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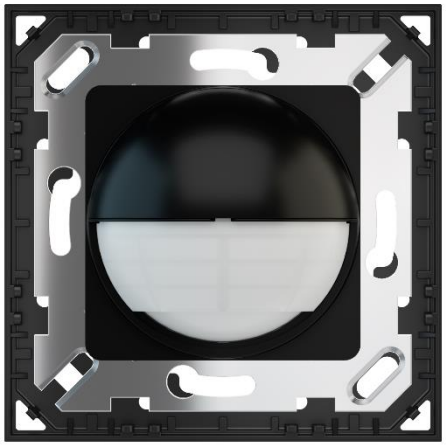
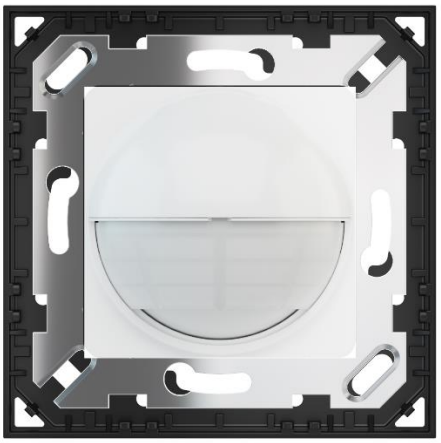
Application manual





KNX standard wall presence detector with movement function

EK-SN2-TP-GAA
EK-SN2-TP-GAE

Contents

Revision	Changes	Date	Written by	Verified by
1.0	First release	29/09/2022	G. Schiochet	

1 Scope of the document

This application manual describes application details for the ekinex® KNX standard wall presence detector with movement function **EK-SN2-TP**.

The document is aimed at the system configurator as a description and reference of device features and application programming. For installation, mechanical and electrical details of the device please refer to the technical description datasheet.

Application manual and application programs for ETS® are available for download at www.ekinex.com.

Item	*File name (## = release)*	*Version*	*Device rel.*	*Update*
Technical datasheet	STEKSN2TP_EN.pdf STEKSN2TP_EN.pdf	-	A1.0	29/09/2022
Application manual	MAEKSN2TP_EN.pdf	-		
Application program	APEKSN2TP##.knxprod APEKSN2TP##.knxprod	-		

2 Product description

The ekinex® EK-SN2-TP sensor is a passive infrared (PIR) indoor presence detector based on KNX standard, with movement function and wall switch. It is designed for the detection of movement / presence of people in shops, offices, small rooms, residential areas such as corridors, stairs, bedrooms, etc., in order to drive lighting and HVAC systems.

The detection area has a coverage angle of 200° and it can be extended using other sensors configured as slave devices. An integrated light sensor, combined with the motion detector, can manage light switching depending on brightness level as well as presence.

The device has two distinct output channels for lighting control, with independent parameters; the operation can be automatic or semi automatic.

The device is also capable of maintaining a constant brightness level in the room by controlling a dimmable light source.

All of the above parameters can be set by the user either through KNX ETS® software.

The device has two additional HVAC channels, which act in a similar way as the Light Control channels but without the standby time and light level dependence.

An additional alarm channel can switch the load on or off depending on the number of trigger events (movements) detected in a time frame of configurable duration.

3 Main features

- Hidden switch, can fit single round or square wall flush-mounting box
- Simple and safe plug-in installation
- The presence detector is used to control devices, e.g. lighting and HVAC
- Learning function, to configure the device functions by reading the “ambient Lux” parameter
- Semi-automatic or fully automatic operation
- Evolved lens model, with well-distributed and concentrated detection capabilities: the detection beams also provide high intensity and sensitivity, so it is possible to detect even a small shaking movement of the hand
- Adjustable sensitivity via ETS® on 4 levels or with "Walk test" to verify detection range
- Operating modes: Manual ON / AUTO / OFF
- An additional device can be used as slave for any of the channels
- Use in the KNX TP bus system (twisted pair) in combination with other KNX devices
- Function parameters and settings via ETS® 5.0 (Engineering Tool Software) or higher

4 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)
- Connection type: KNX bus with Ø 0.8 mm, single cable
- Outputs: 5 channels (2 for lighting, 2 for HVAC, 1 for alarm)
- Mounting height: 1.2 - 2.0 m
- Detection angle: up to 200 °
- Detection range: up to 9 m if mounted at a height between 1.2 - 1.5 m, up to 8 m at a height between 1.8 - 2.0 m
- 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

Other characteristics

- Housing, lens and frame in plastic material
- Wall installation in flush mounting box
- Protection degree IP20 (installed device)
- Climatic classification 3K5 and mechanical 3M2 (according to EN 50491-2)
- Pollution degree 2 (according to IEC 60664-1)
- Weight 40 g (70 g with mounting support)
- Dimensions 80 x 80 x 31 mm

Environmental conditions

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

5 Versions

The sensor is supplied in 2 versions: EK-SN2-TP-GAA, in white color, and EK-SN2-TP-GAE in black color.

6 Switching, display and detection elements

The device is equipped with 2 switching elements, located under the cover:

- a KNX programming button (1)
- a switch to select the operating mode Manual / ON / OFF (2)

The following signaling and detection elements are also visible through the lens:

- a blue programming LED (3),
- a red signaling LED (3),
- a PIR sensor, a light sensor and an IR receiver

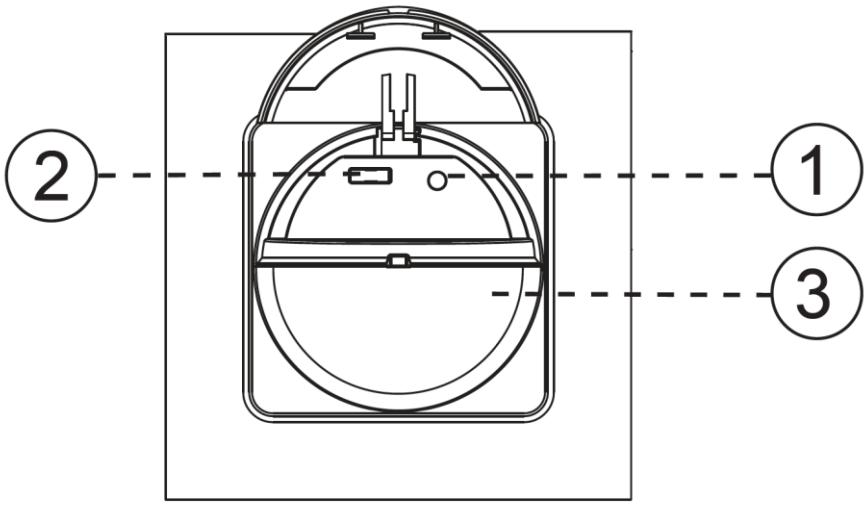


Figure 1 - Switching, display and detection elements

7 Operation

The sensor reacts to the thermal radiation emitted by moving bodies; the detection area is optically divided in small sections through a composite lens. A person walking in the detection area across the sections triggers the sensor.

7.1 Brightness measurement

The measurement of the room brightness is carried out by an integrated light sensor with linear output and optical filter set on the profile of the human eye. The brightness value, measured in Lux, can be transmitted on the bus.

7.2 Lighting control channels

The lighting channel has two operation modes, Automatic or Semi-automatic. The automatic mode controls both switch-on and switch-off, when a movement is detected; the semi-automatic mode requires manual switch-on, which is maintained until movement is detected; it will swich-off only when no more movement is detected.

The lighting source can be controlled through two different types of communication objects: On-Off switch or Absolute dimming percentage.

In automatic mode, a load connected to a lighting channel 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 programmable time duration, a stand-by phase can be entered, during which the light can be dimmed to a lower intensity; if no further movement is detected, once stand-by time has expired, the light will be automatically switched off.

Both the light level threshold and stand-by time functions can be disabled if not required.

7.3 Constant ambient brightness regulation

The internal brightness sensor can be used to maintain a constant ambient brightness if a dimmable light source is available. The light source must be capable of being controlled through a Relative dimming communication object.

