Sensors

SR53X000

Programming manual

ingenium

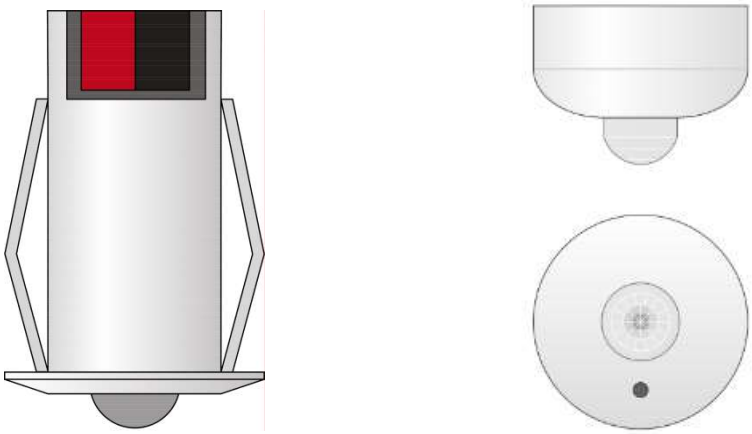
www.besknx.com

Index

1 Description

This sensor is a 2-channel presence sensor with functions to regulate light at a constant value. Presence detection is achieved using a passive infrared sensor which detects any movement in its detection range. In addition, its brightness sensor allows to keep the desired light level in a room taking constant control of the regulators.

It has a high immunity against false alarms, electromagnetic fields and temperature variations. In addition, it allows a large and simple parameterization, especially suitable for light control as well as presence detection and intrusion control. It is recommended to install this kind of detectors inside the house or the building. Installation in places directly exposed to sunlight or airflows must be avoided.

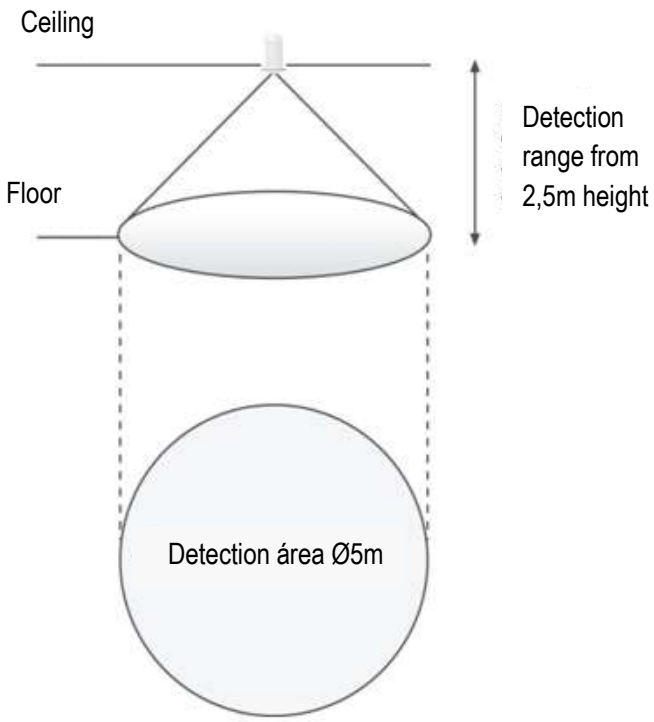


General features:

- 2 presence-detection channels.
- Constant light control depending or non-depending on presence detection.
- Built-in installation and discreet sensor.
- High immunity, passive infrared sensor.
- Relative or absolute regulation of light.
- Temperature sensor for additional measures is included.

2 Technical information

KNX Supply	29Vdc from KNX bus
KNX Current consumption	4mA from KNX bus
Assembly	Assembly in the ceiling (built-in)
Dimensions	SR531000: Ø Built-in: 25mm / Ø Seen: 36mm / Length: 50mm
	SR531000: *Ø44 x 30 mm*
Connections	Connection to KNX bus
Presence detector	Passive infrared sensor with high immunity
Detection range	Ø 5 m at 2.5 m height (see next figure)
Detection channels	2 channels
Light sensor	From 0 to 2550 lux
Temperature sensor	From 0 to 51ºC
Ambient temperature range	Working: -10ºC / 55ºC Stored: -30ºC / 60ºC Transported: -30ºC / 60ºC
Regulations	According to regulations of electromagnetic compatibility and low voltage: EN 50090-2-2 / UNE-EN 61000-6-3:2007 / UNE-EN 61000-6-1:2007 / UNE-EN 61010-1.



3 Programming

3.1 Information of the application program

Catalogue: Ingenium /Siflux-K (Manufacturer / Name).

Catalogue version: v1.0

Maximum number of communication objects: 24.

Maximum number of associations: 28.

3.2 Table of communication objects

Object	Name | Function	Length	DPT	Flags				
				C	R	W	T	U
0	Channel 1 | Movement detection (on/off)	1 bit	1.001	C			T	
1	Channel 1 | Movement detection (value)	1 byte	5.001	C			T	
2	Channel 1 | Movement detection (temperature)	2 bytes	9.001	C			T	
3	Channel 1 | Locked / unlocked	1 bit	1.001	C		W		
4	Channel 1 | Master trigger	1 bit	1.001	C		W		
5	Channel 1 | Remaining time (s)	2 bytes	7.005	C	R			
6	Channel 2 | Movement detection: Bit	1 bit	1.001	C			T	
7	Channel 2 | Movement detection: Byte	1 byte	5.001	C			T	
8	Channel 2 | Movement detection: Temperature	2 bytes	9.001	C			T	
9	Channel 2 | Locked/unlocked channel	1 bit	1.001	C		W		
10	Channel 2 | Master trigger	1 bit	1.001	C		W		
11	Channel 2 | Remaining time (s)	2 bytes	7.005	C	R			
11	Constant light regulation | Measured luminosity/calibrate (lux)	2 bytes	9.004	C	R		T	
12	Constant light regulation | Luminosity setpoint (lux)	2 bytes	9.004	C	R	W		
13	Constant light regulation | Mode: Auto/manual	1 bit	1.001	C		W		
14	Constant light regulation | Mode: Auto/manual status	1 bit	1.001	C	R		T	
15	Constant light regulation | Light regulation on/off	1 bit	1.001	C			T	
16	Constant light regulation | Light regulation (rel) line 1	4 bits	3.007	C			T	
17	Constant light regulation | Light regulation (abs) line 1	1 byte	5.001	C			T	

18	Constant light | Light regulation (abs) line 2	1 byte	5.001	C			T	
19	Constant light | Dimmer value feedback	1 byte	5.001	C		W		
20	Constant light | Manual control on/off line 1	1 bit	1.001	C		W		
21	Constant light | Manual control dimming line 1	4 bit	3.007	C		W		
22	Constant light | Manual control value line 1	1 byte	5.001	C		W		
23	Temperature sensor | Measured temperature	2 bytes	9.001	C	R	W		

