

Observer 180 plus

Order No.: 0830 02

Theory of Operation

This observer responds to thermal movement initiated by persons, animals or objects and, when detecting, turns on consumers such as lights.

The unit remains activated as long as movements are detected. Otherwise, the observer switches off after a preset delay time has elapsed.

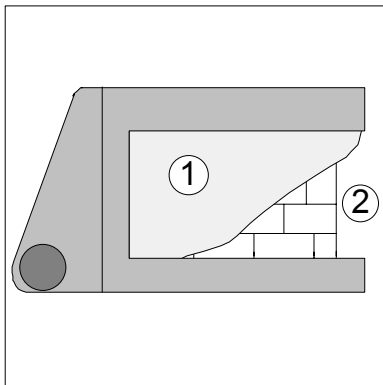
A visual signal indicates the responding of the unit.

With the aid of an adjustable twilight switch, the switching function is activated from a desired brightness value only or can be set to day-time/night-time operation.

The working range of the unit can be individually adapted by adjusting the sensitivity.

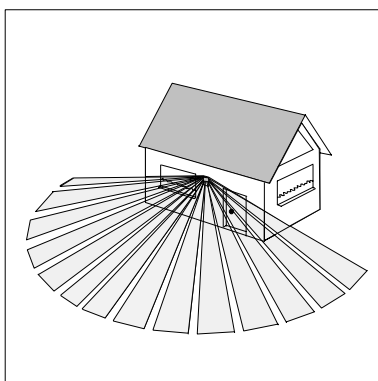
Via a mechanical flush-mounted push-button (normally closed contact), the mode can be changed:

- Observer mode.
- Light ON for 2 hours.
- Light OFF for 2 hours.
- Test mode.



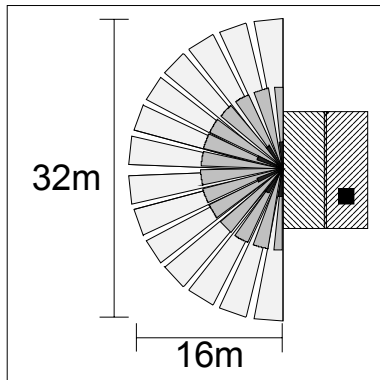
The working range of the unit can be reduced by a sensitivity control.

A protective film ① in front of lens system ② makes the units weather-proof and dependable as well as guarantees a high quality standard.



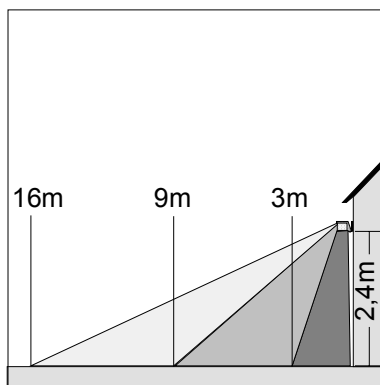
Detection Field

The observer has a dense, semicircular detection field consisting of three levels with 144 switching segments.



Detection field size: 16 m x 32 m,
please refer to the illustration.

The different grey zones in the illustration identify the three observation levels.



The three observation levels are defined as follows:

Near range from	0 m to approx. 3 m.
Medium range from	approx. 3 m to approx. 9 m.
Far range from	approx. 9 m to approx. 16 m.

The working range specified is referred to an installation height of 2.4 m, with the sensor head not tilted, the movement direction lateral to the observer, and with a sufficient temperature difference between the moving body and the environment.

Choosing the Location

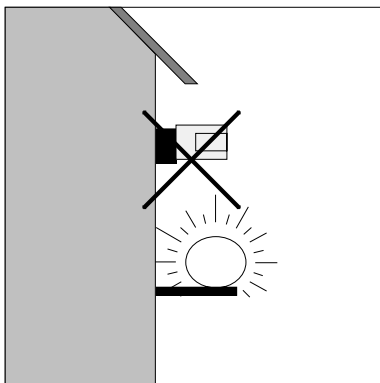
To obtain an optimum working range, install the observer at a height of 2.4 m, laterally to the moving direction, as, otherwise, losses in the working range will have to be encountered.

Mind sources of interference such as animals, shrubs moved by the wind, automotive vehicles or lamps within the range of detection.