7.4 HVAC control channels

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.

8 Positioning

The actual detection range of the sensors depends on the mounting height.

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

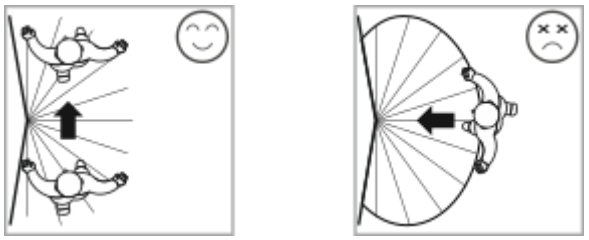


Figure 2 - Positioning

Increased sensitivity if movement crosses the lens beam

Less sensitivity if the movement is towards the lens

It is recommended to install the device at a height of 1.2 m - 2.0 m. The detection range is 9 m at a height of 1.2 m - 1.5 m and up to 8 m at a height of 1.8 m - 2.0 m.

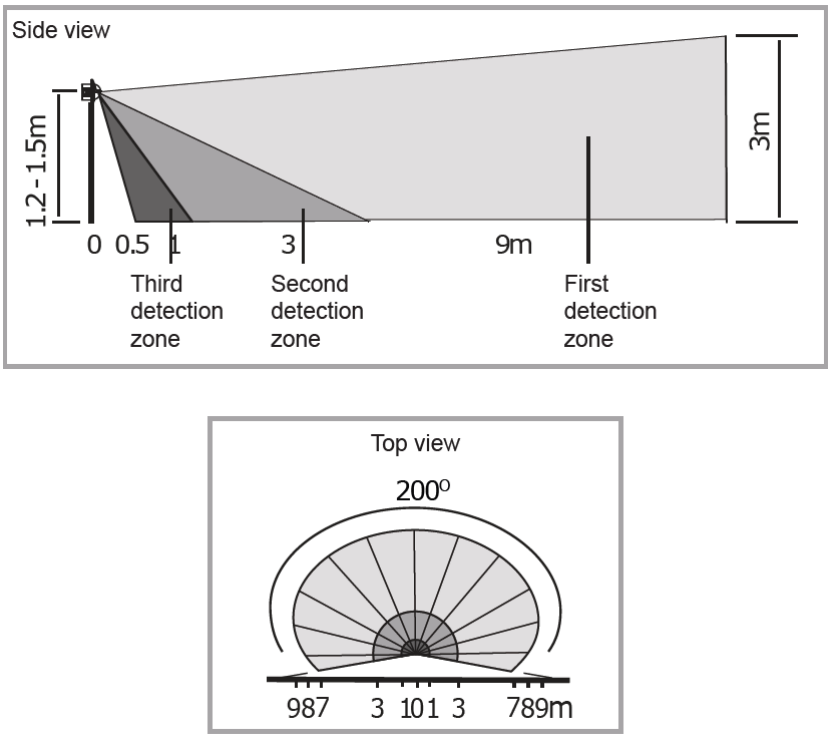


Figure 3 - Installation at a height of 1.2 - 1.5 m

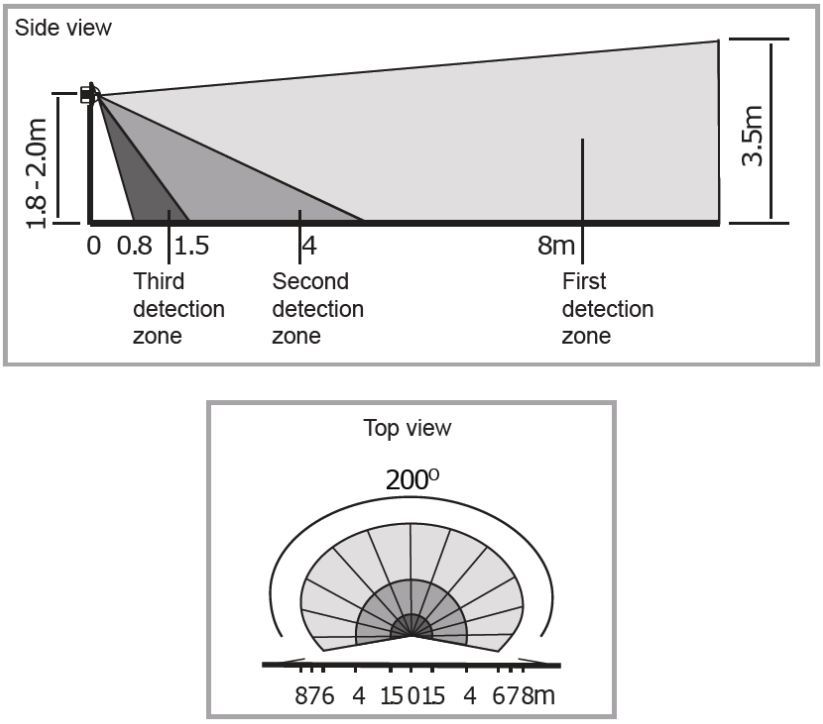


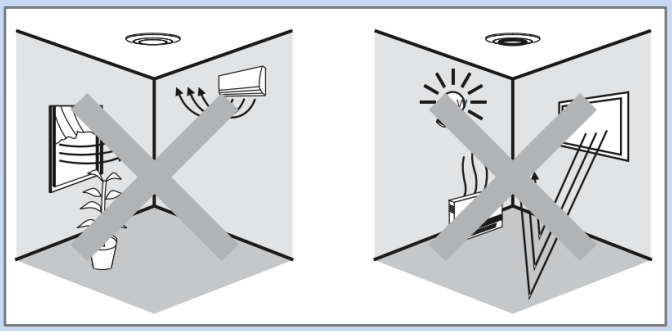
Figure 4 - Installation at a height of 1.8 - 2.0 m

Since the detector responds 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 temperature.
- In very cold days when heavy clothing is worn, especially 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 the following conditions during installation:

- Avoid pointing the detector toward objects with highly 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.



9 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. The shield consists of three layers, each divided into four units, capable of masking an angle of approx. 50 ° each.

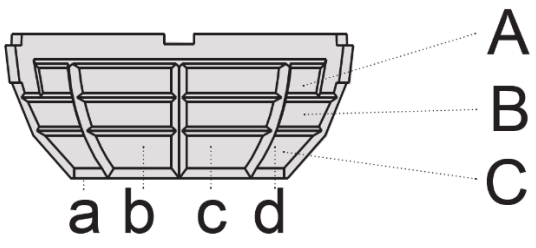


Figure 5 - Lens shield with layers

When mounting the device at a height of 1.2 m - 1.5 m, the detection range is:

- Layer A: masks the area with a circle from about 0m to 9m.
- Layer B: masks the area with a circle from about 0m to 3m.

- Layer C: masks the area with a circle from about 0m to 1m.

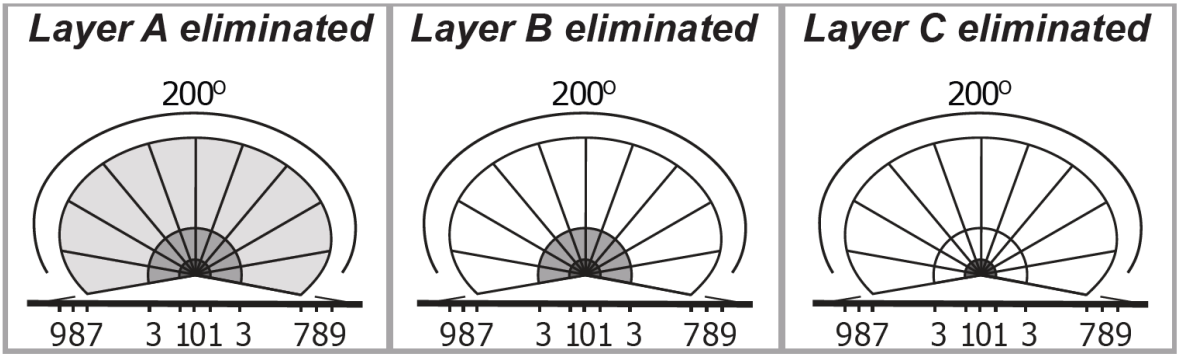


Figure 6 - Layers scheme

Cut the supplied shield in such a way to remove the sectors corresponding to the desired detection area.