3.3 Object description

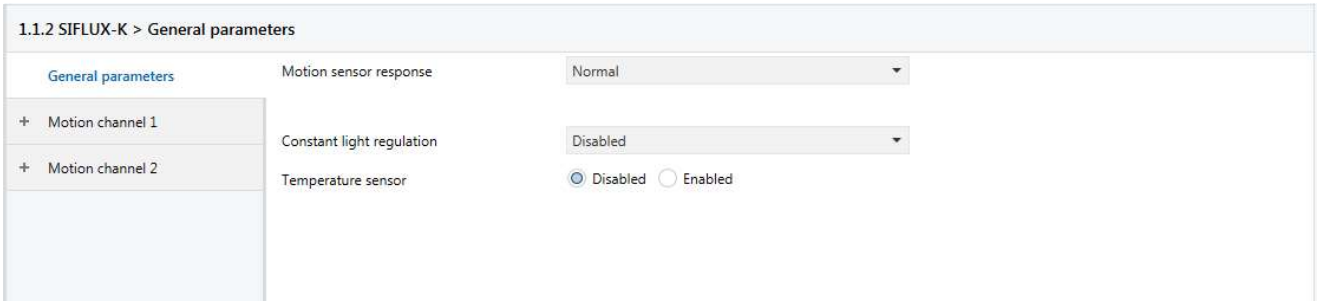
Object	**Object 0/6: Channel X – Motion detection (on/off)**
Function	1 bit communication object for detecting movement in cannel 1
Description	When movement is detected, the sensor is triggered and sends the value stored in the parameter *telegram when motion detection* related to the channel. When the countdown (*channel switch off delay*) ends, the parameter *no motion bit telegram* is sent.
Object	**Object 1/7: Channel X – Motion detection (value)**
Function	1 byte communication object for detecting movement in channel 1
Description	When movement is detected, the sensor is triggered and sends the value stored in the parameter *motion byte telegram* related to the channel. When the countdown (*channel switch off delay*) ends, the parameter *no motion byte telegram* is sent.
Object	**Object 2/8: Chanel X – Movement detection (temperature)**
Function	2 bytes communication object for detecting movement in channel 1
Description	When movement is detected, the sensor is triggered and sends the value stored in the parameter motion temperature telegram related to the channel. When the countdown (channel switch off delay) ends, the parameter no motion temperature telegram is sent.
Object	**Object 3/9: Channel X – locked/unlocked**
Function	1 bit communication object for locking /unlocking a channel
Description	A blocked channel does not detect presence and does not send data using the communication objects of movement detection. Selecting the polarity of the block (blocking with 0 or with 1) is possible using the parameter *lock/unlock polarity* of each channel. It is also possible to send data of end detection when blocking the channel using the parameter *motion telegrams after channel lock*.
Object	**Object 4/10: Channel X – Master trigger**
Function	1 bit communication object for the remote triggering of the sensor (master / slave function)
Description	1 = Force a detection remotely 0 = Force a detection end remotely Used for Master-Slave mode, it allows to emulate a detection without movement being detected. When 1 is sent, the detector is activated remotely, starting the detection event. Slave sensors emulate the master detections: The bit movement detection object of the slave must be linked with this object of the master.

Object	Object 5/11: Channel X – Remaining time (sec.)
Function	2 bytes communication object for the detection event remaining time reading.
Description	The countdown remaining time after detection can be read though this communication object. 0 – 65535 = Reaming time for completion of detection event in seconds.
Object	**Object 11: Measured luminosity (lux)**
Function	2 bytes communication object for brightness measured reading or notification.
Description	Through his object is possible the interpretation or notification of the brightness the sensor is measuring. The value returned in lux. can be sent in dpt 7.013 (2 bytes without sign) or 9.004 (2 bytes floating point) according to the *dpt brightness object* parameter. It is also possible the configuration of the cyclic transmission of the brightness level through the bus with the *cyclically transmission of measured luminosity* parameter.
Object	**Object 12: Luminosity setpoint (lux)**
Function	2 bytes communication object for writing a new brightness level reference.
Description	Through this object, a brightness level reference is established in lux. in the device. The regulation system of the sensor will aim to maintain the brightness level of the room close to this reference by sending to the regulator increasing or decreasing orders to modify its value according to the natural and artificial light contribution at any time.
Object	**Object 13: Auto/Manual mode**
Function	1 bit communication object for establishing the sensor operation mode.
Description	Through this object it is possible the sensor mode establishment. In Auto mode, the sensor works to regulate constantly the brightness level of the room. In Manual mode, the sensor is stopped and the user can regulate the light to his liking. Selecting the object polarity (auto mode with 0 or 1) is possible in function of the *auto/manual polarity* parameter.
Object	**Object 14: Auto/Manual mode status**
Function	1 bit communication object for reading or notifying the sensor operation mode.
Description	Through this object it is possible to read or receive notifications of the current mode of the sensor. The polarity of the object (auto mode with 0 or 1) also depends of the *auto/manual polarity* parameter.
Object	**Object 15: Light regulation (on/off) - Line 1.**
Function	1 bit communication object for the light regulator control.
Description	This object is linked to the on/off object of the dimmer which controls the light of the room. When manual control objects are used, the orders which are received through the object 20 (manual control on/off) are sent through this object as bypass.
Object	**Object 16: Light regulation (relative) - Line 1**
Function	4 bits communication object for the light regulator control.
Description	This object is linked to the dimmer regulation object which controls the light of the room. The sensor regulation system sends automatically regulation values through this object with the step and frequency selected by the *relative type of regulation* parameter. The sensor stops the telegrams transmission when it is switched to manual mode or a 0% to 100% notification is received through the object 19.
Object	**Object 17: Light regulation (absolute) - Line 1**
Function	1 byte communication object for controlling the light regulator of the main line.
Description	This object is linked to the dimmer object value which controls the light of the room. The sensor regulation system sends automatically regulation values through this object with the step and frequency

	selected by *absolute type of regulation* parameter. The sensor stops the telegrams transmission when it is switched to manual mode or once in 0% or 100%.
Object	**Object 18: Light regulation (absolute) - Line 2**
Function	1 byte communication object for controlling the light regulator of the additional line.
Description	This object is linked to the dimmer object value which controls the secondary line of the room. The sensor regulation system sends automatically regulation values through this object with the step and frequency selected by *absolute type of regulation* parameter and with a lower value than the line 1 according to the selected offset in the *luminosity offset in line 2* parameter.
Object	**Object 19: Dimmer value feedback**
Function	1 byte communication object for the reception of light regulator notifications.
Description	This object is linked to the dimmer condition object which controls the light of the room to enable the sensor regulation system to know the condition of this. In the absolute regulation mode, the value received through this object can be used as regulation starting point (see *transition from manual to auto*) parameter. Furthermore, it is used in order to stop the transmission of telegrams when a 0% or 100% notification is received.
Object	**Object 20: Manual control on/off - Line 1**
Function	1 bit communication object for writing orders manually.
Description	This object is linked to the on/off object of any other element of the system from which the light of the room is controlled, for example, by a pushbutton. The manual control objects are used as bypass, in other words, when any value is written in this object, the sensor switches to manual mode, automatic light regulation stops and the value received through the output object (Object 15) is sent.
Object	**Object 21: Manual control dimming - Line 1**
Function	4 bits communication object for writing orders manually in the sensor.
Description	This object is linked to the communication object of any other element of the system from which the light of the room is controlled, for example, by a pushbutton. The manual control objects are used as bypass, in other words, when any value is written in this object, the sensor switches to manual mode, automatic light regulation stops and the value received through the output object (Object 16) is sent.
Object	**Object 22: Manual control value - Line 1**
Function	1 byte communication object for writing orders manually in the sensor.
Description	This object is linked to the communication object of any other element of the system from which the light of the room is controlled, for example, by a pushbutton. The manual control objects are used as bypass, in other words, when any value is written in this object, the sensor switches to manual mode, automatic light regulation stops and the value received through the output object (Object 17) is sent.
Object	**Object 23: Measured temperature**
Function	2 bytes communication object for the reading or notification of the temperature of the room.
Description	Through this object is possible to read or notify the temperature the sensor is measuring. It is possible to configure the transmission of the temperature value cyclically through the bus or by change in the *transmission of measured temperature* parameter.

