1473-1-8910 / 2CKA001473B8910 | 18.04.2016

KNX Technical Reference Manual

ABB i-bus® KNX

180 flush-mounted standard sensor, Select

6122/10-xxx-500

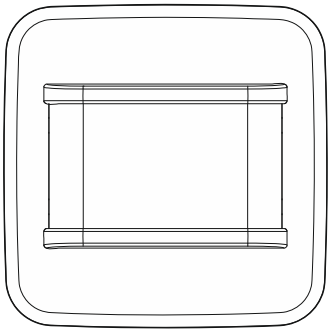


Table of contents

1 Notes on the instruction manual

Please read through this manual carefully and observe the information it contains. This will assist you in preventing injuries and damage to property, and ensure both reliable operation and a long service life for the device.

Please keep this manual in a safe place.

If you pass the device on, also pass on this manual along with it.

ABB accepts no liability for any failure to observe the instructions in this manual.

If you require additional information or have questions about the device, please contact ABB or visit our Internet site at:

www.BUSCH-JAEGER.com

2 Safety

The device has been constructed according to the latest valid regulations governing technology and is operationally reliable. It has been tested and left the factory in a technically safe and reliable state.

However, residual hazards remain. Read and adhere to the safety instructions to prevent hazards of this kind.

ABB accepts no liability for any failure to observe the safety instructions.

2.1 Information and symbols used

The following Instructions point to particular hazards involved in the use of the device or provide practical instructions.

Danger

Risk of death / serious damage to health

– The respective warning symbol in connection with the signal word "Danger" indicates an imminently threatening danger which leads to death or serious (irreversible) injuries.

Warning

Serious damage to health

– The respective warning symbol in connection with the signal word "Warning" indicates a threatening danger which can lead to death or serious (irreversible) injuries.

Caution

Damage to health

– The respective warning symbol in connection with the signal word "Caution" indicates a danger which can lead to minor (irreversible) injuries.

Attention

Damage to property

– This symbol in connection with the signal word "Attention" indicates a situation which could cause damage to the product itself or to objects in its surroundings.

NOTE

This symbol in connection with the word "Note" indicates useful tips and recommendations for the efficient handling of the product.

The following safety symbols are used in the operating manual.

This symbol alerts to electric voltage.

2.2 Intended use

This device is a movement detector for decentralized flush-mounted installation.

Depending on the setting, the movement detector responds to body heat and switches on the lights.

The device is intended for the following:

- Operation according to the listed technical data
- Installation in dry interior rooms and suitable flush-mounted boxes
- Use with the connecting options available on the device

The intended use also includes adherence to all specifications in this manual.

Extensive functions are available for the movement detectors. The range of applications is contained in chapter11 "Description of application / objects" (only in languages of the countries DE, EN, ES, FR, IT and NL).

The integrated bus coupler makes possible the connection of a KNX bus line.

2.3 Improper use

Each use not listed in see chapter “Intended use“ on page 5 is deemed improper use and can lead to personal injury and damage to property.

ABB is not liable for damages caused by use deemed contrary to the intended use of the device. The associated risk is borne exclusively by the user/operator.

The device is not intended for the following:

- Unauthorized structural changes
- Repairs
- Outdoor use
- The use in bathroom areas
- Insert with an additional bus coupler

2.4 Target group / Qualifications of personnel

Installation, commissioning and maintenance of the device must only be carried out by trained and properly qualified electrical installers.

The electrical installer must have read and understood the manual and follow the instructions provided.

The electrical installer must adhere to the valid national regulations in his/her country governing the installation, functional test, repair and maintenance of electrical products.

The electrical installer must be familiar with and correctly apply the "five safety rules" (DIN VDE 0105, EN 50110):

1. Disconnect
2. Secure against being re-connected
3. Ensure there is no voltage
4. Connect to earth and short-circuit
5. Cover or barricade adjacent live parts

No special qualifications are needed to operate the device.

2.5 Safety instructions

Danger - Electric voltage!

Electric voltage! Risk of death and fire due to electric voltage of 230 V.

Dangerous currents flow through the body when coming into direct or indirect contact with live components. This can result in electric shock, burns or even death.

- Work on the 230 V supply system may only be performed by authorised and qualified electricians.
- Disconnect the mains power supply before installation / disassembly.
- Never use the device with damaged connecting cables.
- Do not open covers firmly bolted to the housing of the device.
- Use the device only in a technically faultless state.
- Do not make changes to or perform repairs on the device, on its components or its accessories.
- Keep the device away from water and wet surroundings.

Danger - Electric voltage!

Install the device only if you have the necessary electrical engineering knowledge and experience.

- Incorrect installation endangers your life and that of the user of the electrical system.
- Incorrect installation can cause serious damage to property, e.g. due to fire.

The minimum necessary expert knowledge and requirements for the installation are as follows:

- Apply the "five safety rules" (DIN VDE 0105, EN 50110):
  1. Disconnect
  2. Secure against being re-connected
  3. Ensure there is no voltage
  4. Connect to earth and short-circuit
  5. Cover or barricade adjacent live parts.
- Use suitable personal protective clothing.
- Use only suitable tools and measuring devices.
- Check the type of supply network (TN system, IT system, TT system) to secure the following power supply conditions (classic connection to ground, protective earthing, necessary additional measures, etc.).

Caution! - Risk of damaging the device due to external factors!

Moisture and contamination can damage the device.

- Protect the device against humidity, dirt and damage during transport, storage and operation.

3 Information on protection of the environment

3.1 Environment

Consider the protection of the environment!

Used electric and electronic devices must not be disposed of with domestic waste.

– The device contains valuable raw materials which can be recycled. Therefore, dispose of the device at the appropriate collecting depot.

All packaging materials and devices bear the markings and test seals for proper disposal. Always dispose of the packaging material and electric devices and their components via the authorized collecting depots and disposal companies.

The products meet the legal requirements, in particular the laws governing electronic and electrical devices and the REACH ordinance.

(EU Directive 2002/96/EC WEEE and 2002/95/EC RoHS)

(EU REACH ordinance and law for the implementation of the ordinance (EC) No.1907/2006).

4 Setup and function

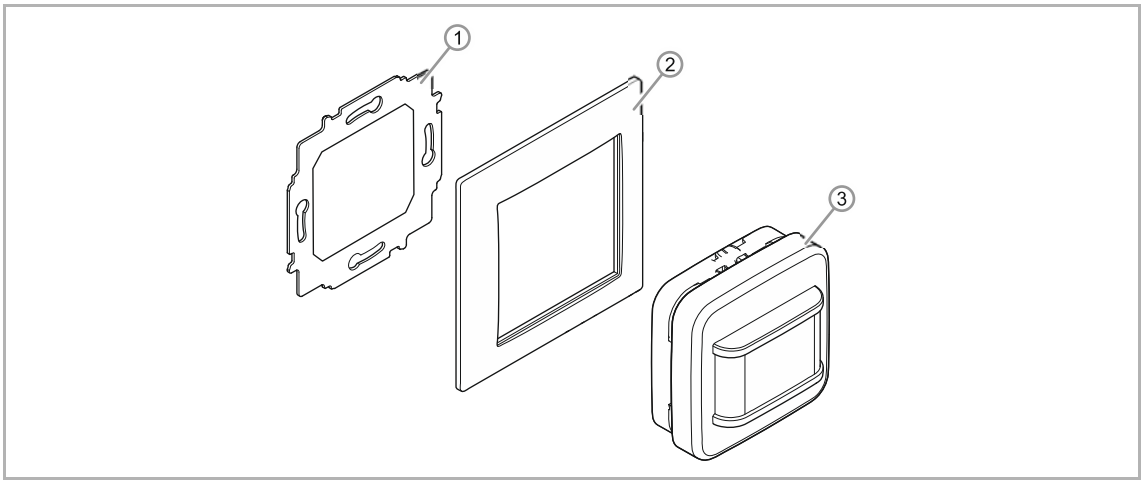


Fig. 1: Product overview

[1] Support ring

[2] Cover frame (not included in scope of delivery)

[3] Flush-mounted insert (with integrated cover)

The movement detector (passive infrared detector) responds as soon as heat is registered in the detection range and triggers a switching process. It can send switch-control telegrams to KNX actuators. To switch on the lighting, for example. If the heat source leaves the detection range or remains motionless, the lighting is switched off after an adjustable switch-off delay.

