

Application description
Presence Detector **pirios 360P KL KNX**
44360.P.O.KL.KNX / 44360.P.X.KL.KNX

10.KNX360PKL-E.1203



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1 General

This document describes the functions of the **pirios 360P KL KNX** and assists in selecting the correct parameter settings.



pirios 360P KL KNX presence detector
Application: pirios 360PKL/basic V1.0

The **pirios 360P KL KNX presence detector** is used for movement- and brightness-dependent light switching and control. It detects sitting people (small movements) in offices, school rooms and toilets, to name but a few applications.

Additional functions such as HVAC control, the twilight switch and the message function allow a broad range of applications.

In addition to its stand-alone use as master, the pirios KNX can be employed flexibly in groups. This allows applications such as master/slave, zone and brightness groups to be implemented.

1.1 Technical data

Environmental conditions

- Protection class (IEC 60529) IP20, dry installation
- Ambient temperature: Operation: -5 °C to +45 °C
Storage: -25 °C to +70 °C

Detection zone 360°

Installation height Recommended 2.5 m

Switching criteria Movement and brightness (configurable)

KNX power supply

- Voltage: 24 V DC (21–30 V DC SELV)
- Connection KNX bus terminal

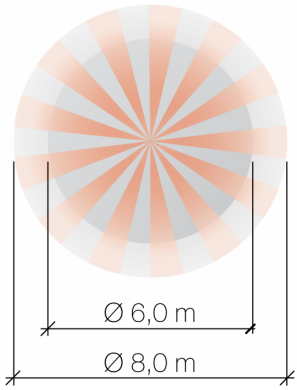
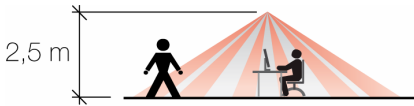
Power input 240 mW max.

Front-to-back depth 22 mm

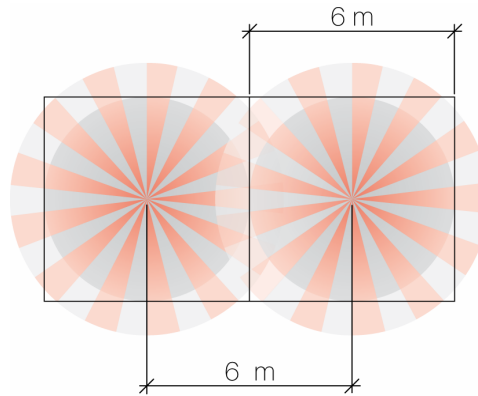
WARNING: The pirios KNX range of devices may only be used in KNX systems and are only for interior use (IP20).

Note: Additional installation information can be found in the installation instructions.

1.2 pirios 360P KL KNX detection zone



pirios 360P KL KNX detection zone



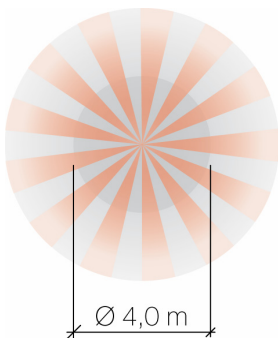
Use of more than one presence detector

The recommended installation height is 2.5 m. If this height is adhered to, empiricism indicates that a detection zone with a diameter of 6 m for seated persons and 8 m for walking persons is covered.

Installation height	Detection zone		
	Presence	Movement	With reduction
2.0 m	Dia. 5.0 m	Dia. 7.0 m	Dia. 3.2 m
2.5 m	Dia. 6.0 m	Dia. 8.0 m	Dia. 4.0 m
3.0 m	Dia. 7.0 m	Dia. 10.0 m	Dia. 4.8 m

A greater installation height increases the detection zone. For lesser installation heights, smaller movements can be detected.

The reduction (44360.SET) is used to reduce detection to the zone in which persons should be detected. This prevents movements being detected outside of the required zone. Example: Through the open door, the presence detector installed in an office detects persons walking in a corridor.



Detection zone with reduction

2 The piriOS 360PKL/basic application

2.1 Overview

Number of communications objects: 39
Max. number of group addresses + allocations: 500
 (dynamic table management)

A special software package is required (KNX Tool Software ETS Version 3 or higher) for planning, commissioning and diagnostics of a KNX system. This allows the application program and its parameters, as well as the addresses, to be selected or generated and loaded into the device.

The product database required by the piriOS 360PKL KNX is available at www.feller.ch. The KNX mark is your guarantee that products from different manufacturers can communicate with each other and that the commands issued by products from different manufacturers will be understood in the same way (command compatibility).

Note: The piriOS 360PKL/basic V1.0 application is only compatible with the piriOS 360PKL KNX presence detector.

2.2 Communications objects

No.	Object name	Function	Type	DPT	Flags			
					R	W	T	A
0	Light 1 output	On/off, switch	1 bit	1.001		x	x	x
Object 0 sends ON or OFF telegrams to switch a light group as a function of movement and brightness. Object 0 is visible for the following parameter settings: Light 1,2 outputs: Light outputs function = <i>switch (1 bit) or constant light control</i>								
					R	W	T	A
1	Light 1 output	Lighter/darker, dim	4 bit	3.007		x	x	x
2	Light 1 output	Value, send	1 byte	5.001		x	x	x
3	Light 1 output	Value feedback, receive	1 byte	5.001		x	x	x
Objects 1-3 are used for constant light control. Objects 1-3 are visible for the following parameter settings: Light 1,2 outputs: Light outputs function = <i>constant light control</i> The prerequisite for correct constant light control functioning is the linking of objects 0-3.								
					R	W	T	A
4	Light 1 output	Scene, send	8 bit	18.001			x	x
Object 4 sends scene telegrams to initiate a scene as a function of movement and brightness. Object 4 is visible for the following parameter settings: Light 1,2 outputs: Light outputs function = <i>send scene (8 bit)</i>								

No.	Object name	Function	Type	DPT	Flags			
					R	W	T	A
15	Light 2 output	Lighter/darker, dim	4 bit	3.007		x	x	x
16	Light 2 output	Value, send	1 byte	5.001		x	x	x
17	Light 2 output	Value feedback, receive	1 byte	5.001		x	x	x
<p>Objects 15-17 are used for constant light control if an additional light group needs to be controlled parallel to light 1 output.</p> <p>Objects 15-17 are visible for the following parameter settings: Light 1,2 outputs: Light outputs function = <i>constant light control</i> Light 1,2 outputs: Light 2 output = <i>active</i></p> <p>The prerequisite for correct 2-channel constant light control functioning is the linking of objects 14-17.</p>								
					R	W	T	A
18	Light 2 output	Scene, send	8 bit	18.001			x	x
<p>Object 18 sends scene telegrams in order to initiate an additional scene as a function of movement and brightness, in addition to light 1 output.</p> <p>Object 18 is visible for the following parameter settings: Light 1,2 outputs: Light outputs function = <i>send scene (8 bit)</i> Light 1,2 outputs: Light 2 output = <i>active</i></p>								
					R	W	T	A
19	Light 2 output, Light demand status	Status, send	1 bit	1.002			x	x
<p>Object 19 sends a TRUE telegram if the light 2 output requires light, i.e. if the brightness threshold for light 2 output is fallen short of. Object 19 sends a FALSE telegram if the light 2 output does not requires light, i.e. if the brightness threshold for light 2 output is exceeded.</p> <p>Object 19 is visible for the following parameter settings: Light 1,2 outputs: Light outputs function = <i>switch (1 bit) or send scene (8 bit)</i> Light 1,2 outputs: Light 2 output = <i>active</i></p>								
					R	W	T	A
25	Light 2 output, Remote brightness difference	Value, define	8 bit	6.001	x	x		x
<p>If object 25 receives a percentage telegram, the sent percentage value is adopted as the brightness difference. The brightness difference defines the brightness threshold for the light 2 output as a function of the brightness threshold for the light 1 output.</p> <p>Object 25 is visible for the following parameter settings: Light 1,2 outputs: Light 2 output = <i>active</i> Light 2 output: Brightness difference – Configure via bus = <i>active</i></p>								
					R	W	T	A
26	Light 1,2 outputs, External pushbutton	On/off, switch	1 bit	1.001		x	x	x
<p>If object 26 receives an ON or OFF telegram, the outputs behave in accordance with the configured pushbutton behaviour. Light output status changes are forwarded to the external pushbutton object.</p> <p>Object 26 is visible for the following parameter settings: Light 1,2 pushbutton functionality: separate, external pushbutton object = <i>active</i></p>								

No.	Object name	Function	Type	DPT	Flags			
					R	W	T	A
32	Light 1,2 outputs, Constant light control status	Status, view	1 bit	1.002			x	x
<p>Object 32 sends a TRUE telegram if Light 1,2 outputs are in controlled mode. Object 32 sends a FALSE telegram if Light 1,2 outputs are not in controlled mode. Light 1,2 outputs are no longer in controlled mode if they are on manual override, for example.</p> <p>Object 32 is visible for the following parameter settings: Light 1,2 outputs: Light output function = <i>constant light control</i></p>								
					R	W	T	A
33	Light 1,2 outputs, Walk test	On/off, receive	1 bit	1.001		x		x
<p>If object 33 receives an ON telegram, the operating walk test is activated. If object 33 receives an OFF telegram, the operating walk test is deactivated.</p> <p>Object 33 is visible for the following parameter settings: General: Walk test during operating = <i>active</i></p>								
					R	W	T	A
34	Light 1,2 outputs, Teach-in	On/off, receive	1 bit	1.001		x		x
<p>If object 34 receives an ON telegram, the teach-in mode is activated. If the teach-in mode is activated and object 34 receives an additional ON telegram, the currently measured brightness is adopted as the brightness threshold. If object 34 receives an OFF telegram the teach-in mode is deactivated.</p> <p>Object 34 is visible for the following parameter settings: Light 1,2 outputs: Teach-in = <i>active</i></p>								
					R	W	T	A
40	Light 1,2 outputs, Remote switch-off delay	Value, define	2 bytes	7.005	x	x		x
<p>If object 40 receives a time value telegram the sent time value is adopted as the new switch-off delay.</p> <p>Object 40 is visible for the following parameter settings: Light 1,2 outputs: Switch-off delay – Configure via bus = <i>yes</i></p>								
					R	W	T	A
41	HVAC output	On/off, switch	1 bit	1.001		x	x	x
<p>Object 41 sends entirely movement-dependent ON or OFF telegrams to switch a load.</p> <p>Object 41 is visible for the following parameter settings: General: HVAC output = <i>active</i></p>								
					R	W	T	A
42	HVAC output	On/off, block	1 bit	1.003		x		x
<p>If object 42 receives an ON or OFF telegram the HVAC output is blocked or re-enabled. Block and enable behaviour is configurable.</p> <p>Object 42 is visible for the following parameter settings: General: Function = <i>master</i> General: HVAC output = <i>active</i> HVAC output: Block HVAC function = <i>active</i></p>								

No.	Object name	Function	Type	DPT	Flags			
					R	W	T	A
43	HVAC output	On/off, enable	1 bit	1.003		x		x
<p>If object 43 receives an ON or OFF telegram the HVAC output is enabled (unblocked). Enable behaviour is configurable.</p> <p>Object 43 is visible for the following parameter settings: General: Function = <i>master</i> General: HVAC output = <i>active</i> HVAC output: Block HVAC function = <i>active</i> Block HVAC output: Block HVAC = <i>forward block telegram</i></p>								
					R	W	T	A
44	HVAC output, Remote switch-off delay	Value, define	2 bytes	7.005	x	x		x
<p>If object 44 receives a time value telegram the sent time value is adopted as the new HVAC switch-off delay.</p> <p>Object 44 is visible for the following parameter settings: General: Function = <i>master</i> HVAC outputs: Switch-off delay – Configure via bus = <i>yes</i></p>								
					R	W	T	A
50	Twilight output	Light/dark, send	1 bit	1.001			x	x
<p>Object 50 sends the configured 1-bit telegram if the measured brightness falls below the twilight threshold. Object 50 sends the configured 1-bit telegram if the measured brightness exceeds the twilight threshold.</p> <p>Object 50 is visible for the following parameter settings: General: Function = <i>master</i> General: Twilight output = <i>active</i></p>								
					R	W	T	A
51	Twilight output	Brightness value, send	2 bytes	9.004			x	x
<p>Object 51 cyclically sends the current brightness value (2 bytes).</p> <p>Object 51 is visible for the following parameter settings: General: Function = <i>master</i> General: Twilight output = <i>active</i> Twilight output: Send brightness value = <i>yes</i></p>								
					R	W	T	A
55	Message output	On/off, enable	1 bit	1.003		x		x
<p>If object 55 receives an ON or OFF telegram the message function is enabled or annulled.</p> <p>Object 55 is visible for the following parameter settings: General: Function = <i>master</i> General: Message output = <i>active</i></p>								
					R	W	T	A
56	Message output	On/off, message	1 bit	1.001			x	x
<p>Object 56 sends the configured 1-bit telegram to display a presence message.</p> <p>Object 56 is visible for the following parameter settings: General: Function = <i>master</i> General: Message output = <i>active</i></p>								

No.	Object name	Function	Type	DPT	Flags			
					R	W	T	A
57	Message output	On/off, acknowledge	1 bit	1.016		x		x
<p>If object 57 receives an ON or OFF telegram cyclic messages are acknowledged.</p> <p>Object 57 is visible for the following parameter settings:</p> <p>General: Function = <i>master</i> General: Message output = <i>active</i> Message output: Behaviour at presence = <i>send cyclic ON telegram (with acknowledge)</i> Message output: Behaviour at presence = <i>send cyclic OFF telegram (with acknowledge)</i></p>								
					R	W	T	A
58	Message output	Life sign, send	1 bit	1.001			x	x
<p>Object 58 sends a cyclic OFF telegram to indicate that the device remains active and has not been sabotaged.</p> <p>Object 58 is visible for the following parameter settings:</p> <p>General: Function = <i>master</i> General: Message output = <i>active</i> Message output: Life sign = <i>active</i></p>								
					R	W	T	A
60	Group, Master/slave	On/off, trigger	1 bit	1.001		x	x	x
<p>Movement information is exchanged between the master and slave in a group via object 60.</p> <p>Object 60 is always visible</p>								
					R	W	T	A
61	Group, Sub-master/slave	On/off, trigger	1 bit	1.001		x	x	x
<p>Movement information is exchanged between a sub-zone and the higher-level secondary zone via object 61.</p> <p>Object 61 is visible for the following parameter settings:</p> <p>General: Function = <i>slave</i> Group: Zone group = <i>active</i> Group: Sub-group = <i>active</i></p>								
					R	W	T	A
62	Group, Brightness group	On/off, trigger	1 bit	1.001		x	x	x
<p>The brightness information in a brightness group is exchanged via object 62.</p> <p>The object is visible for the following parameter settings:</p> <p>General: Function = <i>master</i> Group: Brightness group = <i>active</i></p> <p>or</p> <p>General: Function = <i>slave</i> Group: Zone group = <i>inactive</i> Group: Brightness group = <i>active</i></p>								

2.3 Parameters

2.3.1 Quick reference parameter screen

First, the required parameters must be specified in the ETS application. These parameter settings are stored in the pirios KNX during the ETS download. Prior to downloading ETS requests you press the programming key in order to identify the device. The LED is switched on during the programming phase. The detector starts once the ETS download is complete.