3.4 Parameters

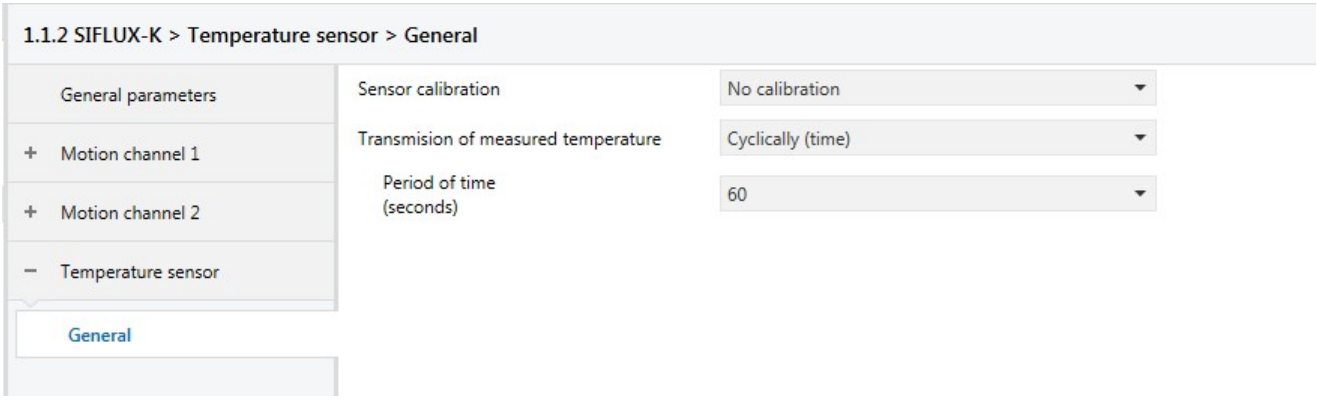
3.4.1 General Parameters



Parameter	Motion sensor response
Values	Sensitive, normal, hard o custom (see 3.5 Advanced configuration page. 19).
Description	This are the detection softening of the presence sensor. It is the value which represents the detected movement persistence. With a sensitive value, the minimal movement generates a detection whereas with a hard value the movement have to be more continuous. Recommended values depending on the use: - Movement detection (for example: turn on a light): normal. - Intrusion detection: hard.
Parameter	**Constant light regulation**
Values	Disabled, movement independent, triggered by motion, triggered by motion (only channel 1) or triggered by motion (only channel 2).
Description	This parameter allows to enable/disenable the continuous regulation channel. If the sensor is disenabled, it can work as a conventional 2 channels sensor. If this parameter is configured as independent from the movement, the continuous brightness regulation system is always operational and must be externally controlled by change auto/manual mode functions. If regulation is established as shot by channel X movement, the sensor starts with the detection and finish once the time of *channel switch of delay* parameter expired for the selected channel (must be disenabled). If it is established as shot by movement, it starts with the detection for any of both channels.
Parameter	**Temperature sensor**
Values	Enabled or disenabled.
Description	This parameter allows to enable/disenable the additional temperature sensor which the device incorporates. It is possible to use this sensor as additional measuring probe for any climate control system.

3.4.2 Temperature sensor

Available parameters in the *temperature sensor* are detailed below (it must have been enabled previously in the general *parameters* menu).

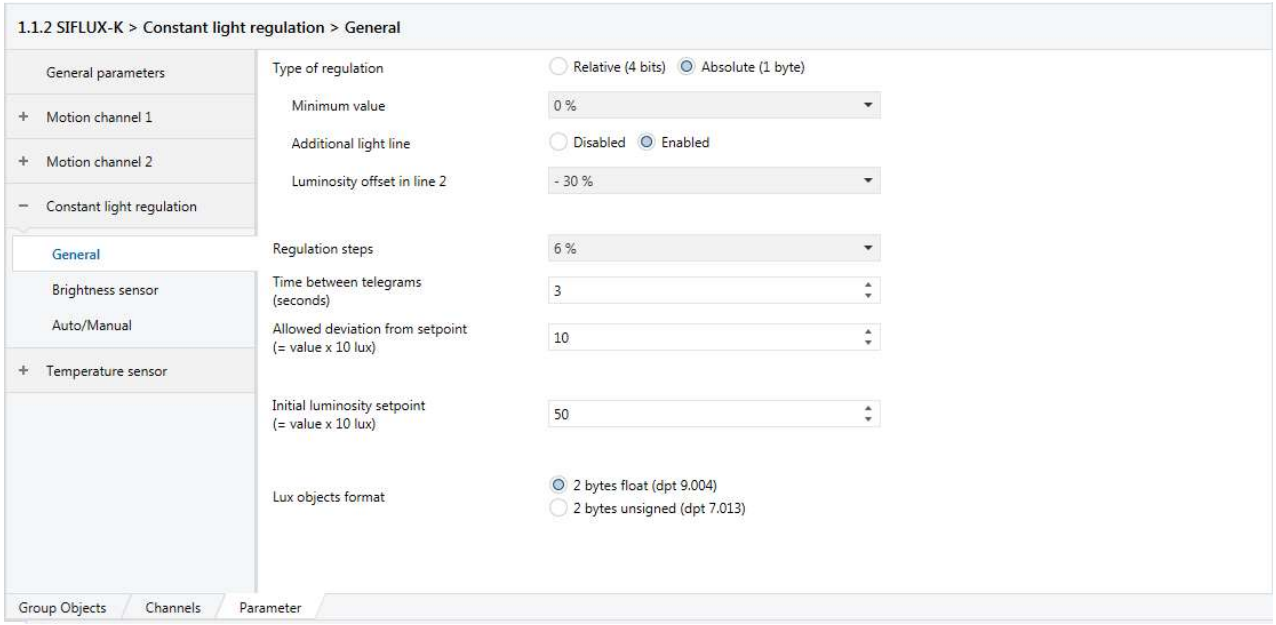


Parameter	Sensor calibration
Values	From -5ºC to +5ºC.
Description	This parameter allows to correct the measure of the sensor if necessary. The selected value is added or subtracted from the current measure of the sensor, which can be tested by *Object 23: Measured temperature.*
Parameter	**Transmission of measured temperature**
Values	Read only, cyclically (time), by change (ºC) or both (ºC y time).
Description	This parameter is used to configure the frequency with which temperature notifications are sent through *Object 23: Measured temperature.*
Parameter	**Period of time (seconds)**
Values	From 5 to 80.
Description	If *transmission of measured temperature* is established *cyclically* or *both*, this additional parameter allows to define the notification transmission period in seconds.
Parameter	**Minimum change**
Values	From 0, 2 to 3, 2ºC.
Description	If *transmission of measured temperature* is established as *by change (ºC)* or *both*, this additional parameter allows to define the minimal temperature change necessary to send a notification. When sending a minimal change notification, the periodical transmission countdown resets.