Also dimming processes can be started in connection with a Busch-Universal dimming actuator. The device can also be used for storing and sending of light scenes.

In addition to the detection of movement, the sensor can with the aid of its integrated message function detect movements within a specific time with only a minimum of sensitivity. This allows the sensor to be integrated in message systems.

The movement detector has a twilight sensing function. This function triggers the surveillance function when the adjustable brightness values are exceeded or fall short (ambient brightness). The parameters in the Engineering Tool Software (ETS) can be used to set the switch-off delay and the brightness limit value of the installed twilight switch.

The movement detector is anti-glare, i.e. when a light beam enters (e.g. with a flashlight), the surveillance function is maintained for approximately 90 seconds.

The devices do not serve as a substitute for an alarm system.

The sensor is integrated in a flush-mounted insert [1].

The integrated bus coupler makes possible the connection to the KNX bus line.

4.1 Scope of supply

The scope of supply only contains the flush-mounted insert [1], including the pre-mounted cover. It must still be completed with a suitable cover frame [2].

NOTE
Additional information about the switch ranges is available in the electronic catalogue (www.busch-jaeger-catalogue.com).

4.2 Overview of types

Article number	Product name	Sensor channels
6122/10-xxx-500	Movement detector	1

Table 1: Overview of types

4.3 Functions

The following table provides an overview of the possible functions and applications of the device:

Special features	Function
▪ 4 channels ▪ Opening angle of 180° ▪ Freely programmable ▪ Protection type IP 20 ▪ 5 - 150 lux	▪ Switching ▪ Value transmitter

Table : Overview of functions

4.4 Device overview

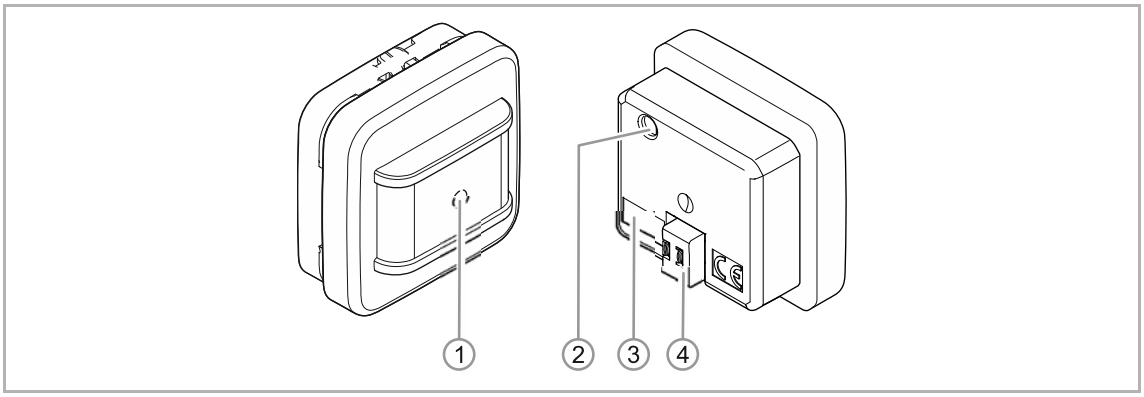


Fig. 2 Device overview of movement detector

[1] Programming LED
[2] Programming button
[3] Type plate
[4] Bus connection terminal

5 Technical data

Designation	Value
Power supply:	24 V DC (via bus line)
Bus subscribers	≤ 12 mA
Connection	Bus connection terminal: 0.4-0.8 mm
Line type:	J-Y(St)Y, 2x2x0.8 mm
Wire stripping:	6-7 mm
Opening angle	180°
Brightness limit value	1 - 500 lux
Mounting height	1.1 m - 1.3 m
Protection type	IP 20
Ambient temperature	-5°C - +45°C
Storage temperature	-20°C - +70°C

Table 2: Technical data

5.1 Dimensional drawings

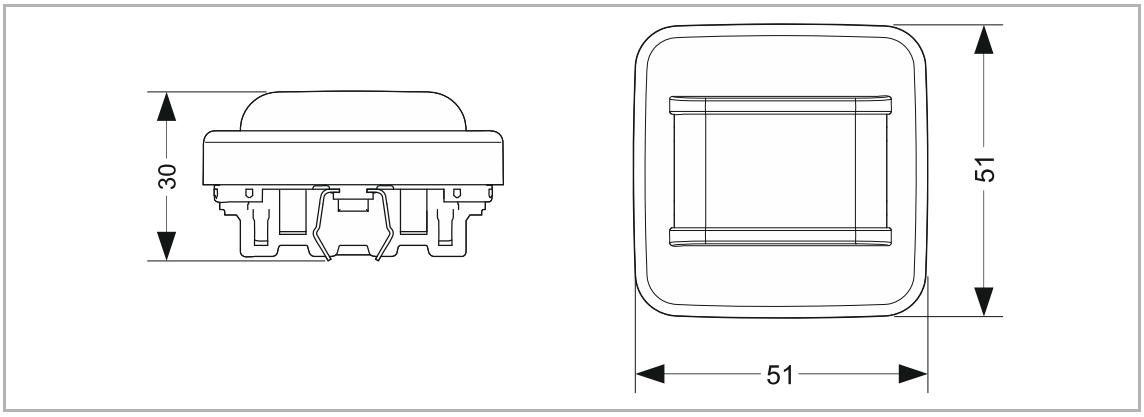


Fig. 3: Dimensions (all dimensions are in mm)