Because certain interrelationships exist between parameters in the ETS, care should be taken that the parameters are defined in the following order:

Master configuration sequence:

1. **General** parameter screen
2. **Light 1,2 outputs** parameter screen
3. The configuration of the remaining parameters can take place in any order.

Slave configuration sequence:

1. **General** parameter screen
2. **Group** parameter screen
3. **Light 1,2 outputs** parameter screen
4. The configuration of the remaining parameters can take place in any order.

Note: Always configure from top to bottom

2.3.2 General parameter screen

The basic configuration is made and individual function blocks activated (HVAC output, twilight output and message output) on the **General** parameter screen.

The **Function** parameter specifies whether the detector is operated as master or slave.

Function:	<i>Master (default)</i> <i>Slave</i>
Default:	<i>Master (default)</i>
<i>Master (default)</i>	Complete functionality is available using the <i>Master</i> setting. A master measures brightness and detects movement. Additional HVAC, twilight and message outputs are available.
<i>Slave</i>	If the detection zone cannot be covered by a single device, additional devices are used with the <i>Slave</i> setting. The movement information is sent to the master via the master/slave object.

The **Sensitivity** parameter serves to define the sensitivity for movement detection.

Sensitivity:	<i>Heavily reduced</i> <i>Reduced</i> <i>Slightly reduced</i> <i>Normal (default)</i> <i>Slightly increased</i> <i>Increased</i>
Default:	<i>Normal (default)</i>
<i>Normal (default)</i>	This is the recommended sensitivity setting and covers most applications.
<i>Slightly reduced,</i> <i>reduced,</i> <i>heavily reduced.</i>	The sensitivity can be reduced if undesired switching occurs. Warning: The detection zone is also reduced by reduced sensitivity!
<i>Slightly increased,</i> <i>increased</i>	If the detector is not sensitive enough or switches on too late, the sensitivity can be increased. Warning: The detection zone is also increased by increased sensitivity!

The **Walk test during operation** parameter specified whether the walk test can be activated via an object during operation.

Walk test during operation: *Inactive (default)*
 Active

Default: *Inactive (default)*

Inactive (default) The walk test cannot be activated during operation.

Active The <Object 33 light 1,2 output, walk test – on/off, receive> is visible.

An ON telegram to the walk test object starts the walk test.

An OFF telegram to the walk test object ends the walk test.

During the walk test operation the light 1 and 2 output objects, and the LED, are switched on at movement. The switch-off delay is fixed at 10 s. The ambient brightness is irrelevant.

The **HVAC output** parameter specifies whether the HVAC output is active.

HVAC output: *Inactive (default)*
 Active

Default: *Inactive (default)*

Inactive (default) The HVAC output is not active.

Active The HVAC output is active.

The <Object 41 HVAC output – on/off, switch> is visible.

The **HVAC output** parameter screen (Section 2.3.10) is visible.

The **Twilight output** parameter specifies whether the twilight output is active.

Twilight output: *Inactive (default)*
 Active

Default: *Inactive (default)*

Inactive (default) The twilight switch is inactive.

Active The twilight output is active.

The <Object 50 twilight output – light/dark, send> is visible.

The **Twilight output** parameter screen (Section 2.3.13) is visible.

The **Message output** parameter specifies whether the message output is active.

Message output:	<i>Inactive (default)</i> <i>Active</i>
Default:	<i>Inactive (default)</i>
<i>Inactive (default)</i>	The message function is inactive.
<i>Active</i>	The message function is active. The <Object 55 output message – on/off, enable> is visible. The <Object 56 output message – on/off, message> is visible. The Message output parameter screen (Section 2.3.14) is visible.

2.3.3 Light 1, 2 outputs parameter screen

The **Operating mode** parameter specifies in which mode the pirios 360P KL KNX is operated:

Operating mode:	<i>Fully automatic (automatic ON/OFF) (default)</i> <i>Semi-automatic (manual ON/automatic OFF)</i>
Default	<i>Fully automatic (automatic ON/OFF) (default)</i>
<i>Fully automatic (automatic ON/OFF) (default)</i>	Light 1,2 outputs are switched on automatically as a function of movement and brightness. They are switched off automatically following the switch-off delay.
<i>Semi-automatic (manual ON/automatic OFF)</i>	Light 1,2 outputs must be switched on manually. They are switched off automatically following the switch-off delay.

The **Light outputs function** parameter specifies whether the light outputs are in switching, scene or constant light control mode:

Light outputs function:	<i>Switch (1 bit) (default)</i> <i>Send scene (8 bit)</i> <i>Constant light control</i>
Default:	<i>Switch (1 bit) (default)</i>
<i>Switch (1 bit) (default)</i>	Switching mode is activated. The <Object 0 light 1 output – on/off, switch> is visible.
<i>Send scene (8 bit)</i>	Scene mode is activated. The <Object 4 light 1 output – scene, send> is visible.
<i>Constant light control</i>	The constant light control (also see Section 3.5) is activated. The <Object 0 light 1 output – on/off, switch> is visible. The <Object 1 light 1 output – lighter/darker, dim> is visible. The <Object 2 light 1 output – value, send> is visible. The <Object 3 light 1 output – value feedback, receive> is visible.

The **Light 2 output** parameter specifies whether the second light output is active:

Light 2 output: *Inactive (default)*
Active

Default: *Inactive (default)*

Inactive (default) Light 2 output is inactive.

Active Light 2 output is active.

The following objects are available as a function of the **Light outputs function**:

Switch (1 bit) (default):

The <Object 14 light 2 output – on/off, switch> is visible.

Send scene (8 bit):

The <Object 18 light 2 output – scene, send> is visible.

Constant light control:

The <Object 14 light 2 output – on/off, switch> is visible.

The <Object 15 light 2 output – lighter/darker, dim> is visible.

The <Object 16 light 2 output – value, send> is visible.

The <Object 17 light 2 output – value feedback, receive> is visible.

The **Light 2 output** parameter screen (Section 2.3.6) is visible.

The **Brightness-dependent switch-off** parameter specifies whether brightness is taken into account for switch-off.

The **Brightness-dependent switch-off** parameter is only available for **Light outputs function** *Switch (1 bit) (default)*:

Brightness-dependent switch-off: *No (default)*
Yes

Default: *No (default)*

No (default) After switch-on brightness is no longer taken into account.

The detector remains on as long as movement is detected.

Yes After switch-on light measurement remains active and if the ambient brightness is good enough the detector switches off, even if movement is detected.

The duration until the detector switches off, brightness-dependent, is at least 5 minutes. If the light output switch-off delay is greater than 5 minutes, the time until brightness-dependent switch-off corresponds to the switch-off delay.

The **Switch-off delay** parameter specifies for which duration after the last detected movement the light output objects remain switched on:

Switch-off delay: *10 sec...60 min.*

Default: *5 min. (default)*

10 sec...60 min. Light 1,2 output objects remain switched on for the defined time following the last detected movement.

The **Configure via bus** parameter specifies whether the switch-off delay can be modified during operation via a communication object:

Configure via bus:	<i>No (default)</i> <i>Yes</i>
Default:	<i>No (default)</i>
<i>No (default)</i>	The switch-off delay cannot be modified via the bus.
<i>Yes</i>	The switch-off delay can be configured via the bus. The <Object 40 light 1,2 output, remote switch-off delay – value, define> is visible. To define the value the new switch-off delay in [s] must be sent via the remote object. The value, interpreted as 2 bytes DPT 7.005, is immediately adopted. The possible range of values is 10 s..4 h. Values smaller than 10 s are adopted as 10 s. Values greater than 4 h are adopted as 4 h. The value defined via the bus is stored and is retained even following a voltage interruption. The current remote value can be accessed at any time via the object.

Note: The required value must be entered in [s].

The **Behaviour for programming** parameter specifies how to deal with the defined remote value via a new ETS download:

Behaviour for programming:	<i>Use ETS value (default)</i> <i>Retain remote value</i>
Default:	<i>Use ETS value (default)</i>
<i>Use ETS value (default)</i>	During an ETS download the value selected in the ETS will be applied.
<i>Retain remote value</i>	The last defined remote value is retained. The defined ETS value is ignored. If there is no valid remote value, the ETS value is always adopted.

The **Behaviour at light demand begin** parameter specifies which telegram is sent to the light 1,2 output objects at the beginning of light demand (movement and brightness threshold fallen short of). The selected parameter is valid if the parameter **Light outputs function** has the value *Switch (1 bit) (default)* and the **Brightness-dependent switch-off** parameter the value *No (default)*:

Behaviour at light demand begin:	<i>No telegram</i> <i>ON telegram (default)</i> <i>OFF telegram</i> <i>Cyclic ON telegram</i>
Default:	<i>ON telegram (default)</i>
<i>No telegram</i>	No telegram is sent.
<i>ON telegram (default)</i>	An ON telegram is sent.
<i>OFF telegram</i>	An OFF telegram is sent.
<i>Cyclic ON telegram</i>	Cyclic ON telegrams are sent. The Cycle duration parameter is visible.

The **Behaviour at light demand begin** parameter is reduced if the **Brightness-dependent switch-off** parameter has the value *Yes* or the second light output is activated. Inverted selection is no longer allowed in order to ensure correct light measurement:

Behaviour at light demand begin:	<i>ON telegram (default)</i> <i>Cyclic ON telegram</i>
Default:	<i>ON telegram (default)</i>
<i>ON telegram (default)</i>	An ON telegram is sent.
<i>Cyclic ON telegram</i>	Cyclic ON telegrams are sent. The Cycle duration parameter is visible.

The **Behaviour at light demand end** parameter specifies which telegram is sent to the light 1,2 output objects at the end of light demand (no movement and switch-off delay expired). The selected parameter is valid if the parameter **Light outputs function** has the value *Switch (1 bit) (default)* and the **Brightness-dependent switch-off** parameter the value *No (default)*:

Behaviour at light demand end:	<i>No telegram</i> <i>ON telegram</i> <i>OFF telegram (default)</i> <i>Cyclic OFF telegram</i>
Default:	<i>OFF telegram (default)</i>
<i>No telegram</i>	No telegram is sent.
<i>ON telegram</i>	An ON telegram is sent.
<i>OFF telegram (default)</i>	An OFF telegram is sent.
<i>Cyclic OFF telegram</i>	Cyclic OFF telegrams are sent. The Cycle duration parameter is visible.

The **Behaviour at light demand end** parameter is reduced if the **Brightness-dependent switch-off** parameter has the value Yes or the second light output is activated. Inverted selection is no longer allowed in order to ensure correct light measurement:

Behaviour at light demand end:	<i>OFF telegram (default)</i> <i>Cyclic OFF telegram</i>
Default:	<i>OFF telegram (default)</i>
<i>OFF telegram (default)</i>	An OFF telegram is sent.
<i>Cyclic OFF telegram</i>	Cyclic OFF telegrams are sent. The Cycle duration parameter is visible.

The **Cycle duration** parameter specifies at what intervals the light 1,2 output objects send the corresponding telegram (ON or OFF):

Cycle duration:	<i>10 sec...60 min.</i>
Default:	<i>2 min. (default)</i>
<i>10 sec...60 min.</i>	Defines the interval between the individual telegrams

The **Switch-off warning** parameter specifies whether the switch-off warning is active or not:

Switch-off warning:	<i>Inactive (default)</i> <i>Active</i>
Default:	<i>Inactive (default)</i>
<i>Inactive (default)</i>	The switch-off warning is inactive.
<i>Active</i>	The switch-off warning is active. The switch-off warning behaves differently depending on the Light outputs function parameter: <i>Switch (1 bit) (default) and send scene (8 bit):</i> When the configured switch-off delay has expired the warning time is started. This is fixed at 60 s. During the warning time the light outputs are switched off three times for 500 ms. The interval until the next switch-off is halved, i.e. the 1st switch-off occurs at warning time = 60 s, the 2nd at 30 s and the 3rd at 15 s. If movement is detected within the warning time, the switch-off warning is aborted and normal operation continued. Correct configuration is required in order for the switch-off warning to function correctly for the Light outputs function – <i>Switch/Scene</i> : Switch-on means that the light output behaves as defined using the parameter Behaviour at light demand begin or Send scene at ON! Switch-off means that the light output behaves as defined using the parameter Behaviour at light demand end or Send scene at OFF! <i>Constant light control:</i> For the Off with switch-off warning the output is first reduced to 50% of the current or previous dim value (however, not less than the minimum dim value). If there is no movement and the warning time expires, the output is switched off completely (to 0% off dim value). The warning time is fixed at 60 s and is independent of the configured switch-off delay. The warning time is added to the switch-off delay. If a movement is detected within the warning time control is continued.

The **Base lighting** parameter specifies whether the base lighting function is active or not. The **Base lighting** parameter is only visible for the **Light outputs function** *Constant light control*:

Base lighting:	<i>Inactive (default)</i> <i>Active</i>
Default:	<i>Inactive (default)</i>
<i>Inactive (default)</i>	The base lighting function is inactive.
<i>Active</i>	The base lighting function is active. The configured base lighting dim value is always jumped to first for base lighting and automatic switch-off, i.e. the appropriate value is sent via the value object. The duration of the base lighting condition depends on the Base lighting duration parameter.

The **Base lighting duration** parameter specifies how long the base lightning is used. The parameter is visible once the base lighting is activated.

Base lighting Duration:	<i>Auto (default)</i> <i>5 min. ... 4 h.</i>
Default:	<i>Auto (default)</i>
<i>Auto (default)</i>	Base lighting is switched on automatically, regardless of movement, if the brightness threshold is fallen short of. Base lighting is switched off automatically if the brightness threshold is exceeded.
<i>5 min. ... 4 h.</i>	Base lighting is not switched on automatically. The controls must have been previously active. On automatic switch-off or after the switch-off delay has expired, the base lighting is switched on. The configured duration defines the maximum time the base lighting remains on. If bright enough, base lighting is ended prematurely.

