

## **Auro KNX**

### **Manual**

basalte bvba  
hundelgemsesteenweg 1a  
9820 merelbeke  
belgium

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### 1. Introduction

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Auro is all a motion detector should be: intelligent, fast, and almost invisible.

Auro is a miniature KNX motion detector, which connects directly to the bus without additional interface. Auro is the most compact full KNX motion detector on the market, with a diameter of 52mm. The inside fitting diameter is 43mm, with an installation depth of only 39mm.

Auro is very discrete, not only because of the very compact dimensions, but also by its extra flat design, with an elevation of only 1mm.

The detection range of Auro is set for residential applications. Horizontal reach is 360°, while the vertical reach attains 90°. If installed at a height of 2.5m, Auro has a detection range with a diameter of approximately 5m. Maximum height is 5 m.

Auro contains a built-in light and temperature sensor. The incorporated led illumination enables Auro to light up with every movement.

## 2. Installation

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Auro is intended for ceiling mounting. In order to install Auro, a round opening should be made with a diameter of 43mm.

The depth required for the Auro KNX is 39mm. Additional depth should be reserved for connecting the device.

Auro has a horizontal detection angle of 360° and a vertical detection angle of 90°. Installed at a height of 2.5m, Auro will have a circular detection field with a diameter of approximately 5m. The maximum installation height is 5m.

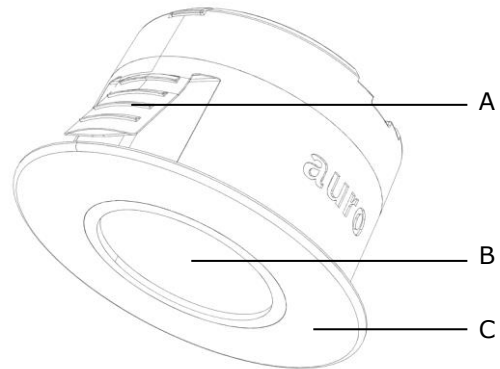
***Note: Do not paint over the central IR window since this will prevent Auro from operating correctly.***

### 2.1 Identifying the parts

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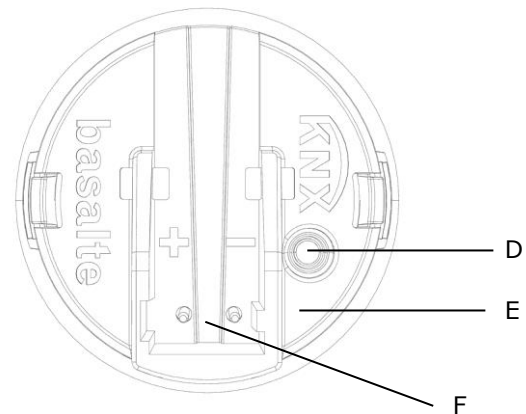
#### 2.1.1 Front view

- A Mounting clip
- B Central IR window
- C Housing (White, RAL colour 9016)



#### 2.1.2 Rear view

- D Programming button
- E Programming LED
- F KNX connector



## **3. General**

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### **3.1 Master/slave functionality**

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In situations where different motion detectors control the same lighting fixture, for example in an entry hall, it is possible to install one of the motion detectors as the master, and the other as the slave. The slave motion detectors will then communicate every detected movement to the master device via a 1 bit trigger object (communication object 8/9). The master in turn then controls the lighting fixture.

### **3.2 Day/Night object**

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The motion detector can be informed that it is day or night through a 1-bit external day/night-object (via communication object 5). Depending on the object, the motion detector can then dim the light to different levels, activate different scenes, switch on the light for different periods of time, or handle different lighting thresholds in the case of light-dependent switching.

### **3.3 Light-dependent switching**

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The motion detector can use an internal light sensor to switch a device on or off, depending on the degree of light available in the room. This means that the light will only be switched on if the degree of light measured is below a previously set lighting threshold. This threshold can be set differently for day or night using the day/night object.

The lighting threshold can also be set via an external 2-byte group address (communication objects 12/13/14), for example by using a touch screen.

There is also a 1-bit group address available, called light object, which is steered by the motion detector if the measured lighting level is below the lighting threshold (communication object 6).

### 3.4 Switching, dimming and scenes

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The motion detector can switch a lighting fixture on or off, dim the light, or control scenes.

In case the light is dimmed, a different dimming value can be set for switching on or off. Different dimming values can be set for day or night. The motion detector can for example set the lighting level at 80% during the day and at 30% during the night.

When switching off, a dimming value of 10% for example can be set so that there is a permanent minimum lighting in the room.

If both a switched and a dimmed lighting fixture are operated, then the motion detector can simultaneously operate a 1-bit switch object (communication object 0) and a 1-byte dim object (communication object 1).

When operating scenes, the motion detector can call up different scenes, also depending on the time of day or night.

When the lights are switched off, the motion detector can send a scene (communication object 2), but there is also the option of sending a 0 on a 1-bit all-off object (communication object 3).

### 3.5 Time setting also via external time value

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The motion detector will activate the lighting fixture for a predefined period of time. This time value can be different for day or night. For example, the motion detector can operate the light for two minutes during daytime, and for 5 minutes in the night.

This time value can also be set externally via a 2-byte group address (communication object 17/18/19), for example by using a touch screen.

