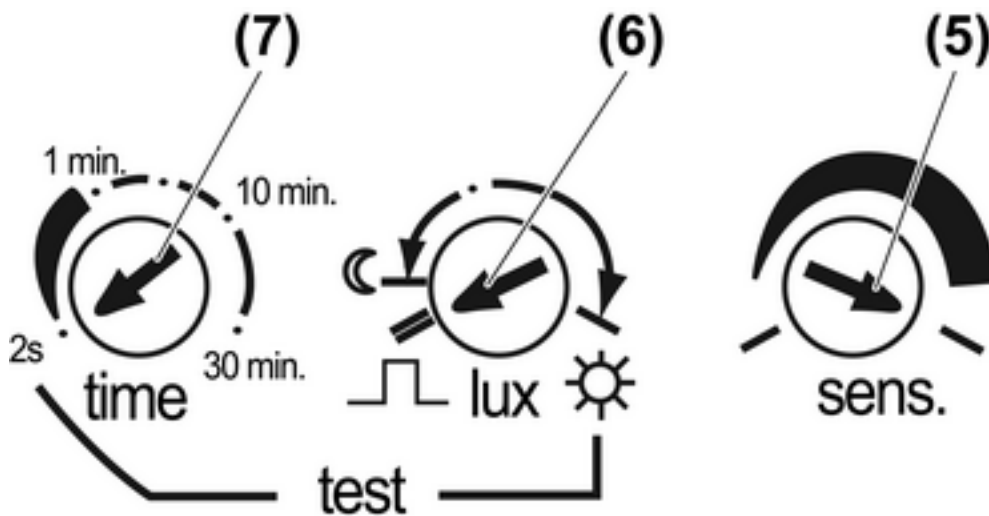
### Setting the sensitivity

The sensitivity of the device can be adapted to the ambient conditions and the tilt of the sensor head.

- Set **sens.** adjuster (5) to maximum sensitivity.
- If there are unwanted switching operations, reduce the sensitivity.

### Presetting the short time operation

In short-time operation, when motion is detected a pulse of 0.5 seconds is generated that can be used, e.g., to activate a bell. This operating mode functions independently of the brightness.

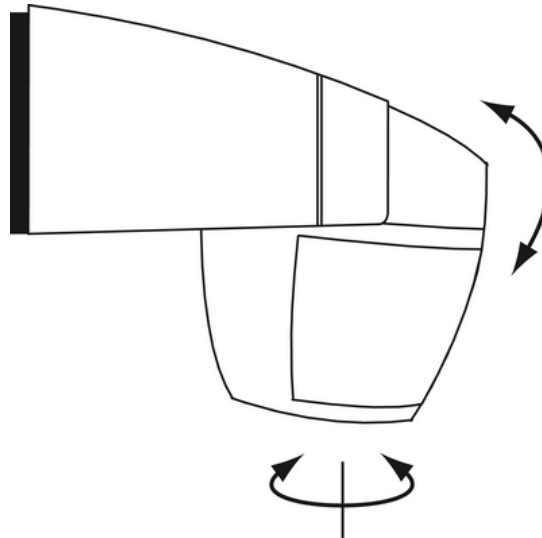


picture 5

- Turn **lux** adjuster (6) to the  $\square$  position (picture 5).
- Use the **time** adjuster to set the pulse separation between 2 seconds and 10 minutes. The pulse separation is the minimum time between two pulses, and is valid only for short-time operation.

- i** The pulse separation is limited to 10 minutes even when a larger time is set.
- i** If during a change from short-time operation to automatic operation a lower brightness value ☾ is being set, the **lux** adjuster should first be set to the 10 lux mark (picture 4), and then turned down.