The **Base lighting value** parameter specifies the value sent to the Light 1,2 outputs when base lighting is activated. The parameter is visible once the base lighting is activated.

Base lighting value:	<i>1%...20%</i>
Default:	<i>6% (default)</i>
<i>1%...20%</i>	Defines the brightness level for base lighting

The **Minimum dim value** parameter specifies the dim value lower bound for the controls. The parameter is only visible for the **Light outputs function** *constant light control* and if **Base lighting** is *inactive*. When base lighting is active the *Minimum dim value* corresponds to the *Base lighting value*.

Minimum dim value:	<i>1%...45%</i>
Default:	<i>1% (default)</i>
<i>1%...45%</i>	In controlled mode no values smaller than the minimum dim value are sent to Light 1,2 outputs.

The **Maximum dim value** parameter specifies the dim value upper bound for the controls. The parameter is only visible for the **Light outputs function constant light control**:

Maximum dim value:	50%...100%
Default:	100% (default)
50%...100%	In controlled mode no values greater than the maximum dim value are sent to Light 1,2 outputs.

The **Light demand status** parameter specifies whether the light demand status message is active or not. The **Light demand status** parameter is only visible for the **Light outputs function constant light control**:

Light demand status:	<i>Inactive (default)</i> <i>Active</i>
Default:	<i>Inactive (default)</i>
<i>Inactive (default)</i>	The light demand status message is inactive.
<i>Active</i>	The light demand status message is active. The <Object 31 Light 1,2 outputs – light demand status – status, send> is visible. This status object indicates whether light is required in controlled mode or not. If the measured ambient brightness falls below the brightness threshold, a TRUE telegram is sent to the light demand status object. If the ambient brightness increases above the brightness threshold, a FALSE telegram is sent to the light demand status object.

The **Constant light control status** parameter specifies whether the constant light control status message is active or not. The **Constant light control status** parameter is only visible for the **Light outputs function constant light control**:

Constant light control status:	<i>Inactive (default)</i> <i>Active</i>
Default:	<i>Inactive (default)</i>
<i>Inactive (default)</i>	The constant light control status message is inactive.
<i>Active</i>	The constant light control status message is active. The <Object 32 Light 1,2 outputs – constant light control status – status, view> is visible. This status object indicates whether the constant light control is active or not. A TRUE telegram is sent via the status object if the detector is in automatic mode. In the fully automatic operating mode this is always the case, assuming no manual actions are taken. If the light outputs are manually overridden, the detector changes to manual mode and a FALSE telegram is sent to the status object. In the semi-automatic operating mode the constant light control status in the switched off condition is always FALSE. Only when the controls are switched on manually (this is only possible via the external pushbutton object) does the status change to TRUE.

The **Behaviour on external scene call up** parameter specifies the behaviour of the light outputs for an external scene call up.

Behaviour at external scene call up:

No reaction
Quiet for 5 min...4 h.

Default:

Quiet for 4 h. (default)

No reaction

The detector does not react to an external scene call up.

Quiet for 5 min...4 h.

To prevent the detector interfering unnecessarily in a scene and switching on the lights, for example, the light outputs can be quieted for a certain period following an external scene call up. The <Object 27 Light 1,2 outputs – scene, receive> must be linked to the corresponding group address to facilitate this. The object reacts to all scene numbers.

When this time-quiet period has expired or following a pushbutton action (via overriding or external pushbutton object) the detector reverts to automatic mode.

Note: If the light output is set to cyclic sending, cyclic sending of telegrams is also interrupted in the Quiet condition. If the detector reverts to automatic mode, cyclic sending is reactivated.

The **Teach-in** parameter specifies whether teach-in (also see Section 3.2) can be activated via an object during operation:

Teach-in:

Inactive (default)
Active

Default:

Inactive (default)

Inactive (default)

The teach-in cannot be activated during operation.

Active

The teach-in can be activated during operation.

The <Object 34 light 1,2 output, teach-in – on/off, receive> is visible.

An ON telegram to the teach-in object activates the teach-in mode:

A 2 s LED pulse indicates that the teach-in mode has started.

The active teach-in mode is indicated by a flashing LED.

The current brightness is adopted as the brightness threshold by an additional ON telegram to the teach-in object:

A 2 s LED pulse indicates that the brightness threshold has been saved.

During the teach-in it is possible to switch between the default brightness threshold and the alternative brightness threshold, i.e. the teach-in can be performed for both thresholds.

The teach-in mode is excited by an OFF telegram to the teach-in object, the light outputs and the LED are switched off.

The **Block light 1,2 function** parameter specifies whether the block function for the Light 1,2 outputs is active or not:

Block light 1,2 function: *Inactive (default)*
 Active

Default: *Inactive (default)*

Inactive (default) The block function is inactive.

Active The block function is active.

The <Object 28 Light 1,2 outputs – on/off, block> is visible.

The **Block light outputs** parameter screen (Section 2.3.4) is visible.

2.3.4 Block light outputs parameter screen

The **Block light** parameter defines the behaviour for blocking the light outputs:

Block light:	<i>Block with ON (enable with OFF) (default)</i> <i>Block with OFF (enable with ON)</i> <i>Forward block telegram</i>
Default:	<i>Block with ON (enable with OFF) (default)</i>
<i>Block with ON (enable with OFF) (default)</i>	The light output objects are blocked by an ON telegram to the <Object Light 1,2 outputs – on/off, block>. Blocking is annulled by an OFF telegram. The Behaviour on block and Behaviour on enable parameters are visible.
<i>Block with OFF (enable with ON)</i>	The light output objects are blocked by an OFF telegram to the <Object Light 1,2 outputs – on/off, block>. Blocking is annulled by an ON telegram. The Behaviour on block and Behaviour on enable parameters are visible.
<i>Forward block telegram</i>	If this parameter is selected, both the <Object 28 Light 1,2 outputs – on/off, block> and the <Object 29 Light 1,2 outputs – on/off, enable> are visible for enabling. The Behaviour on block parameter is no longer visible. The Behaviour on enable parameter is visible. The light outputs can be blocked by sending either an ON or an OFF telegram to the <Object 28 Light 1,2 outputs – on/off, block>. The corresponding telegram is forwarded to the light outputs, depending on the configuration of the light outputs function: Light outputs function: Switch (1 bit) (default): ON telegram to <Object 28 Light 1,2 outputs – on/off, block>: Telegram defined in Behaviour at light demand begin is sent to the light outputs. OFF telegram to <Object 28 Light 1,2 outputs – on/off, block>: Telegram defined in Behaviour at light demand end is sent to the light outputs. Light outputs function: Send scene (8 bit): ON telegram to <Object 28 Light 1,2 outputs – on/off, block>: Scene No. telegram defined in Send scene at ON is sent to the light outputs. OFF telegram to <Object 28 Light 1,2 outputs – on/off, block>: Scene no. telegram defined in Send scene at OFF is sent to the light outputs. Light outputs function: Constant light control: The Light 1 at ON output value parameter is visible. The Light 2 at ON output value parameter is also visible if the light 2 output is active. ON telegram to <Object 28 Light 1,2 outputs – on/off, block>: The defined Light 1 or 2 at ON output value is sent to the light outputs. OFF telegram to <Object 28 Light 1,2 outputs – on/off, block>: An OFF telegram is sent to the light outputs. Enabling is carried out by sending any telegram (ON or OFF) to the <Object 29 Light 1,2 outputs – on/off, enable>.

The **Light 1 at ON output value** and **Light 2 at ON output value** parameters specify which value is sent if the light outputs are blocked by an ON telegram when the **Forward block telegram** parameter is selected.

Light 1 at ON output value:	<i>10% ... 100%</i>
Light 2 at ON output value:	
Default:	<i>100% (default)</i>
<i>1% ... 100%</i>	The selected value is sent.

The **Behaviour on block** parameter specifies which telegram the light outputs send for a block.

Behaviour on block:	Light outputs function: Switch (1 bit) (default) <i>No telegram (default)</i> <i>ON telegram</i> <i>OFF telegram</i> Light outputs function: Send scene (8 bit) <i>No telegram (default)</i> <i>ON scene</i> <i>OFF scene</i> Light outputs function: Constant light control: <i>No telegram (default)</i> <i>Value telegram</i> <i>OFF telegram</i>
Default:	<i>No telegram (default)</i>
<i>No telegram (default)</i>	No telegram is sent.
<i>ON telegram</i>	The light 1 and 2 output objects send an ON telegram on block.
<i>ON scene</i>	The light output – scene objects send the scene number at ON and block.
<i>Telegram value</i>	The Light 1 output value parameter is visible. The Light 2 output value parameter is also visible if light 2 output is active. The defined Light 1 or 2 output value is sent to the light outputs on block.
<i>OFF telegram</i>	The light 1 and 2 output objects send an OFF telegram on block.
<i>OFF scene</i>	The light output – scene objects send the scene number at OFF and on block.

The **Light 1 output value** and **Light 2 output value** parameters specify which value is sent if the behaviour on block has the value **Telegram value**:

Light 1 output value:	<i>10% ... 100%</i>
Light 2 output value:	
Default:	<i>100% (default)</i>
<i>1% ... 100%</i>	The selected value is sent.

The **Behaviour on enable** parameter specifies which telegrams the light outputs send on enable and in which condition they assume.

Behaviour on enable:	<p>Light outputs function: Switch (1 bit) (default) <i>No telegram (default)</i> <i>ON and remain as long as movement</i> <i>OFF, ON again after 5 s if movement (Eco-off)</i> <i>Send internal status</i></p> <p>Light outputs function: Send scene (8 bit) <i>No telegram (default)</i> <i>ON scene and remain as long as movement</i> <i>OFF scene, after 5 s ON scene again if movement</i> <i>Send scene based on internal status</i></p> <p>Light outputs function: Constant light control: <i>Continue control (default)</i> <i>OFF, control again after 5 s if movement</i></p>
Default:	<i>No telegram (default)</i>
<i>No telegram (default)</i>	No telegram is sent.
<i>ON and remain as long as movement</i>	On enable the light output objects send an ON telegram and remain switched on as long as movement is detected (including switch-off delay).
<i>ON scene and remain as long as movement</i>	On enable the light – scene output objects send the configured scene at ON and remain switched on as long as movement is detected (including switch-off delay).
<i>Continue control (default)</i>	The constant light control is started or continued on enable.
<i>OFF, ON again after 5 s if movement (Eco-off)</i>	On enable the light output objects send an OFF telegram and movement detection is suppressed for approx. 5 s. Automatic mode then takes over again.
<i>OFF scene, after 5 s ON scene again if movement</i>	On enable the light – scene output objects send the configured scene at OFF telegram and movement detection is suppressed for approx. 5 s. Automatic mode then takes over again.
<i>OFF, control again after 5 s if movement</i>	On enable the light output objects send an OFF telegram and movement detection is suppressed for approx. 5 s. Automatic mode then takes over again.
<i>Send internal status</i>	On enable the light output objects send an ON or OFF telegram, regardless of the current internal status.
<i>Send scene based on internal status</i>	On enable the light – scene output objects send the configured scene at ON or OFF, regardless of the current internal status.

Note: If **Separate, external pushbutton object** is *active*, the external pushbutton object behaves in accordance with the defined block or enable behaviour.

2.3.5 Light 1 output parameter screen

The **Brightness threshold** parameter specifies the default brightness threshold:

Brightness threshold:	<i>Brightness-independent</i> <i>10...2,000 lux</i>
Recommended presence detector setting:	<i>500 lux (default)</i> This setting corresponds to the ambient brightness usually required in offices and schoolrooms.
<i>10...2,000 lux</i>	Light outputs function: <i>Switch (1 bit) (default)</i> and <i>Send scene (8 bit)</i> If the measured ambient brightness is below the specified value, the detector switches on light 1 output if movement is detected. Light outputs function: <i>Constant light control</i> The specified brightness threshold defines the set value to which brightness is controlled.
<i>Brightness-independent</i>	Only for the light outputs function: <i>Switch (1 bit) (default)</i> and <i>Send scene (8 bit)</i> : The light 1 output only switches as a function of movement.

An additional brightness threshold can be activated via the **Alternative brightness threshold** parameter:

Alternative brightness threshold:	<i>Inactive (default)</i> <i>Active</i>
Default:	<i>Inactive (default)</i>
<i>Inactive (default)</i>	The alternative brightness threshold is not available
<i>Active</i>	The alternative brightness threshold can be used. The <Object 6 light 1 output, alternative brightness threshold – on/off, switchover> is visible. During operation it is possible to switch between the default brightness threshold and the alternative brightness threshold using the alternative brightness threshold object. The Alternative brightness threshold parameter is visible

The value is specified via the **Alternative brightness threshold** parameter:

Alternative brightness threshold:	<i>Brightness-independent</i> <i>10...2,000 lux</i>
Default:	<i>500 lux (default)</i>
<i>10...2,000 lux</i>	Light outputs function: <i>Switch (1 bit) (default)</i> and <i>Send scene (8 bit)</i> : If the measured ambient brightness is below the specified alternative value, the detector switches on light 1 output if movement is detected. Light outputs function: <i>Constant light control</i> The specified alternative brightness threshold defines the set value to which brightness is controlled.
<i>Brightness-independent</i>	Only for the light outputs function: <i>Switch (1 bit) (default)</i> and <i>Send scene (8 bit)</i> : The light 1 output only switches as a function of movement.

The **Configure via bus** parameter specifies whether the brightness threshold or the alternative brightness threshold can be specified during operation via a communication object:

Configure via bus:	<i>No (default)</i> <i>Yes</i>
Default:	<i>No (default)</i>
<i>No (default)</i>	The brightness threshold cannot be configured via the bus.
<i>Yes</i>	The brightness threshold can be configured via the bus. The <Object 12 light 1 output, remote brightness threshold – value, define> is visible. and/or The <Object 13 light 1 output, remote alt. brightness threshold – value, define> is visible. In order to define the value the new brightness threshold can be sent via the remote brightness threshold objects. The value, interpreted as DPT 9.004, is immediately adopted. The possible values range from <i>10 lux ...2,000 lux</i> . Values smaller than 10 lux but greater than 0 are limited to 10 lux. Values greater than 2,000 lux are limited to 2,000 lux. If the value is 0 the brightness threshold is set to brightness-independent (detector only switches as a function of movement)! The value defined via the bus is stored and is retained even following a voltage interruption. The current remote value can be accessed at any time via the object.