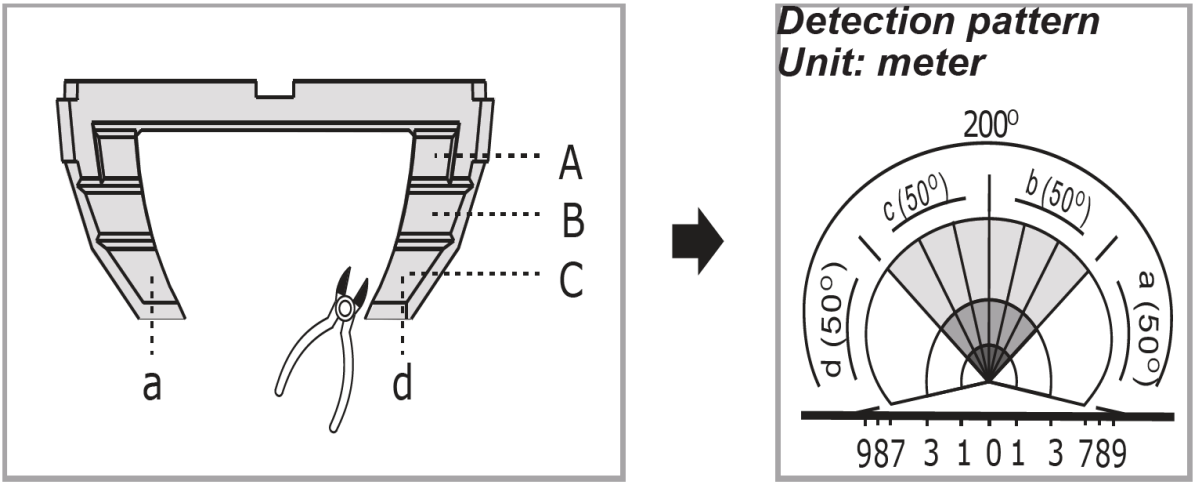


Figure 7 – Example 1

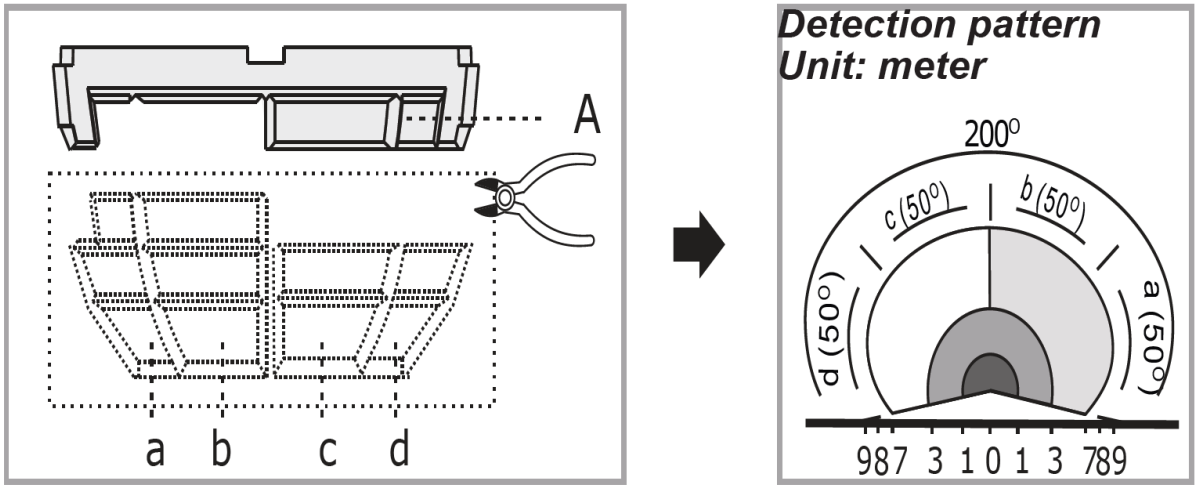


Figure 8 - Example 2

Apply the screen by inserting the edge between the lens and the external ring, in the central and lateral grooves.

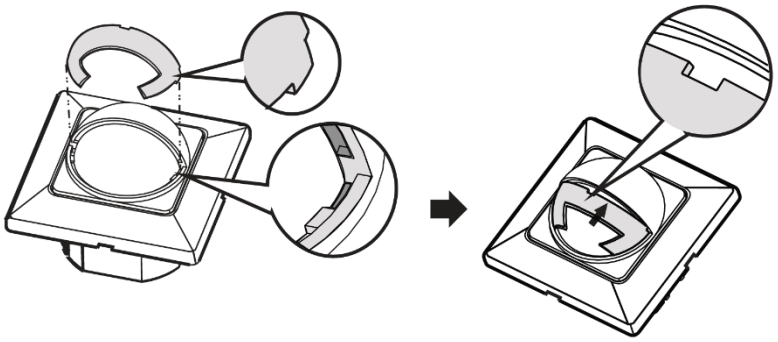


Figure 9 - Shield installation

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

To remove the shield, press slightly with a screwdriver in the central groove and remove it carefully

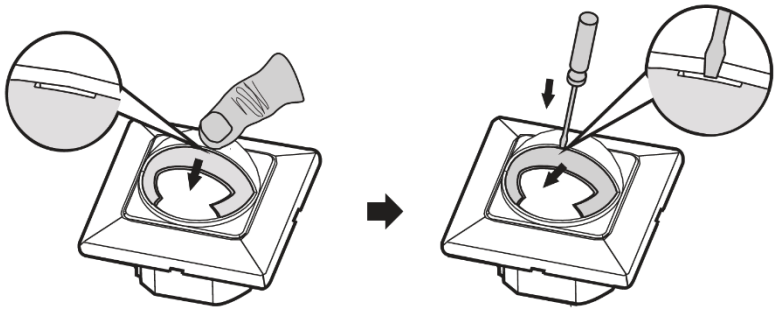


Figure 10 - Shield removal

10 Mounting and installation

Warning! *The electrical connection of the device can be carried out only by qualified personnel. The incorrect installation may result in electric shock or fire. Before making the electrical 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, EK-AG1-TP or EK-AM1-TP). The use of other power supplies can compromise the communication and damage the devices connected to the bus.*

The device has an IP20 degree of protection and is therefore suitable for use in dry indoor environments. With reference environments. With reference to

Figure 11, the device can be assembled on a round or square box.

To assemble the device, carry out the following operations:

- disassemble the detector head and the plastic frame from the power box;
- insert the plastic adapter (c) on the device (d);
- insert the bus terminal, previously connected to the bus cable (see: “Connecting to the KNX bus line”), in the appropriate seat on the back of the sensor; please provide to strip off 5-6mm of cable sheathing by using a tool;
- put the detector head and the plastic frame together, then fix the adapter-device assembly (c+d) by means of the pair of screws (e) on the flush-mount wall box (a) with suitable holes, possibly inserting (if applicable) the frame (b) between the box and the adapter;
- snap-fit the plate (f).