## Aligning the sensor head



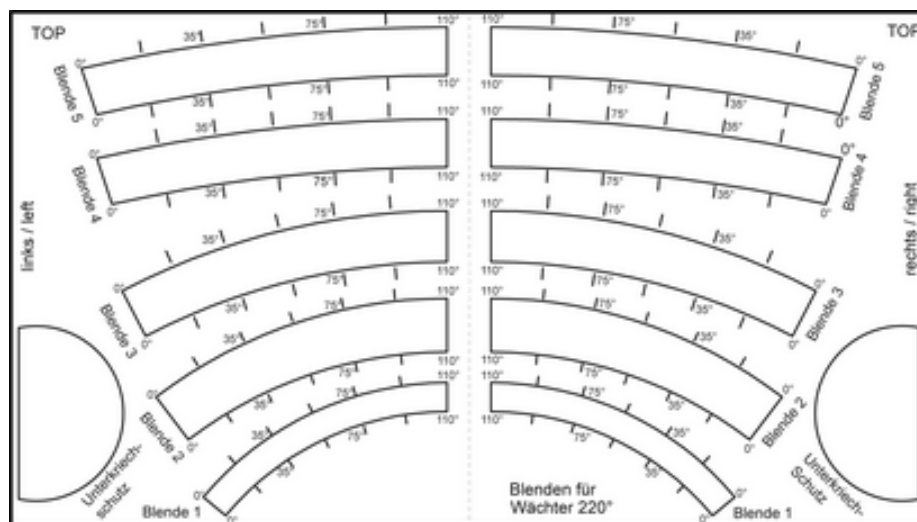
picture 6: Aligning the sensor head

For optimal alignment of the detection area the sensor head can be tilted and turned (picture 6).

- Adjust sensor head to the detection area by tilting and turning it (see "Selecting the installation location").

## Limiting the detection area

If there are heat sources in the detection area that lead to unwanted switching operations, they can be hidden by means of self-adhesive cover plate elements. The cover plate elements (picture 7) are pre-punched for all 5 cover layers, and can be trimmed to the desired angle. Do not interchange the right-side and left-side cover plate elements, because otherwise proper shading is not possible.



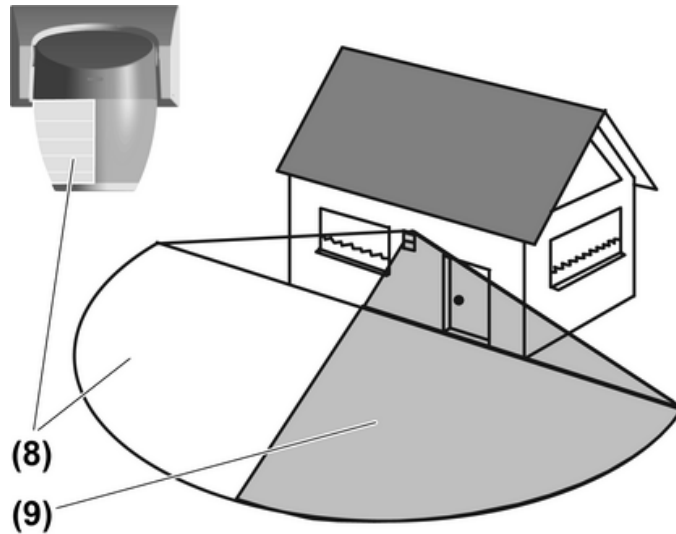
picture 7: Self-adhesive cover plate elements

- Before sticking on the cover plate elements, clean the sensor window with clear water and a soft cloth.
- Carefully pull cover plate elements off of the backing film, trim if necessary and stick on the sensor window so that they are smooth.

### Examples of hidden segments

The follow examples show how individual segments of the detection area can be hidden.