The **Behaviour for programming** parameter specifies how to deal with the defined remote value for a new ETS download:

Behaviour for programming:	<i>Use ETS value (default)</i> <i>Retain remote value</i>
Default:	<i>Use ETS value (default)</i>
<i>Use ETS value (default)</i>	During an ETS download the value selected in the ETS will be applied.
<i>Retain remote value</i>	The last defined remote value is retained. The defined ETS value is ignored. If there is no valid remote value, the ETS value is always adopted.

The **Send scene at ON** and **Send scene at OFF** parameters specify whether a scene is sent at light demand begin or end. This parameter dialog is only visible for the parameter selection **Light outputs function Send scene (8 bit)**:

Send scene at ON, Send scene at OFF:	<i>No (default)</i> <i>Yes</i>
Default:	<i>No (default)</i>
<i>No (default)</i>	No scene is sent.
<i>Yes</i>	Send scene at ON = yes, a scene is sent at light demand begin. Send scene at OFF = yes, a scene is sent at light demand end. The Scene number parameter is visible.

The **Scene number at ON (1...64)** and **Scene number at OFF (1...64)** parameters specify which scene number is sent via the <Object light 1 output – scene, send>:

Scene number at ON (1...64), 1...64

Scene number at OFF (1...64):

Default: 1

The **Light demand status** parameter specifies whether the light demand status message for light 1 output is active or not. The parameter is only visible for the setting **Light outputs function Switch (1 bit) (default)** or **Send scene (8 bit)**:

Light demand status: *Inactive (default)*
Active

Default: *Inactive (default)*

Inactive (default)

The light demand status message for light 1 output is inactive.

Active

The light demand status message for light 1 output is active.

The <Object 5 light 1 output – light demand status – status, send> is visible.

This status object indicates whether light 1 output has light demand or not. If the measured ambient brightness falls below the brightness threshold, a TRUE telegram is sent to the light demand status object. If the ambient brightness increases above the brightness threshold, a FALSE telegram is sent to the light demand status object.

2.3.6 Light 2 output parameter screen

The **Light 2 output to light 1 output brightness difference** parameter specifies the brightness threshold for the light 2 output as a function of the brightness threshold for the light 1 output:

Light 2 output to light 1 output brightness difference: -60%...-10 % (*light 2 near window*)
 0% - none (*default*)
 +10%...+120% (*light 2 in room interior*)

Default: 0% - none (*default*)

-60 %...-10 %
 (*light 2 near window*)

Light outputs function: *Switch (1 bit) (default) and Send scene (8 bit)*
 Light 2 output switches a light group which is closer to the window and therefore requires light later. The brightness threshold for the light 2 output is lower than the brightness threshold for the light 1 output.

Light outputs function: *Constant light control*
 Light 2 output controls a light group which is closer to the window and therefore requires less light. The light 2 output is controlled using a negative offset to the light 1 output.

0% - none (*default*)

Light outputs function: *Switch (1 bit) (default) and Send scene (8 bit)*
 Both light outputs have the same brightness threshold and switch on simultaneously.

Light outputs function: *Constant light control*
 Both light outputs control synchronously, i.e. without an offset.

+10 %...+120 %
 (*light 2 in room interior*)

Light outputs function: *Switch (1 bit) (default) and Send scene (8 bit):*
 Light 2 output switches a light group lying further in the room interior and therefore requiring light earlier. The brightness threshold for the light 2 output is higher than the brightness threshold for the light 1 output.

Light outputs function: *Constant light control*
 Light 2 output controls a light group lying further in the room interior and therefore requiring more light. The light 2 output is controlled using a positive offset to the light 1 output.

The **Configure via bus** parameter specifies whether the brightness difference can be configured via a communications object during operation:

Configure via bus: No (*default*)
 Yes

Default: No (*default*)

No (*default*)

The brightness difference cannot be configured via the bus.

Yes

The brightness difference can be configured via the bus.

The <Object 25 light 2 output, remote brightness difference – value, define> is visible.

In order to define the value the new brightness difference can be sent via the remote brightness difference object. The value, interpreted as DPT 6.001, is immediately adopted.

The possible range of values is –60% ...+120%

Values smaller than –60% are limited to –60%.

Values greater than –10% but smaller than 0% are limited to –10%.

Values greater than 0% but smaller than 10% are limited to 10%.

The value defined via the bus is stored and is retained even following a voltage interruption.

The current remote value can be accessed at any time via the object.

The **Behaviour for programming** parameter specifies how to deal with the defined remote value for a new ETS download:

Behaviour for programming: *Use ETS value (default)*
Retain remote value

Default: *Use ETS value (default)*

Use ETS value (default) During an ETS download the value selected in the ETS will be applied.

Retain remote value The last defined remote value is retained. The defined ETS value is ignored. If there is no valid remote value, the ETS value is always adopted.

The **Send scene at ON** and **Send scene at OFF** parameters specify whether a scene is sent by light 2 output at light demand begin or end. This parameter dialog is only visible for the parameter selection **Light outputs function** *Send scene (8 bit)* and **Light 2 output active**:

Send scene at ON *No (default)*

Send scene at OFF: *Yes*

Default: *No (default)*

No (default) No scene is sent.

Yes **Send scene at ON** = yes, a scene is sent at light demand begin.

Send scene at OFF = yes, a scene is sent at light demand end.

The **Scene number** parameter is visible.

The **Scene number at ON (1...64)** and **Scene number at OFF (1...64)** parameters specify which scene number is sent via the <Object 18 light 2 output – scene, send>:

Scene number at ON (1..64): *1...64*

Scene number at OFF (1..64):

Default: *1*

The **Light demand status** parameter specifies whether the light demand status message for light 2 output is active or not. The parameter is only visible for the setting **Light outputs function Switch (1 bit) (default)** and **Send scene (8 bit) and Light 2 output active**:

Light demand status: *Inactive (default)*
 Active

Default: *Inactive (default)*

Inactive (default) The light demand status message for light 2 output is inactive.

Active The light demand status message for light 2 output is active.
 The <Object 19 light 2 output – light demand status – status, send> is visible.
 This status object indicates whether light 2 output has light demand or not. If the measured ambient brightness falls below the brightness threshold for light 2 output, a TRUE telegram is sent to the light demand status object. If the ambient brightness increases above the brightness threshold of light 2 output, a FALSE telegram is sent to the light demand status object.

2.3.7 Light 1,2 pushbutton functionality parameter screen

Pushbuttons can be directly linked to the light outputs. This corresponds to planning habits and allows a light group to be tested using a pushbutton, even when the detector has not yet been installed.

In addition, a separate pushbutton object can be activated via a parameter to achieve greater flexibility.

The **Behaviour at external ON** parameter specifies how the light outputs behave after the light 1 or 2 output object has been overridden by an ON, value or dimmer step telegram:

Behaviour at external ON: *ON and remain as long as movement (default)*
 ON and remain for given time

Default: *ON and remain as long as movement (default)*

ON and remain as long as movement (default) For an external ON, value or dimmer step telegram to the light output objects, the light outputs remain switched on until movement is detected (including switch-off delay).

ON and remain for given time For an external ON, value or dimmer step telegram to the light output objects, the light outputs remain switched on for the configured duration + switch-off delay. The time is restarted by a new ON telegram.

The **Duration** parameter is visible.

The **Behaviour at external OFF** parameter specifies how the light outputs behave after the light 1 or 2 external output object has received an OFF or 0% telegram:

Behaviour at external OFF: **Light outputs function: Switch (1 bit) (default):**
OFF and remain as long as movement
OFF, ON again after 5 s if movement (Eco-off)
OFF and remain for given time

Light outputs function: Constant light control:
OFF and remain as long as movement
OFF, after 5 s control again if movement
OFF and remain for given time

Default:

Light outputs function: Switch (1 bit) (default):
OFF, ON again after 5 s if movement (Eco-off)

Light outputs function: Constant light control:
OFF, control again after 5 s if movement

OFF and remain as long as movement

For an external OFF or 0% value telegram to the light outputs objects, the light outputs remain switched off until movement is detected (including switch-off delay).

OFF, ON again after 5 s if movement (Eco-off)

After an external OFF or 0% value telegram to the light output objects, the light outputs are switched off and movement detection suppressed for approx. 5 s.

OFF, control again after 5 s if movement

This allows a person to extinguish the light at the end of the detection zone by pressing a pushbutton and to leave the detection zone. Any person subsequently entering the detection zone (assuming this does occur immediately after pressing the pushbutton) is detected again after approx. 5 s and the light switches on again or control starts.

OFF and remain for given time

For an external OFF or 0% value telegram to the light output objects, the light outputs remain switched off for the configured duration + switch-off delay. The time is restarted by a new OFF telegram.

The **Duration** parameter is visible.

Note: This duration is aborted on a pushbutton command (e.g. Eco-off) and the detector reverts to the corresponding condition.

Note: Overriding the scene objects output is not permitted for the **Light outputs function send scene (8 bit)**.

<i>ON scene and remain for given time</i>	<p>The light outputs send the scene for ON for an ON telegram to the external pushbutton object and remain in this condition for the configured duration + switch-off delay. The time is restarted if a new ON telegram to the external pushbutton object is received.</p> <p>The Duration parameter is visible.</p>
<i>On with control and remain for given time</i>	<p>The controls are started via the light outputs for an ON telegram to the external pushbutton object and remain active for the configured duration + switch-off delay. The time is restarted if a new ON telegram to the external pushbutton object is received.</p> <p>The Duration parameter is visible.</p>
<i>Only ON for light demand</i>	<p>For an ON telegram to the external pushbutton object the light outputs only send an ON telegram if the measured brightness is below the brightness threshold of the respective output. The switched on light outputs remain switched on as long as movement is detected (including switch-off delay).</p>
<i>ON scene only for light demand</i>	<p>For an ON telegram to the external pushbutton object the light outputs only send a scene at ON telegram if the measured brightness is below the brightness threshold of the respective output. The switched on light outputs remain switched on as long as movement is detected (including switch-off delay).</p>
Behaviour at external OFF:	<p>Light outputs function: Switch (1 bit) (default): <i>No reaction</i> <i>OFF and remain as long as movement</i> <i>OFF, ON again after 5 s if movement (Eco-off)</i> <i>OFF and remain for given time</i></p> <p>Light outputs function: Send scene (8 bit): <i>No reaction</i> <i>OFF scene and remain as long as movement</i> <i>OFF scene, ON scene again after 5 s if movement</i> <i>OFF scene and remain for given time</i></p> <p>Light outputs function: Constant light control: Base lighting: Inactive (default) <i>No reaction</i> <i>OFF and remain as long as movement</i> <i>OFF, control again after 5 s if movement</i> <i>OFF and remain for given time</i></p> <p>Light outputs function: Constant light control: Base lighting: Active <i>No reaction</i> <i>OFF and remain as long as movement</i> <i>BL, control again after 5 s if movement</i> <i>OFF and remain for given time</i></p>
Default:	<i>No reaction (default)</i>
<i>No reaction</i>	There is no reaction to an OFF telegram to the external pushbutton object.
<i>OFF and remain as long as movement</i>	The light outputs switch OFF for an OFF telegram to the external pushbutton object and remain switched off as long as movement is detected (including switch-off delay). The switch-off delay is restarted if a new OFF telegram to the external pushbutton object is received.
<i>OFF scene and remain as long as movement</i>	For OFF the light outputs send the scene for an OFF telegram to the external pushbutton object and remain in this condition as long as movement is detected (including switch-off delay). The switch-off delay is restarted if a new OFF telegram to the external pushbutton object is received.
<i>OFF, ON again after 5 s if movement (Eco-off)</i>	Following an OFF telegram to the pushbutton object the light outputs are switched off and movement detection is suppressed for approx. 5 s.

*OFF, control again
after 5 s if movement*

Automatic mode continues after 5 s and switches on if movement is detected or it is dark, or the control system is restarted.

This allows a person to extinguish the light at the end of the detection zone by pressing a pushbutton and to leave the detection zone. Any person subsequently entering the detection zone (assuming this does occur immediately after pressing the pushbutton) is detected again after approx. 5 s and the light switches on again or control starts.

*BL, control again after 5 s if
movement*

Following an OFF telegram to the external pushbutton object the light outputs are not switched off completely. Instead, base lighting is used, i.e. the configured base lighting values are sent to the light outputs.

*OFF scene, ON scene again
after 5 s if movement*

Following an OFF telegram to the external pushbutton object the light outputs send the scene for OFF and movement detection is suppressed for approx. 5 s.

Automatic mode continues after 5 s and the scene for ON is sent if movement is detected or it is dark.

*OFF and remain for
given time*

The light outputs switch OFF for an OFF telegram to the external pushbutton object and remain switched off for the configured duration + switch-off delay. The time is restarted if a new OFF telegram to the external pushbutton object is received.

The **Duration** parameter is visible.

*OFF scene and remain for
given time*

The light outputs send the scene for OFF for an OFF telegram to the external pushbutton object and remain in this condition for the configured duration + switch-off delay. The time is restarted if a new OFF telegram to the external pushbutton object is received.

The **Duration** parameter is visible.

The **Duration** parameter specifies the duration for which the light output objects remain switch on or off:

Duration: 5 min. ... 4 h.

Default: 4 h. (default)

2.3.8 Master function group parameter screen

The **Group** parameter screen is visible for the settings:

Function:	<i>Master</i>
Light outputs function:	<i>Switch (1 bit) (default) or Send scene (8 bit)</i>
Light 2 output:	<i>Inactive (default)</i>

The **Brightness group** parameter specifies whether the brightness group is supported:

Brightness group:	<i>Inactive (default)</i> <i>Active</i>
Default:	<i>Inactive (default)</i>
<i>Inactive (default)</i>	The Brightness group is not supported. Brightness measurements are only performed by the master.
<i>Active</i>	The Brightness group is supported. Brightness measurements are performed by the entire group. The <Object 62 group, brightness group – on/off, trigger> is visible. The Light output status parameter is visible.

The **Light output status** parameter specifies whether the artificial light measurement is performed on the basis of an internal or an external status.

Light output status:	<i>Internal status (default)</i> <i>External status (own object)</i>
Default:	<i>Internal status (default)</i>
<i>Internal status (default)</i>	Artificial light measurement is performed on the basis of an internal status, if light 1 output is switched off.
<i>External status (own object)</i>	Artificial light measurement is performed on the basis of the external status object. The <Object 30 Light 1,2 outputs – status, synchronise> is visible.

2.3.9 Slave function group parameter screen

The **Group** parameter screen is visible for the settings:

Function:	<i>Slave</i>
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The **Triggering cycle duration** parameter specifies the intervals at which a slave triggers the master via the master/slave object if movement is detected:

Triggering cycle duration:	<i>10 sec. ...60 min.</i>
Default:	<i>2 min. (default)</i>
<i>10 sec...60 min.</i>	If movement is detected the slave sends a cyclic trigger ON telegram via the <Object 60 master/slave – on/off, trigger> at the specified cycle duration. Short cycle durations increase the bus load.