### 3.6 Minimum time elapse between off and on

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It is possible to set the motion detector to observe a minimum time elapse between switching off and re-activating the lights. This avoids the situation where switching off a lighting fixture is considered as a detection, and it also extends the life cycle of the lighting fixture.

### 3.7 Blocking object

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The motion detector can be blocked using a 1-bit blocking object (communication object 7).

In this way, the motion detector can be blocked if the lighting fixture is operated by a switch.

It is also possible to set up a time period during which the motion detector remains locked after the blocking object is disabled.

This avoids the situation that, when the light fixture is switched off, and thus also the blocking object, the lighting fixture is immediately switched on again by the motion detector.

## **3.8 Ventilation object**

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Independently from the lighting, the motion detector can also steer the ventilation of the room via a 1-bit group address (communication object 15).

The operation of the ventilation is independent of the measured degree of lighting and also independent of the blocking object.

It is possible to establish a time elapse period during which the ventilation is further activated after the lighting has been switched off.

This time elapse can be set in relation to the output of the motion detector, but also in relation to an external 1-bit status object (communication object 16). This enables the ventilation to follow the lighting, even if this is externally steered by for instance a switch.

## **3.9 Feedback via motion object**

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A 1-bit motion-object (communication object 4) is available which can be steered by every detection, independent of the lighting levels and independent of the blocking object.

This means that the motion detection can for instance be visualized on a touch screen, or the detection can be used for security applications.

## **3.10 Feedback via led**

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An internal led light can be activated when motion is detected. Thus, the motion detector can be tested at installation, without it having to activate a lighting fixture. The led is activated during detection and is independent of the lighting level and independent of the blocking object.

The led can also be activated via a 1-bit group address (communication object 20). Thus, the led has a signalling function, or can be linked to the lighting switch-object.

## **3.11 Broadcast of measured lux value**

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The measured lux value can be broadcast in cycle via a 2-byte group address (communication object 10).

The lux value is only broadcast if the feedback led is not activated.



## **3.12 Broadcast of measured temperature**

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The motion detector contains a built-in temperature sensor. The measured temperature can be broadcast via a 2-byte group address (communication object 11).

Although the position of a motion detector is not ideal for measuring temperature, the measurement can give an indication of temperature in a room without having to install a separate temperature sensor.

Temperature measurement can be compensated by defining a compensation value.

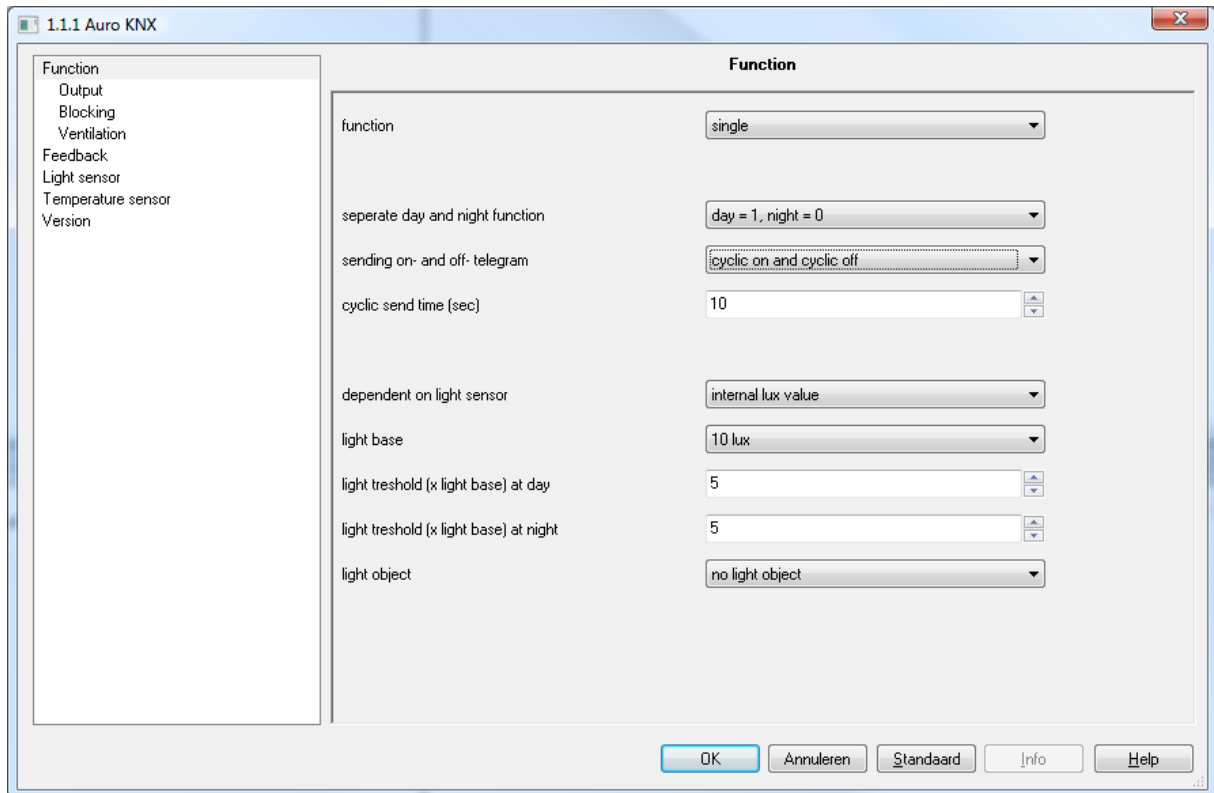
## **3.13 Heat alarm**

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The motion detector can send out a heat alarm via a 1-bit group address (communication object 21). The alarm is sent out when the measured temperature surpasses a threshold. In this manner possible danger can be detected when the temperature for example exceeds 45°C.