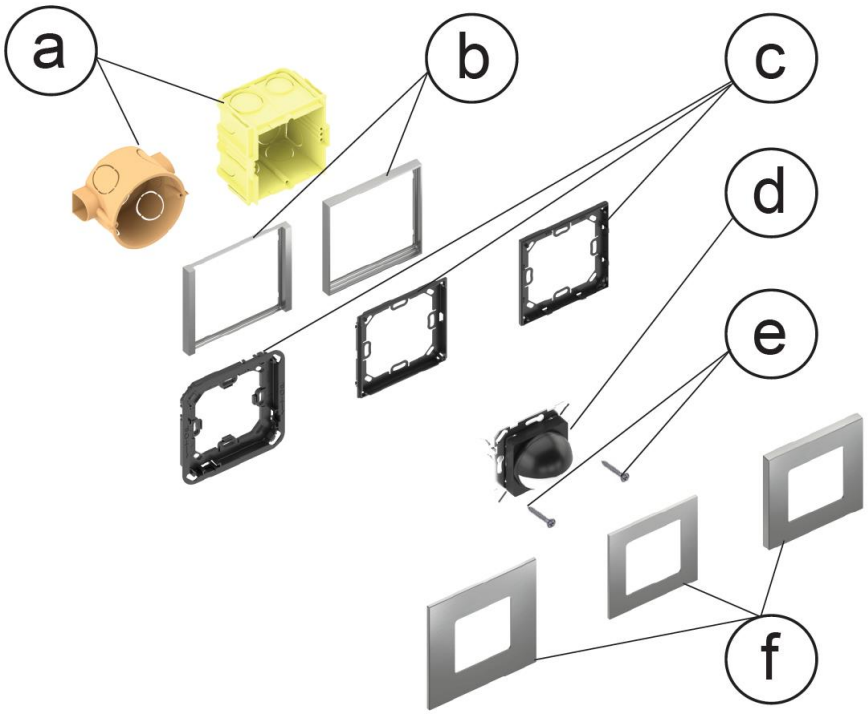


Figure 11 - Installation for round and square flush mounting box

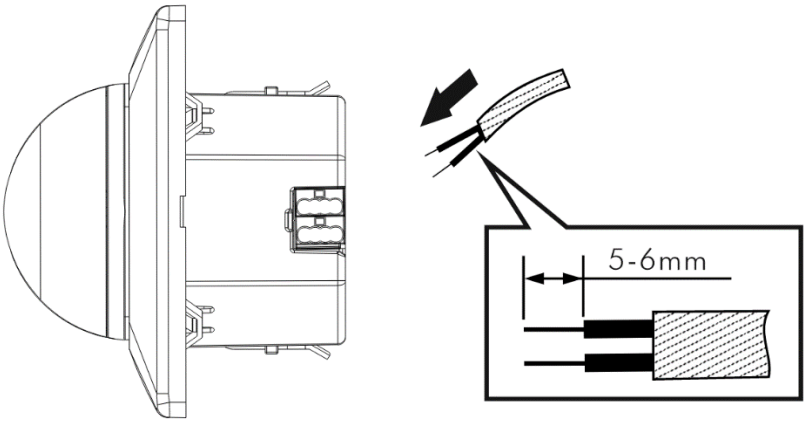


Figure 12 - Wire stripping

Warning:

- *Do not mount on conductive surface.*
- *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.*

11 Connection of the KNX bus line

The connection of the KNX bus line is made with the terminal block included in delivery and inserted into the slot of the housing. At this point it is recommended to carry out the commissioning of the device (see “Commissioning”), or at least the download of the physical address, using the programming button placed close to the bus connector.

12 Configuration and commissioning

Nota: *The configuration and commissioning of KNX devices require specialized skills. To acquire these skills, you should attend the workshops at KNX certified training centers.*

Configuration and commissioning of the device require the use of the ETS® (Engineering Tool Software) program V5 or later releases. These activities must be carried out according to the design of the building automation system done by a qualified planner.

For the configuration of the device parameters the corresponding application program or the whole ekinex® product database must be loaded in the ETS® program.

Code	*Application program (## = release)*
EK-SN2-TP	APEKSN2TP##.knxprod

For the commissioning of the device the following activities 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 device 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 approximately 60 s for the sensor to stabilize before it enters normal operation mode.

Both the light output channels and the red LED are steady ON during the warm-up phase, and they are switched OFF at the end.

During this settling period, the sensor may not appear to react or perform its programmed functions.

13 Operations

13.1 Slide switch setup

By using a screwdriver in the center groove (1), pull out the cover of slide switch slightly (2).
Turn it upwards to access the switch (3).
Once the setting is complete, turn the cover downwards in its original position.

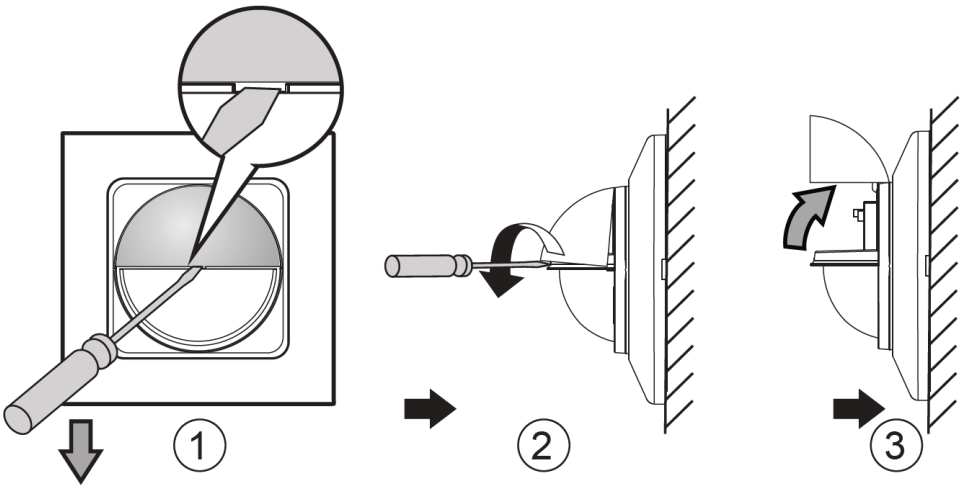


Figure 13 - Slide switch access

13.2 Slide switch functions

The slide switch allows to set the following parameters.

- AUTO: by placing the switch in the central position, the detector is in AUTO mode.
- ON: In ON mode, the load remains ON for 8 hours and the LED flashes for 1 second every 5 seconds. After 8 hours, the detector automatically returns to AUTO mode.
- OFF: in the OFF position, the load remains OFF for 8 hours and the LED flashes for 1 second every 5 seconds. After 8 hours, the detector automatically returns to AUTO mode.

In the event of a power failure, the detector enters AUTO mode once the power is supplied again, even the switch is set to ON or OFF.

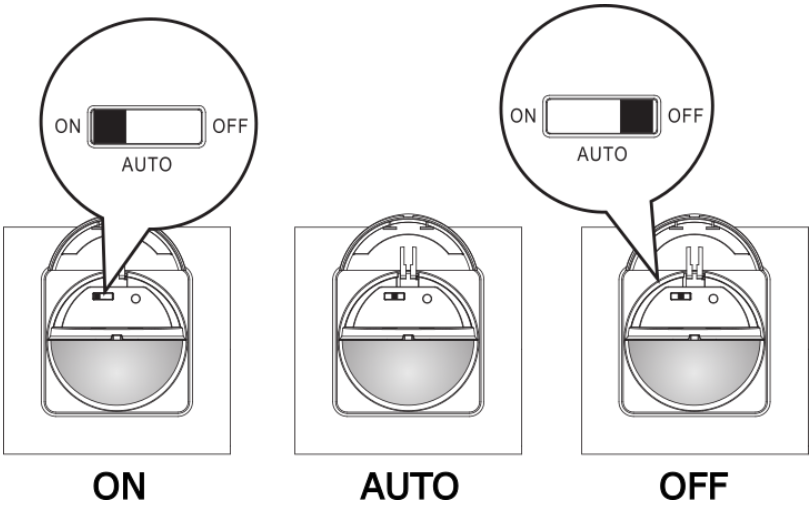


Figure 14 - Slide switch function setup

13.3 Walk test

The purpose of the 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 tester is within the detection coverage and the sensor is connected to the powered KNX bus and allow the 60 s warm-up time to pass. During this timeframe, the red LED turns on, then turns off after warming up time is expired.

Set the operating mode to “Test” via ETS®, 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. The 2s, then turn off again. The next trigger should be after 2s (please refer to

- Figure 15).
- If required, adjust the sensitivity setting through ETS®.
- Also if required, adjust the time setting through ETS®.
- Repeat the procedure in other selected radial directions, particularly if a shield is applied on the lens.
- Repeat the above steps until desired performance is achieved.

