

Description

The ekinex® motion sensor EK-DG2-TP is a ceiling flush mount Passive Infrared (PIR) motion detector, for the detection of movement of people in indoor spaces with a coverage area of 360°.

Main features

- Semi-automatic or fully automatic operation
- Two independent Light control channels
- Two independent HVAC control channels
- One alarm channel
- An additional device can be used as slave for any of the channels
- Detection span of 360°, sectors can be masked through optical shields
- Adjustable Sensitivity, with “Walk test” to verify de-tection range
- Most parameters can be set from ETS or through an IR remote

Technical data

- Rated voltage: 24 Vdc (21 - 30 Vdc) supplied by KNX bus
- Current consumption (on KNX bus): max 10 mA (operation) / 5 mA (Standby)
- Detection range: 360° circular (maskable), up to 12 m diameter at 2.5m mounting height
- Light measurement range: 10..2000 Lux
- Housing, lens and frame in plastic material
- Safety standards: IEC 61000-6-1 / IEC 61000-6-3 / EN 55014 / EN 50491

Dimensions:

- Body diameter Ø 67 mm
- Bezel diameter Ø 80 mm
- Mounting Hole diameter Ø 68 mm
- Total height 64 mm
- Recess depth 49 mm

Environmental conditions:

- Operating temperature: - 20 ... + 40°C
- Relative humidity: 95% not condensing
- Environmental protection: IP20

Switching, display and detection elements

The device is equipped with:

- on the rear side, a programming pushbutton
- visible through the plastic lens, a blue programming LED, a red signalling LED, a PIR sensor, a bright-ness sensor and an IR receiver.

Operation

The sensor reacts to the thermal radiation emitted by moving bodies. A person walking in the detection area across the sections triggers the sensor.

The measurement of the room brightness is carried out by an integrated light sensor; the brightness value, me-asured in Lux, can be transmitted on the bus.

The internal brightness sensor can also be used to maintain a constant ambient brightness if a dimmable light source is available.

The lighting channels have two operation modes, Au-tomatic or Semi-automatic. The automatic mode con-trols both switch-on and switch-off; the semi-automatic mode only controls switch-off after a manual switch-on.

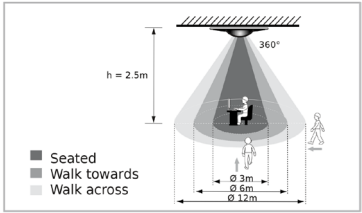
In automatic mode, a load connected to a lighting chan-nel will be switched on when movement is detected and (if desired) the ambient light level is below a preset brightness value.

When no movement has been detected for a program-mable time duration, a stand-by phase can be entered, during which the light can be dimmed to a lower inten-sity.

The HVAC channels act in a similar way as the Light Control channels, but without the standby time and the dependence from the light level.

Positioning

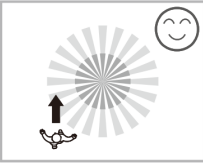
The actual detection range of the sensors depends on the mounting height. For the EK-DG2-TP sensor, at a standard mounting height of 2.5 m, the motion de-tection range for small movements is approximately 3 meters in diameter, while the detection range for larger movements (e.g. person walking through the sensing area) is about 12 meters in diameter.



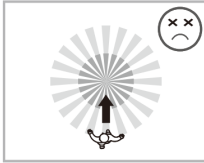
Height	Walk across	Walk towards	Seated
2.0m	Ø 12m	Ø 5m	Ø 2m
2.5m	Ø 12m	Ø 6m	Ø 3m
3.0m	Ø 14m	Ø 5m	Ø 2m
3.5m	Ø 14m	Ø 5m	Ø 1m
4.0m	Ø 16m	Ø 5m	

The optimal range is achieved walking through several portions of the detection area.

More sensitive of movement walking across the detector



Less sensitive of movement directly towards to detector



The recommended mounting height varies from 2 m up to 4 m. Since the detector re-sponds to temperature change, be aware that following conditions may cause lower sensitivity:

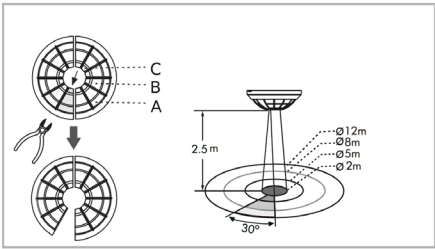
- In very foggy days, the sensitivity may be less due to moisture collecting on the lens.
- In very hot days, the sensitivity may be less since high ambient temperature is close to body tempe-rature.
- In very cold days when heavy clothing is worn, espe-cially if the facial area is covered, very little heat will be emitted from the body causing the unit to be less sensitive.

Please also verify following conditions during installa-tion:

- Avoid pointing the detector toward objects with hi-gly reflective surfaces, such as mirrors, glass, etc.
- Avoid mounting the detector very close to heat sources, such as heating vents, air conditioners, lights, etc.
- Avoid pointing the detector toward objects which may sway in air currents, such as curtains, tall plants, etc.

