» SR-MOC Solar

Solar wireless ceiling sensor 360°

Thermokon®
HOME OF SENSOR TECHNOLOGY

Datasheet

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enocean®

» APPLICATION

The battery- and wireless ceiling sensor is designed for movement detection in room or office spaces. Radio telegrams are transmitted according to the EnOcean standard. Integrated solar energy storage for maintenance-free operation.

Functions of the SR-MOC:

- Occupancy detection 360°
- Wireless transmission of telegrams
- Monitoring of charging voltage of the energy storage

» SECURITY ADVICE – CAUTION

The installation and assembly of electrical equipment should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets. Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Please comply with
- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

» NOTES ON DISPOSAL

As a component of a large-scale fixed installation, Thermokon products are intended to be used permanently as part of a building or a structure at a pre-defined and dedicated location, hence the Waste Electrical and Electronic Act (WEEE) is not applicable. However, most of the products may contain valuable materials that should be recycled and not disposed of as domestic waste. Please note the relevant regulations for local disposal.

» GUIDELINES FOR DEVICES WITH SOLAR ENERGY STORAGE

Due to the energy-optimized EnOcean radio technology used in "EasySens®" wireless sensors, the devices can work without batteries and self-charge themselves using electric energy generated by integrated solar cells. This makes the devices almost maintenance free and environmentally sound due to not having to replace batteries.

For optimum use, the device should be mounted in a location with sufficient ambient brightness. Minimum illumination of 200 lx (artificial light or ambient) is required for at least 3 to 4 hours each day. (The health and safety regulations at work require a minimum illumination of 500 lx for office workplaces).

The solar cell should be mounted facing towards the window direction if possible. If the device has a temperature sensor, then even periodic direct sun radiation should be avoided due to incorrect false temperature readings.

The mounting position should be selected so that the device will not be obstructed in the future: for example by placement areas, additional furniture or roll-fronted cupboards.

The sensor is supplied in an operational state. If the sensor has been stored in darkness for longer periods, the internal solar energy storage will most likely need to be recharged. This would normally happen automatically during commissioning or during initial start up in ambient light. If the initial charge is not sufficient, the sensor will reach its full operating state up to 3 to 4 days, if the requirements for minimum illumination per day are met. The sensor will then transmit continuously in darkness as specified f (2/3 days on factory default telegram timing). Depending on the application it is also possible for the devices to operate in darker rooms (with brightness <100 lx) by using the battery back-up option. Batteries to be used are listed in accessories.

The operating time when using batteries will depend on the transmission frequency as well as the component aging and the self-discharge of the battery. Standard operating time will be 5-10 years on factory default telegram timing. Changing of the device from solar to battery operation is done automatically by simply adding a battery to the device.

» INFORMATION ABOUT EASYSENS® (RADIO) / AIRCONFIG GENERAL USAGE

EasySens® - airConfig

Basic information about EasySens® radio and about general usage of our airConfig software, please download from our website.

» OVERVIEW OF THE RADIO TELEGRAMS

EEP

The structure of the data contained in the telegram can be found in the EEP (EnOcean equipment profile) list provided by the EnOcean Alliance.

» TECHNICAL DATA

Measuring values	motion
Radio technology	EnOcean (IEC 14543-3-10), transmission power <10 mW EEP A5-07-01
Frequency	868 MHz
Power supply	Solar cell, internal super cap, maintenance-free Clamp for external power supply 3..5 V = optional: backup battery CR 2032
Measuring -/transmission interval	immediately at the first motion detection, then every 2 min at presence, no presence at 10 and 30 min., Heartbeat 1h (optional ON/OFF)
Detection range	∅=5 m at a mounting height of 2,5 m
Sensor	PIR (passive infrared)
Enclosure	PC, white
Protection	IP50 according to EN 60529
Ambient condition	-10..+40 °C, max. 85% rH
Weight	125 g
Mounting	surface mounting, to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	integrated battery backup possibility for usage in dark rooms