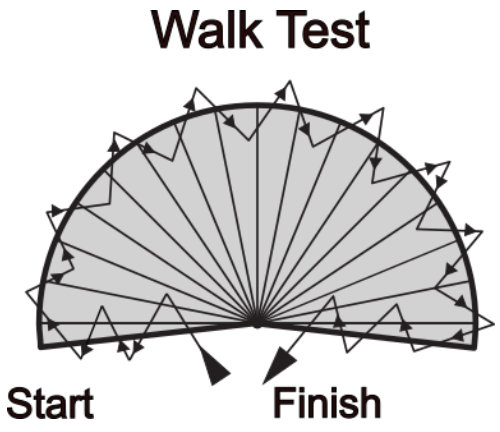


Figure 15 - Walk Test

13.4 Auto / Semi-auto mode (absence detection function)

This function is enabled with ETS® setting and it is used to activate / deactivate Auto mode or Semi-auto mode of Light control output C1.

The behaviour is as follows:

- Under auto mode, the load will turn on automatically when a movement is detected and the ambient light level is below the Lux setting value. When movement is no longer detected and the delay time has expired, the load will turn off automatically.
- Under semi-auto mode, the load can only be manually switched on by operating via a connected external pushbutton. When the load is switched on, it will keep be on if the movements are detected constantly. The load will turn off only when movement is no longer detected and the delay time has expired.

Please refer to section 14.3 for further information.

13.5 Test mode

Parameters can be set via ETS®. Test mode switches to the RUN status after “storing”, or 10 min after activating the test mode. Load and red LED are not controlled by Lux setting under the Test mode. Once the detector is triggered, both load and red LED turn on for 2s, then turn off, and the next triggering should be 2 sec interval.

IMPORTANT:
The settings of functions described in paragraphs 13.6, 13.7, 13.8, 13.9 and 13.10 are intended for lighting control, therefore do not apply to HVAC control.

13.6 Manual ON / OFF and DIM switching function

This function is enabled with ETS® setting and operated either by the slide switch loacted under the frontal cover, or through a connected KNX interface module on KNX bus system.

Please refer to section “Parameter setting“ - “Communication objects description“ for further information.

13.7 Master / Slave selection

This function can only be set via ETS® software and it allows to set the device as a master or slave device:

- when detector is enabled as master device, all the functions are available and it also can receive the triggering signal from one or more slave detectors;
- if it is enabled as slave detector, then it works exclusively to extend the field of detection and all its function are managed by a master detector.

Please refer to section “Parameter setting“ - “Communication objects description“ for further information.

13.8 Ambient light appraisal

In case of changeable ambient light level, the detector can postpone delay time of turning on and off loads, in order to avoid its unnecessary on or off switching.

This behaviour works in two ways:

- The ambient light level changes from bright to dark: to avoid unnecessary switching on / off of the load due to temporary variations in the ambient light value caused by events (e.g.

passing cloud), the detector has been designed with a delay of 10 s for light activation, i.e. it will ignore any movement within the 10 s delay time. The red LED will be on steady as an indication, but the detector will not react within this timeframe.

- The ambient light level changes from dark to bright: if the ambient light level exceeds the “Switch ON Lux value” for 5 min, there are different reactions according to the value of the “Lighting delay time” parameter:
  - If Lighting delay time > 5 min: the light will be automatically switched off after 5 min.
  - if Lighting delay time < 5 min: the light will be automatically switched off when the set time expires, if no movement is detected within the 5 min. timeframe. But if any movement is detected within the 5 min timeframe, the time will be reset upon detection and the light is switched off after 5 min.

13.9 2-level (Standby Lighting) function

In Auto mode and when Output type is set to “Dimming”, when the ambient light level falls below the pre-set “Switch ON Lux value”, the detector will enter into 2-level mode function automatically.

- if “Standby Time” is set to “Infinity”, the detector will enter into 2-level mode when the “Lighting delay time” is expired. In this situation, if a movement is detected, the load will turn on with the setting illumination (100% or the dimmed value according to the setting of “Standby brightness) and then turn off if movement is no longer detected and the “Lighting Delay time” has expired. It will be cycled until the ambient light level is higher than the “Switch ON Lux value” and it lasts for 5min, then turns off and the detector resumes to Auto mode function.
- if “Standby Time” is set to other position except for “infinity”, the detector behaviour is basically the same as above mentioned, but the duration is according to the selected “Standby Time” value.
- If “Lighting standby time” is set to “disable” (OFF), the load will be off when the “Lighting delay time” is expired.

13.10 Constant light control

According to the changeable ambient light level, if “Constant light control” is set to Enabled, then the load can dim to bright or dark automatically to match the “Preset setpoint” Lux value.

13.11 Alarm

The alarm function can be set to behave in the same way in case of switching on or off, or in a different way depending on the event.

The Alarm output (Communication Object 18) can be locked using CO 17 (Lock alarm).

Options for “Behaviour at switching ON (or OFF) lock by CO are “no reaction”, “switch OFF” and “switch ON”.

The number of detected movements (“windows”) within a time frame (“Duration”) can be set.

14 List of ETS® parameters

The parameters available in ETS® are detailed in the next sections.

14.1 Menu: General

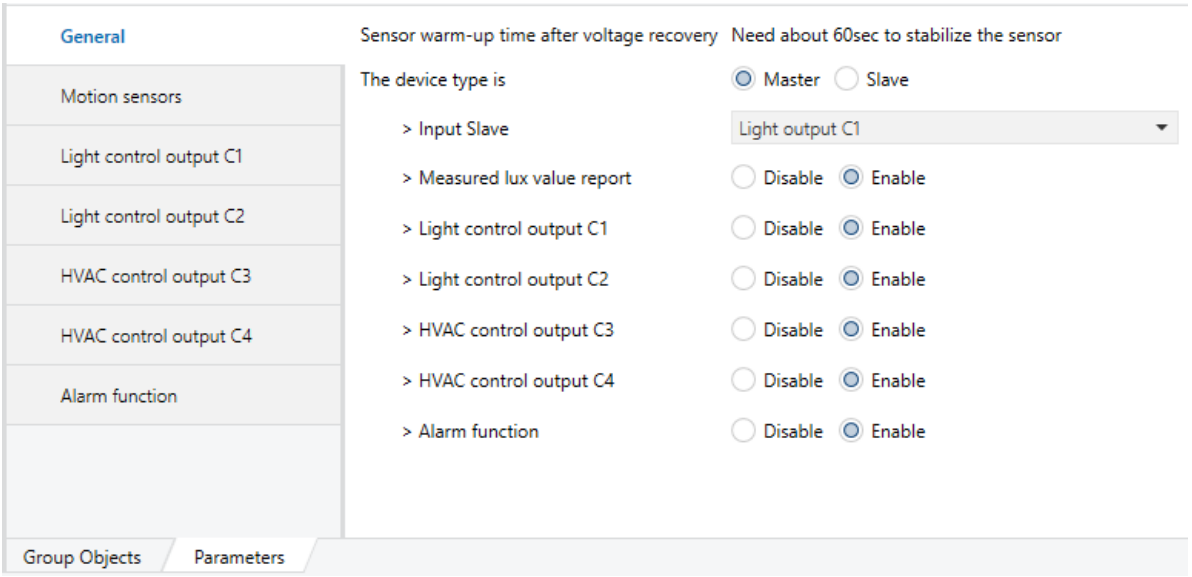


Figure 16 - General parameters window

Parameter name	*Conditions*	*Values [Default]*
Device type	-	**Master** Slave
When the sensor is configured as master, all features are available; it can also receive the trigger signal from one or more slave sensors for only one of the 4 output channels available. *When the sensor is configured as slave, it can only be used to extend the field of coverage for a master sensor.*		
Input slave	Device type = Master	**Light output C1** Light output C2 HVAC output C3 HVAC output C4
Assign the signal from the slave to one of the device channels.		
Measured Lux value report		**Disable** Enable
When enabled, the measured ambient brightness value in Lux is transmitted on the bus every 5 s.		
Light control output C1	Device type = Master	**Disable** Enable
Enable the control channel and show the respective group of parameters.		
Light control output C2	Device type = Master	**Disable** Enable
Enable the control channel and show the respective group of parameters.		