If necessary, restrict the sensor range of detection with the attached slip-fit aperture.

Warning

Caution: The installation and assembly of electrical equipment may only be performed by a skilled electrician.

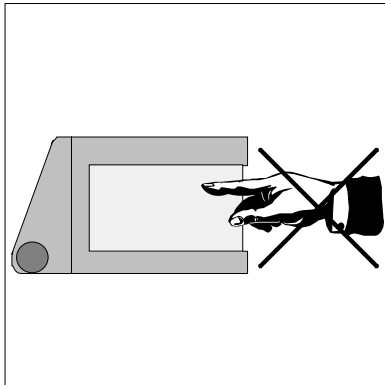


Installation

All required screws and dowels are supplied with the unit.

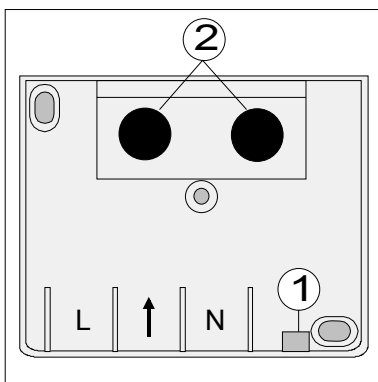
Do not install directly above a lamp. A lamp cooling down may be detected as a different heat rate and can lead to reclosing.

Choose a suitable place of installation. The detection field should not be restricted by walls, fences, shrubs etc.



Do not touch the sensor window.
Do not align the sensor window towards the sun. Sensors will be damaged by the high thermal energy.

Install the observer in a vibration-free manner as sensor movements may also initiate switching.

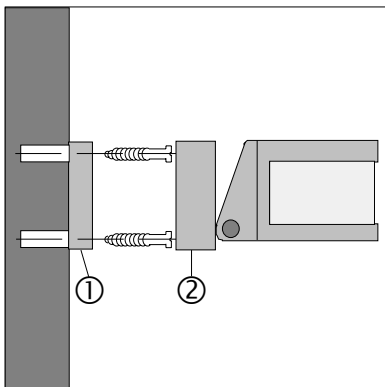


Tilt the sensor head. Remove the central screw and open the unit.

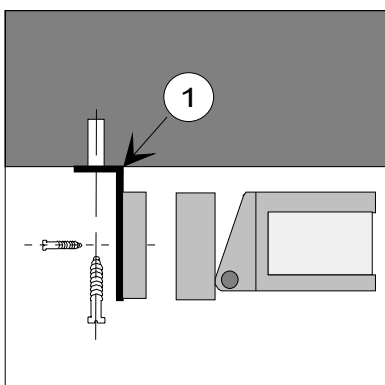
Open condensed water hole ① prior to installation (not when installing the unit in dusty rooms).

The unit is provided with two cable entries.
The supply and lamp lines can be led into the enclosure separately.

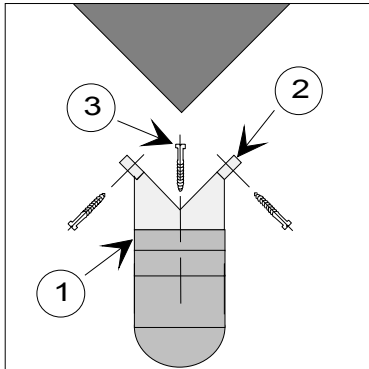
To lead in the lines, pierce respective rubber bushing ②. Do not cut open the rubber bushing too much. The cable sheath must be firmly surrounded by the rubber bushing so that no water can penetrate into the unit.



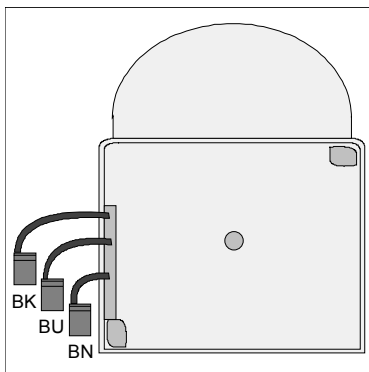
Install the observer in such a way that condensed water hole ① and controls ② are located below.
Fasten the unit to its place of installation with two screws.