## 4. Configuration of parameters

### 4.1 Function

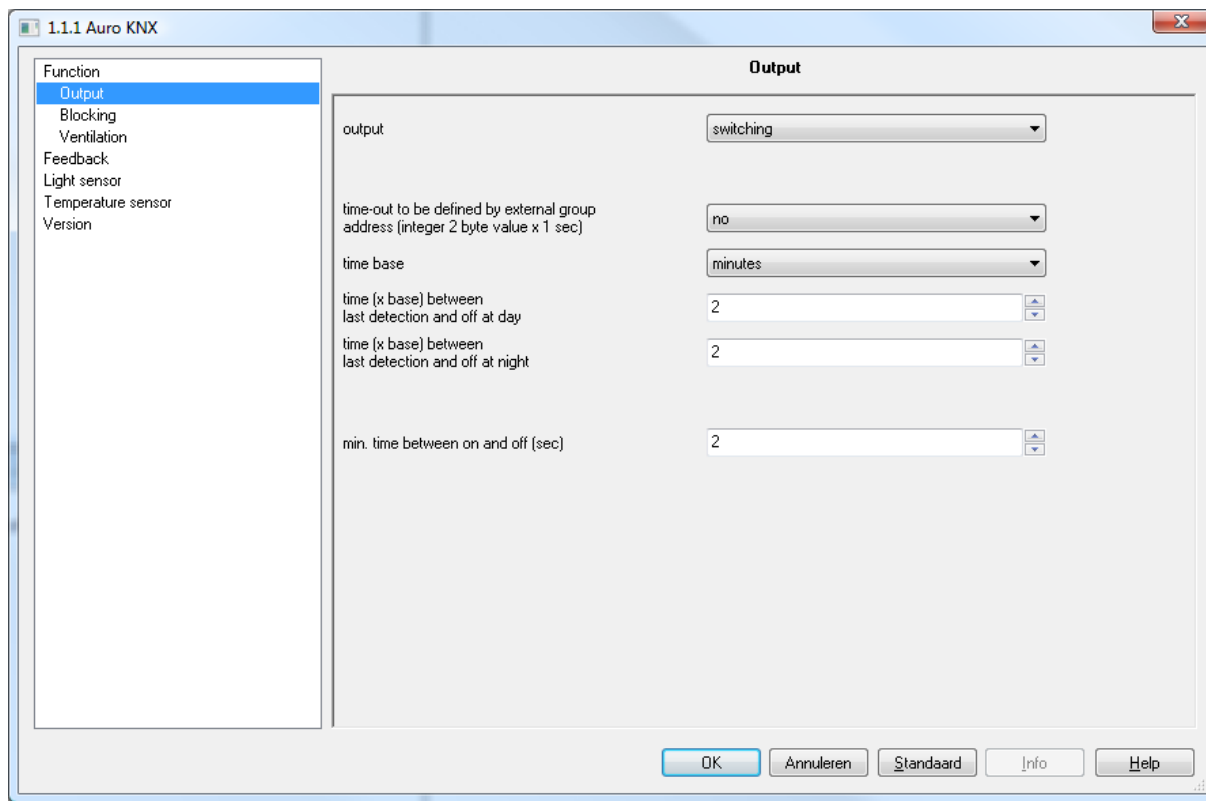


Parameter	Description
Function	<p>This parameter configures the mode of the device.</p> <p><u>Settings:</u>                      Single                      Master                      Slave</p> <p><u>Communication objects:</u>                      8: trigger (input)                      9: trigger (output)</p>
Separate day and night function	<p>This parameter disables or sets the day/night function.</p> <p><u>Settings:</u>                      Disable                      Day = 1, night = 0                      Day = 0, night = 1</p> <p><u>Communication objects:</u>                      5: day/night</p>

Sending on- and off-telegram	<p>This parameter defines when the on and off commands are sent.</p> <p><u>Settings:</u>            Only on at first detection            Only on at every detection            On at first detection and off after time-out            On at every detection and off after time-out            Cyclic on and cyclic off            Only off after time-out            Cyclic off after time-out</p>
Cyclic send time (sec)	<p>This parameter sets the cyclic send time for previous parameter, in case this is cyclic.</p> <p><u>Settings:</u>            Value between 1 and 60</p>
Depending on light sensor	<p>This parameter disables or sets the light dependent function.</p> <p><u>Settings:</u>            Disable            Internal lux value            External lux value</p> <p><u>Communication objects:</u>            12: light threshold            13: light threshold during day            14: light threshold during night</p>
Light base	<p>This parameter defines the multiple factor for the light base.</p> <p><u>Settings:</u>            1 lux            10 lux            100 lux</p>
Light threshold (x light base)	<p>This parameter sets the threshold of the light depending switching.</p> <p><u>Settings:</u>            Value between 1 and 10</p> <p><i>Remark: This value is multiplied with the light base value.</i></p>
Light threshold (x light base) at day	<p>This parameter sets the threshold of the light depending switching during the day when day/night function is enabled.</p> <p><u>Settings:</u>            Value between 1 and 10</p> <p><i>Remark: This value is multiplied with the light base value.</i></p>