Parameter name	*Conditions*	*Values [Default]*
HVAC control output C3	Device type = Master	**Disable** Enable
Enable the control channel and show the respective group of parameters.		
HVAC control output C4	Device type = Master	**Disable** Enable
Enable the control channel and show the respective group of parameters.		
Alarm function	Device type = Master	**Disable** Enable
Enable the alarm function and show the respective group of parameters.		

14.2 Menu: Motion sensors

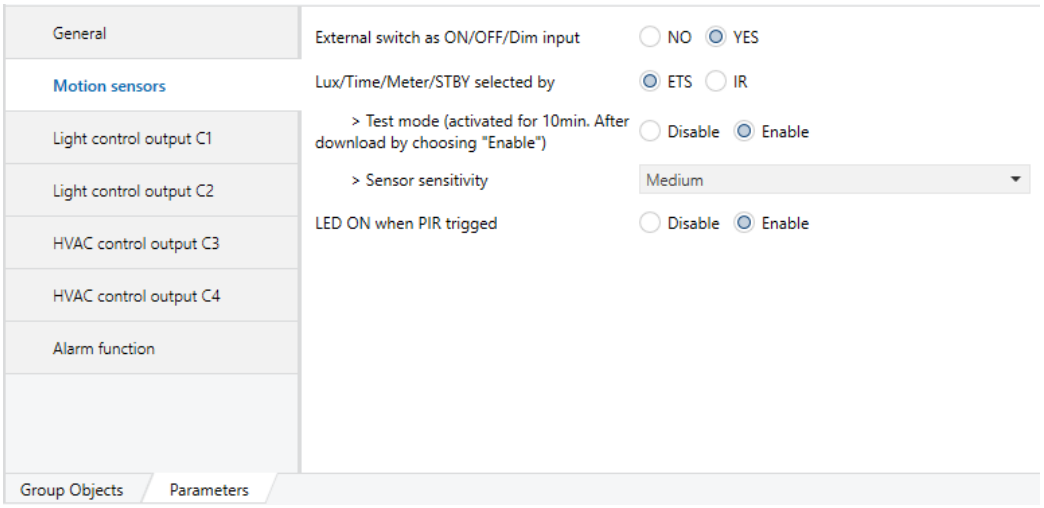


Figure 17 - Motion sensors parameters window

Parameter name	*Conditions*	*Values [Default]*
External switch as ON / OFF / Dim input	Device type = Master	**No** Yes
If enabled, each channel can also be controlled from the KNX bus through communication objects #5-6-7-8. *For Light control channels, the CO (which is of 1-bit Switch type) also controls the dimming function.* *The Manual ON/OFF and DIM function is operated by the switch built-in/connected with KNX interface module on KNX bus system.*		
Lux / Time / Sensitivity(Meter)/ STBY selected by	Device type = Master	**ETS** IR
It is used to set the parameter of Lux, Time, Sensitivity (Meter), STBY of detector is changed by ETS® software or IR remote control (not available in this product version). When the control mode is set to "ETS", all the parameters on detector can only be changed by ETS® after completing the object build up. *Note: this setting is only relevant for the two Light Control channels (C1-C2).*		

Parameter name	*Conditions*	*Values [Default]*
Test mode	Device type = Master	**Disable** Enable
If enabled, test mode is activated after the program download and exits automatically after 10 min. Then enters into auto mode or semi-auto mode according to the setting item of "Auto-Semi-auto select". *If test mode function is activated, once the movement is detected, both the load and LED will be 2 sec on and 2 sec off.*		
Sensor sensitivity		**Maximum** High Medium Low OFF
It is used to increase or decrease the sensitivity of PIR in the device. The sensitivity can be adjusted according to user's requirement no matter the detector is master or slave. • *Maximum: Highest sensitivity* • *High: Higher sensitivity* • *Medium: Medium sensitivity* • *Low: Lowest sensitivity* • *OFF: Detecting function of PIR is deactivated*		
LED turns on when PIR is triggered		Disable **Enable**
It is used to set the switch on of the indicator LED when PIR is triggered. *When enabled, the red LED will turn on for 1 s every time movement is detected. This indication can be suppressed (disable); however, all other indication functions of the LED remain enabled.*		

14.3 Menus: Light control output C1 / C2

Following parameters are repeated for each of the two Light Control channels C1 and C2.
Although not specified below, these options are only listed if the corresponding channels are active.

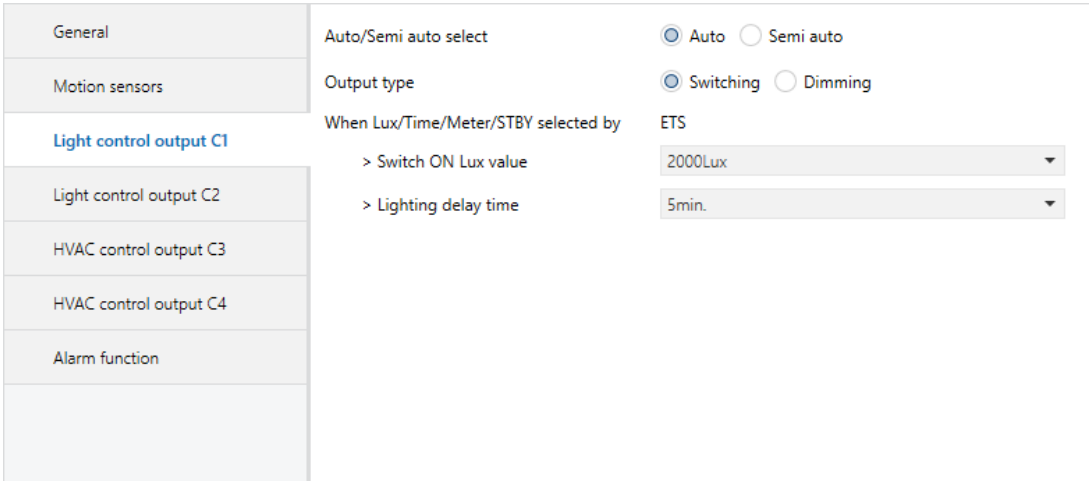


Figure 18 - Light control output C1 / C2 – Switching parameters

Parameter name	*Conditions*	*Values [Default]*
Auto / Semi-auto select	Device type = Master	**Auto** Semi-auto
It is used to activate / deactivate Auto mode or Semi-auto mode of Light control output C1 or C2. *The automatic mode controls both switch-on and switch-off; the semi-automatic mode controls switch-off after a manual switch-on through the external control pushbutton.*		
Output type	Device type = Master	**Switching** Dimming
It is used to set the output type of detector to be Switching or Dimming. *Switching mode is used to control an On/Off actuator through a Switch-type object; in this mode, Standby function and Constant light control are not available.* *Dimming mode controls a dimming-capable actuator for Absolute brightness, Standby brightness and/or Constant rightness, through dedicated Communication Objects.*		
Dimming value during ON phase	Device type = Master Output type = Dimming	1...100% **[100%]**
Sets the light output level to switch on, when the channel is active. *Infinity means that the dimming level is not controlled by Lux value.*		
Constant light control	Device type = Master Output type = Dimming	**Disable** Enable
Enables light control function for constant ambient brightness		
Preset setpoint	Device type = Master Output type = Dimming Constant light control = enable	10...2000 Lux **[300 Lux]**
It is used to set the pre-set Lux value for constant light control function, i.e. it sets the target value for constant ambient brightness		
Lux deviation	Device type = Master Output type = Dimming Constant light control = enable	0...255 Lux **[10 Lux]**
It is used to set the deviation value of constant dimming function, that is the detector will react refer to what the deviation of the ambient light level is. *This parameters sets the allowed deviation from target value (plus or minus) for constant ambient brightness*		
Time after switch-on until constant light control starts	Device type = Master Output type = Dimming Constant light control = enable	1 s ... 5 min **[1 min]**
It is used to set the standby time before activating the constant light control function after the load is switched on. This because after switching the light On, a time period might be necessary for the light to warm up or reach a stable condition before brightness regulation starts.		
Switch ON Lux value	Device type = Master Lux / Time etc. selected by = ETS	5...2000 Lux **[2000 Lux]**, Infinity
Sets the reference brightness for the sensor light level threshold. *The "Infinity" value disables the threshold, i.e. makes detection independent from light level.*		
Lighting delay time	Device type = Master Lux / Time etc. selected by = ETS	5 s...60 min **[5 min]**
Sets the delay before the output is switched off (or to standby level, if enabled) in absence of detected movement.		