For installation under ceilings, use the separate 'angle bracket' ① accessory item.
Attach the angle bracket to the ceiling with two screws and fit the observer from behind with the central screw.



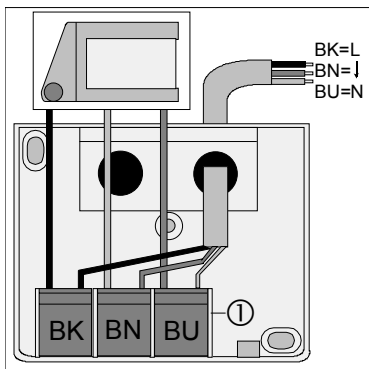
For installation at building corners use the 'corner piece' ② (optional) accessory item.
Attach observer connection enclosure ① to corner piece ② by central screw ③, then mount the corner piece to the building corner with two screws.



Plug-in terminals have been provided by the manufacturer.

Terminal assignment:

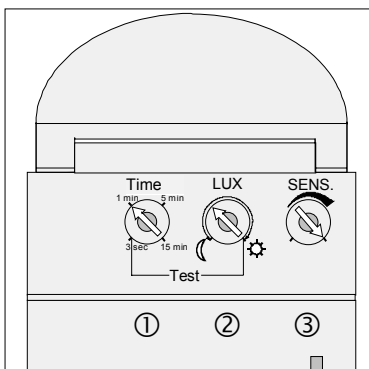
BK (black): L
BU (blue): N
BN (brown): ↓



Connect the lines as shown in the wiring diagrams.

Lock the connection terminals into their holders ① in the enclosure bottom.

Plug on the enclosure top (sensor head) and secure with the central screw.



Adjustments

Time setting (follow-up time) ①

within the range of approx. 3 seconds to approx. 15 minutes.

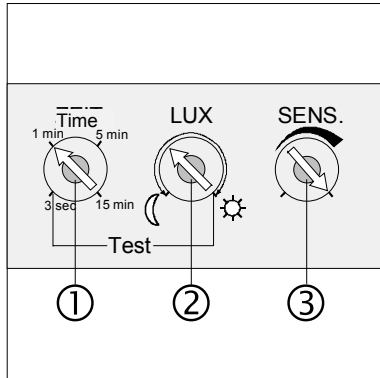
Brightness setting ②

within the range of approx. 3 - 80 lux and for day-time operation.
Recommended: Setting to 10 LUX - as shown in the illustration - activates the unit at the beginning of dusk.

Sensitivity setting ③

Sensitivity: Approx. 100% - 20%
reduction of the working range of the unit.

Adjust the sensitivity depending upon the tilt of the sensor head.
For a decreased detection range, the sensitivity should be reduced. First of all, select the highest sensitivity level as well as determine and adjust the desired value by walking the detection range during a function test.



Additional Functions

The mode can be changed via a mechanical flush-mounted push-button (normally closed contact) (for connecting the push-button, please refer to the wiring diagrams).

Coloured light-emitting diodes (LEDs) are located behind the time, lux and sensitivity controls. These LEDs indicate what additional function has been selected.

LED ①: Green.
LED ②: Red.
LED ③: Red.

1st Additional Function

Pressing the push-button once: Observer mode.

After activation, the observer switches on for the preset time irrespective of the brightness. Movements will be detected and evaluated.

When the unit has switches off, movements are evaluated, depending upon the brightness.

Relay open: All LEDs are off.

Relay closed: LED ① is lit.

2nd Additional Function

Pressing the push-button twice: Light ON.

The light is switched on for approx. 2 hours. After this, the unit changes to observer mode.

LED ① and LED ③ are lit.

3rd Additional Function

Pressing the push-button three times: Light OFF.

The light is switched off for approx. 2 hours. After this, the unit changes to observer mode.

LED ② is lit.

4th Additional Function

Pressing the push-button four times: Test mode.

Brightness evaluation is deactivated (day-time operation). The observer switches on for about 3 seconds when detecting a movement.

Relay open: LED ② and LED ③ are lit.

Relay closed: LED ① and LED ② and LED ③ are lit.

For each operation, the push-button must be held pressed for at least 200 ms, while the next operation must be done within 2 seconds. After this, the additional function selected will be activated.

After mains voltage failure, the unit is in the observer mode (function 1).