Example 1: Hide left side



picture 8: Hiding the left side of the detection area

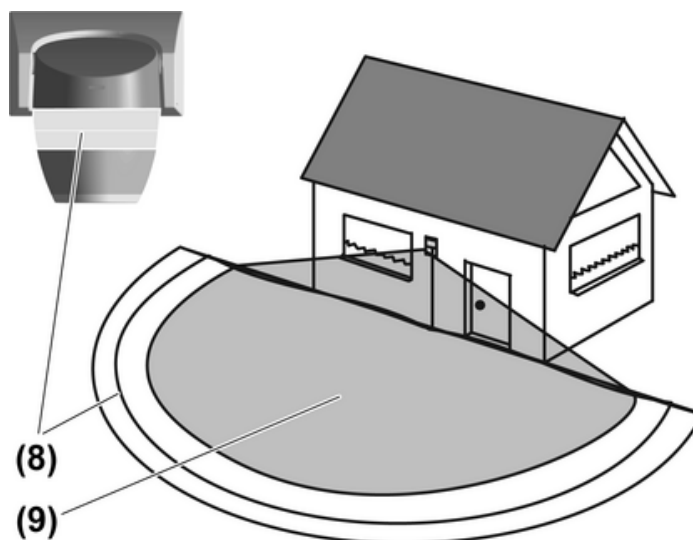
(8) Hidden area

(9) Monitored area

- Stick the five left-side cover plate elements to the left side of the sensor window (picture 8).

**i** Due to the complex structure of the motion detector, sharp delimitation of the hidden area is not possible in all cases.

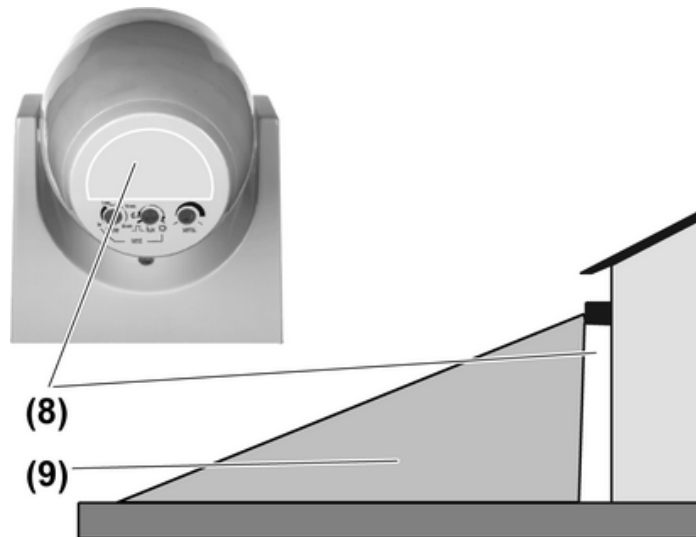
Example 2: Hiding the long range



picture 9: Hiding the long range

- Stick the two upper cover plate segments for the left and right sides to the sensor window (picture 9).

Example 3: Hide protection against crawling under



picture 10: Hiding protection against crawling under

- Stick the protection against crawling under cover plate element under the sensor head (picture 10) in order to hide the area underneath the motion detector.

## 5 Information for electrically skilled persons

### 5.1 Fitting and electrical connection



#### **DANGER!**

**Electrical shock when live parts are touched.  
Electrical shocks can be fatal.**

**Before carrying out work on the device or load, disengage all the corresponding circuit breakers. Cover up live parts in the working environment.**