5.2 Circuit diagrams

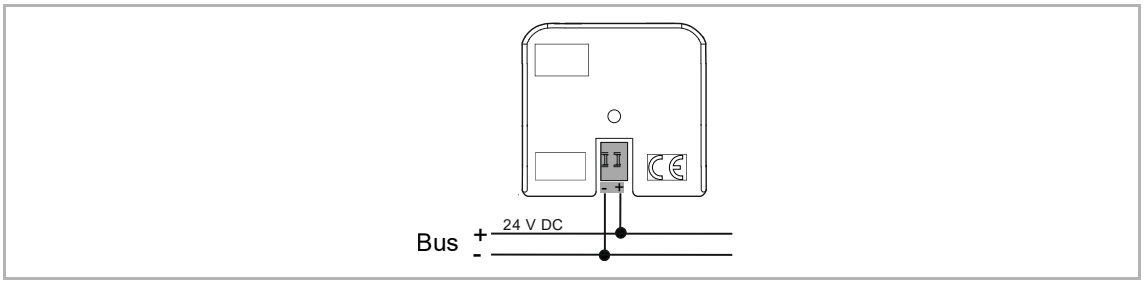


Fig. 4: Electrical connection

5.3 Detection range

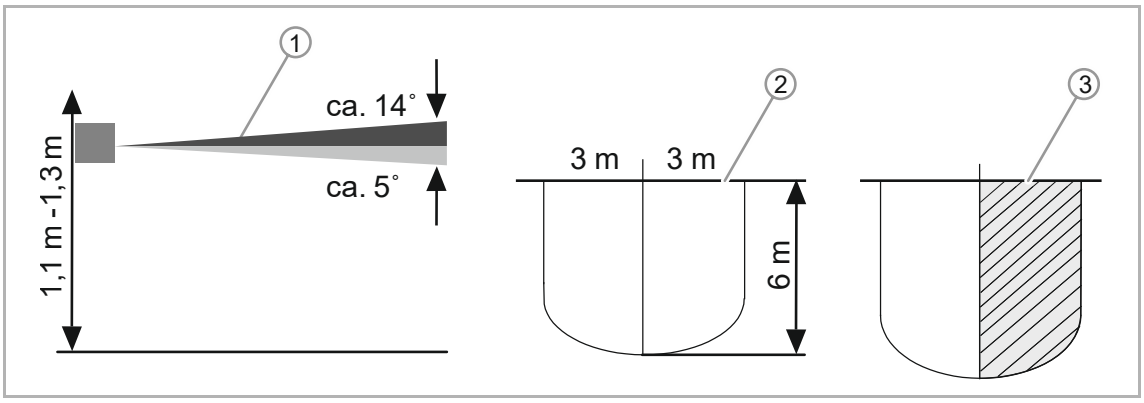


Fig. 5: Detection range

[1] Mounting heights / Detection levels

[2] Detection range (0°C – +36°C);

[3] Horizontal reduction of the detection range by masking

6 Connection, installation / mounting

Danger - Electric voltage!

Install the device only if you have the necessary electrical engineering knowledge and experience.

- Incorrect installation endangers your life and that of the users of the electrical system.
- Incorrect installation can cause serious damage to property, e.g. due to fire.

The minimum necessary expert knowledge and requirements for the installation are as follows:

- Apply the "five safety rules" (DIN VDE 0105, EN 50110):
  1. Disconnect
  2. Secure against being re-connected
  3. Ensure there is no voltage
  4. Connect to earth and short-circuit
  5. Cover or barricade adjacent live parts.
- Use suitable personal protective clothing.
- Use only suitable tools and measuring devices.
- Check the type of supply network (TN system, IT system, TT system) to secure the following power supply conditions (classic connection to ground, protective earthing, necessary additional measures, etc.).
- Observe the correct polarity.

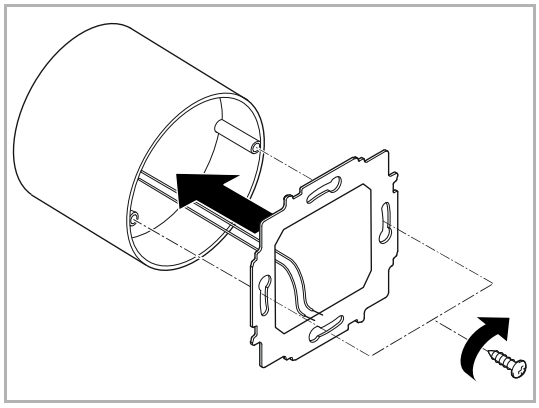
6.1 Mounting

NOTE

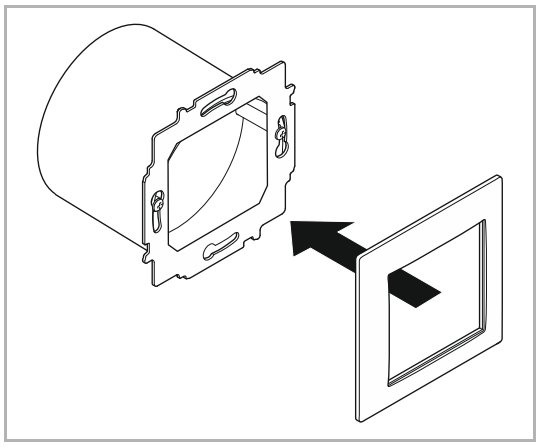
The devices with integrated bus coupler have been prepared for installing in flush-mounted boxes in connection with the corresponding mounting plate.

Ensure that there is sufficient distance between movement detector and heat sources such as lighting, heaters, etc., since these devices can cause incorrect switching.

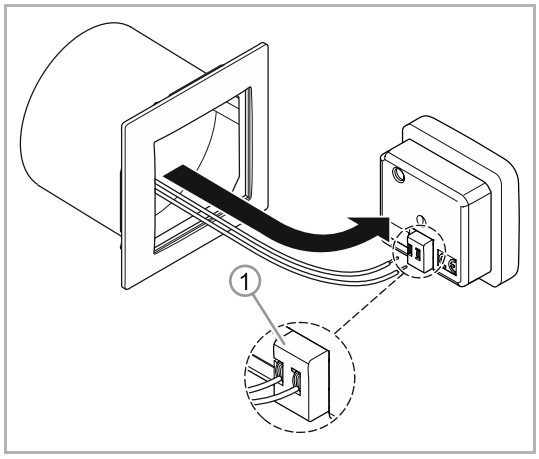
To install the device, perform the following steps:



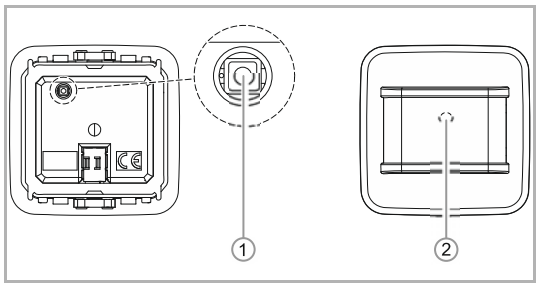
1. Screw the support ring to the flush-mounted box.



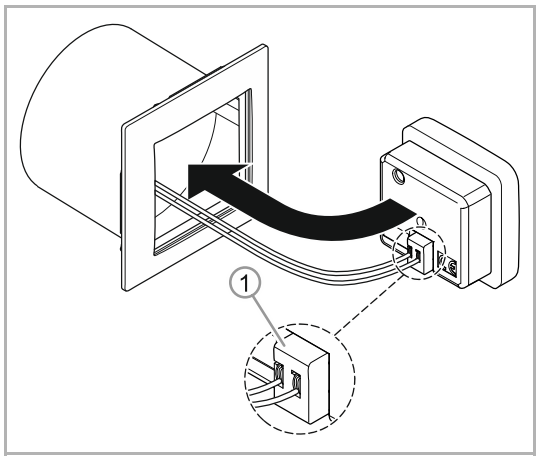
2. Attach the cover frame (not included in scope of delivery).



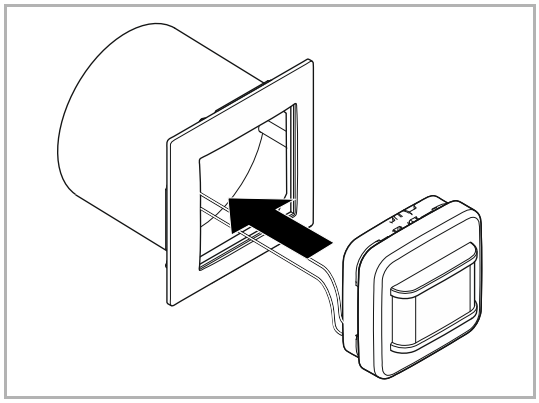
3. Connect the bus line with the bus connection terminal [1] (Chapter 6.2 “Electrical connection“ on page 15).
   – Observe the correct polarity!