Light threshold (x light base) at night	<p>This parameter sets the threshold of the light depending switching during the night when day/night function is enabled.</p> <p><u>Settings:</u> Value between 1 and 10</p> <p><i>Remark: This value is multiplied with the light base value.</i></p>
Light object	<p>This parameter disables or sets the light object. This light object indicates the light level in relation to the threshold.</p> <p><u>Settings:</u> No light object Light = 1 above threshold Light = 1 under threshold</p> <p><u>Communication objects:</u> 6: light threshold status</p> <p><i>Remark: This light-object will be set on 1 when the lux level is above/under the threshold.</i></p>

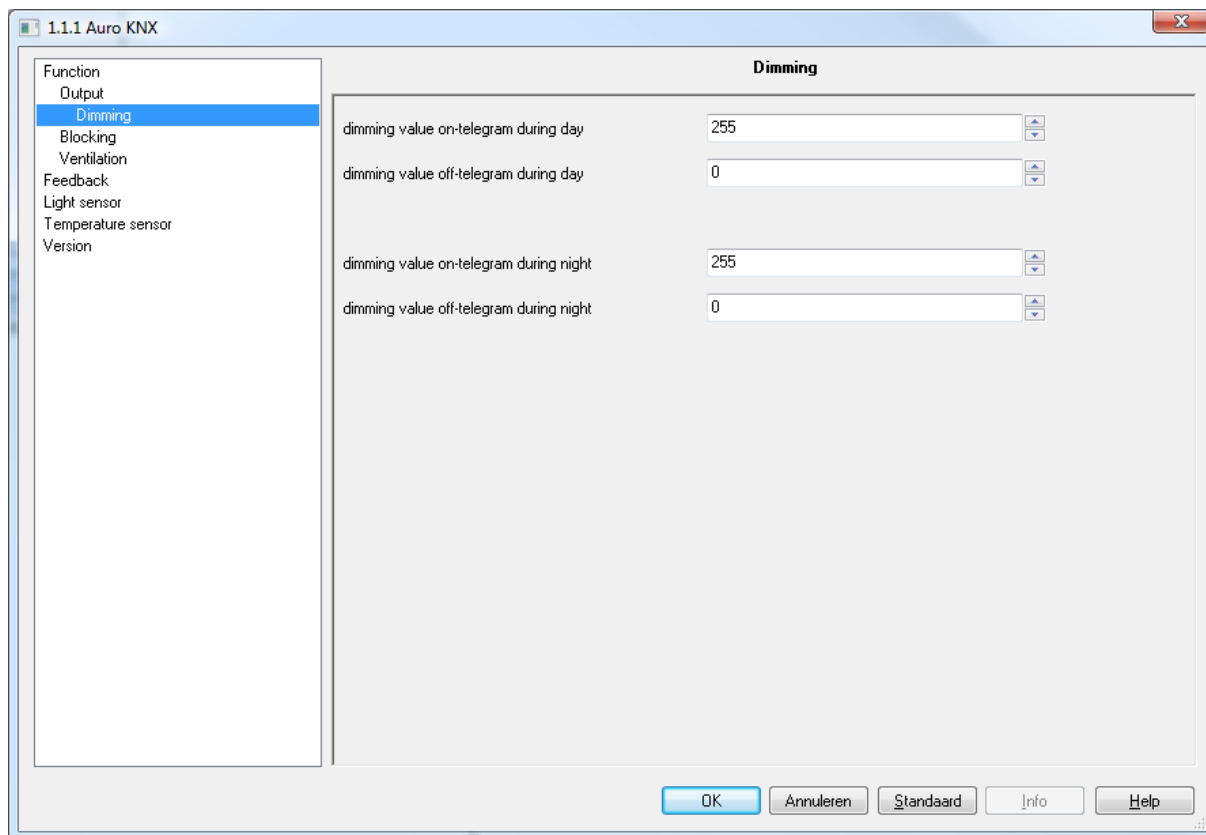
## 4.1.1 Output



Parameter	Description
Output	<p>This parameter defines the output type of the device.</p> <p><u>Settings:</u>                      Switching                      Dimming                      Switching and dimming                      Scene on/scene off                      Scene on/all off</p> <p><u>Communication objects:</u>                      0: light                      1: dim value                      2: scene                      3: all off</p>

<p>Time-out to be defined by groupaddress (integer 2 byte value x1 sec)</p>	<p>This parameter enables or disables the function to control the time-out by a group address.</p> <p><u>Settings:</u> No Yes</p> <p><u>Communication objects:</u> 17: timeout 18: timeout during day 19: timeout during night</p> <p><i>Remark: This parameter is only for the following functions: "On at first detection and off after time-out", "On at every detection and off after time-out", "Only off after time-out" and "Cyclic off after time-out".</i></p>
<p>Time base</p>	<p>This parameter defines the time base for the output.</p> <p><u>Settings:</u> Seconds Minutes</p>
<p>Time (x base) between last detection and off</p>	<p>This parameter sets the time that the output remains on after the last detection before turning the output off.</p> <p><u>Settings:</u> Value between 1 and 60</p> <p><i>Remark: This value can be in seconds or minutes, depending on the parameter "time base".</i></p>
<p>Time (x base) between last detection and off at day</p>	<p>This parameter sets the time that the output remains on after the last detection before turning the output off during the day.</p> <p><u>Settings:</u> Value between 1 and 60</p> <p><i>Remark: This value can be in seconds or minutes, depending on the parameter "time base".</i></p>
<p>Time (x base) between last detection and off at night</p>	<p>This parameter sets the time that the output remains on after the last detection before turning the output off during the night.</p> <p><u>Settings:</u> Value between 1 and 60</p> <p><i>Remark: This value can be in seconds or minutes, depending on the parameter "time base".</i></p>
<p>Min. time between off and on (sec)</p>	<p>This parameter sets the minimum time elapse between switching off and re-activating the lights. This avoids the situation where switching off a lighting fixture is considered as a detection and it also extends the life cycle of the lighting fixture.</p> <p><u>Settings:</u> Value between 1 and 60</p>