3.4.3 Constant light regulation

The constant brightness regulation channel setting is explained in the sections below.

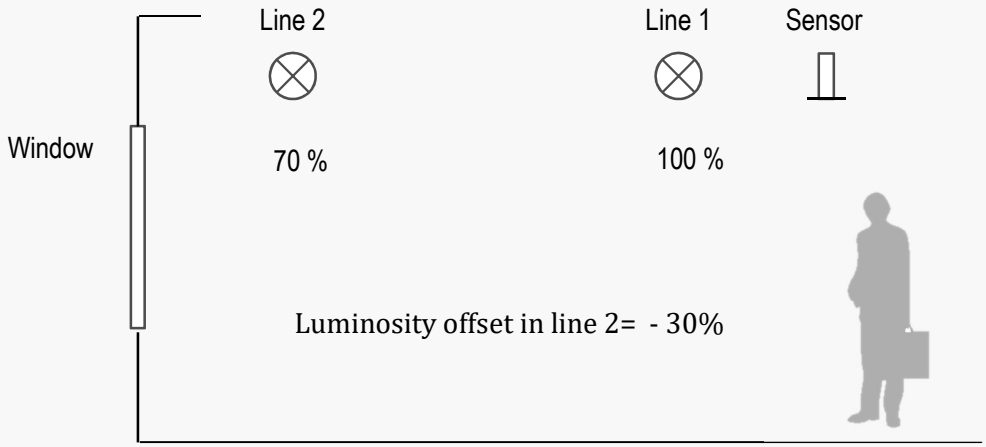
3.4.3.1 GENERAL



Parameter	Type of regulation
Values	Absolute (1 byte) or Relative (4 bits).
Description	Absolute: Constant brightness regulation through objects 17 and 18. The sensor sends values from 0 to 100% to the dimmer which controls the light of the room. Relative: Constant brightness regulation through object 16. The sensor sends values of relative increases and decrease (1%, 3% or 6%) to the dimmer which controls the light of the room.

Parameter	Minimum value
Values	From 0% to 50%.
Description	In *absolute type of regulation*, this parameter define the minimum value of regulation which is sent to Line 1 which controls the light of the room. In this way, it is possible to maintain the light on, even though it is in auto mode and though the brightness is sufficient.

Parameter	Additional light line
Values	Enabled / disabled.
Description	This parameter allows to use an additional absolute regulation object to control a second line of light in the room. The additional line (or line 2) is in a closer position to the window so its influence in the brightness of the room have to be lower due to the higher amount of natural light in its area.

Parameter	Luminosity offset in line 2
Values	Without any change, from - 10% to - 50%
Description	If *Additional light line* is established as *enabled*, this parameter allows define the offset of line 2, in other words, the value which is subtracted from the output calculated value of brightness for the line 1. If this parameter is established as *no change*, line 2 is regulated with the same brightness than line 1. In the following image, it is represented an example with two light lines. If the sensor has a higher set point than the brightness measured in the point where the device is located, it will send regulation orders until line 1 reaches 100% to compensate. With a 30% offset programmed for the line 2, this will reach 70%, which is a sufficient value due to the natural light spilling through the window: 

Parameters	Regulation steps
Values	1%, 3% or 6%
Description	*Regulation steps* parameter together with *time between telegrams* one define the brightness regulation. A minor regulation step enables a most precise control but slower, because a higher time to reach the desired brightness level is required. A higher regulation step allows to reach the desired value before but in a less approximate manner. For brightness regulation, it is also taken into account *allowed deviation from set point* parameter. If this parameter is small and the regulation step is big, sensor could be unable to control the light in a properly manner.

Parameter	Time between telegrams (seconds)
Values	From 1 to 255
Description	This parameter defines the time between the sending of a regulation step and the next. A lower time between telegrams enables a more precise control of the brightness, however, a higher value decreases the amount of telegrams through the bus.

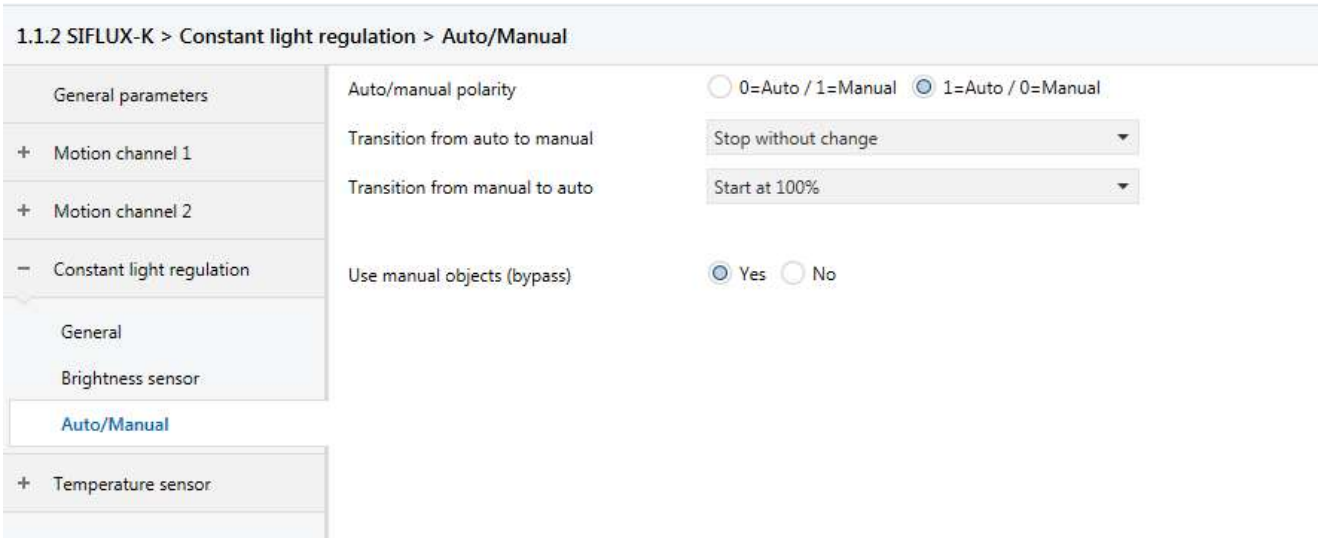
Parameter	Initial luminosity set point
Values	From 0 to 255 (lux = value x 10)
Description	This parameter defines the initial brightness set point once the sensor is programmed. The established value increased tenfold is the brightness level in lux.
Parameter	**Allowed deviation from set point**
Values	From 1 to 50 (lux = value x 10)
Description	This parameter defines the maximum deviation which is allowed between brightness set point and brightness the sensor is measuring. If deviation is higher than this value, the sensor will send regulation orders to the dimmer in order to increase or decrease the light level.
Parameter	**Lux objects dpt**
Values	9.004 (2 bytes floating point) or 7.013 (2 unsigned bytes)
Description	This parameter defines the format of the values which are written or read in the *measured luminosity (11)* and *luminosity setpoint (12)* communication objects.