4. Commission the device.
   Programming is carried out via the programming button [1].
   [1] Programming button is on the rear
   [2] LED is on the front



5. Turn the device into the correct installation position.
   – The bus connection terminal [1] must be at the rear at the bottom.



6. Snap the device into the support ring.

6.2 Electrical connection

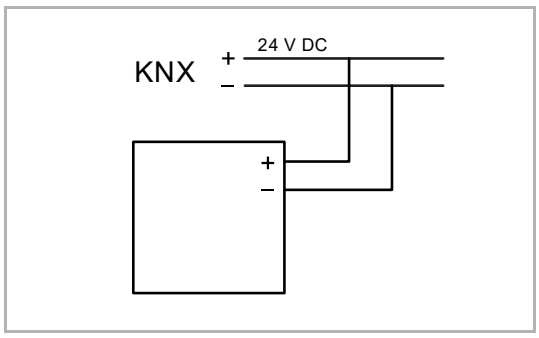


Fig. 6: Connection of bus coupler

Carry out the electrical connection according to the circuit diagram.

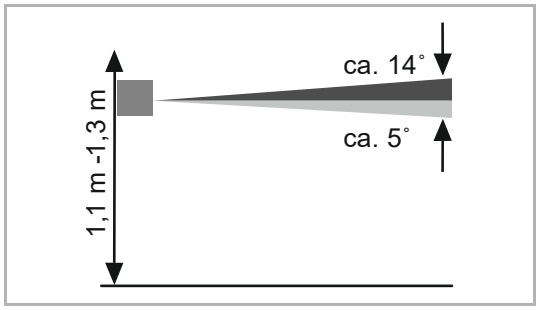
7 Commissioning

7.1 Hardware

The movement detectors must be mounted to a solid wall, since each movement of the device has the same effect as the movement of a heat source in the detection range.

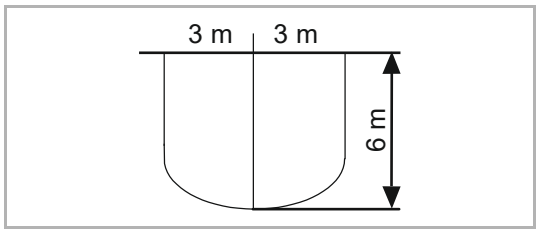
– The optimum function of the movement detector is assured when it is mounted laterally to the direction of movement (tangential approach).
– Since infrared waves cannot penetrate solid objects, ensure that nothing obstructs the "line of vision" of the movement detector.
– A minimum distance of 2 m is to be kept from the direct light of lamps.

Mounting heights / Detection levels



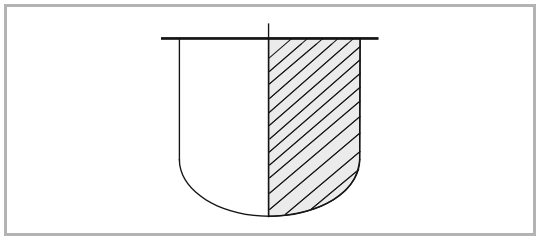
- The movement detector has a selective lens which has a detection level of approximately 3° upwards and approximately 2° downwards.

Detection range



- The detection range is 180°, which is composed of two 90° segments.
- The transmission range at a tangential / vertical approach amounts to at least 6 m.

Narrowing the detection range



- The detection range can be narrowed via the parameter setting within the Engineering Tool Software (ETS) (Power-Tool).

7.2 Software

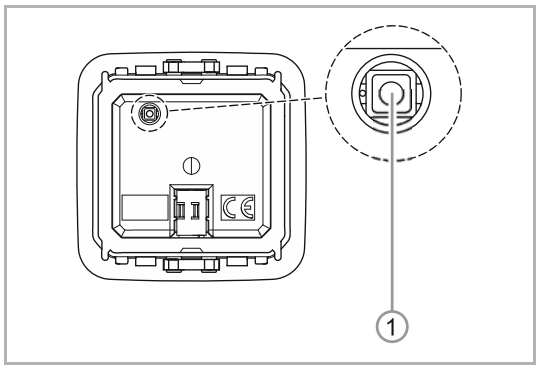
To start the device a physical address must be assigned first. The physical address is assigned and the parameters are set with the Engineering Tool Software (ETS).

NOTE
The devices are products of the KNX system and meet KNX guidelines. Detailed expert knowledge by means of KNX training sessions for a better understanding is assumed.

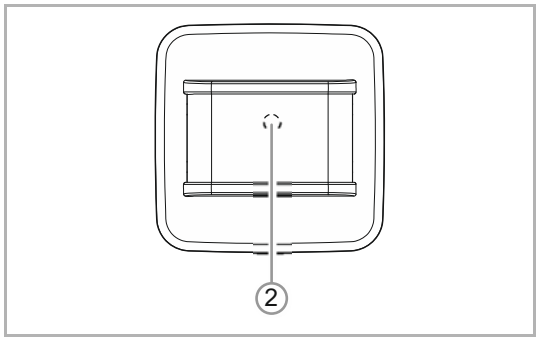
7.2.1 Preparation

1. Connect a PC to the KNX bus line via the KNX interface (e.g. via the commissioning interface / commissioning adapter 6149/21-500).
   – The Engineering Tool Software must be installed on the PC (native application from ETS 4.0).
2. Switch on the bus voltage.

7.2.2 Assigning a physical address



1. Press the programming button [1] on the rear of the device.



– The red programming LED [2] on the front of the device lights up.

7.2.3 Assigning the group address(es)

The group addresses are assigned in connection with the ETS.

7.2.4 Selecting the application program

Please contact our Internet support unit (www.BUSCH-JAEGER.com). The application is loaded into the device via the ETS.

7.2.5 Differentiating the application program

Various functions can be implemented via the ETS.

Detailed description of parameters, Chapter 11 “Description of application and parameters“ on page 22 (only in languages DE, EN, ES, FR, IT and NL).

8 Update

A firmware update is carried out via the KNX bus by means of the ETS app "KNX Bus Update".

NOTE

The description of the update process can be downloaded via the electronic catalogue (www.busch-jaeger-catalogue.com). It is stored on the device page under category "Software".

9 Operation

The device is operated only via the programming button.

Details about how to operate the programming button are contained in chapter "Commissioning", paragraph "Assigning a physical address".

Further manual operations are not necessary.

The function is fixed via the assigned function and its parameter settings.

Extensive functions are available for the movement detector. The range of applications is contained in chapter "Description of applications / objects" (only in languages of the countries DE, EN, ES, FR, IT and NL).

NOTE

The scope of delivery contains only the electronic insert. It must still be completed with a suitable cover frame.
Additional information about the switch ranges is available in the electronic catalogue (www.busch-jaeger-catalogue.com).

10 Maintenance

The device is maintenance-free. In case of damage, e.g. during transport or storage), do not perform repairs. Once the device is opened, the warranty is void.

Access to the device must be guaranteed for operation, testing, inspection, maintenance and repairs (according to DIN VDE 0100-520).