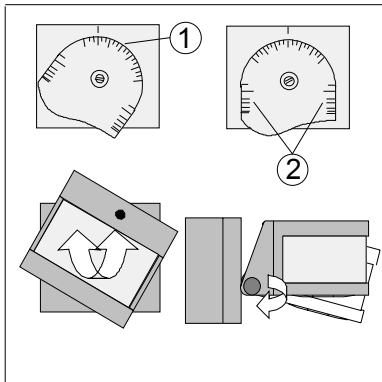
Intelligent Limit Function

Once the observer has switched on, the brightness is no longer evaluated. The lamps shine on the brightness sensor, the preset brightness value might be exceeded, and the observer would switch off. So as not to keep the lighting continuously switched on when movements permanently take place within the detection field (e. g. beyond dawn), the unit is provided with an intelligent limit function. The follow-up time (the time when the light still remains on after no more movement has been detected) is selected as a function of the real on period:

On period	Follow-up time (approx.)
Up to 60 min.	according to the setting
Up to 70 min.	4 min.
Up to 75 min.	2 min.
Up to 80 min.	1 min.
Up to 85 min.	30 sec.
Up to 90 min.	15 sec.
90 min.	Switching-off

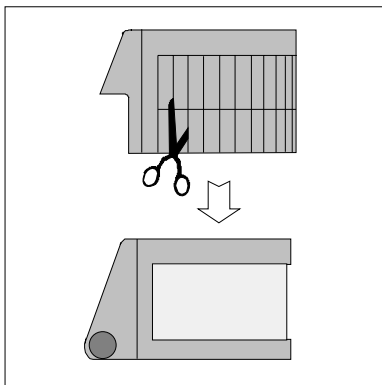
Thus, even in the event of permanent movements within the detection field, the observer switches off after 90 min., at the latest.

Reclosing will only be triggered when the preset brightness value is undercut and a movement is perceived within the detection field.

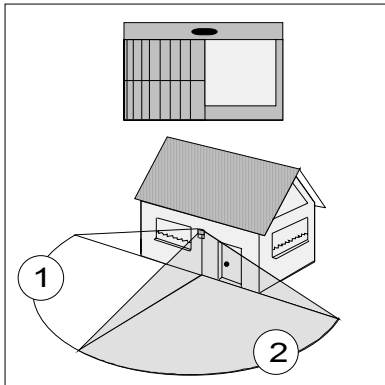
**Detection Range - Adjustment**

To adapt the detection field to the local conditions, the sensor head can be tilted and turned.

To open and close the connection chamber, it might be necessary to bring the turned sensor head to neutral position. For this purpose, turning angle ① and tilting angle ② can be read off scales on the observer enclosure, the desired position being reproducible any time.

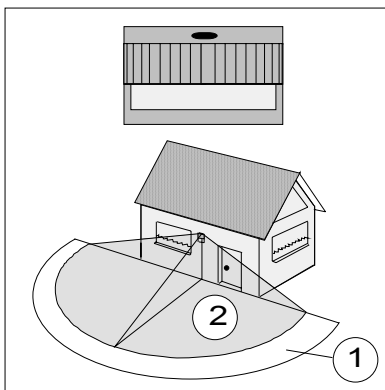
**Using the Slip-Fit Aperture**

With the aid of the attached aperture, interference sources can be eliminated by restricting the detection angle. For this purpose, cut out the aperture and slip it onto the sensor head.



Example

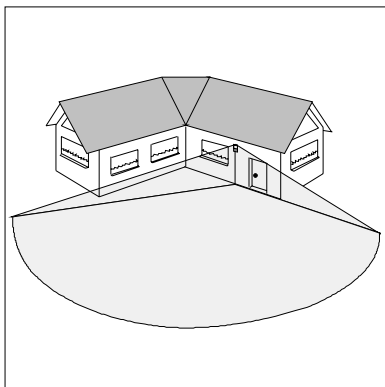
- ① : Masked area.
- ② : Observed area.