Parameter name	*Conditions*	*Values [Default]*
Lighting standby time	Device type = Master Lux / Time etc. selected by = ETS	**Disable** Enable
Enables the standby phase before the output is switched off in absence of detected movement. If this is disabled, the standby light function is deactivated and the load will turn off directly when the delay time is expired.		
Standby time	Device type = Master Lux / Time etc. selected by = ETS Lighting standby time = enabled	30 s...60 min **[5 min]**
It is used to set Auto off time, i.e. the duration of the Standby phase		
Standby brightness	Device type = Master Lux / Time etc. selected by = ETS Lighting standby time = enabled	1...60% **[10%]**
It sets the Light brightness level during the Standby phase		

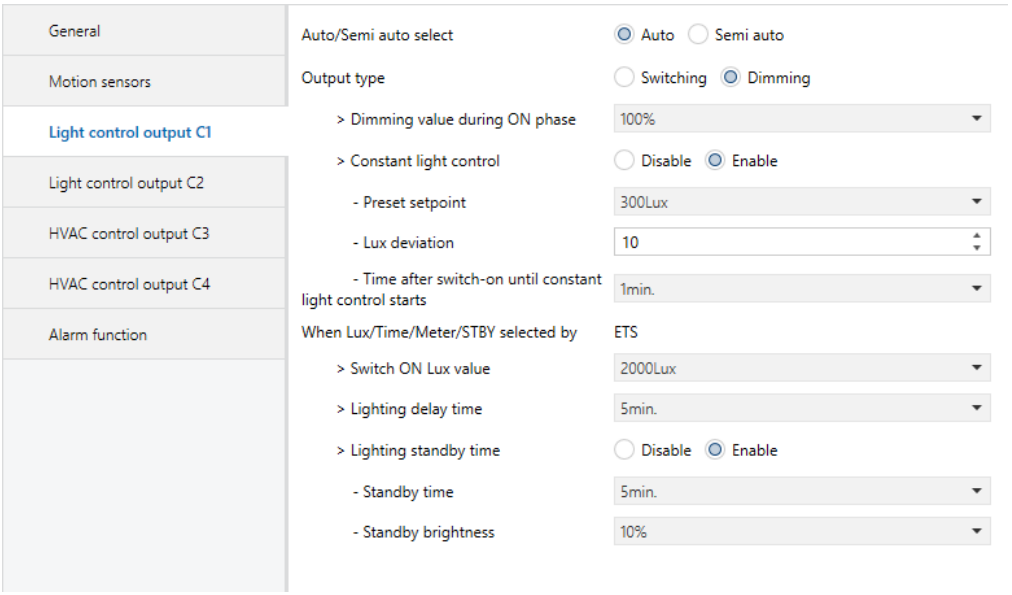


Figure 19 - Light control output C1/C2 – Dimming and Standby parameters

14.4 Menus: HVAC control output C3 / C4

The following parameters are repeated for each of the two HVAC Control channels C3 and C4.
Although not specified below, these options are only listed if the corresponding channels are active.

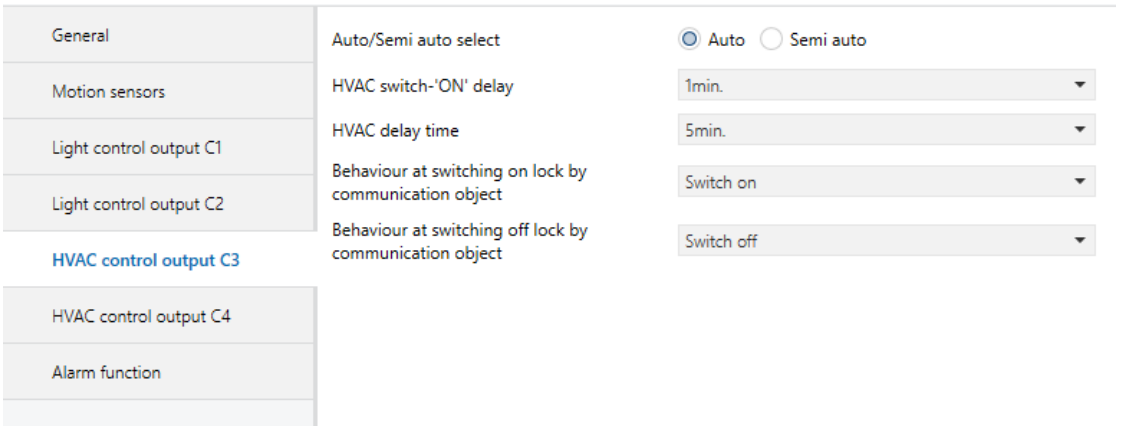


Figure 20 - HVAC control output C3 / C4 parameters

Parameter name	*Conditions*	*Values [Default]*
Auto / Semi-auto select	Device type = Master	**Auto** Semi-auto
The automatic mode controls both switch-on and switch-off; the semi-automatic mode only controls switch-off after a manual switch-on through the external control pushbutton.		
HVAC switch-'ON' delay	Device type = Master	0...30 min **[1 min]**
Sets the delay before the output is switched ON whenever a movement is detected; this is required to prevent immediate activation when a person is present in the coverage area for just a brief period of time.		
HVAC delay time	Device type = Master	5 s...60 min **[5 min]**
Sets the delay before the output is switched OFF whenever movement is no longer detected.		
Behaviour at switching on lock by communication object	Device type = Master	**No reaction** Switch off Switch on
Value used as output status of the detector when it is triggered (i.e., when movement / presence is detected) and switched ON.		
Behaviour at switching off lock by communication object	Device type = Master	**No reaction** Switch off Switch on
Value used as output status of the detector when it is triggered (i.e., when movement / presence is detected) and switched OFF.		

14.5 Menus: Alarm function

Although not specified below, these options are only listed if the alarm function is active.