## 4.1.1.1 Dimming

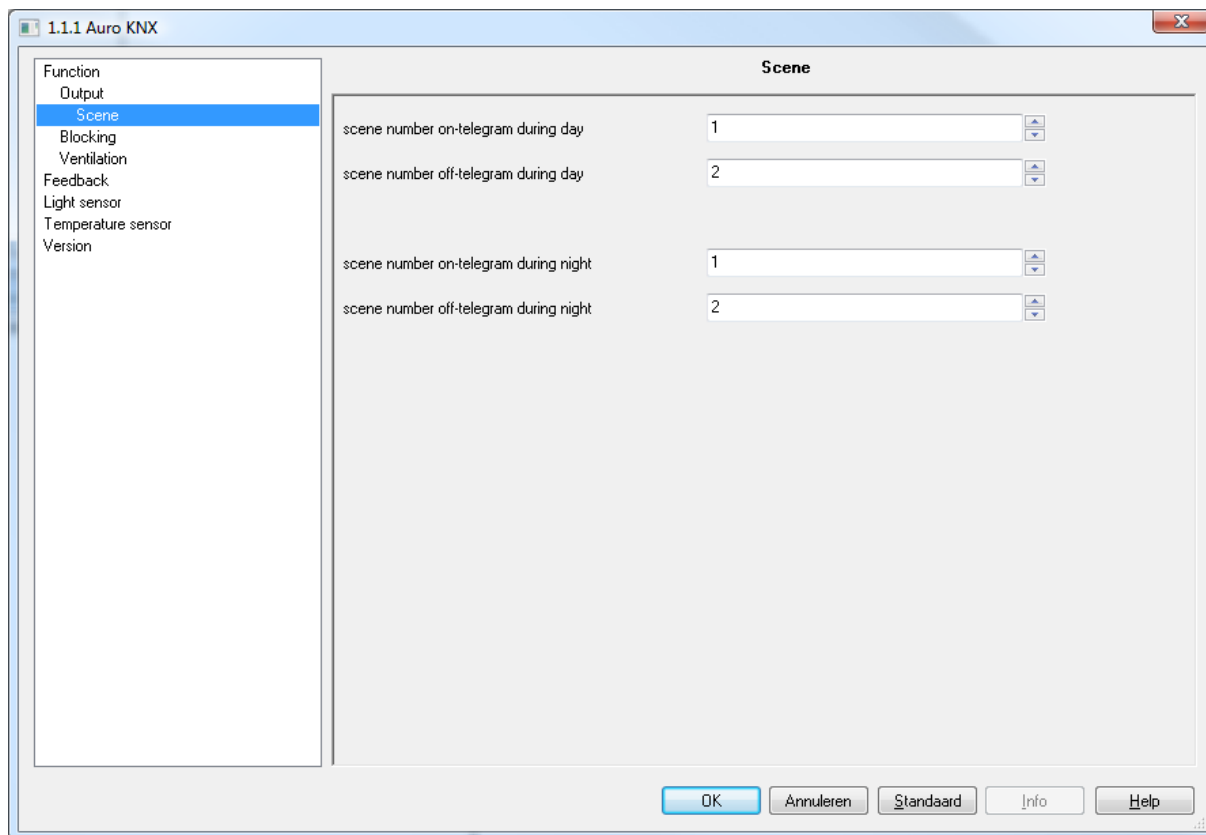


Parameter	Description
Dimming value on-telegram	This parameter sets the dim value when turning the light on.  <u>Settings:</u> Value between 0 and 255  <u>Communication objects:</u> 1: dim value
Dimming value off-telegram	This parameter sets the dim value when turning the light off.  <u>Settings:</u> Value between 0 and 255  <u>Communication objects:</u> 1: dim value
Dimming value on-telegram during day	This parameter sets the dim value when turning the light on during the day.  <u>Settings:</u> Value between 0 and 255  <u>Communication objects:</u> 1: dim value

Dimming value off-telegram during day	This parameter sets the dim value when turning the light off during the day.  <u>Settings:</u> Value between 0 and 255  <u>Communication objects:</u> 1: dim value
Dimming value on-telegram during night	This parameter sets the dim value when turning the light on during the night.  <u>Settings:</u> Value between 0 and 255  <u>Communication objects:</u> 1: dim value
Dimming value off-telegram during night	This parameter sets the dim value when turning the light off during the night.  <u>Settings:</u> Value between 0 and 255  <u>Communication objects:</u> 1: dim value