The **Zone group** parameter specifies whether a slave supports the zone group:

Zone group:	<i>Inactive (default)</i> <i>Active</i>
Default:	<i>Inactive (default)</i>
<i>Inactive (default)</i>	The Zone group is not supported.
<i>Active</i>	The Zone group is supported. The slave has its own light outputs to control its own zone. The Sub-group parameter is visible.

The **Sub-group** parameter specifies whether additional zones (sub-zones) are supported by the slave:

Sub-group:	<i>Inactive (default)</i> <i>Active</i>
Default:	<i>Inactive (default)</i>
<i>Inactive (default)</i>	The Sub-group is not supported by the slave. The secondary zone can be extended using slaves; however, sub-zone are not possible.
<i>Active</i>	The Sub-group is supported by the slave. The secondary zone can be extended using slaves and sub-zones are also possible. The <Object 61 group, sub-master/slave – on/off, trigger> is visible.

The **Brightness group** parameter specifies whether the brightness group is supported:

Brightness group:	<i>Inactive (default)</i> <i>Active</i>
Default:	<i>Inactive (default)</i>
<i>Inactive (default)</i>	The Brightness group is not supported. Brightness measurements are only performed by the master.
<i>Active</i>	The Brightness group is supported. Brightness measurements are performed by the entire group. The slave has its own brightness threshold and its own alternative brightness threshold. The <Object 62 group, brightness group – on/off, trigger> is visible. The Light output status parameter is visible. The Brightness threshold parameter is visible. The Alternative brightness threshold parameter is visible.

The **Light output status** parameter specifies whether the artificial light measurement is performed on the basis of an internal or an external status.

Light output status:	<i>Internal status (default)</i> <i>External status (own object)</i>
Default:	<i>Internal status (default)</i>
<i>Internal status (default)</i>	Artificial light measurement is performed on the basis of the internal status.
<i>External status (own object)</i>	Artificial light measurement is performed on the basis of the external status object. The <Object 30 Light 1,2 outputs – status, synchronise> is visible.

The **Brightness threshold** parameter specifies the default brightness threshold:

Brightness threshold:	<i>10...2,000 lux</i>
Recommended presence detector setting:	<i>500 lux (default)</i> This setting corresponds to the ambient brightness usually required in offices and schoolrooms.
<i>10...2,000 lux</i>	If the slave detects movement and the measured ambient brightness is below the specified value, it sends ON trigger telegrams at the configured cycle duration to the brightness group object.

An additional brightness threshold can be activated via the **Alternative brightness threshold** parameter:

Alternative brightness threshold:	<i>Inactive (default)</i> <i>Active</i>
Default:	<i>Inactive (default)</i>
<i>Inactive (default)</i>	The alternative brightness threshold is not available
<i>Active</i>	The alternative brightness threshold can be used. The <Object 6 light 1 output, alternative brightness threshold – on/off, switchover> is visible. During operation it is possible to switch between the default brightness threshold and the alternative brightness threshold using the alternative brightness threshold object. The Alternative brightness threshold parameter is visible

The value is specified via the **Alternative brightness threshold** parameter:

Alternative brightness threshold:	<i>10...2,000 lux</i>
Default:	<i>500 lux (default)</i>
<i>10...2,000 lux</i>	If the slave detects movement and the measured ambient brightness is below the specified value, it sends ON trigger telegrams at the configured cycle duration to the brightness group object.

The **Configure via bus** parameter specifies whether the brightness threshold or the alternative brightness threshold can be specified during operation via a communication object:

Configure via bus:	<i>No (default)</i> <i>Yes</i>
Default:	<i>No (default)</i>
<i>No (default)</i>	The brightness threshold cannot be configured via the bus.
<i>Yes</i>	The brightness threshold can be configured via the bus. The <Object 12 light 1 output, remote brightness threshold – value, define> is visible. or The <Object 13 light 1 output, remote alt. brightness threshold – value, define> is visible. In order to define the value the new brightness threshold can be sent via the remote brightness threshold objects. The value, interpreted as DPT 9.004, is immediately adopted. <ul style="list-style-type: none">• The possible value range is <i>10 lux ...2,000 lux</i>. Values smaller than 10 lux but greater than 0 are limited to 10 lux. Values greater than 2,000 lux are limited to 2,000 lux. If the value is 0 the brightness threshold is set to brightness-independent (detector only switches as a function of movement)! The value defined via the bus is stored and is retained even following a voltage interruption. The current remote value can be accessed at any time via the object.

The **Behaviour for programming** parameter specifies how to deal with the defined remote value for a new ETS download:

Behaviour for programming:	<i>Use ETS value (default)</i> <i>Retain remote value</i>
Default:	<i>Use ETS value (default)</i>
<i>Use ETS value (default)</i>	During an ETS download the value selected in the ETS will be applied.
<i>Retain remote value</i>	The last defined remote value is retained. The defined ETS value is ignored. If there is no valid remote value, the ETS value is always adopted.

Note: It is not possible to combine the zone group and the brightness group.

2.3.10 HVAC output parameter screen

The **Switch-on delay** parameter specifies how long the delay is following the first detected movement until the HVAC output object is switched on:

Switch-on delay:	<i>None</i> <i>10 sec. ...40 min.</i>
Default:	<i>5 min. (default)</i>
<i>None</i>	There is no switch-on delay. The HVAC output object immediately switches on when the first movement is detected.
<i>10 sec. ...40 min.</i>	Delay following the first detected movement until the HVAC output is switched on.

The **Switch-off delay** parameter specifies for which duration after the last detected movement the <Object 41 HVAC output – on/off, switch> remains switched on:

Switch-off delay:	<i>30 sec...60 min.</i>
Default:	<i>20 min. (default)</i>
<i>30 sec...60 min.</i>	The HVAC output remains switched on for the specified time following the last detected movement.

The **Configure via bus** parameter specifies whether the switch-off delay can be modified during operation via a communication object:

Configure via bus:	<i>No (default)</i> <i>Yes</i>
Default:	<i>No (default)</i>
<i>No (default)</i>	The switch-off delay cannot be modified via the bus.
<i>Yes</i>	The switch-off delay can be configured via the bus. The <Object 44 HVAC output, remote switch-off delay – value, define> is visible. To define the value the new switch-off delay in [s] must be sent via the remote HVAC object. The value, interpreted as 2 bytes DPT 7.005, is immediately adopted. The possible range of values is <i>30 s ...4 h</i> . Values smaller than 30 s are adopted as 30 s. Values greater than 4 h are adopted as 4 h. The value defined via the bus is stored and is retained even following a voltage interruption. The current remote value can be accessed at any time via the object.

Note: The required value must be entered in [s].

The **Behaviour for programming** parameter specifies how to deal with the defined remote value for a new ETS download:

Behaviour for programming: *Use ETS value (default)*
Retain remote value

Default: *Use ETS value (default)*

Use ETS value (default) During an ETS download the value selected in the ETS will be applied.

Retain remote value The last defined remote value is retained. The defined ETS value is ignored. If there is no valid remote value, the ETS value is always adopted.

The **Behaviour at HVAC demand begin** parameter specifies which telegram the HVAC output object sends for HVAC demand begin:

Behaviour at HVAC demand begin: *No telegram*
ON telegram (default)
OFF telegram
Cyclic ON telegram

Default: *ON telegram (default)*

No telegram No telegram is sent.

ON telegram (default) An ON telegram is sent.

OFF telegram An OFF telegram is sent.

Cyclic ON telegram Cyclic ON telegrams are sent.
The **Cycle duration** parameter is visible.

The **Behaviour at HVAC demand end** parameter specifies which telegram the HVAC output object sends for HVAC demand end:

Behaviour at HVAC demand end: *No telegram*
ON telegram
OFF telegram (default)
Cyclic OFF telegram

Default: *OFF telegram (default)*

No telegram No telegram is sent.

ON telegram An ON telegram is sent.

OFF telegram (default) An OFF telegram is sent.

Cyclic OFF telegram Cyclic OFF telegrams are sent.
The **Cycle duration** parameter is visible.

The **Cycle duration** parameter specifies at what intervals the HVAC output object sends the corresponding telegram (ON or OFF):

Cycle duration: *10 sec...60 min.*
 Default: *2 min. (default)*

The **Block HVAC function** parameter specifies whether the block function for the HVAC output is active or not:

Block HVAC function: *Inactive (default)*
Active

Default: *Inactive (default)*

Inactive (default) The block function is inactive.

Active The block function is active.

The <Object 42 HVAC output – on/off, block> is visible.

The **Block HVAC output** parameter screen is visible.

2.3.11 Block HVAC output parameter screen

The **Block HVAC** parameter defines the behaviour for blocking the HVAC output (HVAC output object):

Block HVAC: *Block with ON (enable with OFF) (default)*
Block with OFF (enable with ON)
Forward block telegram

Default: *Block with ON (enable with OFF) (default)*

Block with ON (enable with OFF) The HVAC output object is blocked by an ON telegram to the HVAC output, block object.

Blocking is annulled by an OFF telegram.

The **Behaviour on block** and **Behaviour on enable** parameters are visible.

Block with OFF (enable with ON) The HVAC output object is blocked by an OFF telegram to the HVAC output, block object.

Blocking is annulled by an ON telegram.

The **Behaviour on block** and **Behaviour on enable** parameters are visible.

Forward block telegram If this parameter is selected, the <Object 43 HVAC output – on/off, enable> is visible for enabling, in addition to the <Object 42 HVAC output – on/off, block>. The HVAC output can be blocked by sending either an ON or an OFF telegram to the <Object HVAC output – on/off, block>.

The corresponding telegram (ON, OFF) is simultaneously forwarded by the HVAC output object.

Enabling is carried out by sending any telegram (ON or OFF) to the <Object HVAC output – on/off, enable>.

The **Behaviour on block** parameter is not visible.

The **Behaviour on enable** parameter is visible.

The **Behaviour on block** parameter specifies which telegram the HVAC output sends for block:

Behaviour on block:	<i>No telegram (default)</i> <i>ON telegram</i> <i>OFF telegram</i>
Default:	<i>No telegram (default)</i>
<i>No telegram (default)</i>	No telegram is sent.
<i>ON telegram</i>	The HVAC output object sends an ON telegram.
<i>OFF telegram</i>	The HVAC output object sends an OFF telegram.

The **Behaviour on enable** parameter specifies which telegram the HVAC output sends on enable and which condition it assumes:

Behaviour on enable:	<i>No telegram (default)</i> <i>ON and remain as long as movement</i> <i>OFF, ON again after 5 s if movement (Eco-off)</i> <i>Send internal status</i>
Default:	<i>No telegram (default)</i>
<i>No telegram (default)</i>	No telegram is sent.
<i>ON and remain as long as movement</i>	The HVAC output object sends an ON telegram and remains switched on as long as movement is detected (including switch-off delay).
<i>OFF, ON again after 5 s if movement (Eco-off)</i>	The HVAC output object sends an OFF telegram and movement detection is suppressed for approx. 5 s. Automatic mode then takes over again and the HVAC output switches on again if movement is detected. If a switch-on delay has been specified for the HVAC output, it switches on again only after the switch-on delay has expired.
<i>Send internal status</i>	The HVAC output object sends the detector's internal status.

2.3.12 HVAC pushbutton functionality parameter screen

Pushbuttons can be directly linked to the HVAC output. This corresponds to planning habits and allows testing using a pushbutton, even when the detector has not yet been installed.

The **Behaviour at external ON** parameter specifies how the HVAC output behaves after the HVAC external output object has received an ON telegram:

Behaviour at external ON:	<i>ON and remain as long as movement (default)</i> <i>ON and remain for given time</i>
Default:	<i>ON and remain as long as movement (default)</i>
<i>ON and remain as long as movement (default)</i>	For an external ON telegram to the HVAC output object the output remains switched on as long as movement is detected (including switch-off delay).
<i>ON and remain for given time</i>	If an external ON telegram is sent to the HVAC output object, the output remains switched on for the configured duration + switch-off delay. The time is restarted by a new ON telegram. The Duration parameter is visible.

The **Behaviour at external OFF** parameter specifies how the HVAC output behaves after the HVAC external output object has received an OFF telegram:

Behaviour at external OFF: *OFF and remain as long as movement*
 OFF, ON again after 5 s if movement (Eco-off)
 OFF and remain for given time

Default: *OFF, ON again after 5 s if movement (Eco-off)*

OFF and remain as long as movement For an external OFF telegram to the HVAC output object the output remains switched off as long as movement is detected (including switch-off delay).

OFF, ON again after 5 s if movement (Eco-off) Following an external OFF telegram to the HVAC output object the output is switched off and movement detection suppressed for approx. 5 s.
 This allows a person to extinguish the light at the end of the detection zone by pressing a pushbutton and to leave the detection zone. Any person subsequently entering the detection zone (assuming this does occur immediately after pressing the pushbutton) is detected again after approx. 5 s and the HVAC output switches on again.

If a switch-on delay has been specified for the HVAC output, it switches on again only after the switch-on delay has expired.

OFF and remain for given time If an external OFF telegram is sent to the HVAC output object, the output remains switched off for the configured duration + switch-off delay. The time is restarted by a new OFF telegram.

The **Duration** parameter is visible.

The **Duration** parameter specifies the duration for which the HVAC output object remains switch on or off:

Duration: *5 min. ... 4 h.*

Default: *4 h. (default)*

Note: This duration is aborted on a pushbutton command (e.g Eco-off) and the detector reverts to the corresponding condition.

Note: The HVAC output has no **separate, external pushbutton object**.

2.3.13 Twilight output parameter screen

The **Twilight threshold** parameter specifies at which brightness threshold the twilight object switches on:

Twilight threshold:	<i>10...2,000 lux</i>
Default:	<i>200 lux (default)</i>
<i>10...2,000 lux</i>	If the ambient brightness is lower than this specified threshold, the configured telegram is sent via the <Object 50 twilight output – light/dark, send>.

The **Hysteresis** parameter specifies the switching hysteresis for switching of the twilight object:

Hysteresis:	<i>None</i> <i>10...400 lux</i>
Default:	<i>50 lux (default)</i>
<i>None</i>	There is no hysteresis. The switch-on threshold is the same as the switch-off threshold. If the ambient brightness fluctuates heavily and is close to the switching threshold, continual switching on and off may occur!
<i>10...400 lux</i>	Once the twilight switch has been switched on, the measured ambient brightness must exceed the twilight threshold + hysteresis in order for the twilight switch to switch-off again.