Limitation of the detection area

The detection area can be limited, in order to avoid unwanted activations, by means of the supplied optical shielding filters. Cut the supplied shield in such a way to remove the sectors corresponding to the desired de-tection area as in following figure:



Section of shield applied	Active range (h =2.5m)
Angular section	-30° per section
A + B + C	Ø 2 m
A + B	Ø 5 m
A	Ø 8 m
None	Ø 12 m

Apply the shield by inserting it between the lens and the bezel:



When the device is installed in pla-ce, make sure that the shield is in the correct position according to the required area masking.

Installation



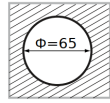
Warning! The electrical connection of the de-vice can be carried out only by qualified per-sonnel. The incorrect installation may result in electric shock or fire. Before making the electri-cal connections, make sure the power supply has been turned off.

Warning! In order to supply the KNX bus lines use only KNX bus power supplies (e.g. ekinex EK-AB1- TP or EK-AG1-TP). The use of other power supplies can compromise the communication and damage the devices connected to the bus.

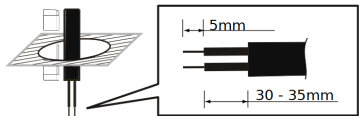
The device has degree of protection IP20, and is the-refore suitable for use in a dry indoor environment. The device can be flush mounted through a 68 mm diameter hole on a ceiling board with 5 mm to 25 mm thickness; for solid ceilings, a plastic barrel-shaped plastic support for external mounting is available as an accessory.



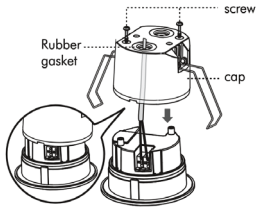
Warning! Do not mount on conductive surfa-ce. Do not open the enclosure frequently. The sensor is a low voltage circuit; never connect it with the 230V line network. Do not run the KNX wiring in the same conduit used by line network wiring..



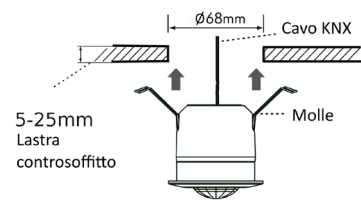
Drill a hole with Ø=65mm on the ceiling



Connect the device to the bus cable terminated by the standard terminal block on the back of the device. At this point it is recommended to carry out the commis-sioning of the device (see “Commissioning”), or at least the download of the physical address, using the pro-gramming button placed close to the bus connector; alternatively, programming mode can be activated later when the device is already installed by means of the EK-QR6-IR remote controller.



To insert the device into the hole on the ceiling board, raise and hold the spring clips; guide them into the hole and gently slide the body of the sensor until it falls into place.



To remove the sensor, remove the bezel, gently pry un-der the external rim with a screwdriver or another flat object; once you can get a firm hold with your hands on the rim, pull gently but firmly to extract the body of the sensor.



Warning! Before extracting the last part of the sensor body, please hold both spring clips with a hand. Take extreme care of preventing the clips to jump back and harm your hand holding the sensor!

See the instruction leaflet for further details on installa-tion and commissioning).

Configuration and commissioning



Note. The configuration and commissioning of KNX devices require specialized skills. To acquire these skills, you should attend the wor-kshops at KNX cer- tified training centers.

Configuration and commissioning of the device requi-re the use of the ETS® (Engineering Tool Software) program V4 or later releases. These activities must be carried out according to the design of the building au-tomation system done by a qualified planner. For the configuration of the device parameters the correspon-ding application program or the whole ekinex® product database must be loaded in the ETS program. For detailed information on configuration options, refer to the application manual of the device available on the website www.ekinex.com.

Code	Application program (## = versione)
EK-DG2-TP	APEKDG2TP##.knxprod

For the commissioning of the device the following acti-vities are required:

- make the electrical connections as described above;
- turn on the bus power supply;
- switch the device operation to the programming mode by pressing the programming pushbutton; the blue programming LED (visible through the device lens) turns ON;
- download into the device the physical address and the configuration with the ETS program;
- at the end of the download, the operation of the de-vice automatically returns to normal mode. During the programming process, the programming LED is turned off.

Now the bus device is programmed and ready for use.



IMPORTANT: After a download, it takes ap-proximately 60 s for the sensor to stabilize before it enters normal operation mode. Du-ring this settling period, the sensor may not appear to react or perform its programmed functions.

The programming pushbutton is placed on the rear side of the device, close to the KNX connector; it is therefore recommended to program at least the physical address before the device is installed on the ceiling. Once the physical address has been assigned, the device confi-guration can be later downloaded without pressing the programming pushbutton. If a further activation of the programming button should become necessary, the de-vice can be switched in programming mode through the IR remote (available separately).