3.4.3.2 BRIGHTNESS SENSOR

Parameter	Luminosity calibration
Values	From – 128 to 127 (+/- value x 10 lux)
Description	This parameter allows to correct the sensor brightness measure if necessary. The value in lux is the established parameter increased tenfold which is added or subtracted from the current sensor measuring, that which is verifiable through *object 11 Brightness measured.*

Parameter	Allow overwrite calibration through object
Values	Yes/No
Description	This parameters allows to calibrate the sensor through a communication object.
Parameter	**Transmission of measures luminosity**
Values	Read only, cyclically (time), by change (ºC) or both (ºC y time).
Description	This parameter is used to configure the frequency which brightness notifications are sent through *object 11 Brightness measured.*
Parameter	**Period of time (seconds)**
Values	From 1 to 255.
Description	If *transmission of measures luminosity* parameter is established as *cyclically* or *both*, this additional parameter allows to define the feedback sending period in seconds.
Parameter	**Minimum change**
Values	From 10 to 500 lux.
Description	If *transmission of measured luminosity* parameter is established as *by change (lux)* or *both*, this additional parameter allows to define the minimum change in lux needed to send a notification. When sending a notification by minimal change, periodical sending countdown resets.

3.4.3.3 AUTO / MANUAL

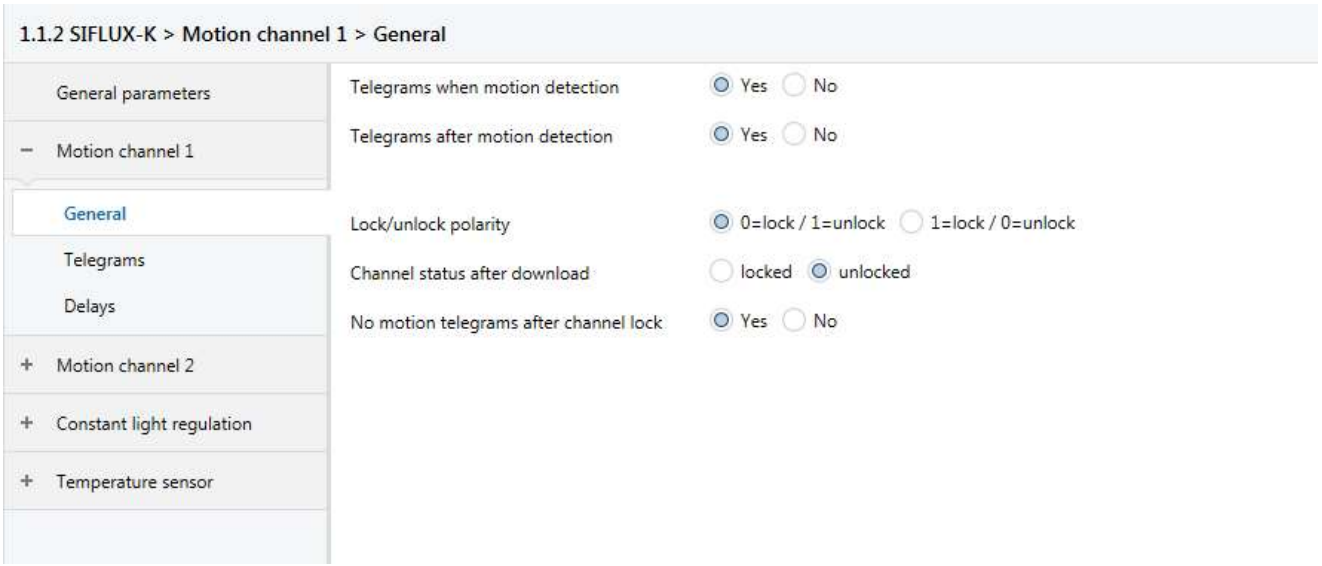


Parameter	Auto/manual polarity
Values	1=Auto / 0=Manual or 0=Auto / 1=Manual
Description	This parameter defines the objects behaviour in order to establish and notify the auto/manual mode (objects 13 and 14).
Parameter	**Transition from auto to manual**
Values	Stop without change, stop with 0%, stop with 100%.
Description	This parameter is used to define the sensor behaviour when switching from auto to manual mode through object 13. In auto mode, the sensor regulates the brightness to maintain the measure close to set point. In manual mode, regulation stops in order that the user can regulate the light to his liking. IF this parameter is defined as *stop without change*, when switching to manual mode, auto regulation stops without sending any other value, remaining the dimmer in the last regulation value it had. If this parameter defines as *stop with 0%*, when switching to manual mode, auto regulation stops, sending to the dimmer a value of 0%.
Parameter	**Transition from manual to auto**
Values	Start in the last value, start in 100%, start in 0%.
Description	This parameter is used to define the sensor behaviour when switching from manual to auto mode through the object 13. If this parameter is defined as *start at 100%*, when switching to manual mode, dimmer turns on in 100% and auto regulation resumes from that point. If this parameter is defined as *start at last value*, when switching to auto mode, regulation resumes from the last value which was sent. While the sensor is in manual mode, if it receives a value through object 19 *Dimmer value feedback*, when switching to auto mode, regulation resumes from this value.
Parameter	**Use manual objects (bypass)**
Values	Yes / No
Description	Manual control objects are linked to other KNX system elements from which the light of the room is desired to be control as well, for example, from pushbuttons. This objects are used as bypass mode, in other words, when writing any value in them, the sensor switches to manual mode, regulations stops automatically and the value received through the output objects is sent as appropriate.

3.4.4 Motion channel 1/2

Sensor behaviour configuration when a movement detection is produced and when this finishes, is explained in sections below. The operating mode and the programming of both channels are done in the same manner and they have similar parameters which will be explained below.