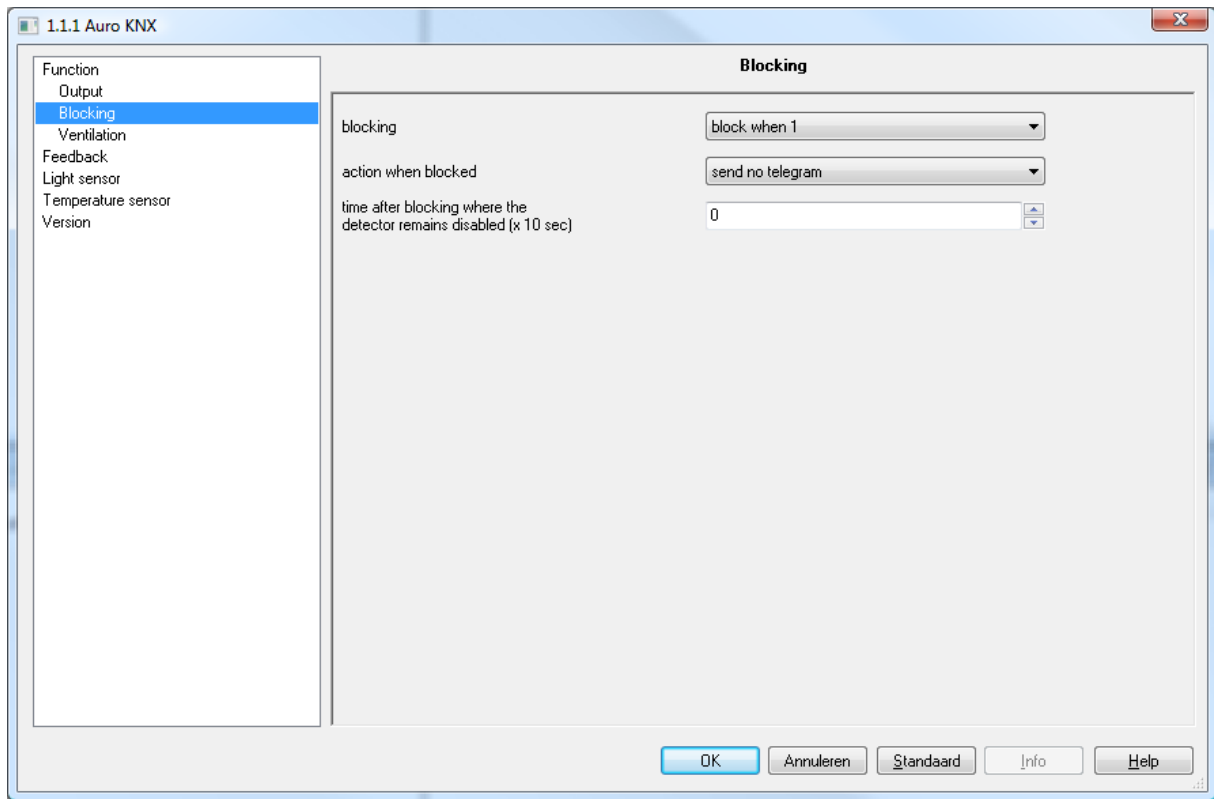
### 4.1.1.2 Scene



Parameter	Description
Scene number on-telegram	<p>This parameter sets the scene number when turning the light on.</p> <p><u>Settings:</u> Value between 1 and 64</p> <p><u>Communication objects:</u> 2: scene number</p>
Scene number off-telegram	<p>This parameter sets the scene number when turning the light off.</p> <p><u>Settings:</u> Value between 1 and 64</p> <p><u>Communication objects:</u> 2: scene number</p>