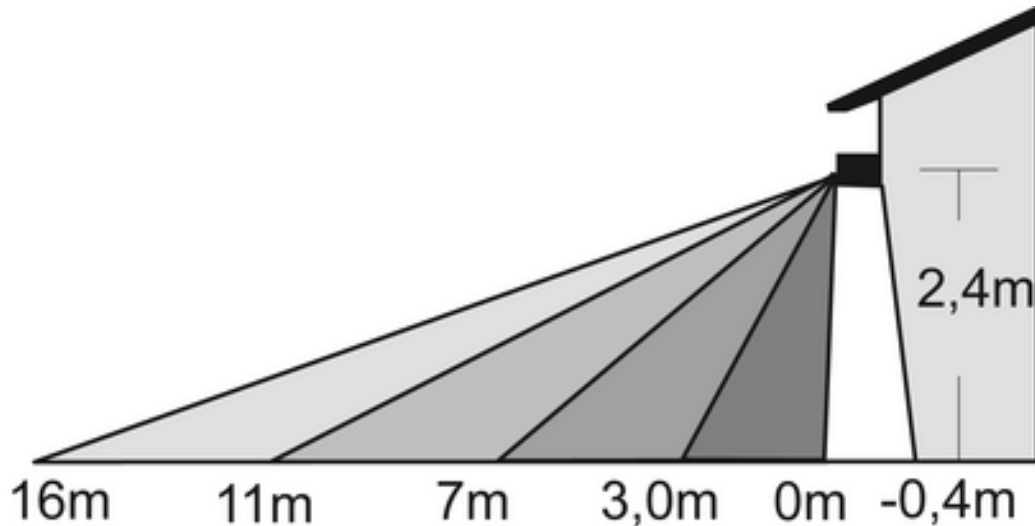


#### **CAUTION!**

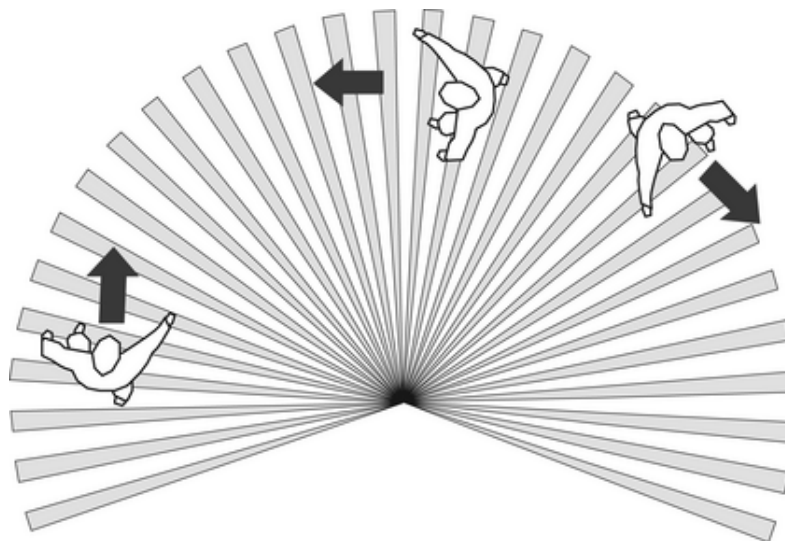
**Damage to the device when heat radiation is too high.  
Sensors will be destroyed.**

**Align the device so that no direct sunshine hits the sensor window.  
Do not place the device in the sun.**





picture 11: Recommended installation height



picture 12: Recommended installation laterally to the direction of movement

### Selecting the installation location

At an installation height of 2.40 m (picture 11), the optimum range of the motion detector is achieved transversely to the direction of movement (picture 12).

The range is reduced in the case of:

- The land slopes upwards away from the motion detector
- Tilted sensor head
- Low temperature difference
- Installation height less than 2.4 m
- Effects of weather, e.g. rain or snow

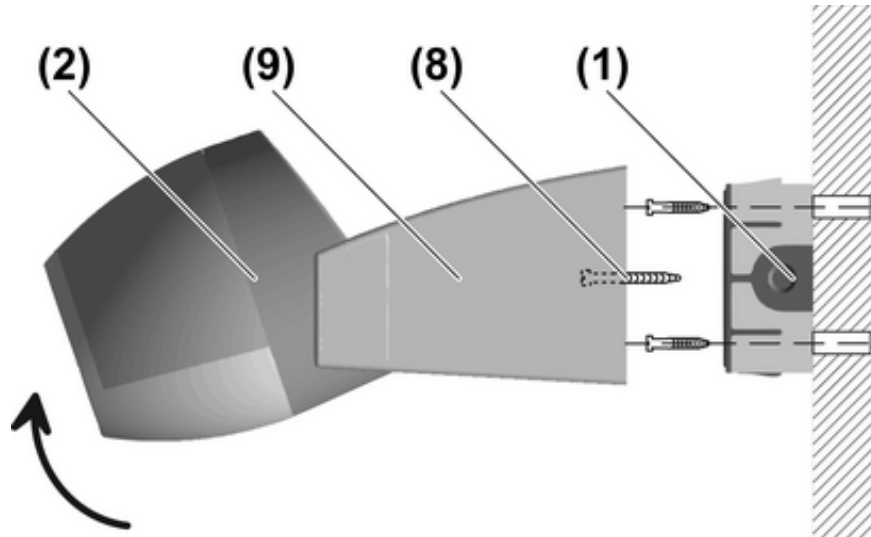
The range is increased in the case of:

- The land slopes downwards away from the motion detector
- Sensor head pointed upwards
- High temperature difference
- Installation height greater than 2.4 m

- Select a vibration-free installation location; vibrations can lead to unwanted switching.
- Avoid interference sources in the detection area. Interference sources, e.g. heaters, ventilation, air conditioners, or cooling light bulbs can lead to unwanted switching.

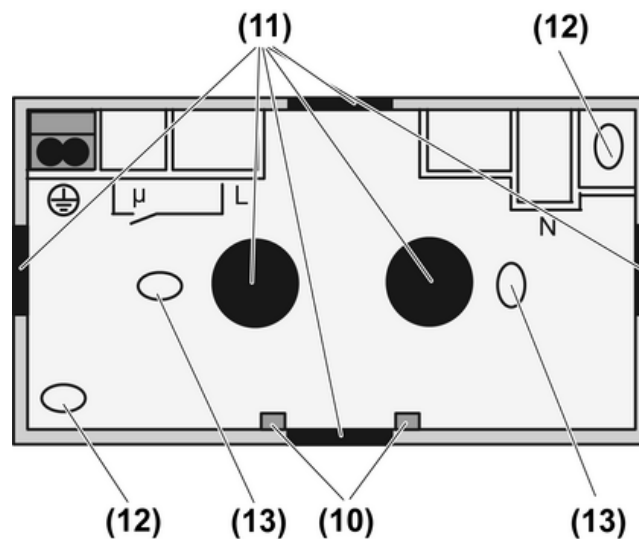
- Take direction of motion into account.
- Determine installation height.

### Installing the connection box



picture 13: Fastening the motion detector and connection box

- Turn sensor head upwards (picture 13).
- Undo central fastening screw (8) and pull the upper part of the device (9) off of the connection box.



picture 14: Connection box openings

- Break out condensation water holes (10) (picture 14).  
Exception: installation in dusty rooms.

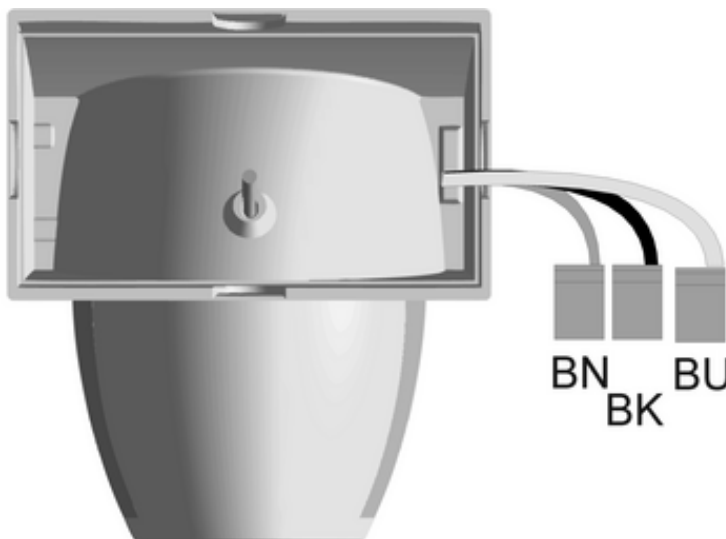
The connection box has 6 cable entries (11) that are provided with moulded-in rubber sheaths. The supply and power cables can be routed into the appliance box separately.

- For cable insertion, penetrate the rubber sheath (11) and insert the cable.

**i** Do not cut the rubber sheath with a knife so that the seal tears. The cable jacket must be held tightly by the rubber sheath to prevent water from entering the device.