10.1 Cleaning

Clean dirty devices with a soft dry cloth.

– If this is insufficient, the cloth can be moistened slightly with a soap solution.

11 Description of application and parameters

11.1 Application program

The following application program is available:

- Switching, Value, Cyclic, Twilight/6

11.2 Overview of applications

The application program for the devices contains the KNX applications listed in the following:

- Detector (1 - 4)
- Brightness (brightness detection)

11.3 "Detector" application

11.3.1 General parameters - Type of output

Options:	Master
	Slave

– *Master*: In master mode On and Off telegrams are sent (to an actuator) dependent on movement.

– *Slave*: In slave mode On telegrams are sent cyclically (to the "input slave or slave input" of a master detector) when movement is detected.

11.3.2 General parameters - Slave input

Options:	No
	Yes

– *No*: The option of receiving telegrams from a slave is not available.

– *Yes*: A 1-bit slave communication object (input) is being enabled. Via this input the master detector receives the (On) telegrams of the connected slaves or of a push-button. An On telegram from a slave is comparable with a detected movement.

11.3.3 General parameters - Output is of type

Options:	1 bit
	1 byte 0 - 100%
	1 byte (0 - 255)
	Light scene number 1 - 64
	RTC operating mode switchover (1 byte)

– *1 bit*: intended for switch actuators.

– *1 byte 0 - 100%*: for activating dimmers.

– *1 byte 0 - 255*: for actuators, which are activated with a value of between 0 and 255.

– *Light scene number (1 - 64)*: for activating light scenes.

– *RTC operating mode switchover (1 byte)*: to directly switch room temperature controllers into a specific operating mode.

  - Auto
  - Comfort
  - Standby
  - ECO
  - Frost/heat protection

NOTE

If the type of output is changed, also the options for setting the parameters change.

- Value for switching on
- Value for switching off

In this manual only values for the 1-bit setting are described.

11.3.4 General parameters - Output object sends at

Options:	Switching on/off
	Activation
	Deactivation

– *Switch-on/switch-off*: sends a telegram at the start of movement and at the end of switch-off delay.

– *Switch-on*: only sends a telegram at the start of movement.

– *Switch-off*: only sends a telegram at the end of switch-off delay.

NOTE

If switch-on or switch-off has been selected, the following parameters are not displayed:

- Value for switching on (not for switching off)
- Value for switching on, cyclic sending (not for switching off)
- Value for switching off (not for switching on)
- Value for switching off, cyclic sending (not for switching on)

11.3.5 General parameters - Value for switch-on

Options:	On
	Off

– *On*: When the detector detects movement, value 1 is sent via the bus.

– *Off*: When the detector detects movement, value 0 is sent via the bus.

11.3.6 General parameters - Cyclic sending of value for switch-on

Options:	No
	Yes

– *No*: The set value is sent only once via the bus.

– *Yes*: The set value is sent cyclic via the bus.

  – Parameter "cyclic repeat time" is also displayed.

11.3.7 Cyclic repeat time (hh:mm:ss)

Options:	00:00:10 ... 00:00:30 ... 18:12:15

– Here the time which lies between the sending of two telegrams (no change in value) is set.

11.3.8 General parameters - Value for switch-off

Options:	Off
	On

– *Off*: If movement is no longer detected and the switch-off delay has expired, value 0 is sent via the bus.

– *On*: If movement is no longer detected and the switch-off delay has expired, value 1 is sent via the bus.

11.3.9 General parameters - Cyclic sending of value for switch-off

Options:	No
	Yes

– *No*: The set value is sent only once via the bus.

– *Yes*: The set value is sent cyclic via the bus.

  – Parameter "cyclic repeat time" is also displayed.

11.3.10 Cyclic repeat time (hh:mm:ss)

Options:	00:00:10 ... 00:00:30 ... 18:12:15

– Here the time which lies between the sending of two telegrams is set.

11.3.11 General parameters - Switch-off delay (hh:mm:ss)

Options:	00:00:10 .. 00:05:00 .. 18:12:15

– The switch-off delay is the time period between the last movement detected and the sending of the telegram "Value for switch-off". If movement is detected again within this period, the switch-off delay timer is started again.

11.3.12 General parameters - Brightness-value threshold internal (lux)

Options:	1 .. 1000

– The brightness-value threshold is used to specify the lighting intensity at which the detector is to start to respond. If the detector does not switch on and the measured brightness lies above the set threshold, no telegram is sent during movement.

11.3.13 General parameters - Fade in extended parameters

Options:	No
	Yes

– *No*: Only the most important parameters for setting the detector are displayed.
– *Yes*: All parameters are displayed, also those that are not required in most cases.
  - Extended parameter settings
  - Status display parameter
  - Brightness parameter
  - External button parameter
  - Sensor selection parameter
  - Enable

NOTE
The following parameters are visible only when parameter "Fade in extended parameters" is set on "Yes".

11.3.14 Extended parameter settings - Operating mode

Options:	Automatic mode
	Automatic switch-off
	Automatic switch-on
	Surveillance

– *Automatic* = automatic switch-on and switch-off.
The detector switches on automatically when detecting a movement. The switch-off is effected after the set switch-off delay beginning from the most recent detection.

– *Automatic switch-off*: Manual switch-on and automatic switch-off.
The detector must be switched on manually via object "External push-button (input)". The switch-off is effected automatically under consideration of the switch-off delay.

– *Automatic switch-on*: Automatic switch-on and manual switch-off.
The detector switches on automatically when detecting a movement. The switch-off is effected by the receipt of an Off telegram on object "External push-button (input)". Note: The detector switches off automatically after 6 hours.

– *Surveillance*: Automatic switch-on and switch-off.
The detector switches on brightness-dependent if an adjustable component of movement has been recorded within the time period set. The switch-off occurs 2 seconds after switch-on and the last detection of movement.

NOTE

Manual switch-on and switch-off is possible in operating modes automatic, automatic switch-on and automatic switch-off via the external push-button (input). This external push-button is activated under the "External push-button" parameter. During manual switch-off the detection of movement is suppressed for the pause time. The purpose of pause time is to prevent an immediate re-activation.

Example:

The person switches the light off manually when leaving the room. Without the pause time the detected movement would cause a renewed switch-on during exiting.

11.3.15 Extended parameter settings - Use of a two-stage switch-off

NOTE
This parameter is only displayed when "Output is of type" is set on 1 byte 0 - 100% or 1 byte 0 - 255.

Options:	No
	Yes

– *No*: The detector has a switch-off delay and, following the switch-off delay, transmits what has been set under the "Value for switch-off" parameter.

– *Yes*: After the switch-off delay the detector first switches to the set reduced brightness and only then sends the value set under the "Value for switch-off" parameter after brightness reduced according to switch-off delay.

Example:

Switch-off delay of 5 minutes.

- Value for switching off = 0%
- Value for reduced brightness = 20%
- Brightness reduced according to switch-off delay = 3 minutes

If movement is no longer detected, the light is dimmed to 20% after 5 minutes and then to 0% after a further 3 minutes (switch-off).

11.3.16 Extended parameter settings - Value for reduced brightness (%)

Options:	0 .. 20 .. 100

– Here the value for the reduced brightness is set. After the switch-off delay has expired the detector is to dim the light to this value.

11.3.17 Extended parameter settings - Brightness reduced according to switch-off delay (hh:mm:ss)

NOTE

This parameter is only visible if the "Use of a two-stage switch-off" parameter is set on "Yes".