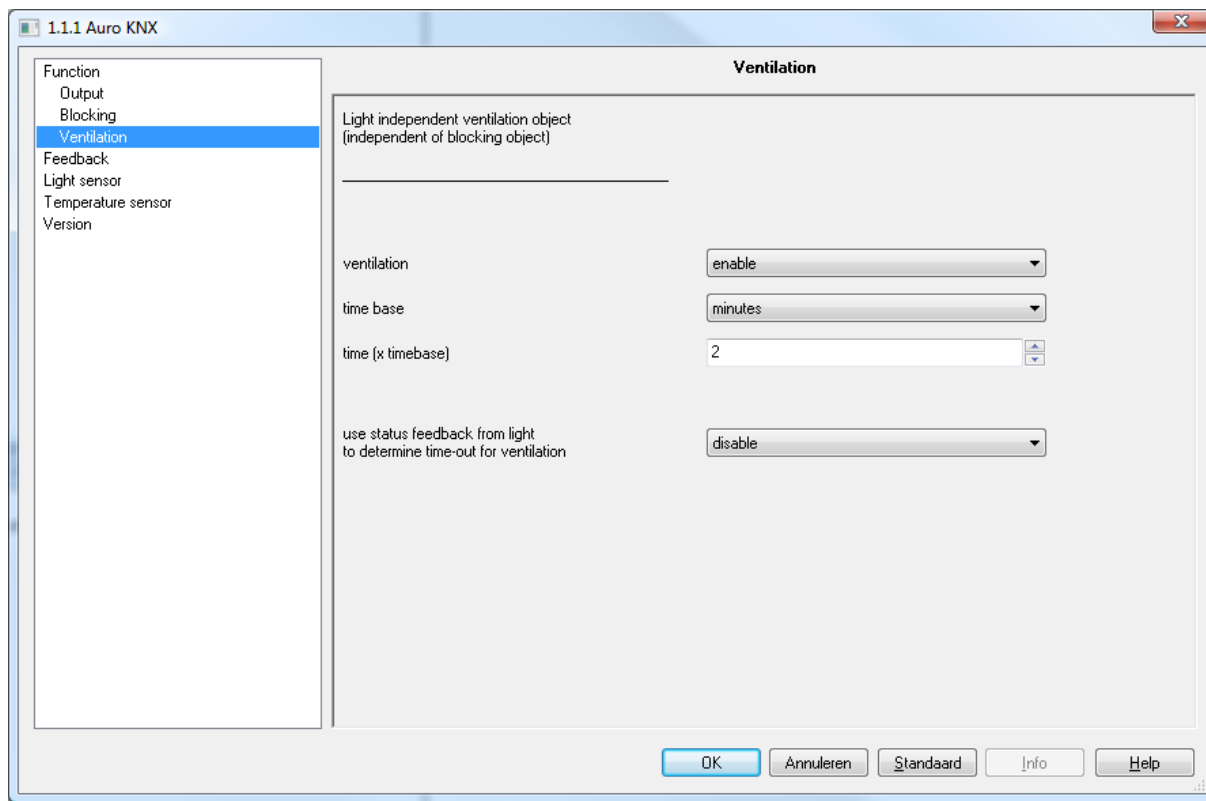
<p>Scene number on-telegram during day</p>	<p>This parameter sets the scene number when turning the light on during the day.</p> <p><u>Settings:</u> Value between 1 and 64</p> <p><u>Communication objects:</u> 2: scene number</p>
<p>Scene number off-telegram during day</p>	<p>This parameter sets the scene number when turning the light off during the day.</p> <p><u>Settings:</u> Value between 1 and 64</p> <p><u>Communication objects:</u> 2: scene number</p>
<p>Scene number on-telegram during night</p>	<p>This parameter sets the scene number when turning the light on during the night.</p> <p><u>Settings:</u> Value between 1 and 64</p> <p><u>Communication objects:</u> 2: scene number</p>
<p>Scene number off-telegram during night</p>	<p>This parameter sets the scene number when turning the light off during the night.</p> <p><u>Settings:</u> Value between 1 and 64</p> <p><u>Communication objects:</u> 2: scene number</p>

## 4.1.2 Blocking



Parameter	Description
Blocking	<p>This parameter disables or sets the blocking function. While the blocking object is active, the motion detector is disabled.</p> <p><u>Settings:</u>                      Disable                      Block when 1                      Block when 0</p> <p><u>Communication objects:</u>                      7: blocking</p>
Action when blocked	<p>This parameter defines the action when blocked.</p> <p><u>Settings:</u>                      Send no telegram                      Send off telegram</p>
Time after blocking where the detector remains disabled (x10sec)	<p>This parameter defines the time that the detector remains disabled after unblocking.</p> <p><u>Settings:</u>                      Value between 0 and 255</p>