The **Twilight behaviour** parameter specifies whether an ON or OFF telegram is sent at twilight (dark):

Twilight behaviour:	<i>Dark = ON/light = OFF</i> <i>Dark = OFF/light = ON</i>
Default:	<i>Dark = ON/light = OFF</i>
<i>Dark = ON/light = OFF</i>	Dark: The twilight object sends an ON telegram. Light: The twilight object sends an OFF telegram.
<i>Dark = OFF/light = ON</i>	Dark: The twilight object sends an OFF telegram. Light: The twilight object sends an ON telegram.

The **Send brightness value** parameter specifies whether the detector sends the brightness value cyclically via the brightness value object (2 bytes):

Send brightness value: *No (default)*
 Yes

Default: *No (default)*

No (default) The brightness value is not sent.

Yes The brightness value is sent cyclically as a 2 bytes value (DPT 9.004) via the <Object 51 Twilight output – brightness value, send>.

The <Object 51 Twilight output – brightness value, send> is visible.

The **Cycle duration** parameter is visible.

Note: For example, the brightness value can be used to view the currently measured brightness on a display or in a visualisation.

The **Cycle duration** parameter specifies at what intervals the brightness value is sent:

Cycle duration: *10 sec...60 min.*

Default: *2 min. (default)*

2.3.14 Message output parameter screen

The **Enable message function** parameter specifies whether the message function is enabled by an ON or an OFF telegram to the <Object 55 message output – on/off, enable>:

Enable message function: *Enable with ON (annul with OFF) (default)*
 Enable with OFF (annul with ON)

Default: *Enable with ON (annul with OFF) (default)*

Enable with ON The message function is enabled by an ON telegram to the <Object message output – on/off, enable>.

(annul with OFF) (default)

It is annulled by an OFF telegram to the <Object message output – on/off, enable>.

Enable with OFF
(annul with ON)

The message function is enabled by an OFF telegram to the <Object message output – on/off, enable>.

It is annulled by an ON telegram to the <Object message output – on/off, enable>.

Note: Following a bus voltage interruption the message function is inactive and must first be enabled via the Message, enable object!

The **Message function sensitivity** defines the movement detection sensitivity for the message function:

Message function sensitivity:	<i>Heavily reduced</i> <i>Reduced (default)</i> <i>Slightly reduced</i> <i>Normal</i> <i>Slightly increased</i> <i>Increased</i>
Default:	<i>Reduced (default)</i>
<i>Reduced (default)</i>	This is the recommended setting for the message function. Thanks to the reduced sensitivity the message function is highly resistant to undesirable triggering by draughts, hot lamps, etc.
<i>Heavily reduced</i>	The sensitivity can be reduced if undesired switching occurs. Warning: The detection zone is also reduced by reduced sensitivity!
<i>Normal</i> <i>Slightly increased</i> <i>Increased</i>	If the detector is not sensitive enough or switches on too late, the sensitivity can be increased. Warning: The detection zone is also increased by increased sensitivity!

The **No. of detections for message** specifies how many detections must be recorded until a message is sent:

No. of detections for message:	<i>1...5 (without group)</i> <i>1...8 (with group)</i>
Default:	<i>2 (w/o group) (default)</i>
<i>1...5 (without group)</i>	The specified value corresponds to the number of detections that need to be recorded until a message is sent via the <Object 56 message output – on/off, message>. Detections made by any slaves are not taken into account (without group). A maximum of 1 detection is recorded in any 10 s period. For example, if <i>3 detections</i> are specified, a message is sent after 20 s at the earliest. If a detection has been recorded the next detection must occur within the next 2 minutes to enable it to be recorded. If this is not the case, the previously recorded detections are deleted and counting begins anew.
<i>1...8 (with group)</i>	The specified value corresponds to the number of detections that need to be recorded until a message is sent via the <Object 56 message output – on/off, message>. Detections made by any slaves are taken into account (with group). A maximum of 1 detection is recorded in any 10 s period. For example, if <i>3 detections</i> are specified, a message is sent after 20 s at the earliest. If a detection has been recorded the next detection must occur within the next 2 minutes to enable the new detection to be recorded. If this is not the case, the existing detections are deleted and counting begins anew.

The **Behaviour at presence** parameter specifies which telegram is sent via the message object:

Behaviour at presence:	<i>Only send ON telegram</i> <i>ON, then send OFF telegram</i> <i>Cyclic ON, then send cyclic OFF telegram</i> <i>Send cyclic ON telegram (with acknowledge)</i> <i>Send cyclic OFF telegram (with acknowledge)</i>
Default:	<i>Only send ON telegram</i>
<i>Only send ON telegram</i>	<p>If a person is present the <Object 56 message output – on/off, message> sends an ON telegram.</p> <p>No telegram is sent following the Trail time.</p>
<i>ON, then send OFF telegram</i>	<p>If a person is present the <Object 56 message output – on/off, message> sends an ON telegram.</p> <p>An OFF telegram is sent following the Trail time.</p>
<i>Cyclic ON, then send cyclic OFF telegram</i>	<p>If a person is present the <Object 56 message output – on/off, message> sends a cyclic ON telegram.</p> <p>A cyclic OFF telegram is sent following the Trail time.</p> <p>The Cycle duration parameter is visible.</p>
<i>Send cyclic ON telegram (with acknowledge)</i>	<p>If a person is present the <Object 56 message output – on/off, message> sends cyclic ON telegrams until acknowledged by the <Object 57 message output – on/off, acknowledge> or the Acknowledge waiting time has expired.</p> <p>The <Object 57 message output – on/off, acknowledge> is visible.</p> <p>The Cycle duration parameter is visible.</p> <p>The Acknowledge waiting time parameter is visible.</p>
<i>Send cyclic OFF telegram (with acknowledge)</i>	<p>If a person is present the <Object 56 message output – on/off, message> sends cyclic OFF telegrams until acknowledged by the <Object 57 message output – on/off, acknowledge> or the Acknowledge waiting time has expired.</p> <p>The <Object 57 message output – on/off, acknowledge> is visible.</p> <p>The Cycle duration parameter is visible.</p> <p>The Acknowledge waiting time parameter is visible.</p>

The **Trail time** parameter specifies for which duration after the last detection the message object remains switched on:

Trail time:	<i>10 sec...60 min.</i>
Default:	<i>5 min. (default)</i>
<i>10 sec...60 min.</i>	<p>The <Object 56 message output – on/off, message> remains switched on for the specified time after the last detection.</p> <p>If the time has expired, the <Object 56 message output – on/off, message> sends the following telegrams:</p> <p>An OFF telegram for the setting <i>ON, then send OFF telegram</i></p> <p>No telegram for the setting <i>Only send ON telegram</i></p> <p>A cyclic OFF telegram for the setting <i>Cyclic ON, then send cyclic OFF telegram</i>.</p>

The **Acknowledge waiting time** parameter specifies how to wait for an acknowledge if the cyclic message is sent:

Acknowledge waiting time: *10 sec...60 min.*

Default: *5 min. (default)*

10 sec...60 min.

The specified value corresponds to the waiting time for the acknowledgement from the Message, acknowledge object.

The message object stops sending telegrams once an acknowledgement has been received.

The acknowledgement can be performed by any telegram.

The **Active life sign** parameter specifies whether a cyclic telegram is sent via the life sign object in order to show that the detector is still operating:

Active life sign: *Inactive (default)*
Active

Default: *Inactive (default)*

Inactive (default)

The send life sign function is inactive.

Active

The send life sign function is active.

The <Object 58 message output – life sign, send> sends a cyclic OFF telegram after starting to show that the detector is operating.

The <Object 58 message output – life sign, send> is visible.

The **Cycle duration** parameter is visible.

The **Cycle duration** parameter specifies at what intervals the cyclic message telegrams are sent:

Cycle duration: *10 sec...60 min.*

Default: *2 min. (default)*

3 Functional description

3.1 Behaviour following ETS download or bus voltage return

- Starting behaviour for switching 1 channel, scenes 1 channel, constant light control 1 channel and constant light control dual light functions:
 - The starting phase lasts approx. 30 s and is initially indicated by flashing LED.
 - After 9 s all light outputs are switched on for 12 s.
 - All light outputs and the LED are then switched off in order to measure the artificial light from the light jump difference.
 - Completion of the artificial light measurement is confirmed by a short pulse from the LED.
- Switching function and Dual light scene starting behaviour:
 - The starting phase lasts approx. 35 s and is initially indicated by the flashing LED.
 - After 9 s both light outputs are switched on for 12 s.
 - Light output 2 is then first switched off and Artificial light 2 is measured from the light jump difference.
 - After a further 6 s light 1 output and the LED are switched off in order to measure artificial light 1 from the light jump difference.
 - Completion of the artificial light measurement is confirmed by a short pulse from the LED.

Note: The LED is located below the lens of the pirios 360P KL KNX.

Note: If the light output objects are not yet linked to an actuator or a lamp, correct artificial light measurement is not possible. If an excessively small artificial light value is measured, a default value is used. Once the lamp is connected the artificial light value is adapted during the subsequent switching operations.

3.2 Defining the teach-in brightness threshold

Because the pirios 360P KL KNX measures the brightness at the ceiling level, the measured brightness value may deviate from the governing brightness value at the user's working surface. A mechanism needs to be provided to correct this difference.

The teach-in is a commissioning function providing a very simple procedure for specifying the ideal set value, which also takes into consideration the room's reflection properties, the furnishings and the installation location.

- **Teach-in for the light outputs function: *Switch (1 bit) (default) and Send scene (8 bit)*:**
In switching mode or scene mode the brightness threshold corresponds to the switching threshold (the brightness at which artificial light is required).
 1. Activate teach-in mode with an ON telegram to the teach-in object.
The light outputs are switched off.
The start of the teach-in mode is indicated by a 2 s LED pulse.
 2. The LED flashes, i.e. teach-in is active.
The required brightness must be defined by varying the blinds or waiting for the required brightness situation. This is done by using either a lux meter at the working surface to define a certain value, or the brightness is configured until it is found to be pleasant.
 3. Adopt the current brightness as the brightness threshold by sending an additional ON telegram to the Teach-in object.
The LED shows that the brightness threshold has been saved by a 2 s pulse.
 4. The LED flashes, i.e. teach-in is still active.
As long as the teach-in mode is active, the procedure described above may be repeated as often as required, i.e. the brightness threshold is overwritten by the current brightness value for each ON telegram to the Teach-in object. During the teach-in it is possible to switch between the brightness threshold and the alternative brightness threshold, i.e. the teach-in can be performed for both thresholds.
 5. End the teach-in mode with an OFF telegram to the teach-in object.
The light outputs and the LED are switched off.
The pirios 360P KL KNX reverts to normal mode.
If the second light output is activated, the ratio of the two outputs to each other can be subsequently defined in order to achieve the optimal switching behaviour.

- **Teach-in for the light outputs function: *Constant light control***
In controlled mode the brightness threshold corresponds to the set value (constantly required brightness).
 1. Activate teach-in mode with an ON telegram to the teach-in object.
The light outputs are switched off.
The start of the teach-in mode is indicated by a 2 s LED pulse.
 2. The LED flashes, i.e. teach-in is active.
Ideally, room lighting consists to equal parts of artificial light and daylight. To achieve this it is best to place a lux meter on the working surface. Daylight is now adjusted by varying the blinds such that half of the required set value is measured at the working surface (e.g. for 500 lux this corresponds to 250 lux). The artificial light is then increased via the Dim object until the required set value is reached on the lux meter (250 lux to 500 lux).
 3. Adopt the current brightness as the brightness threshold by sending an additional ON telegram to the Teach-in object.
The LED shows that the brightness threshold has been saved by a 2 s pulse.
 4. The LED flashes, i.e. teach-in is still active.
As long as the teach-in mode is active, the procedure described above may be repeated as often as required, i.e. the brightness threshold is overwritten by the current brightness value for each ON telegram to the Teach-in object. During the teach-in it is possible to switch between the brightness threshold and the alternative brightness threshold, i.e. the teach-in can be performed for both thresholds.
 5. End the teach-in mode with an OFF telegram to the teach-in object.
The light outputs and the LED are switched off.
The detector reverts to normal mode.

3.3 Switch

Switching on and off based on movement and brightness is carried out via the <Object light 1 output – on/off, switch>.



- Brightness threshold:
 - The switch-on threshold corresponds to the configured brightness threshold.
- Switch-on behaviour:
 - The switch-on conditions are darkness and movement (beginning of light demand).
 - If these two conditions are met, the configured telegram is sent at the beginning of light demand via the light output object (default: ON telegram).
- Brightness-independent switch-off behaviour:
 - As soon as no movement is detected the configured switch-off delay starts.
 - If the switch-off delay has expired (end of light demand), the configured telegram is sent at the end of light demand (default: OFF telegram).
 - If movement is detected again during the switch-off delay, the switch-off delay restarts as soon as no movement is detected.
- Brightness-dependent switch-off behaviour:
 - The **Brightness-dependent switch-off** parameter must be active (non-default).
 - The Brightness-dependent switch-off condition is light.
 - The Brightness-dependent switch-off remains active even if movement is detected.
 - The switch-off time if it is light corresponds to the configured switch-off delay. The minimum switch-off time if it is light is 5 min., even if the switch-off delay was configured at less than 5 min.:
t – Brightness-dependent switch-off \geq 5 min.
 - Upon switch-off the configured telegram is sent at end of light demand.

pirios 360P KL KNX parameter settings:

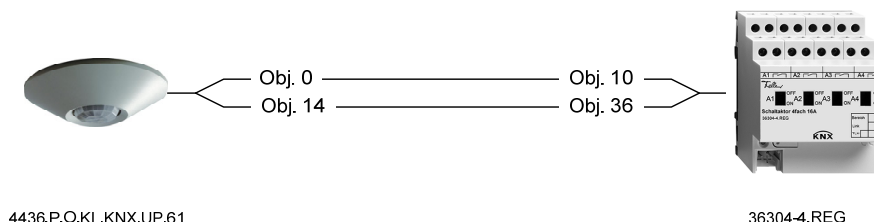
Light 1,2 outputs: **Light outputs function** = *Switch (1 bit) (default)*

3.4 Switch dual light

If the second light output is activated in switching mode, a second light 2 output switching object is available in addition to light 1 output switching object:

<Object 0 light 1 output – on/off, switch>

<Object 14 light 1 output – on/off, switch>



- Brightness thresholds:
 - The switching threshold for light 1 output is configured via the **Light 1 brightness threshold output** parameter.
 - The switching threshold for light 2 output is configured via the **Light 2 output to light 1 output brightness difference** parameter.
- Switch-on behaviour:
 - The light output with the higher brightness threshold is always switched on first.
 - The switch-on conditions are darkness and movement.
 - A new light measurement is then performed. If the lower brightness threshold also has darkness and movement, the second output is also switched on.
 - If both brightness thresholds are the same, both outputs switch on simultaneously.
- Brightness-independent switch-off behaviour:
 - As soon as no movement is detected the configured switch-off delay starts.
 - If the switch-off delay has expired (end of light demand), the output with the lower brightness threshold is switched off first.
 - The output with the higher brightness threshold is switched off with a delay.
 - If both brightness thresholds are the same, light 2 output always switches off before light 1 output.
 - If movement is detected again during the switch-off delay, the switch-off delay restarts as soon as no movement is detected.
- Brightness-dependent switch-off behaviour:
 - The **Brightness-dependent switch-off** parameter must be active (non-default).
 - The Brightness-dependent switch-off condition is light, i.e. the brightness threshold must be exceeded.
 - Each channel independently switches off brightness-dependent. Here, too, switch-off is staggered. The brightness-dependent switch-off remains active even if movement is detected.
 - The switch-off time if it is light corresponds to the configured switch-off delay. The minimum switch-off time if it is light is 5 min., even if the switch-off delay was configured at less than 5 min.:
 - t – Brightness-dependent switch-off \geq 5 min.

pirios 360P KL KNX parameter settings:

Light 1,2 outputs:	Light outputs function	= <i>Switch (1 bit) (default)</i>
Light 1,2 outputs:	Light 2 output	= <i>active</i>

3.5 Constant light control

The following communications objects are available when the constant light control is activated:

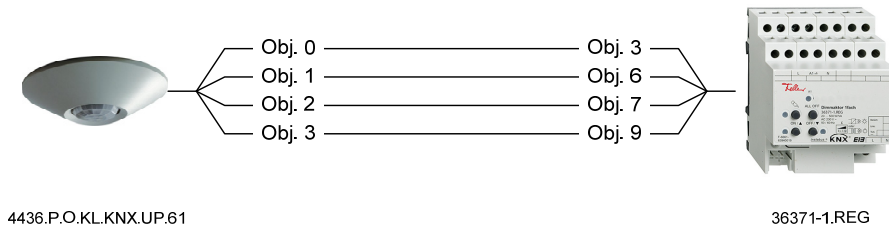
<Object 0 light 1 output – on/off, switch>

<Object 1 light 1 output – lighter/darker, dim>

<Object 2 light 1 output – value, send>

<Object 3 light 1 output – value feedback, receive>.

All four objects must be linked to the actuator for the constant light control to function correctly.



Control takes place via the Value object. This involves a 1 byte object, which allows values between 0 and 255 to be sent. The object is defined in line with the KNX standard as a data point type: DPT_Scaling with the ID: 5.001. If required, the pirios 360P KL KNX itself gathers the information from the actuator via the value feedback object. The actuator does need to actively return the value.

If it is necessary to limit the control range, the lower and upper bounds can be configured via the **Minimum** and **Maximum dim value** parameters. The Value object then only sends values inside the defined range.

- Switch-on behaviour:
 - The conditions for starting control are darkness and movement.
 - If both conditions are met, a start value is sent via the Value object as a function of the current brightness.
 - The pirios 360P KL KNX then controls the brightness to the configured set value. To achieve this it periodically compares the current brightness to the set value and increases or reduces the artificial light by sending a value telegram.
- Switch-off behaviour:
 - As soon as no movement is detected the configured switch-off delay starts.
 - If the switch-off delay has expired, 0% is sent via the Value object. The actuator dims at the configured speed to the minimum and switches off.
 - If movement is detected again during the switch-off delay, the switch-off delay restarts as soon as no movement is detected.
 - Switch-off is brightness-dependent by default if the constant light control is activated. The switch-off time if it is light corresponds to the configured switch-off delay. The minimum switch-off time if it is light is 5 min., even if the switch-off delay was configured at less than 5 min.:
 - t – Brightness-dependent switch-off ≥ 5 min.
 - However, the switch-off time does not start until the control output (<Object light 1 output – value, send>) is at the minimum, i.e. brightness-dependent switch-off only occurs at the minimum dim value! Brightness-dependent switch-off also remains active even if movement is detected.

Recommended configuration of the Feller dim actuators for constant light control:

Defining the brightness range	<i>with base brightness</i>
Maximum brightness	100%
Switch-on brightness	100%
Dim behaviour when receiving a brightness value	<i>dim</i>
Time between two dim steps	< 18 ms
Brightness value feedback	<i>Feedback object is passive status object</i>

pirios 360P KL KNX parameter settings:

Light 1,2 outputs: **Light outputs function** = *Constant light control*

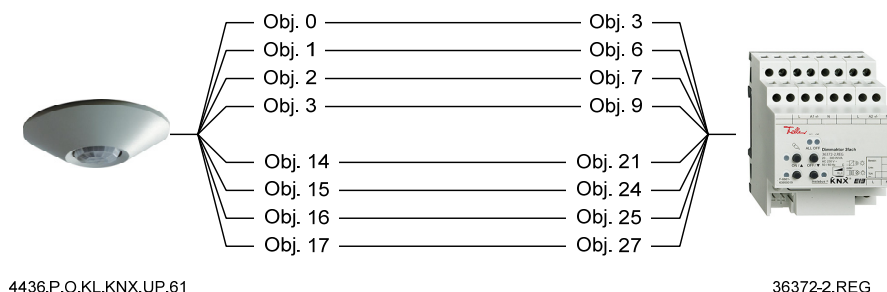
3.6 Constant light control dual light

If the second light output is activated during constant light control, a second object set appears for light 2 output:

- <Object 14 light 1 output – on/off, switch>
- <Object 15 light 1 output – lighter/darker, dim>
- <Object 16 light 1 output – value, send>
- <Object 17 light 1 output – value feedback, receive>.

In order to better utilise the lighting conditions in a given room it is now possible to define a brightness offset for the light 2 output via the light 2 output to light 1 output brightness difference parameter. The two outputs are controlled in parallel and are identical to the 1 channel control. Both light outputs are always switched on and off together.

All eight objects must be linked to the actuator for the constant light control dual light to function correctly.



pirios 360P KL KNX parameter settings:

Light 1,2 outputs: **Light outputs function** = *constant light control*
Light 1,2 outputs: **Light 2 output** = *active*

3.7 Send scene

Scenes can be triggered with the pirios 360P KLKNX.

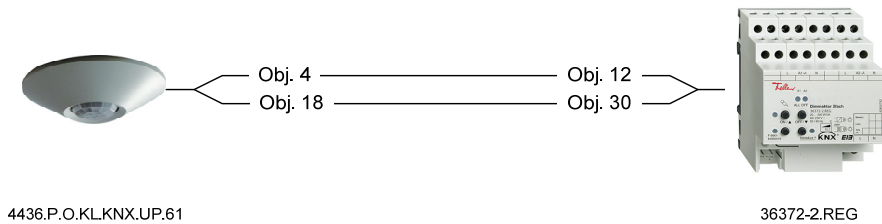
If the pirios 360P KL KNX is operated in the light outputs *send scene (8 bit)* function mode, the following communications object is available for the light 1 output:

<Object 4 light 1 output – scene, send>

If an additional output-scene object is required the light 2 output can be activated. This makes the scene object for the light 2 output visible:

<Object 18 light 2 output – scene, send>

Actuators or pushbuttons which support scene functionality (8 bit scene), can be linked using the pirios 360P KL KNX scene output objects.



- Switch-on behaviour:
 - Switch-on conditions are darkness and movement (beginning of light demand).
 - Whether or not a scene is sent at light demand begin can be defined for each output scene object. If a scene needs to be sent, the required scene number (1...64) must be selected.
- Brightness-independent switch-off behaviour:
 - Whether or not a scene is sent at light demand end can be defined for the output scene object. If a scene needs to be sent, the required scene number (1...64) must be selected.
 - As soon as no movement is detected the configured switch-off delay starts.
 - If the switch-off delay has expired (end of light demand), the configured scene is sent at the end of light demand. If movement is detected again during the switch-off delay, the switch-off delay restarts as soon as no movement is detected.
- Brightness-dependent switch-off behaviour:
 - Is consciously ignored for the pirios 360PKL, because the current light situation is not known.

pirios 360P KL KNX parameter settings:

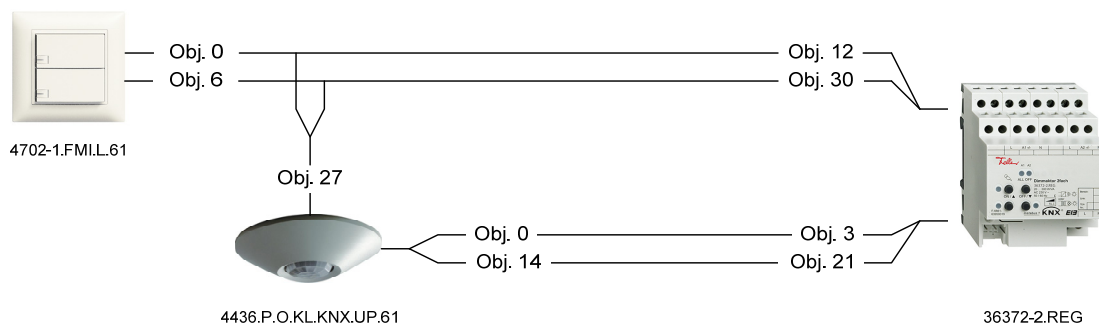
Light 1,2 outputs:	Light outputs function	= <i>send scene (8 bit)</i>
Light 1,2 outputs:	Light 2 output	= <i>active</i>

3.8 Receive scene

For an external scene call up, the pirios 360P KL KNX no longer knows the condition of the actuator it controls via its light outputs. To prevent the detector interfering unnecessarily in such a scene and altering the status of the light outputs, it can be quieted for a certain period following an external scene call up.

The pirios 360P KL KNX has an input scene object to facilitate this:
<Object 27 Light 1,2 outputs – scene, receive>

The scene input object must be linked with the corresponding scene group addresses. It reacts to all scene numbers. A possible trigger may be a pushbutton, for example. When receiving a telegram at the output scene object the pirios 360P KL KNX light 1,2 output objects are quiet. The corresponding quiet duration can be configured via a parameter.



pirios 360P KL KNX parameter settings:

General:	Function	= <i>master</i>
or		
General:	Function	= <i>slave</i>
Group:	Zone group	= <i>active</i>

3.9 Group functions

In a group it is possible to expand the detection range using any member of the pirios KNX detector family.

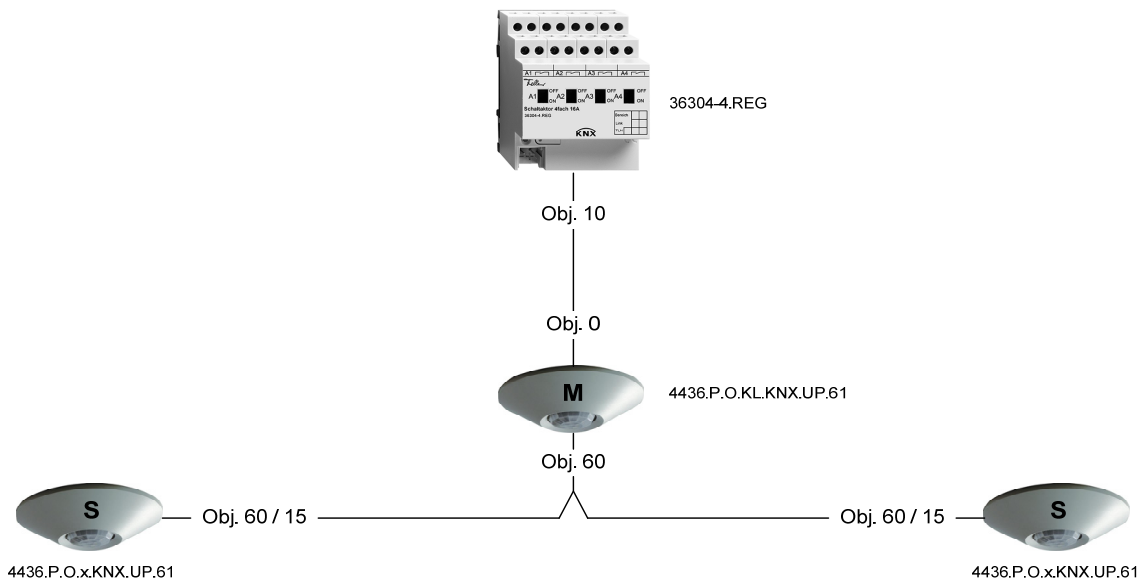
3.9.1 Simple group (master/slave)

A pirios 360P KL KNX in the master function and one or more pirios KNX in the slave function can be connected to form a simple group. The slaves merely serve to expand the detection range. The master always decides whether the light is switched on or not. The master/slave object is available to facilitate the exchange of movement information between slave and master:

<Object 60 group, master/slave – on/off, trigger>

Note: In the existing pirios KNX detector the master/slave object has the number 15.

The group must be implemented such that the bus load is as small as possible. If a presence is detected the slaves send a cyclic (configurable cycle duration tz) **movement telegram** (ON telegram) via the master/slave object. The fastest wins. Only this one sends a telegram. The fastest slave sends the movement telegram for as long as it detects movement. The other slaves listen in and determine whether a telegram has already been sent. The figure below shows a simple group with two slaves and a master in the switching function.



- Switch-on behaviour:
 - The master decides based on its brightness threshold.
 - The master switches on for darkness and master presence or slave presence.

- Switch-off behaviour:
 - The master switches off if the configured trail time has expired or if it switches off brightness-dependent.
 - A slave presence telegram retriggers the master's switch-off delay.
 - During dead time or Eco-time the master ignores the slaves' movement telegrams.
 - In order to guarantee that the slaves switch on again for movement immediately after the dead time or Eco-time have expired, the master sends an ON telegram to the master/slave object. This OFF telegram facilitates slave synchronisation. Upon movement only one of the slaves retriggers the master.

pirios 360P KL KNX parameter settings (master):

General:	Function	= <i>master</i>
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pirios 360P KL KNX parameter settings (slave):

General:	Function	= <i>slave</i>
-----------------	-----------------	----------------

3.9.2 Zone group

In order to detect and illuminate individual light zones the room is divided into a primary zone and several secondary zones. A pirios 360P KL KNX in the master (M) setting serves the primary zone through its light output. The pirios KNX in the slave setting and activated zone group (S_{N1} , S_{N2}) controls the secondary zones. The master/slave object is available to facilitate the exchange of movement information between slave and master: <Object 60 group, master/slave – on/off, trigger>

Note: In the existing pirios KNX detector the master/slave object has the number 15.