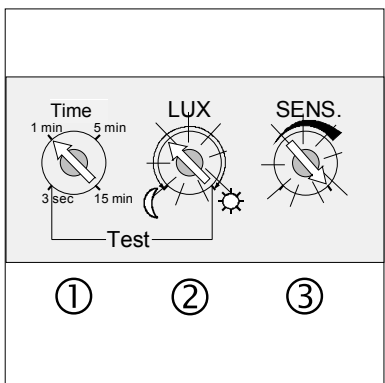
To mask the remote area, cut out the lower aperture blades only.

Example

- ① : Masked area.
- ② : Observed area.



If the detection angle of 180° is not required because of the local conditions, the detection field should be restricted by the use of the slip-fit aperture. Otherwise, undesired detection (e. g. thermal movement through open windows) may entail erroneous switching.



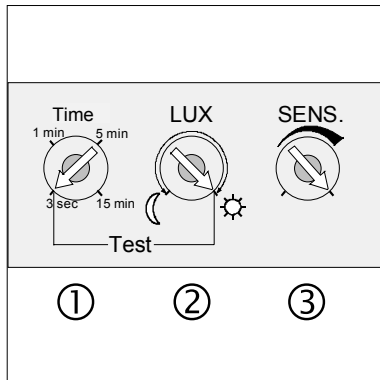
Function Test

For the function test, the slip-fit aperture must be removed or cut out to the desired angle of detection.

Select 'test mode' by pressing the push-button four times (please refer to 'Additional Functions'). LED ② and LED ③ are permanently lit. LED ① indicates the switching of the observer.

Check the alignment of the sensor head by walking the detection field.

After the function test, activate 'observer mode' by pressing the push-button once.



If no push-button for the additional functions has been installed for the 180° observer, the test mode can also be set on the unit.

Select the following for the function test:

- ① Time setting: Approx. 3 sec.
- ② Brightness setting: Day-time operation.
- ③ Sensitivity: Individual, please refer to the illustration.

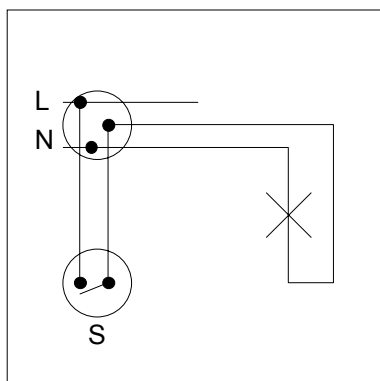
After the function test, you can set the time and brightness value as desired.

Notes:

After the observer has switched off, a delay time of 3 seconds must be waited before switching on takes place again.

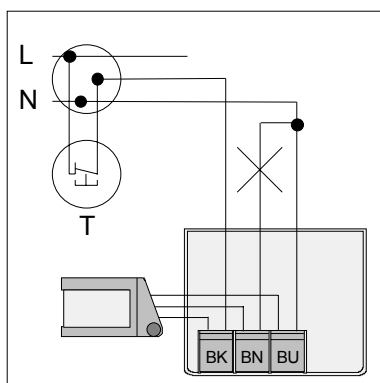
Turning on the mains supply triggers a switching process of the observer. If this is not desired, please install an additional switch, as shown in the connection diagram.

When the lighting is off, unfavourable installation conditions may cause reclosing by detection of the lamps (cooling down and hence different heat rate), due to reflection of heat radiation from the lighting, or due to too close a spacing between the observer and the lighting fixture. In this case, reduce the sensitivity.



Wiring Diagrams

Existing Installation

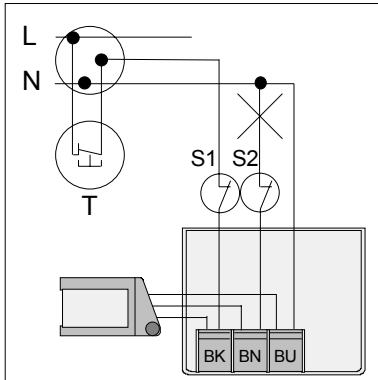


Connecting the Observer

Replace existing switch 'S' by additional functions push-button 'T' (normally closed contact).

For each operation, the push-button must be held pressed for at least 200 ms, while the next operation must be done within 2 seconds. After this, the additional function selected will be activated.