Options:	00:00:10 .. 00:05:00 .. 18:12:15

– Here the value for the switch-off delay of the reduced brightness is set. The total switch-off delay then consists of the switch-off delay + brightness reduced according to switch-off delay.

11.3.18 Extended parameter settings - Use of forced switch-off

Options:	No
	Yes

– *No*: The detector does not switch off after a specific time to carry out a new brightness measurement.

– *Yes*: The detector switches off once after 3x switch-off delay or at a minimum of 90 minutes or a maximum of 24 hours to carry out a new brightness measurement.

If the presence detector is switched on, it operates independent of brightness. Problem: When movement is detected the light remains on even though the brightness may be sufficient. This effect can be prevented by activating this parameter.

11.3.19 Extended parameter settings - Use of object for switch-off delay

Options:	No
	Yes

– *No*: The only option available is to change the switch-off delay via the switch-off delay parameter setting.

– *Yes*: There is a separate 2-byte switch-off delay object (input) for changing the switch-off delay of the detector. The time entered is in seconds. A switch-off delay of 4 minutes, for example, has a value of 240 seconds.

NOTE

The values which can be sent are between 10 and 65535 seconds. If a value that is too small or too large is sent, the value is automatically adjusted to the limit value:

- Value < 10 -> Value = 10
- Value < 65535 -> Value = 65535

11.3.20 Extended parameter settings - Use of object for brightness reduced according to switch-off delay

NOTE

This parameter is only displayed when "Output is of type" is set on 1 byte 0 - 100% or 1 byte 0 - 255.

Options:	No
	Yes

– *No*: The only option available is to change the switch-off delay via the "Brightness reduced according to switch-off delay" parameter setting.

– *Yes*: There is a separate 2-byte brightness reduced according to switch-off delay object (input) for changing the switch-off delay for the reduced brightness of the detector. The time entered is in seconds. A switch-off delay of 4 minutes, for example, has a value of 240 seconds.

NOTE

The values which can be sent are between 10 and 65535 seconds. If a value that is too small or too large is sent, the value is automatically adjusted to the limit value:

- Value < 10 -> Value = 10
- Value < 65535 -> Value = 65535

11.3.21 Extended parameter settings - Use of object for test mode

Options:	No
	Yes

– *No*: There is no possibility to set the detector to test mode to test the detection range.

– *Yes*: There is a separate 1-bit test mode activation object (input) for activating the test mode with a 1a. The function is reset again with the receipt of a 0 on this object or automatically after 10 minutes. During the test mode the LED functions as movement detection indicator. The device operates independent of brightness with a switch-off delay of 2 to 9 seconds.

11.3.22 Extended parameter settings - Use of the actuator status object

Options:	No
	Yes

– *No*: There is no separate actuator status object for connecting with the status of an actuator.

– *Yes*: A 1-bit actuator status communication object (input) is being enabled. This is connected with the status of a switch actuator, for example. When this actuator is switched off via a central command, the detector is informed and is ready again for switch-on after the pause time.

11.3.23 Extended parameter settings - Use of the status manually on/off object

NOTE
This parameter is displayed only when automatic switch-on/switch-off has been activated and/or when the external push-button has been activated.

Options:	No
	Yes

– *No*: There is no separate status manual on/off object for monitoring the status of the control.
– *Yes*: A 1-bit status manual on/off communication object (output) is being enabled. This object sends an On telegram when the movement detector is deactivated and only one manual operation is possible via the external push-button input. If this object sends an Off telegram, the movement detector switches back to automatic mode.

11.3.24 Extended parameter settings - Pause time (ss.fff)

Options:	00.100 .. 01.250 .. 59.999

– The set pause time is started after the detector has been switched off due to expiry of the switch-off delay or when a switch-off telegram is received on objects external push-button or actuator status.

If movement is detected during this time, the detector is not switched on immediately. The pause time is first extended by 7 seconds. If there is still movement after these 7 seconds, the detector switches back on.

If no movement is detected during the pause time, the detector is ready for activation again after the pause time.

This behaviour can, for example, be important when the lamp cools down drastically and is located within the detection range of the detector. Without a blockage there would be an unintentional switch-on. The purpose of pause time is to prevent an immediate re-activation.

Example:

A person switches the light off manually when leaving the room. Without the pause time the detected movement would cause a renewed switch-on during exiting.

NOTE
- The external push-button object is activated under the "External push-button" parameter.
- The actuator status object is activated under the status display parameter.

11.3.25 Extended parameter settings — Overwriting settings during a download

Options:	Yes
	No

– *Yes*: When the application is reloaded into the detector, the values changed via the bus are overwritten with the parameterized values of the ETS application.

– *No*: When the application is reloaded into the detector, the values changed via the bus are **not** overwritten with the parameterized values of the ETS application.

Values:

- Switch-off delays
- External/internal brightness threshold
- Brightness correction (daylight), see "Brightness detection" application

11.3.26 Brightness parameter - Use of object for detection independent of brightness

Options:	No
	Yes

– *No*: There is no separate object for detection independent of brightness.

– *Yes*: A 1-bit communication object for brightness-independent detection (input) is being enabled. This object allows the detector to be switched independent of brightness.

11.3.27 Brightness parameter - Activating detection independent of brightness with

NOTE
This parameter is only visible if the "Use of object for detection independent of brightness" parameter is set on "Yes".

Options:	On telegram
	Off telegram

– *On telegram*: Detection independent of brightness is activated with a 1 telegram and deactivated with a 0 telegram.

– *Off telegram*: Detection independent of brightness is activated with a 0 telegram and deactivated with a 1 telegram.

11.3.28 Brightness parameter - Detection independent of brightness after bus voltage recovery

NOTE
This parameter is only visible if the "Use of object for detection independent of brightness" parameter is set on "Yes".

Options:	No
	Yes

- *No*: Detection independent of brightness is deactivated after a bus voltage recovery, reprogramming or a reset.
- *Yes*: Detection independent of brightness is activated after a bus voltage recovery, reprogramming or a reset.

11.3.29 Brightness parameter - Input Slave takes the brightness into consideration

Options:	No
	Yes

– *No*: Each ON telegram to the input slave object ensures that the detector is switched on or the switch-off delay is reset. This is independent of whether the actual brightness is below or above the brightness-value threshold.

– *Yes*: The detector is switched on or the switch-off delay is reset only when the actual brightness is below the brightness-value threshold.

11.3.30 Brightness parameter - Used brightness

Options:	Brightness-independent
	Only internal
	Only external
	Internal or external

– *Brightness-independent*: The detector functions independent of brightness and will switch during each movement.

– *Only internal*: The detector uses its own measured brightness and brightness-value threshold internally to decide whether to switch on during movement.

– *Only external*: A 2-byte external brightness (input) communication object is enabled. The detector uses this externally measured brightness and the external brightness-value threshold parameter (lux) to decide whether to switch on during movement.

– *Internal or external*: The detector is activated only when the internally measured brightness drops below the internal brightness-value threshold or the externally measured brightness drops below the external brightness-value threshold.

11.3.31 Brightness parameter - Use object for internal brightness-value threshold

NOTE
This parameter is only visible if the "Used brightness" parameter is set on "internal" or "internal or external".

Options:	No
	Yes

– *No*: There is no separate internal brightness-value threshold object.
– *Yes*: A 2-byte internal brightness-value threshold communication object (input) is being enabled. This can be used to change the switching threshold at which the detector is activated. The value is sent to this object in lux.