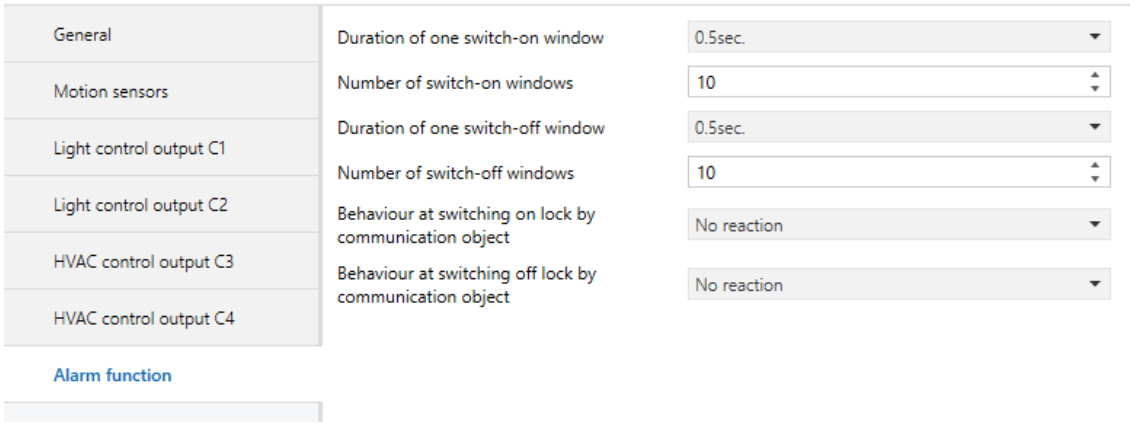


Figure 21 - Alarm function parameters

Parameter name	*Conditions*	*Values [Default]*
Duration of one switch-on window	Device type = Master	0.5 s...60 min **[0.5 s]**
Duration of the period in which the specified number of movements (see next parameter) must occur in order to cause the alarm to be switched ON		
Number of switch-on windows	Device type = Master	0...100 min **[10]**
Number of movements in the specified period ("window", see previous parameter) that cause the alarm to be switched ON		
Duration of one switch-off window	Device type = Master	0.5 s...60 min **[0.5 s]**
Duration of the period in which the specified number of movements (see next parameter) must occur in order to cause the alarm to be switched OFF		
Number of switch-off windows	Device type = Master	0...100 min **[10]**
Number of movements in the specified period ("window", see previous parameter) that cause the alarm to be switched OFF		
Behaviour at switching on lock by communication object	Device type = Master	**No reaction** Switch off Switch on
Value used as output when the alarm status is switched to ON.		
Behaviour at switching off lock by communication object	Device type = Master	**No reaction** Switch off Switch on
Value used as output when the alarm status is switched to OFF.		

15 ETS® Communication Objects list

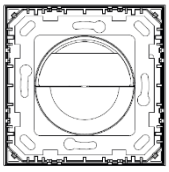
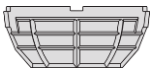
CO number	Object name	Conditions	Size	Flags	DPT
1	Slave input - Slave motion	Device type = Master	1 bit	C-W--	[1.017] Trigger
2	Slave output - Slave motion	Device type = Slave	1 bit	CR-T-	[1.001] Switch
3	Test output	Device type = Master	1 bit	CR-T-	[1.001] Switch
4	Measured lux value output	Device type = Master	2 bytes	CR-T-	[7.013] Brightness [Lux]
5	C1 Manual Input	Device type = Master External Switch = Yes Light Control Output C1 = enabled	1 bit	C-W--	[1.001] Switch
6	C2 Manual Input	Device type = Master External Switch = Yes Light Control Output C2 = enabled	1 bit	C-W--	[1.001] Switch
7	C3 Manual Input	Device type = Master External Switch = Yes HVAC Output C3 = enabled	1 bit	C-W--	[1.001] Switch
8	C4 Manual Input	Device type = Master External Switch = Yes HVAC Output C4 = enabled	1 bit	C-W--	[1.001] Switch
9	C1 Light Control Output	Device type = Master Light Control Output C1 = enabled	1 bit	CR-T-	[1.001] Switch
10	C1 Light Control Dimming value	Device type = Master Light Control Output C1 = enabled	1 byte	CR-T-	[5.001] Percentage (0..100%)
11	C1 Constant Light Control	Device type = Master Light Control Output C1 = enabled	4 bit	CR-T-	[3.007] Dimming control
12	C2 Light Control Output	Device type = Master Light Control Output C2 = enabled	1 bit	CR-T-	[1.001] Switch
13	C2 Light Control Dimming value	Device type = Master Light Control Output C2 = enabled	1 byte	CR-T-	[5.001] Percentage (0..100%)
14	C2 Constant Light Control	Device type = Master Light Control Output C2 = enabled	4 bit	CR-T-	[3.007] Dimming control
15	C3 HVAC Control Output	Device type = Master HVAC Output C3 = enabled	1 bit	CR-T-	[1.001] Switch
16	C4 HVAC Control Output	Device type = Master	1 bit	CR-T-	[1.001] Switch

		HVAC Output C4 = enabled			
17	Lock Alarm	Device type = Master Alarm function = enabled	1 bit	C-W--	[1.003] Enable
18	Alarm Output	Device type = Master Alarm function = enabled	1 bit	CR-T-	[1.005] Alarm

16 Troubleshooting

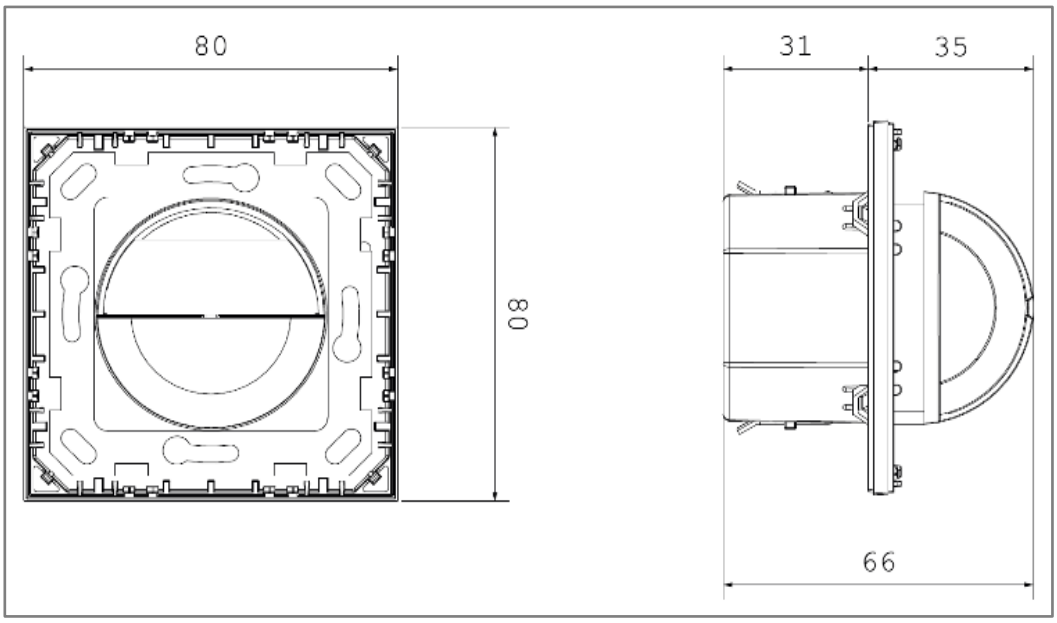
Lighting / HVAC output does not turn on	Sensor is not powered.	Verify the KNX bus connection
	Incorrect wiring	Refer to wiring diagram for correct connection
	Incorrect Lux setting.	Check if Lux is set to the correct value
	Unable to detect movement	Check detection range setting
Lighting / HVAC output 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 activating 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, heaters etc.
	Reflective surfaces are reflecting radiation from heat sources toward the sensor	Verify that the sensor is not aimed towards any highly reflective surfaces
	There are moving objects in the detection area	Make sure there are no swaying or moving objects within the detection coverage

17 Package contents

		
EK-SN2-TP Sensor	Lens shield	Instruction sheet

18 Dimensions

Dimensions in the pictures are in mm.



19 Markings

- KNX
- CE: the device complies with the Electromagnetic Compatibility Directive (2014/30/EU) and the RoHS III Directive ((2011/65/EU).

  Tests carried out according to following regulations:
  - EN 61000-3-2
  - EN 61000-3-3
  - IEC/EN 61000-6-1
  - IEC/EN 61000-6-3
  - EN 55014
  - EN 50491

20 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.

21 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 Directive 2012/19/EU (WEEE recast), and cannot be disposed together with the municipal undifferentiated solid waste.

Warning: *Incorrect disposal of this product may cause serious damage to the environment and human health.*

Please be informed about the correct disposal procedures for waste collecting and processing provided by local authorities.

22 General warnings

- Installation, electrical connection, configuration and commissioning of the device can only be carried out by qualified personnel in compliance with the applicable technical standards and laws of the respective countries.
- In case of tampering, the compliance with the essential 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

23 Other information

This datasheet is aimed at installers, system integrators and planners

For further information on the product, please contact the ekinex® technical support at the e-mail address: support@ekinex.com or visit the website www.ekinex.com.

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