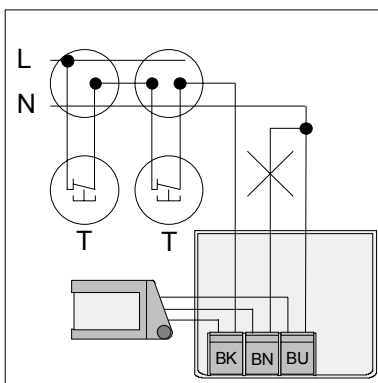
- BK (black): L
- BU (blue): N
- BN (brown): ↓



Deactivating the Observer

Remove the observer from operation with switch S1 or S2. When the observer is re-activated, switch S1 triggers a switching process, whereas S2 does not.

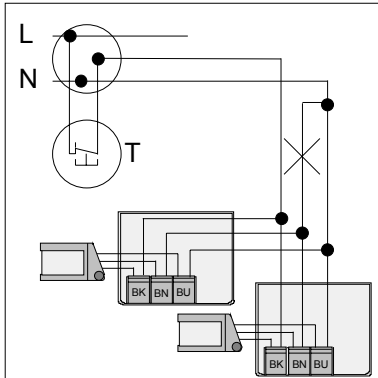
BK (black): L
 BU (blue): N
 BN (brown): ↓



Two-Way Circuit:

Existing two-way switches may be replaced by 'T' push-buttons (normally closed contact).

BK (black): L
 BU (blue): N
 BN (brown): ↓



Connecting Several Observers

Parallel connection ('T' push-button, normally closed contact).

Note: Parallel connection will increase the maximum installed load.

BK (black): L
 BU (blue): N
 BN (brown): ↓

When observers are connected in parallel, only the presently active unit may possibly detect a movement. If the room illumination switched on shines on further parallel units, these will not be activated because of the high ambient brightness.

After the observer has switched off, the factory-set locking time of approx. 3 seconds must be waited. Reclosing due to detecting a lamp cooling down is thus avoided.

Observers (individual or parallel units) which have not detected any movement are not locked, or their locking time of 3 seconds has elapsed already.

When the lighting is switched off, reclosing may be caused by the detection of lamps (cooling and hence different heat rate), due to reflection of heat radiation from the lighting, or due to too close a spacing between the observer and the lighting fixture.

Specifications

Rated working range:	16 m
Installation height:	Approx. 2.40 m
Rated voltage:	230 VAC, 50 Hz
Switching contact:	Relay
Starting current:	Max. 20 A
Automatic cut-out:	10 A

Switching capacity:

Incandescent lamps	2500 W
Halogen HV lamps	2500 W
Fluorescent lamps	
Unbalanced:	1200 W
Shunt-compensated:	920 W
Twin-lamp circuit:	2400 W

Important:

Mind high starting current peaks for 'energy-saving lamps'. Test the suitability of the lamps prior to use.

Power consumption:	Approx. 1.1 W
Temperature range:	-25 °C to 55 °C
On period:	Approx. 3 sec. to approx. 15 min., continuously adjustable
Brightness sensor: Day-time and night-time operation	Continuously adjustable
Sensitivity:	Adjustable on approx. 20-100%
Additional functions:	ON for 2 hours OFF for 2 hours Test mode
Protective system:	IP 55, hose-proof.
Connections:	L, N, ↓ 1.5 mm ² line

Please hand over these Operating Instructions to your Customer after installation.

These observers are not sabotage-proof and, therefore, not suitable for use as alarm system.

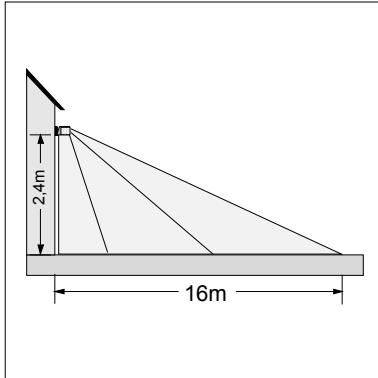
A Few Remarks on the Working Range

The Optical System and its Alignment

With its many optical lenses, the observer "looks" slantwise down from its place of installation.

- At the specified installation height of 2.4 m,
- with the sensor head not tilted,
- and in plain terrain, the most remote beams hit the ground at a distance of **16 m**.

This value is specified as the rated working range of the unit.