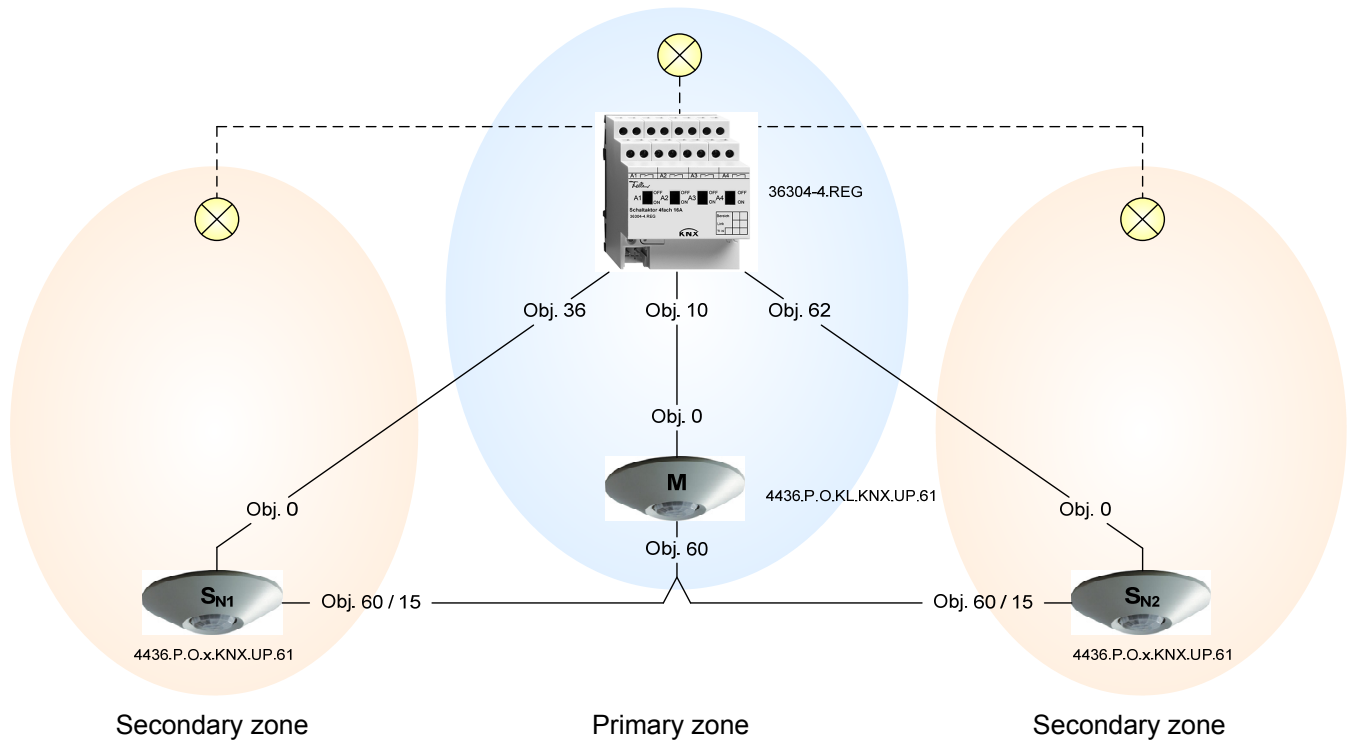
If a person in the secondary zone moves, the primary zone is switched on simultaneously, assuming too little ambient light is measured there. This means the entire route from the secondary zone to the primary zone is illuminated (signpost function).

Movement in the primary zone leads to switching in the primary zone only.

The brightness threshold and the switch-off delay can be defined individually for each zone.

The primary zone's detection zone can be expanded using slaves by linking the slaves' master/slave objects to the master's master/slave object.

The secondary zone's detection zone can be expanded using slaves by linking the slaves' master/slave objects to the secondary zone slaves' sub-master/slave object (S_{N1} , S_{N2}). The secondary zone slave's sub-group must be activated to facilitate this.



pirios 360P KL KNX parameter settings (master):

General: **Function** = *master*

pirios KNX parameter settings (slave):

General: **Function** = *slave*

Group: **Zone group** = *active*

(Group: **Sub-group** = *active*)

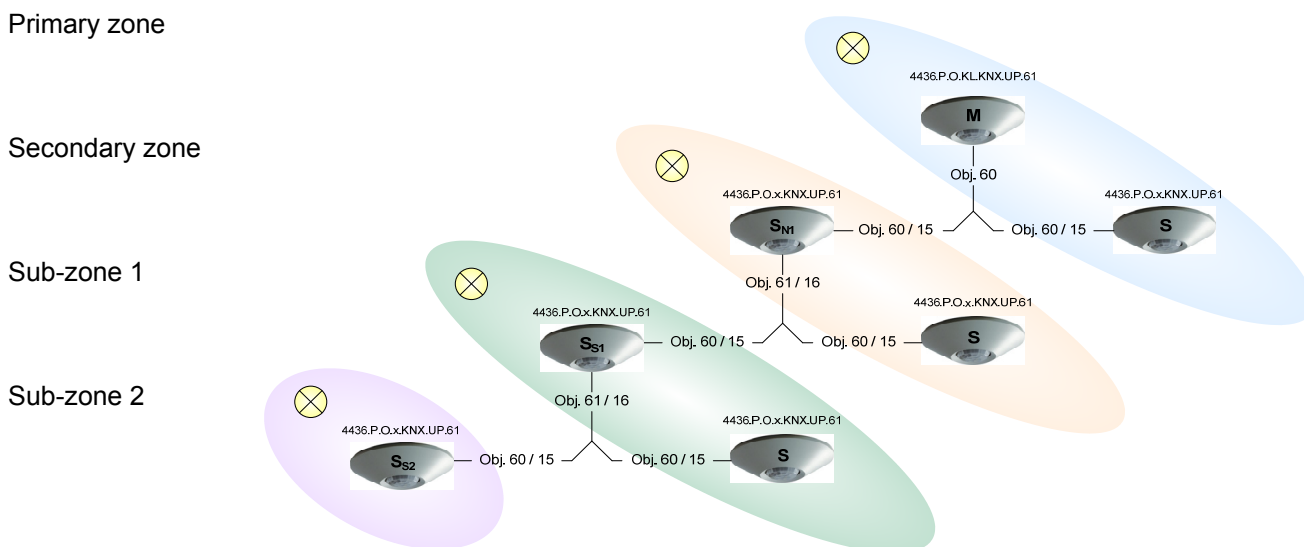
3.9.3 Sub-zone group

A secondary zone can be expanded using additional slaves with their own light outputs (S_{S1}), thus creating sub-zones. The following objects are available for implementing a sub-zone group:

- <Object 60 group, master/slave – on/off, trigger>
- <Object 61 group, sub-master/slave – on/off, trigger>

The sub-zone slave's master/slave object is linked to the higher order zone's sub-master/slave object (by means of group address). Zone expansions can be implemented using simple slaves (S) in each zone by linking the master/slave objects.

Note: The number of telegrams increases as the number of sub-zones increases.



pirios 360P KL KNX parameter settings (master):

General: **Function** = *master*

pirios KNX parameter settings (slave):

General: **Function** = *slave*

Group: **Zone group** = *active*

Group: **Sub-group** = *active*

3.9.4 Brightness group

In order to detect brightness the room is divided into several brightness zones. The pirios 360P KL KNX with the master setting can be installed in any zone, the remaining zones are covered by pirios KNX with the slave setting. The following objects must be linked in order to facilitate the exchange of movement and brightness information between slave and master, and to guarantee correct functioning:

<Object 60 group, master/slave – on/off, trigger>

<Object 62 group, brightness group – on/off, trigger>

Note: In the existing pirios KNX detector the master/slave object has the number 15 and the brightness group object number 17.

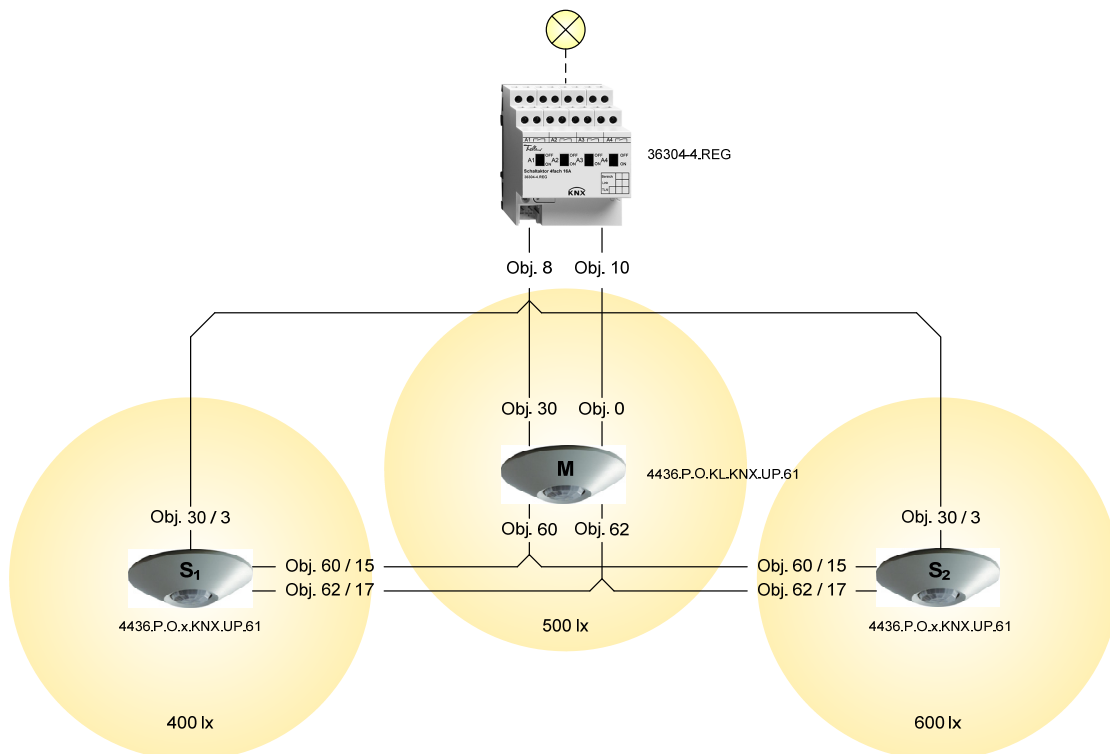
If a person is located in a zone where too little ambient brightness is measured, the corresponding slave requests light from the master. This switches on the light in the whole room, regardless of whether it detects sufficient ambient brightness or not.

If a person is located in a zone with sufficient ambient brightness, the slave only reports movement and the master does not switch the light on.

In order to guarantee that the artificial light measurement is carried out correctly within the group, the external status objects should be linked to the actuator's feedback object. The slaves are notified when the master has switched the light on or off via the status object. In particular when brightness-dependent switch-off is required in a group, linking is stringently required. In a brightness group the external status object can be activated via the external light output status parameter (own object) and is then available:

<Object 30 Light 1,2 outputs – status, synchronise>

Note: In the existing pirios KNX detector the synchronise status object has the number 3.



Parameter settings:

pirios 360P KL KNX parameter settings (master):

General:	Function	= <i>master</i>
Light 1,2 outputs:	Light outputs function	= <i>switch (1 bit) (default) or Send scene (8 bit)</i>
Group:	Brightness group	= <i>active</i>
Group:	Light output status	= <i>external status (own object)</i>

pirios 360P KL KNX parameter settings (slave):

General:	Function	= <i>slave</i>
Group:	Zone group	= <i>inactive (default)</i>
Group:	Brightness group	= <i>active</i>
Group:	Light output status	= <i>external status (own object)</i>

Note: It is not possible to combine the zone group and the brightness group.

3.10 Message function

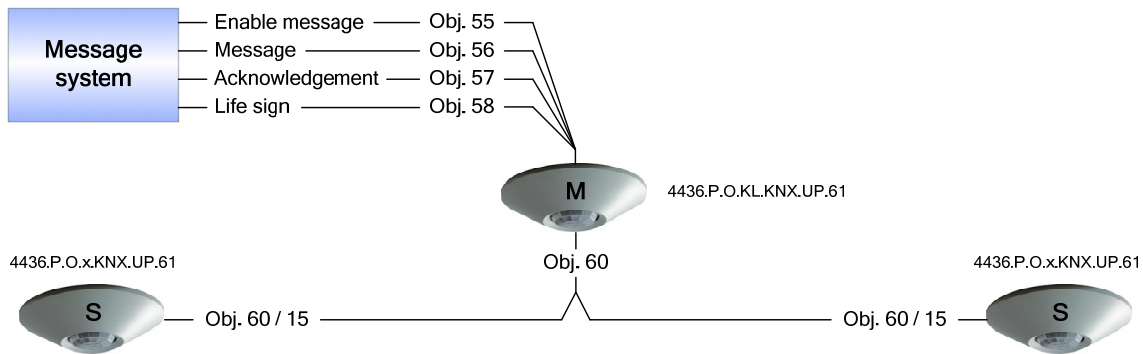
The message function provides the following communications objects:

- <Object 55 message output – on/off, enable>
- <Object 56 message output – on/off, message>
- <Object 57 message output – on/off, acknowledge>
- <Object 58 message output – life sign, send>

The sensitivity of movement detection and the number of detections to initiate a message can be specified for the message function, independently of the light output.

Devices can be used with the slave setting to expand the detection zone. They notify the master whether they have detected movement via the master/slave object. The master continuously counts the number of detections. The number of detections required until it sends a message can be specified on the master. It is important that the slaves' cycle duration is not configured to be greater than 2 minutes, because the master specifies a fixed, 2 minute time window by which time the next detection must arrive. The time window is renewed for every movement detected or every movement telegram. If the master does not receive a movement message within 2 minutes, the counted detections are deleted.

The detector with the master setting provides the connection to a message system, where notifications about absence, alarms and additional functions can be executed.



Warning: The pirios KNX message function serves to notify absence. It can be configured such that it is extremely resistant to undesirable triggering by draughts, hot lamps, etc. However, it is not certified for safety-relevant applications!

pirios 360P KL KNX parameter settings:

General:	Function	= <i>master</i>
General:	Message output	= <i>active</i>

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