3.4.4.1 GENERAL



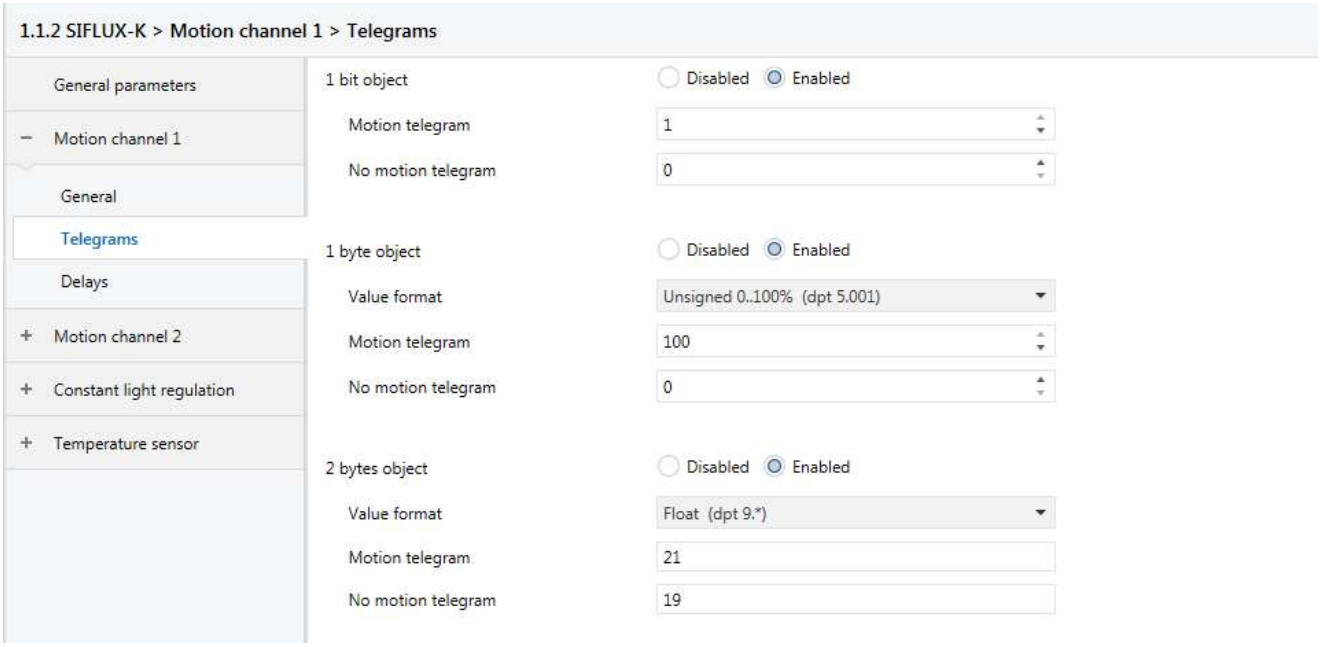
Parameter	Telegrams when motion detection
Values	Yes / No
Description	This parameter defines the behaviour of the 3 movement detection objects of the channel. A *Yes* value means that when detecting a movement the sensor sends detection telegrams through objects 0, 1 and 2 for the channel 1 and objects 6, 7 and 8 for the channel 2. A *No* value Values sent by these objects can be defined in the *Telegrams* menu.

Parameter	Telegrams after motion detection
Values	Yes / No
Description	In a similar manner as described in the section above, this parameter defines the behaviour of the 3 movement detection objects of the channel on expired the *channel switch off delay* (see *Delays* menu). A *Si* value means that when time to finish detection is passed, the sensor sends finished-detection telegrams through objects 0, 1 and 2 for channel 1 and objects 6, 7 and 8 for channel 2. A *No* value means that telegrams are nor sent when this time is passed without any movement. Values which are sent through these objects can be define in the *Telegrams* menu.

Parameter	Lock/Unlock polarity
Values	0 = lock / 1 = unlock or 1 = lock / 0 = unlock
Description	This parameter defines the behaviour of the lock channel object (object 3 or 9), in other words, if lock with 0 or 1. A locked channel does not detect presence and it does not send data through movement detection objects.

Parameter	Channel status after download
Values	Lock / Unlock
Description	This parameter defines the behaviour of the lock channel object (object 3 or 9), in other words, if lock with 0 or 1. A locked channel does not detect presence and it does not send data through movement detection objects.
Parameter	**No motion telegrams after channel lock**
Values	Yes / No
Description	This parameter defines the behaviour of the 3 movement detection objects of the cannel when this is locked. A *Yes* value means that when channel is locked, the sensor sends finished-detection telegrams. With a *No* value, when channel is locked, the sensor sends nothing.

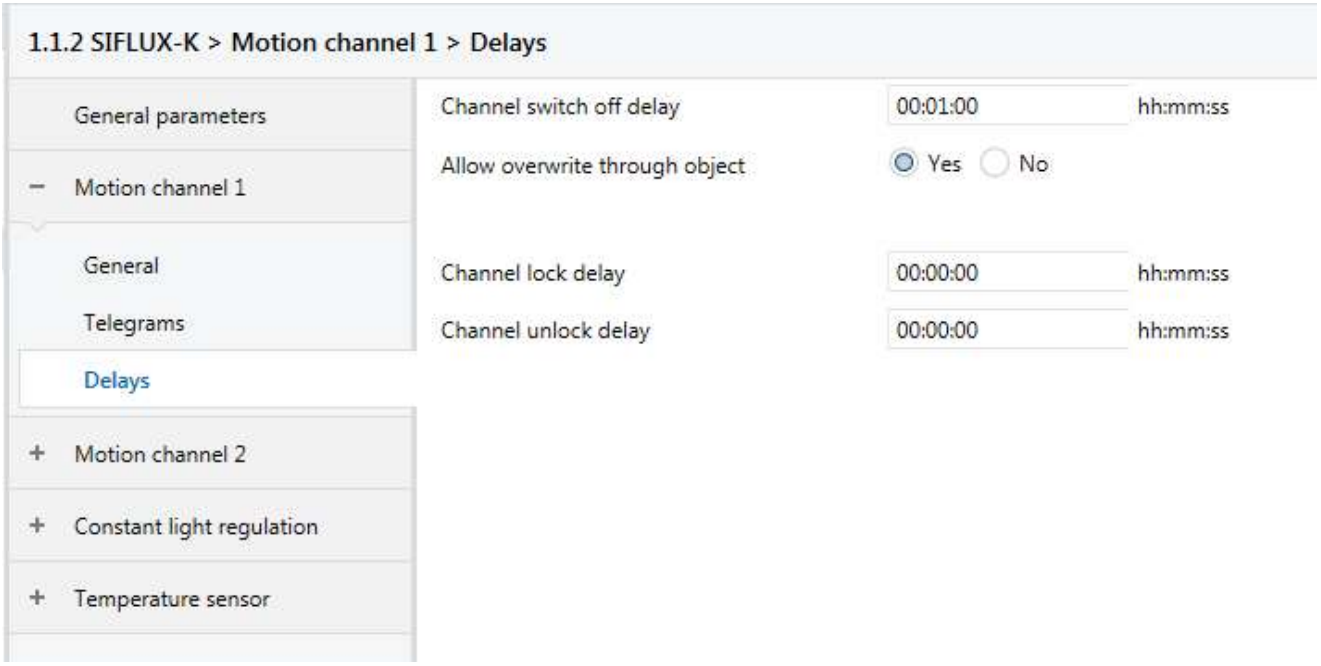
3.4.4.2 TELEGRAMS



Parameter	Motion channel 1 / 2 - Motion bit telegram
Values	From 0 to 1
Description	Value sent through object 0/6 (DPT1.00X) when movement is detected.
Parameter	**Motion channel 1 / 2 - No motion bit telegram**
Values	From 0 to 1
Description	Value sent through object 0/6 (DPT1.00X) if there have been no movement when *channel switch off delay* passed.