- Fasten the connection box on the installation location with two screws in such a way that the condensation water holes are at the bottom. For installation on a 60 mm appliance box, use the central screw holes (13), otherwise use the outer screw holes (12) (picture 14).

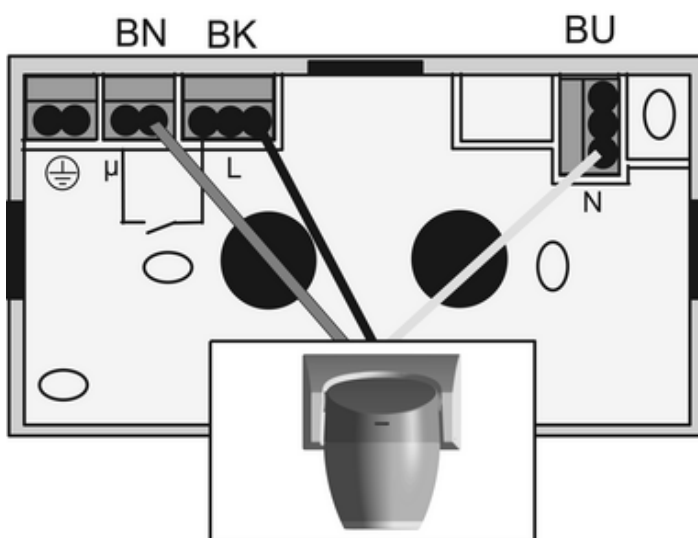
**Connecting and installing the motion detector**



picture 15: Terminals

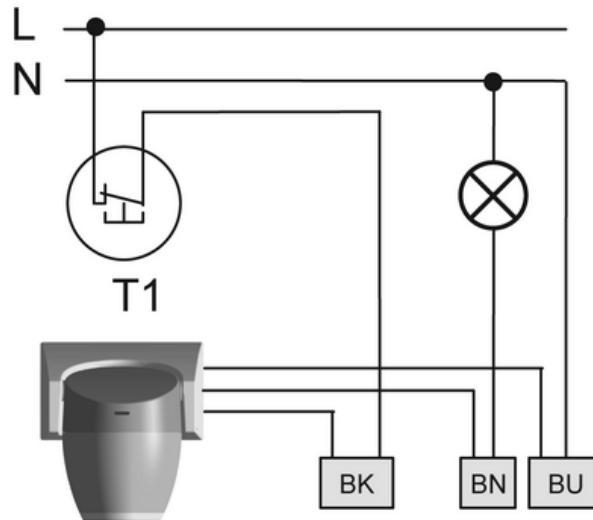
The connecting cables are preassembled with screwless terminals

brown, BN	μ, relay, lamp cable
black, BK	L, external conductor
blue, BU	N, neutral conductor



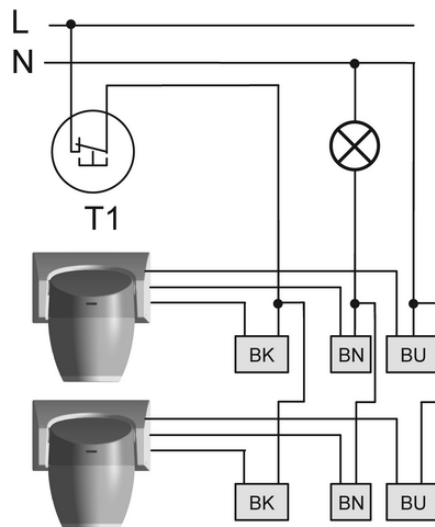
picture 16: Holders for screwless terminal

- Insert the screwless terminals for fixing into the holders of the connection box (picture 16).



picture 17: Motion detector connection diagram

- Connect motion detector and optional installation buttons T1, NC contact, for operating mode selection according to connection diagram (picture 17).



picture 18: Parallel motion detectors connection diagram

- If required, connect additional motion detectors in parallel according to connection diagram (picture 18).

The motion detectors connected in parallel detect lighting switched on on the power cable, and also switch on. The motion detector with the longest run-on time determines the switch-on time.