NOTE
The range of values lies between 0.5 – 1100 lux.

11.3.32 Brightness parameter - Use object for external brightness-value threshold

NOTE
This parameter is only visible if the "Used brightness" parameter is set on "external" or "internal or external".

Options:	No
	Yes

– *No*: There is no separate external brightness-value threshold object.
– *Yes*: A 2-byte external brightness-value threshold communication object (input) is being enabled. This can be used to change the switching threshold at which the detector is activated. The value is sent to this object in lux.

NOTE
The range of values lies between 0.5 – 1100 lux.

11.3.33 Brightness parameters - Brightness-value threshold external (lux)

NOTE
This parameter is only visible if the "Used brightness" parameter is set on "external" or "internal or external".

Options:	1 .. 500 .. 1000

– The brightness-value threshold is used to specify the lux value at which the detector is to start to respond. If the detector does not switch on and the measured brightness lies above the set threshold, no telegram is sent during movement. The threshold applies only to the external brightness.

11.3.34 External push-button parameter - Use of external push-button object

Options:	No
	Yes

– *No*: There is no separate external push-button object.

– *Yes*: A 1-bit external push-button communication object (input) is being enabled. Via this object it is possible to manually change the (output) status of the detector with the aid of a 1-bit telegram. It is used especially in the "Automatic switch-on" mode for switching off and in "Automatic switch-off" mode for switching on.

11.3.35 External push-button parameter - Use of external push-button switches on with

NOTE
This parameter is only visible if the "Use of external push-button" parameter is set on "Yes".

Options:	On telegram
	Off telegram

– *On telegram*: The detector is activated with a 1 telegram and deactivated with a 0 telegram.

– *Off telegram*: The detector is activated with a 0 telegram and deactivated with a 1 telegram.

11.3.36 External push-button parameter — Use of switchover to manual mode object

NOTE
This parameter is only visible if the "Use of external push-button" parameter is set on "Yes".

Options:	No
	Yes

– *No*: There is no separate switchover to manual mode object.
– *Yes*: A 1-bit switchover to manual mode communication object (input) is being enabled. If an ON telegram is received on this input, the detector is deactivated. In this case only manual operation is possible via the "External push-button" object. The receipt of an OFF telegram resets the detector to detector mode.

11.3.37 External push-button parameter - Manual mode is activated with

NOTE
This parameter is only visible if the "Use of switchover to manual mode object" parameter is set on "Yes".

Options:	On telegram
	Off telegram

– *On telegram*: The detector is deactivated with a 1 telegram and activated with a 0 telegram.
– *Off telegram*: The detector is deactivated with a 0 telegram and activated with a 1 telegram.

11.3.38 Sensor selection - Sensitivity of sensor 1/2

Options:	Maximum
	High
	Medium
	Low
	Off

– *Maximum*: Even higher sensitivity than standard – increase in transmission range.
– *High*: As standard intended for indoor use.
– *Medium*: To be used when there are small interfering heat sources within the detection area.
– *Low*: To be used when there are large interfering heat sources within the detection area.
– *Off*: The sensor is switched off and movement is no longer detected in this area.

NOTE
The transmission range can **not** be changed via the sensitivity.

11.3.39 Enable - Use of enable detector object

Options:	No
	Yes

– *No*: There is no object with which the detector can be blocked or enabled.
– *Yes*: A 1-bit enable movement communication object (input) is being enabled. This object allows the detector to be enabled or blocked. No telegrams are sent by the detector during blockage.

11.3.40 Enable - Enable with

NOTE
This parameter is only visible if the "Use of enable detector object" parameter is set on "Yes".

Options:	ON telegram
	OFF telegram

– *ON telegram*: With the receipt of value 1 on the enable movement (input) object the detector is enabled and blocked with value 0.
– *OFF telegram*: With the receipt of value 0 on the enable movement (input) object the detector is enabled and blocked with value 1.

11.3.41 Enable - After bus voltage recovery detector is

NOTE
This parameter is only visible if the "Use of enable detector object" parameter is set on "Yes".

Options:	Enabled
	Blocked

- *Enabled*: The device is enabled and functions normally when the bus voltage is interrupted or the device has been re-programmed, as well as after a reset.
- *Blocked*: The device is blocked and must be enabled for normal function when the bus voltage is interrupted or the device has been re-programmed, as well as after a reset.

11.3.42 Enable - Output sends at enable

NOTE
This parameter is only visible if the "Use of enable detector object" parameter is set on "Yes".

Options:	No telegram
	Current status
	Single value for switching on
	Single value for switching off

– *No telegram*: No telegram is sent during enable.

– *Current status*: During enable the detector checks whether a movement has occurred and the brightness is below the brightness-value threshold. If yes, the single value for switch-on is sent. Otherwise the single value for switch-off is sent.

– *Single value for switch-on*: During enable the single value which has been parameterized under the value for switch-on parameter is sent.

– *Single value for switch-off*: During enable the single value which has been parameterized under the value for switch-off parameter is sent.

11.3.43 Enable - Output sends at blockage

NOTE
This parameter is only visible if the "Use of enable detector object" parameter is set on "Yes".

Options:	No telegram
	Off after expiry of switch-off delay
	Single value for switching off
	Single value for switching on

– *No telegram*: No telegram is sent during blockage.
– *Off after expiry of switch-off delay*: During blockage the switch-off delay is started anew and the detector sends the value that has been parameterized under the value for switch-off parameter only after this time has expired.
– *Single value for switch-off*: During blockage the single value which has been parameterized under the value for switch-off parameter is sent.
– *Single value for switch-on*: During blockage the single value which has been parameterized under the value for switch-on parameter is sent.

11.4 "Brightness detection" application

11.4.1 General parameters - Sending of brightness every (hh:mm:ss)

Options:	00:00:05 .. 00:00:30 .. 18:12:15

– Here it is specified how often the brightness is sent on the bus.

11.4.2 General parameters - Use of object for LED

Options:	No
	Yes

– *No*: There is no separate LED object.

– *Yes*: There is a separate 1-bit LED object (input) for the option of switching on the LED via an On telegram and to switch it off with an Off telegram.

NOTE
Only the LED has been switched. This does **not** place the device into programming mode.

11.4.3 General parameters - Correction of internal brightness

Options:	No
	With daylight adjustment

– *No*: It is not necessary to calibrate the internal brightness sensor.

– *With daylight adjustment*: This adjustment is used mainly for the detector application.

11.4.4 General parameters - Fade in extended parameters

Options:	No
	Yes

– *No*: Only the most important parameters for setting the brightness detection are displayed.

– *Yes*: All parameters are displayed, also those that are not required in most cases.

- Extended parameters

NOTE
The following parameters are visible only when parameter "Fade in extended parameters" is set on "Yes".

11.4.5 Extended parameters - Use of internal brightness

Options:	Yes
	No

– *Yes*: The internal brightness sensor is used as encoder for the different detector applications. Applies only to this application.

– *No*: The internal brightness sensor is not used. The brightness values must then be sent from the external brightness sensors.

11.4.6 Extended parameters - Number of external brightness measurement objects

Options:	1
	2

– *1*: There is a separate external brightness 1 (input) object with which the internal brightness sensor is not used. The brightness values must then be sent from the external brightness sensors.

– *2*: There is a separate external brightness 2 (input) object with which the internal brightness sensor is not used. The brightness values must then be sent from the external brightness sensors.