Parameter	Value format
Values	Unsigned 1..100%. unsigned 0..255, signed
Description	With this parameter you can change the value format.
Parameter	**Motion byte telegram**
Values	From 0 to 100,0 to 255, -128…127, depending on the value format selected.
Description	Unsigned 1..100%: from 0 to 100 value sent through DPT 5.001 when movement is detected. Unsigned 1..255: from 0 to 255 value sent through DPT 5.010 when movement is detected. Signed: from -128 to 127 value sent through DPT 6.* when movement is detected.
Parameter	**Motion channel 1 / 2 - No motion byte telegram**
Values	From 0 to 100,0 to 255, -128…127, depending on the value format selected.
Description	Unsigned 1..100%: from 0 to 100 value sent through DPT 5.001 if there have been no movement when *channel switch off delay* passed. Unsigned 1..255: from 0 to 255 value sent through DPT 5.010 if there have been no movement when *channel switch off delay* passed. Signed: from -128 to 127 value sent through DPT 6.* if there have been no movement when *channel switch off delay* passed.
Parameter	**Motion channel 1 / 2 - Motion 2 byte telegram**
Values	From 0 to 65535, -32768 to 32767, -629145 to -629145, depending on the value format selected.
Description	Unsigned 1..100%: From 0 to 65535 value sent through DPT 7.* when movement is detected. Signed 1..255: -32768 to 32767value sent through DPT 8.* when movement is detected. Float: -629145 to -629145 value sent through DPT 9.* when movement is detected.
Parameter	**Channel 1 / 2 - No motion 2 byte telegram**
Values	From 0 to 65535, -32768 to 32767, -629145 to -629145, depending on the value format selected.
Description	Unsigned 1..100%: from 0 to 100 value sent through DPT 5.001 if there have been no movement when *channel switch off delay* passed. Unsigned 1..255: from 0 to 255 value sent through DPT 5.010 if there have been no movement when *channel switch off delay* passed. Signed: from -128 to 127 value sent through DPT 6.* if there have been no movement when *channel switch off delay* passed.

3.4.4.3 DELAYS



Parameter	Channel 1 / 2 - Channel switch off delay
Values	From 0:0:0 to 18:12:15
Description	This parameter is the time between the last movement detection and the transmission of the deactivation event. In light control, *channel switch off delay* determines how much time the light remains turned on after a movement detection. With each movement, sensor is retriggered and countdown resets again, therefore light remains turned on permanently until a new movement during *channel switch off delay.*

Parameter	Allow overwrite through object
Values	Yes/No
Description	Modify channel switch off delay value through its communication object.

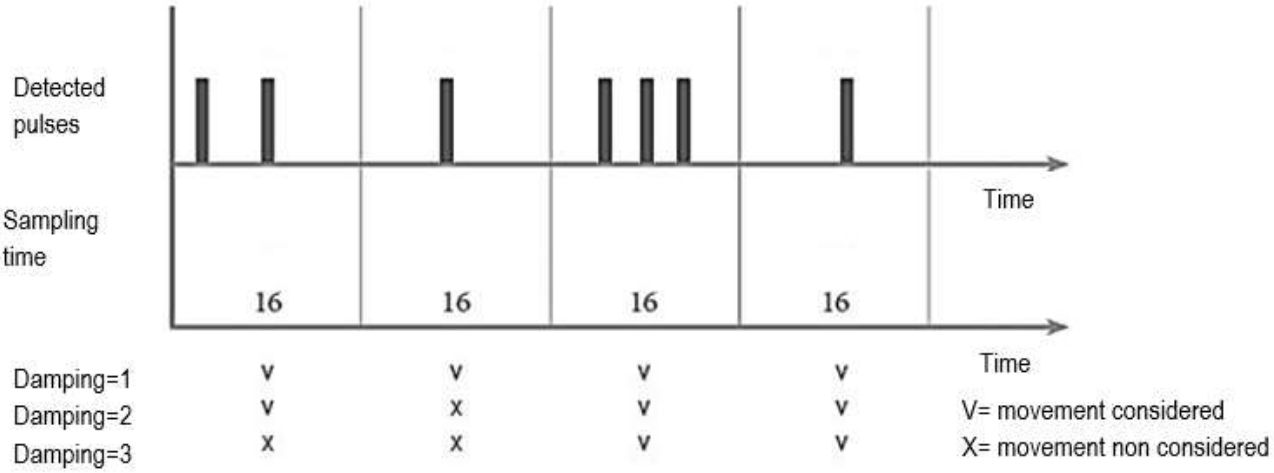
Parameter	Channel 1 / 2 - Channel lock delay
Values	From 0:0:0 to 18:12:15
Description	When the sensor channel is locked, it continues to detect movement until that delay time passes.

Parameter	Channel 1 / 2 - Channel unlock delay
Values	From 0:0:0 to 18:12:15
Description	When the sensor channel is unlocked, it continues not to detect movement until that delay time passes.

1.1 Advanced configuration: Smoothing

This presence sensor is permanently sending infrared signals. The detection movement is based on the change of any body, material or object causes in reflected infrared signals. This signals are processed and considered as 'movement detection' according to the parameters.

The behaviour, depending on the configured parameters, is shown in the figure below:



Any movement which generates an amount of pulses higher than the damping factor, during a sampling time, is considered "movement detection" by the sensor. For the same sampling time, increasing the damping, the movement should be faster and wider to generate a detection as the need of more pulses. Furthermore, a lower damping allows shorter and slower movements to be detected as well.

4 Examples of implementation

4.1 Independent control from movement with timer shutdown

4.1.1 Devices

Ref. SR53000: constant brightness control presence sensor.

Ref. DM470140: Universal dimmer actuator with 1000W 1 channel.

Ref. CT454000: 4 channel binary module.

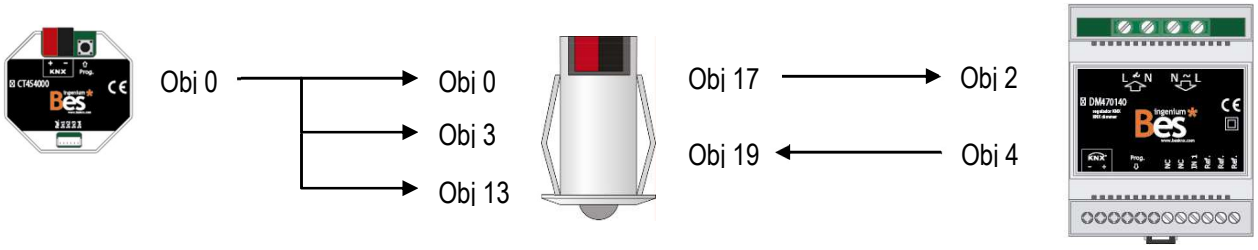
4.1.2 Description

The light of the room is connected to a 1000W universal dimmer and controlled by the constant brightness control presence sensor and a pushbutton.

The sensor does not turn up the light by movement but it is the user who decide to turn on through a pushbutton. When the light is turned on, the sensor starts to regulate the brightness automatically. One minute after not detecting any presence in the room, the light turns off automatically and the sensor stops the brightness regulation until the pushbutton is actuated again.

4.1.3 Objects links

Ref. 454000 –	Obj. 0: Input 01	->	Obj. 0: Motion detection	– Ref. 53000
Ref. 454000 –	Obj. 0: Input 01	->	Obj. 3: Lock/Unlock	– Ref. 53000
Ref. 454000 –	Obj. 0: Input 01	->	Obj. 13: Auto/manual	– Ref. 53000
Ref. 53000–	Obj. 17: Light Regulation	->	Obj. 2: Value	– Ref. 470140
Ref. 53000–	Obj. 19: Dimmer value feed.	->	Obj. 4: State Value	– Ref. 470140



4.1.4 Parameters configuration

The following parameters adjustments are the recommended for this example from the default configuration. The ideal configuration could change depending on the application or installation.