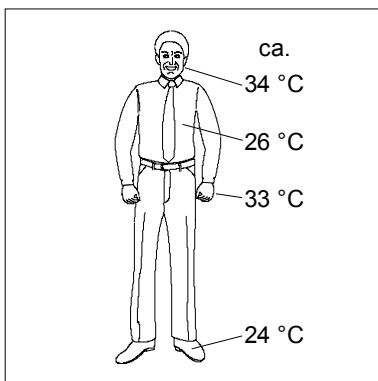


The working range **reduces**:

- in rising terrain,
- with the sensor head tilted down,
- and at an installation height of less than 2.4 m.

The working range **increases**:

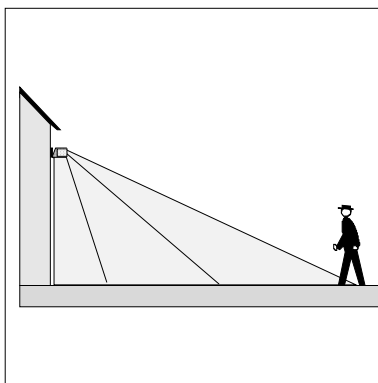
- in falling terrain,
- with the sensor head tilted up,
- and at an installation height of more than 2.4 m.



Moving Heat Sources

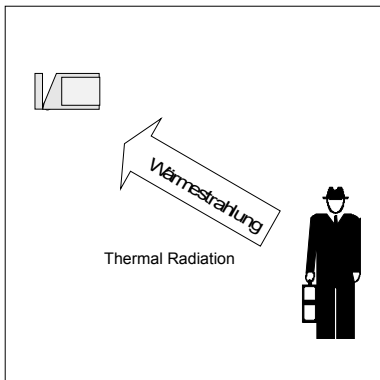
The observer (PIR) responds to thermal changes within the detection field. The higher the relative temperature difference between the moving heat source and the environment is, the more sensitively the observer acts.

Temperature profile of the human body (example). The thermal energy radiated by the body depends upon the clothing.



When a person enters the detection field, he/she is, first of all, detected by his/her feet.

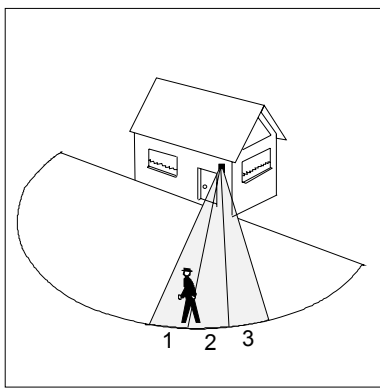
Good detection or no response yet is obtained, depending upon the temperature of his/her shoes and the ground. If the temperature difference is not sufficient for detection when a person enters the detection field, the person must go closer to the observer to be detected, i. e. the working range decreases:



Depending upon the atmospheric humidity, the temperature change is transmitted to the observer well or with some losses.

Good transmission of the thermal radiation (e. g. dry air) ensures a stable working range.

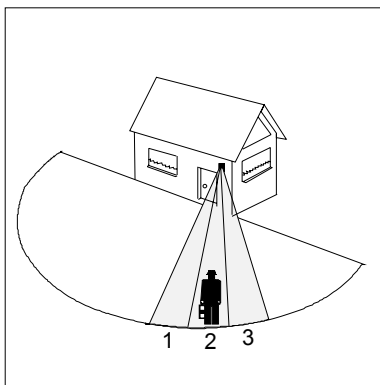
Losses in the transmission of the thermal radiation (e. g. mist) reduce the working range.



Moving Direction

If a person moves square to the observer, a negative temperature jump results for ray ② (e. g. from 20 °C to 18 °C) and a positive temperature jump for ray ① (e. g. from 18 °C to 20 °C).

This means good detection and a stable working range.



If a person approaches the observer directly, the temperature in ray ② remains almost constant. This may possibly result in no detection yet. The person will have to get closer to the observer to get 'recognised'.

Acceptance of guarantee

We accept the guarantee in accordance with the corresponding legal provisions.

Please return the unit postage paid to our central service department giving a brief description of the fault:

Gira
Giersiepen GmbH & Co. KG
Service Center
Dahlienstrasse 12
D-42477 Radevormwald



The CE sign is a free trade sign addressed exclusively to the authorities and does not include any warranty of any properties.

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