» PRODUCT TESTING AND CERTIFICATION

Declaration of conformity

The declaration of conformity of the products can be found on our website https://www.thermokon.de/.
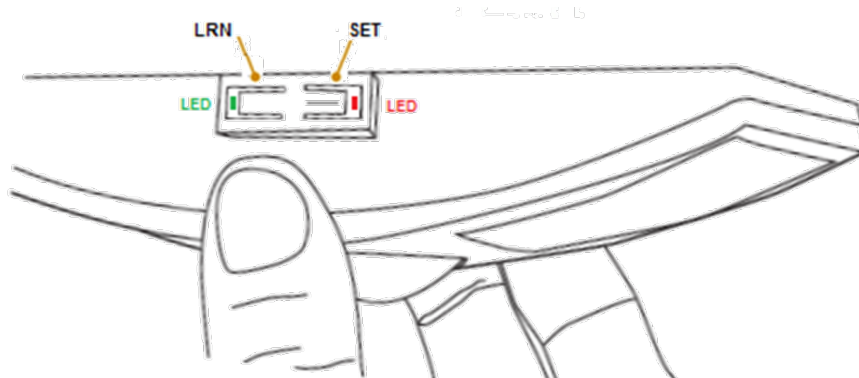

» MOUNTING ADVICE

The sensor is supplied in an operational status.

Before mounting check if the sensor cover the required detection range and the signal can be received in sufficient signal strength from the receiver.

Walk Test
Use the walk test to confirm that motion is within the sensor's range.

1. Press and hold the Set button for 5 seconds.
   ➔ Red LED will illuminate to confirm that a walk test is active.

2. Move in and out of the sensor's range to determine its coverage area.
   ➔ The red LED will illuminate when the sensor detects motion. During the walk test, no telegram is sent.

3. Make small hand movements just inside the limit of the sensor's range to see if the motion triggers a response.

4. The walk test will be left automatically after 3 minutes max. Pressing the LRN button for 5s to the walk test will be terminated.

Note: Before starting the test, you should recharge the sensor for 1.5 hours under bright light (2000 lux). Alternatively, you put a battery into the battery holder or power the sensor temporarily with 3..5V DC

In case of insufficient energy the test mode is not possible. No lighting of the LED or a flashing red LED by pressing the SET button indicates: "Not enough energy."

Ensure the sensor does not falsely trigger from user activity outside the desired zone or other heat and motion sources. If false triggering occurs, adjust the sensitivity switch (next to the battery slot) from REG to LOW.

Light Test
Use the light test to measure real-time light levels and confirm whether the occupancy sensor has sufficient light.

1. Create a realistic lighting condition (the test measures the real-time light level).

2. Press and hold the Set button for 10 seconds.
   ➔ Red & green LEDs will blink to confirm light test is active.

3. Watch the LED blink rate to determine the light strength.
5x flashing	light conditions very well (200 lux or more).
4x flashing	light conditions good
3x flashing	light conditions sufficient
2x flashing	light conditions borderline - Check other better position
1x flashing	light conditions inadequate - sensor will not work without battery backup
No flashing	No solar contribution - sensor will not work without a backup battery or DC power supply

4. The test is terminated automatically after 3 minutes max. Pressing the LRN button for 5s to finish the walk test prematurely.

Check radio signal strength
For testing the radio signal strength, place AirScan or a similar tool on the receiver.
Send telegrams by (multiple) pressing the LRN button and measure the field strength at the receiver position.

Mounting Height
The mounting height has a direct influence on the coverage range of the occupancy sensor. The optimum mounting height is between 2,40 m – 3 m. All deviating measures will result in a change of the coverage range.

Fixed Installation
The occupancy sensor has to be mounted on a solid ground, as every movement of the sensor leads to a faulty release.

Distance to Switched Lamps
In order to avoid an unintended switch-on of the lamp triggered by the occupancy sensor, the lamps should not be mounted in the detection range of the sensor. Moreover, the sensor should not be installed above a lamp. The heat radiation of the lamp can affect the function of the occupancy sensor and might probably cause a faulty release due to the PIR.

**Distance to Sources of Interference**
In order to avoid any faulty releases, sources of interferences such as heat radiators, lamps, air exits of air-conditioning systems etc. should be installed outside the detection range. In addition, direct sun radiation should be avoided.

Mounting:

- Remove the mounting plate by lateral displacement from the sensor. Align the mounting plate and marking out drillholes.
- Drill two holes for the wall plugs and screw the mounting plate on securely.
- Place the sensor on the mounting plate and engage by lateral displacement
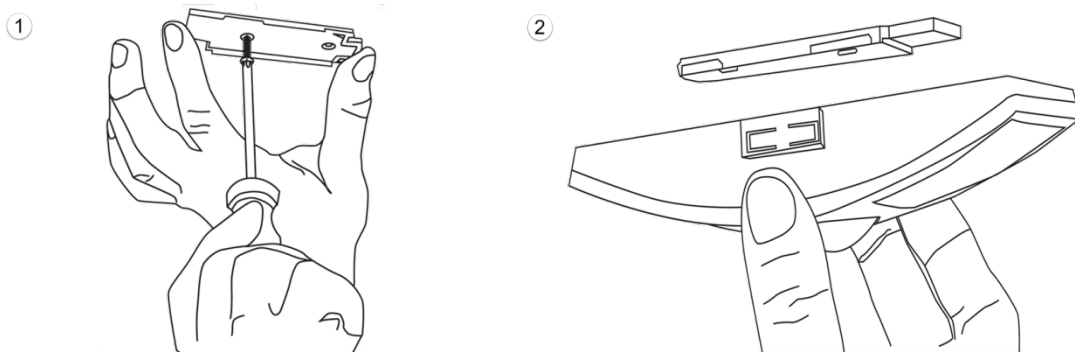
» DETECTION RANGE
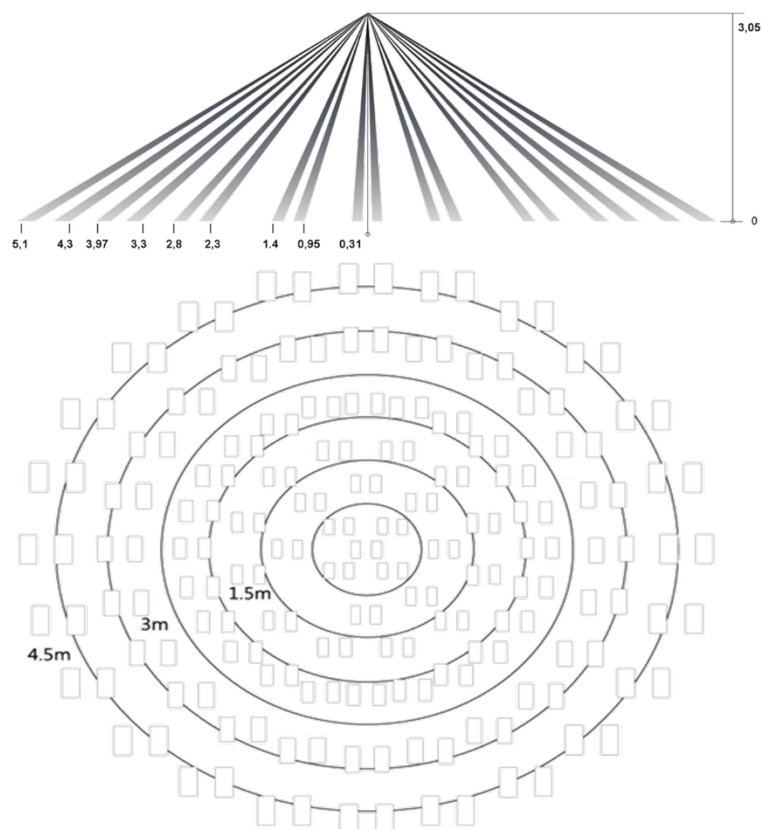
Installation to the Side of Walk Direction
For an optimal occupancy detection, the sensor has to be mounted laterally of the detection range, so that the zones are cutter as rectangular as possible. Installation places, where the detected objects move straightly to the occupancy sensor, result in a considerable reduced coverage range.
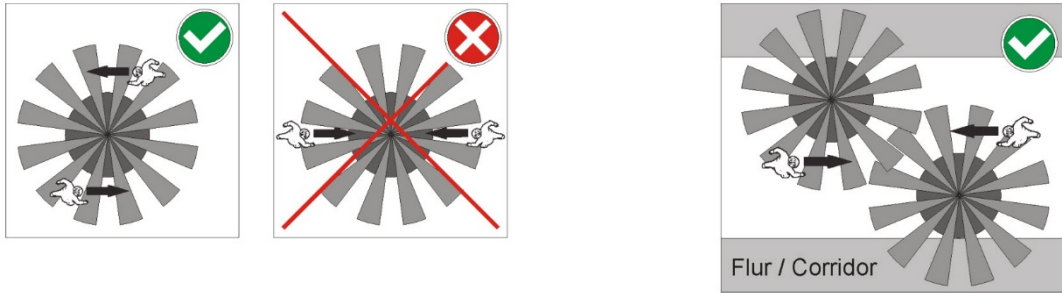
» COMMISSIONING

Teaching and unlink the motion sensor
In order to assure a correct evaluation of the measuring values by the receiver, it is necessary to have the devices learned in by the receiver. For this purpose, the receiver has to be turned on and is in learning mode. More information's are described in the Software documentation of the receiver.