Menu	Parameter	Configuration
General parameters	Constant brightness regulation	Movement independent
Regulation - Auto/manual	Transition from auto to manual	Stop with 0%
Channel 1 - General	Telegrams when motion detection	No
	Telegrams after motion detection	No
Channel 1 – Delays	Channel switch off delay	60 seconds

The brightness set point can be adjusted with the parameter or linking a group address to the corresponding object in order to adjust it with a bus telegram.

4.2 Day/Night mode in an office

4.2.1 Devices

Ref. DS530000: constant brightness control presence sensor.

Ref. 470140: Universal dimmer actuator with 1000W 1 channel.

Time control module KNX.

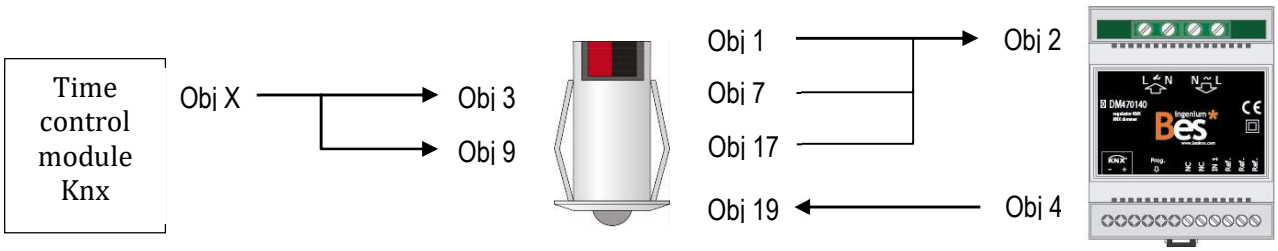
4.2.2 Description

The light of the room is connected to a 1000W universal dimmer and controlled by the constant brightness control sensor.

During the work time, the sensor turns on the light by presence and regulates it constantly according to the brightness. After one minute without detecting any presence, it regulates the light to a 10% value in order not to turn off completely the luminaire. During the night, it works in a similar manner but when the detection finishes, it turns off completely sending a 0%.

4.2.3 Object links

Time control module KNX –	Obj. X: day=1 / night=0	->	Obj. 3: Lock=0 / Unlock=1	– Ref. 53000
Time control module KNX –	Obj. X: day=1 / night=0	->	Obj. 9: Lock=1 / Unlock=0	– Ref. 53000
Ref. 53000 –	Obj. 1: Motion detection	->	Obj. 2: Value	– Ref. 470140
Ref. 53000 –	Obj. 7: Motion detection	->	Obj. 2: Value	– Ref.470140
Ref. 53000 –	Obj. 17: Light regulation Line1	- >	Obj. 2: Value	– Ref. 470140
Ref. DS530000-K –	Obj. 19: Dimmer value feedback	->	Obj. 4: State value	– Ref. RK1000



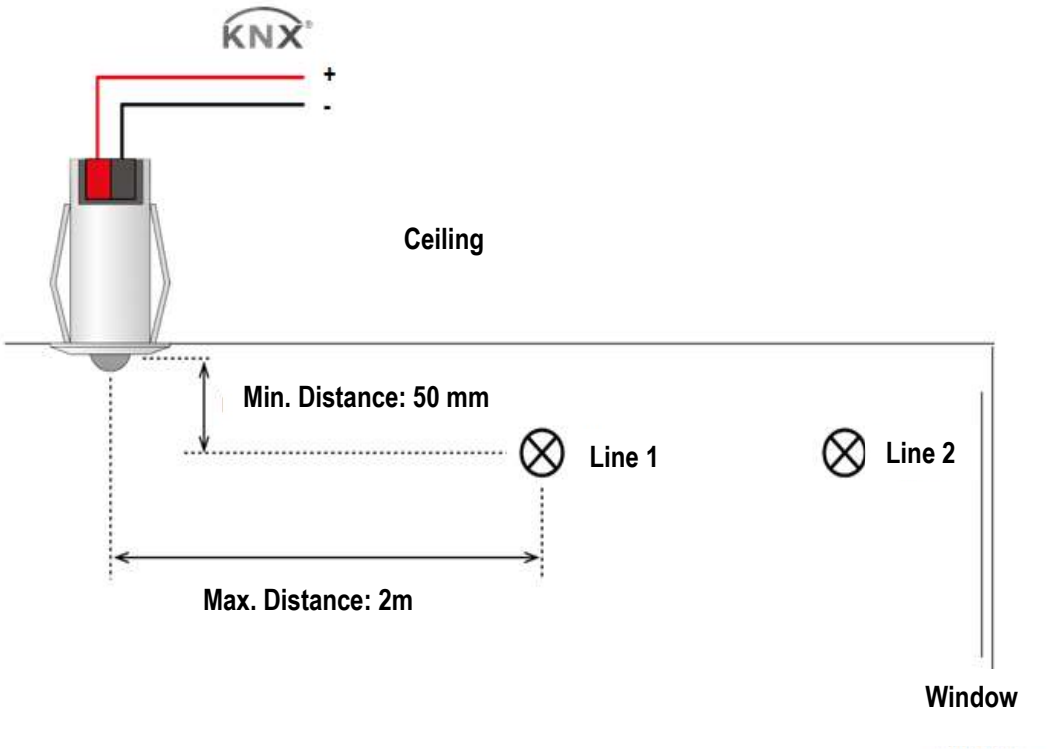
4.2.4 Parameters configuration

The following parameters adjustments are the recommended for this example from the default configuration. The ideal configuration could change depending on the application or installation.

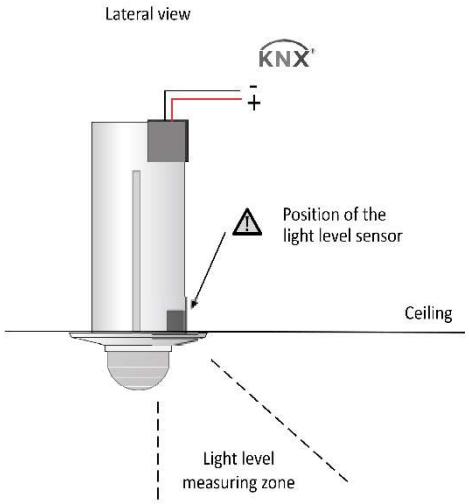
Menu	**Parameter**	**Configuration**
General parameters	Constant brightness regulation	Triggered by movement
Regulation- Auto/manual	Transition from auto to manual	Stop with 0%
Channel 1 - General	Telegrams after motion detection	No
Channel 1 - Telegrams	No motion byte telegram	25 (=10%)
Channel 1 - Times	Channel switch off delay	60 seconds
Channel 2 - General	Lock/Unlock polarity Telegrams after motion detection	1=lock / 0=unlock No
Channel 1 - Times	Channel switch off detection	60 seconds

5 Installation

Installation for two lines control:



Focus the sensor for brightness measurement:



Feed low-voltage lines (bus and inputs) in separated conduits from the main feed (230Vac) and the outputs in order to ensure that they are isolated enough and avoid interferences.

Do not connect the main feed (230Vac) or any other external voltage to neither any other point of the bus nor device inputs.

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