- i** All motion detectors connected in parallel must be operated on the same external conductor.
- i** Connection in parallel does not increase the maximum connected load or the total length of the power cable.
- Set upper part of box (9) on connection box (picture 13), at the same time pulling back the central fastening screw (8), and making sure that the motion detector does not become tilted.
- Tighten central fastening screw (8) (picture 13).

## 5.2 Commissioning

### Performing a function test

- Switch on test mode by pressing the installation button four times (see "Operation")
- ❗ If no installation button is installed for changing the operating mode, the test mode can also be set directly on the device. To do this, set **time** adjuster to **2 s** and **lux** adjuster to ☀.
- Pace off the detection area, paying attention to reliable detection and interference sources.
- ❗ If the motion detector has switched off, it is necessary to wait for a max. delay time of 4 seconds before switching on again.
- If necessary, limit the detection area to mask out interference sources. Do this by adjusting the sensor head or sticking cover plate elements on the sensor window (see "Operation").
- After the function test press installation button 1 x.  
Automatic mode is active.
- ❗ If no installation button is installed for for changing the operating mode, the automatic mode is activated by setting the run-on time and brightness threshold.
- Set run-on time, brightness threshold and sensitivity (see "Operation").

## 6 Appendix

### 6.1 Technical data

Rated voltage	AC 230 / 240 V ~
Power consumption	approx. 1.1 W
Ambient temperature	-20 ... +55 °C
Protection rating	IP 55
Circuit breaker	max. 16 A
Installation height	approx. 2.40 m
Detection angle	approx. 220 °
Range	approx. 16 m
Follow-up time	approx. 2 s ... 30 min
Sensitivity	20 ... 100 %
Brightness setting	approx. 1 ... 1000 lx (and day operation)
pulse duration	0.5 s
pulse stop	approx. 2 s ... 10 min
Connected load	
Incandescent lamps	2300 W
HV halogen lamps	2300 W
Tronic transformers	1200 W
Inductive transformers	1200 VA
Electronic ballast	Type-dependent
Fluorescent lamps, uncompensated	1200 VA
Fluorescent lamps, parallel compensated	920 VA
Fluorescent lamps, duo circuit	2300 VA
Switching current	
Switch-on current max. 4 s at 10% switch-on time	20 A
Minimum switching current AC	100 mA
Contact type	μ contact
Connection	
Single stranded	max. 2.5 mm <sup>2</sup>
Total length power cable	max. 100 m

### 6.2 Troubleshooting

#### Motion detector does not switch on

Cause 1: The ambient brightness is greater than the set brightness threshold.

Increase the brightness threshold using the **lux** adjuster.

Cause 2: Detection area is limited.

Align sensor head and adapt cover plates.

Cause 3: The locking time for the transition between Day and Night mode has not yet elapsed, approx. 2 minutes.

Check again after approx. 2 minutes.

Cause 4: Operating mode "Light off for 4 hours" is switched on.

Press installation button 1 x to switch on automatic mode.

Cause 5: sensitivity of the device is too low.

Increase sensitivity **sens..**

#### **Motion detector switches on, although no-one is in the detection area.**

Cause: Interference sources in the detection area, e.g. ventilation, cooling light bulbs, trees and bushes.

Align sensor head, stick cover plate elements on the sensor window, or reduce sensitivity **sens..**

#### **Motion detector does not switch off after the set follow-up time has elapsed**

Cause 1: Motion detector detects motions constantly. Interference sources in the detection area, e.g. ventilation, cooling light bulbs, trees and bushes.

Align sensor head, stick cover plate elements on sensor window, or reduce sensitivity **sens..**

Cause 2: Operating mode "Light on for 4 hours" is switched on.

Press installation button 1 x and switch on automatic mode.

## **6.3 Warranty**

We reserve the right to make technical and formal changes to the product in the interest of technical progress.

We provide a warranty as provided for by law.

Please send the unit postage-free with a description of the defect to our central customer service office:

#### **ALBRECHT JUNG GMBH & CO. KG**

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