11.4.7 Extended parameters - Weighting of external brightness 1

NOTE
This parameter is only visible if the "Use of internal brightness" parameter is set on "No".

Options:	1… 100

11.4.8 Extended parameters - Send brightness output

Options:	Cyclic
	Cyclic and during change of value

– *Cyclic*:

– *Cyclic and during change of value:*

11.4.9 Extended parameters - Alarm object

Options:	Is deactivated
	Sends cyclic
	Only sends during change

– *Is deactivated*:

– Sends *cyclic*:

– Only sends *during change*:

11.4.10 Extended parameter settings — Overwriting settings during a download

Options:	Yes
	No

– *Yes*: When the application is reloaded into the detector, the values changed via the bus are overwritten with the parameterized values of the ETS application.

– *No*: When the application is reloaded into the detector, the values changed via the bus are **not** overwritten with the parameterized values of the ETS application.

Values:

- Brightness correction

11.5 Communication objects — Busch-Watchdog Standard — Master

11.5.1 Mx: Enable movement

Number	Name	Object function	Data type
1 | 19 | 37 | 53	Mx: Enable movement	Input	1.001 switch

The detector can be blocked or enabled via the object. Enabling has priority over all other objects.

11.5.2 Mx: Switch-off delay

Number	Name	Object function	Data type
2	Mx: Switch-off delay	Input	7.005 time (s)

If no movement is detected, the function enters the programmed switch-off and then switches off. The switch-off delay can be reprogrammed at all times via this object from a different control element without the aid of ETS. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

11.5.3 Mx: Slave

Number	Name	Object function	Data type
3	Mx: Slave	Input	1.001 switch

This object can be used by a different movement or presence detector to inform the detector whether it has detected movement or not and thus initiate a "Retrigger" of the detector.

11.5.4 Mx: Actuator status

Number	Name	Object function	Data type
4 | 22 | 40 | 56	Mx: Actuator status	Input	1.001 switch

Actuators controlled by the detector can send their status to this input (1 bit). Upon the receipt of an On/Off telegram on the object the detection of movement is suppressed for the specified pause time and the switch-off delay is reset.

11.5.5 Mx: Detection independent of brightness

Number	Name	Object function	Data type
5 | 23 | 41 | 57	Mx: Detection independent of brightness	Input	1.001 switch

If a 1 is received on this object, the detector switches at every movement independent of brightness. However, if a 0 is received, the detector switches on only when the brightness drops below the programmed brightness-value threshold and during movement.

11.5.6 Mx: External brightness

Number	Name	Object function	Data type
6 | 24 | 42 | 58	Mx: External brightness	Input	9.* 2-byte float value

The brightness value of an external brightness sensor is sent to this object.

11.5.7 Mx: External brightness-value threshold

Number	Name	Object function	Data type
7 | 25 | 43 | 59	Mx: External brightness-value threshold	Input	9.* 2-byte float value

The external brightness-value threshold can be adjusted via this object. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

11.5.8 Mx: Internal brightness-value threshold

Number	Name	Object function	Data type
8 | 26 | 44 | 60	Mx: Internal brightness-value threshold	Input	9.* 2-byte float value

The internal brightness-value threshold can be adjusted via this object. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

11.5.9 Mx: Status manual On/Off

Number	Name	Object function	Data type
9 |	Mx: Status manual On/Off	Output	1.001 switch

This object sends an On telegram when the movement detector is deactivated and only one manual operation is possible via the external push-button input. If this object sends an Off telegram, the movement detector switches back to automatic mode.

11.5.10 Mx: Movement (master)

Number	Name	Object function	Data type
10 | 29 | 47 | 63	Mx: Movement (master)	Output	1.001 switch

– Movement (master) sends switch-on/switch-off telegrams in master mode
– Movement (slave) sends cyclic On telegrams in slave mode.
– Surveillance sends Switch-on/switch-off telegrams in surveillance mode.

11.5.11 Mx: Switchover of manual operation

Number	Name	Object function	Data type
12 | 30 | 48 | 64	Mx: Switchover of manual operation	Input	1.001 switch

This object is used to switch over from automatic mode to manual mode (default: 0 = automatic, 1 = manual).

11.5.12 Mx: External push-button

Number	Name	Object function	Data type
13 | 31 | 49 | 65	Mx: External push-button	Input	1.001 switch

The detector switches on if a 1 (default) is received via this object. The detector switches off if a 0 (default) is received via this object.

- *Manual mode inactive*: Movement detector is back on automatic.
- *Manual mode active*: The movement detector remains switched off until the detector is switched on manually or manual mode is deactivated.

NOTE

The movement detector is inactive in manual mode and to switch it on or off is only possible only via the external push-button. In automatic mode the switch-on via the external push-button simulates a movement.

11.5.13 Mx: Activate test mode

Number	Name	Object function	Data type
14 | 32 | 50 | 66	Mx: Activate test mode	Input	1.001 switch

The test mode is activated via this object (1 = activated, 0 = deactivated). It is automatically deactivated after 10 minutes.

11.6 Communication objects — Busch-Watchdog Standard — Slave

11.6.1 Mx: Enable movement

Number	Name	Object function	Data type
1 | 19 | 37 | 53	Mx: Enable movement	Input	1.001 switch

The detector can be blocked or enabled via the object. Enabling has priority over all other objects.

11.6.2 Px: Actuator status

Number	Name	Object function	Data type
4 | 22 | 40 | 56	Px: Actuator status	Input	1.001 switch

Actuators controlled by the detector can send their status to this input (1 bit). Upon the receipt of an Off telegram on the object the detection of movement is suppressed for the specified pause time and the switch-off delay is reset.

11.6.3 Mx: Movement (slave)

Number	Name	Object function	Data type
11 | 29 | 47 | 63	Mx: Movement (slave)	Output	1.001 switch

To retrigger the master, this object sends (Default: independent of brightness) a 1 telegram.

11.7 Communication objects — Busch-Watchdog Standard — Brightness detection

11.7.1 BR: Brightness

Number	Name	Object function	Data type
65	BR: Brightness	Output	9.* 2-byte float value

This object sends the brightness value calibrated via the daylight correction.

11.7.2 BR: Alarm

Number	Name	Object function	Data type
66	BR: Alarm	Output	1.005 alarm

If a brightness value is not received within the programmed time, the object sends value = 1.

11.7.3 BR: External brightness 1

Number	Name	Object function	Data type
67	BR: External brightness 1	Input	9.* 2-byte float value

Via this object it is possible to combine an external value from a different brightness sensor with the internal brightness.

11.7.4 BR: Brightness adjustment (daylight)

Number	Name	Object function	Data type
69	BR: Brightness adjustment (daylight)	Input	9.* 2-byte float value

The measured value for daylight is sent to this object during the brightness adjustment.

11.7.5 BR: Brightness adjustment (output 1)

Number	Name	Object function	Data type
70	BR: Brightness adjustment (output 1)	Input	9.* 2-byte float value

The measured value for output 1 (light row 1) is sent to this object during the brightness adjustment.

11.7.6 BR: Brightness adjustment (output 2)

Number	Name	Object function	Data type
71	BR: Brightness adjustment (output 2)	Input	9.* 2-byte float value

The measured value for output 2 (light row 2) is sent to this object during the brightness adjustment.

11.7.7 BR: LED

Number	Name	Object function	Data type
72	BR: LED	Input	1.001 switch

The LED located in the device can be switched on and off via this object (1= switch-on, 0 = switch-off).

12 Notes

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