Pressing the LRN button, a "learning"-telegram will be sent which the sensor connect with the receiver. The receiver stores the sensor assignment permanently. Reprogramming in the receiver deletes the sensor assignment.

NOTE: The button on the sensor is only used for connecting and testing. Other settings, for example, possible delay times can be set on the associated transceiver.

Optional settings (LED flashing by detecting motion/ Heartbeat Transmission)
Following two settings can be configured. Both settings consume more energy and are therefore not recommended for installations with non-optimal lighting conditions. No problems with battery or DC supply.

LED flashing by detecting motion:
Red LED under the Fresnel lens flashes if motion is detected (default: deactivated)
Changing the setting, press and hold the LRN button for 3 seconds, until the green LED flashes briefly.
The active state is indicated by the flashing red or green LED:
> green LED 3x = Enabled
> red LED 3x = Disabled

Heartbeat Transmission:
If a motion is detected the sensor sends out its status regularly. An "unoccupied" telegram will be sent only 10 and 30 minutes after the last detected motion. A Heartbeat can be set to notify the receiver with its function. The Heartbeat will be send every hour if no movement is detected. (factory default: disabled).

To enable/disable – press and hold Teach-In-button for 5 sec. (both green LEDs will blink once)
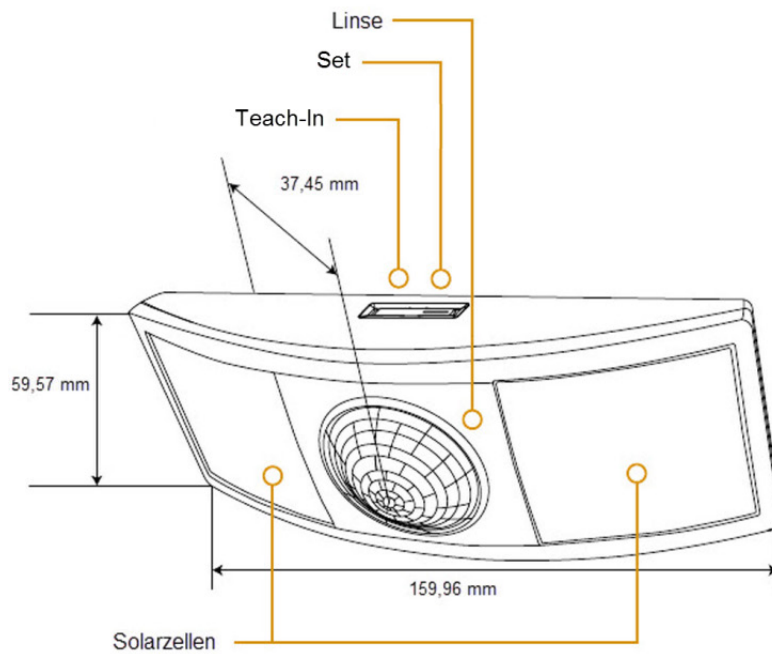- Enabled =   green LED flashes 3x
- Disabled =   red LED flashes 3x

» MAINTENANCE

Battery change (optional Power supply according to technical Data)
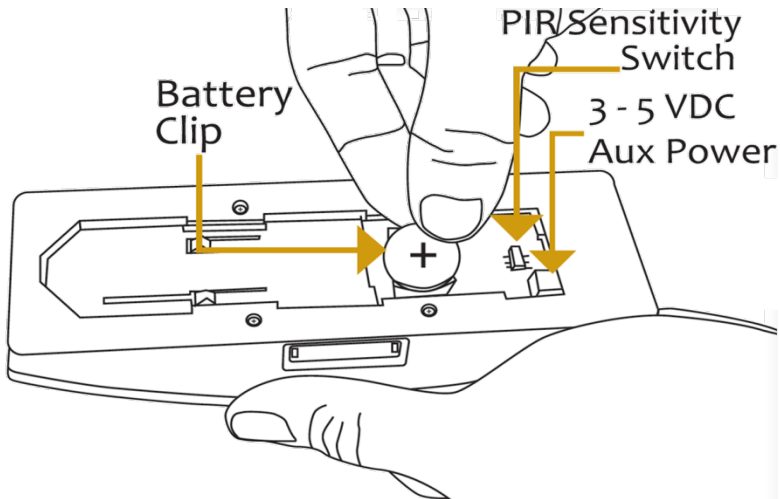
» DIMENSIONS (MM)

» ACCESSORIES

Rawl plugs and screws (2 pieces each) Item No. 102209
Coin cell CR 2032 Item No. 347013