Walk test

The purpose of walk test is to select a proper location and verify the desired detection coverage. Lux setting value is not regarded during this process. First of all, make sure the sensor is connected to the powered KNX bus and allow the 60 s warm-up time to pass. Set the operating mode to “Test” via ETS or IR remote con-trol EK-QR6-IR, then refer to the following steps:

- Walk from outside across to the detection pattern until red LED and load turn on for approx. 2s, then turn off again
- If required, adjust the sensitivity setting through ETS or IR remote to reach desired coverage.
- Also if required, adjust the time setting through ETS or IR remote to change the switch-off delay.
- Repeat the procedure in other selected radial direc-tions, particularly if a shield is applied on the lens.
- Repeat the above steps until desired performance is achieved.

Troubleshooting

Lighting / HVAC output does not turn on:

Sensor is not powered

- Verify the KNX bus connection
- Incorrect wiring
- Refer to wiring diagram for correct connection
- Incorrect Lux setting
- Check if Lux is set to the correct value
- Unable to detect movement
- Check detection range setting

Lighting / HVAC output does not turn off

Auto off time is set too long

- Set auto off time to a shorter time and check if the load is or not switched off according to the pre-set delay off time

Sensor is triggered

- Keep away from the detection range to avoid activa-tion of the sensor while doing the test

Red LED does not turn on

Sensor is not set to Test mode

- Activate test mode
- Detection range exceeded
- Walk in the effective detection range
- LED indicating function is set to “Disable”
- Set the LED indicating function to “Enable” via ETS software

The sensor has an incorrectly positioned shield

- Check the positioning of the optical shield on the lens

Erratic trigger events

Sources of heat may affect the sensor

- Verify that the sensor is not aimed towards any heat source such as air conditionings, electric fans, he-aters etc.
- Reflective surfaces are reflecting radiation from heat sources toward the sensor
- Verify that the sensor is not aimed towards any hi-gly reflective surfaces

There are moving objects in the detection area

- Make sure there are no swaying or moving objects within the detection coverage

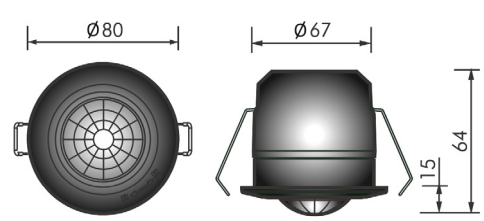
Package contents

EK-DG2-TP Sensor	Lens shield	instruction sheet

Optional accessories

EK-QR6-IR IR remote controller	EK-QS3 Support for external mounting

Dimensions [mm]



Markings

- KNX
- CE: the device complies with the Low Voltage Direc-tive (2006/95/EC) and the Electromagnetic Compati-bility Directive (2004/108/EC).

Maintenance

The device is maintenance-free. To clean it, use only a dry cloth; avoid the use of detergents, solvents or other aggressive substances, particularly on the lens.

This datasheet refers to the release A1.0 of the ekinex® device EK-DG2-TP, and is available for download at www.ekinex.com as a PDF (Portable Data Format) file.

File name	Device release	Update
STEKDG2TP_EN.pdf	A1.0	03 / 2023

Disposal



At the end of its useful life the product described in this datasheet is classified as waste from electronic equipment in accordance with the European Direc-tive 2002/96/EC (WEEE), and cannot be disposed together with the municipal undifferentiated solid waste.



Warning! ! Incorrect disposal of this prod-uct may cause serious damage to the en-vironment and human health. Please be informed about the correct disposal proce-dures for waste collecting and processing provided by local authorities.

Warnings

- Installation, electrical connection, configuration and commissioning of the device can only be carried out by qualified personnel in compliance with the appli-cable technical standards and laws of the respective countries.
- In case of tampering, the compliance with the es-sential requirements of the applicable directives, for which the device has been certified, is no longer guaranteed.
- ekinex® KNX defective devices must be returned to the manufacturer at the following address: EKINEX S.p.A. Via Novara 37, I-28010 Vaprio d'Agogna (NO) Italy

ekinex

EN

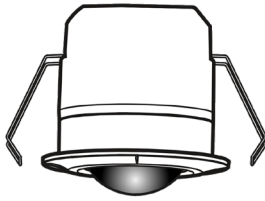
Motion sensor
with 360° detection area

Code: EK-DG2-TP

KNX

CE

Instruction Sheet



EKINEX S.p.A.

Via Novara 37

I-28010 Vaprio d'Agogna (NO), Italia

Tel. +39 0321 1828980

info@ekinex.com

www.ekinex.com

FISPDG2TPIEXX02

Other information

- This datasheet is aimed at installers, system integra-tors and planners
- For further information on the product, please con-tact the ekinex® technical support at the e-mail address: support@ekinex.com or visit the website www.ekinex.com
- KNX® and ETS® are registered trademarks of KNX Association cvba, Brussels

© EKINEX S.p.A. The company reserves the right to make changes to this documentation without notice.