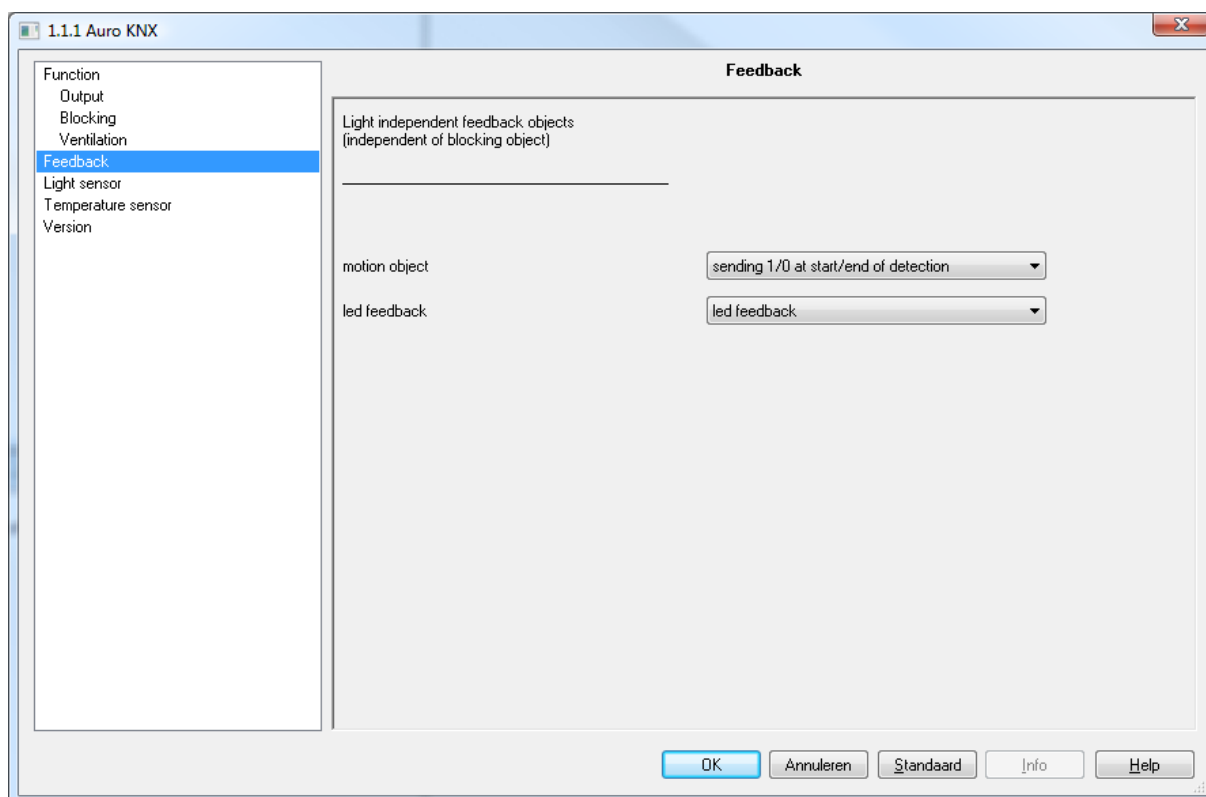
## 4.1.3 Ventilation



Parameter	Description
Ventilation	<p>This parameter enables or disables the ventilation function.</p> <p><u>Settings:</u> Disable Enable</p> <p><u>Communication objects:</u> 15: ventilation</p>
Time base	<p>This parameter defines the time base for the ventilation.</p> <p><u>Settings:</u> Seconds Minutes</p>
Time	<p>This parameter sets the time to control the ventilation.</p> <p><u>Settings:</u> Value between 1 and 60</p> <p><i>Remark: This value can be in seconds or minutes, depending on the parameter "time base".</i></p>

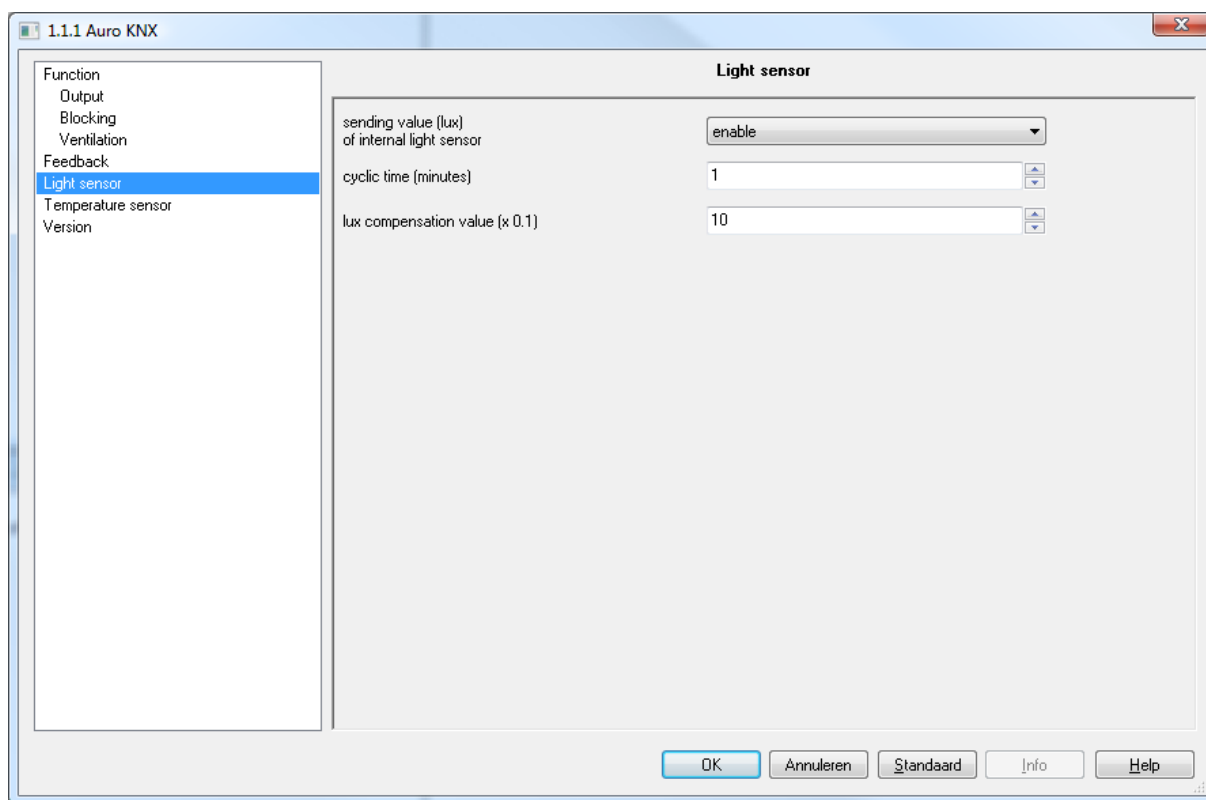
<p>Use status feedback from light to determine time-out for ventilation</p>	<p>This parameter enables or disables the function to control the time-out depending on the status object.</p> <p><u>Settings:</u> Disable Enable</p> <p><u>Communication objects:</u> 16: light status</p>
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## 4.2 Feedback



Parameter	Description
Motion object	<p>This parameter disables or sets the motion object.</p> <p><u>Settings:</u>                      No motion object                      Sending 1/0 at start/end of detection                      Sending 1 at every detection</p> <p><u>Communication objects:</u>                      4: motion</p>
Led feedback	<p>This parameter sets the behaviour of the feedback led's.</p> <p><u>Settings:</u>                      No led feedback                      Led feedback                      Led controlled by group address</p> <p><u>Communication objects:</u>                      20: led feedback</p>

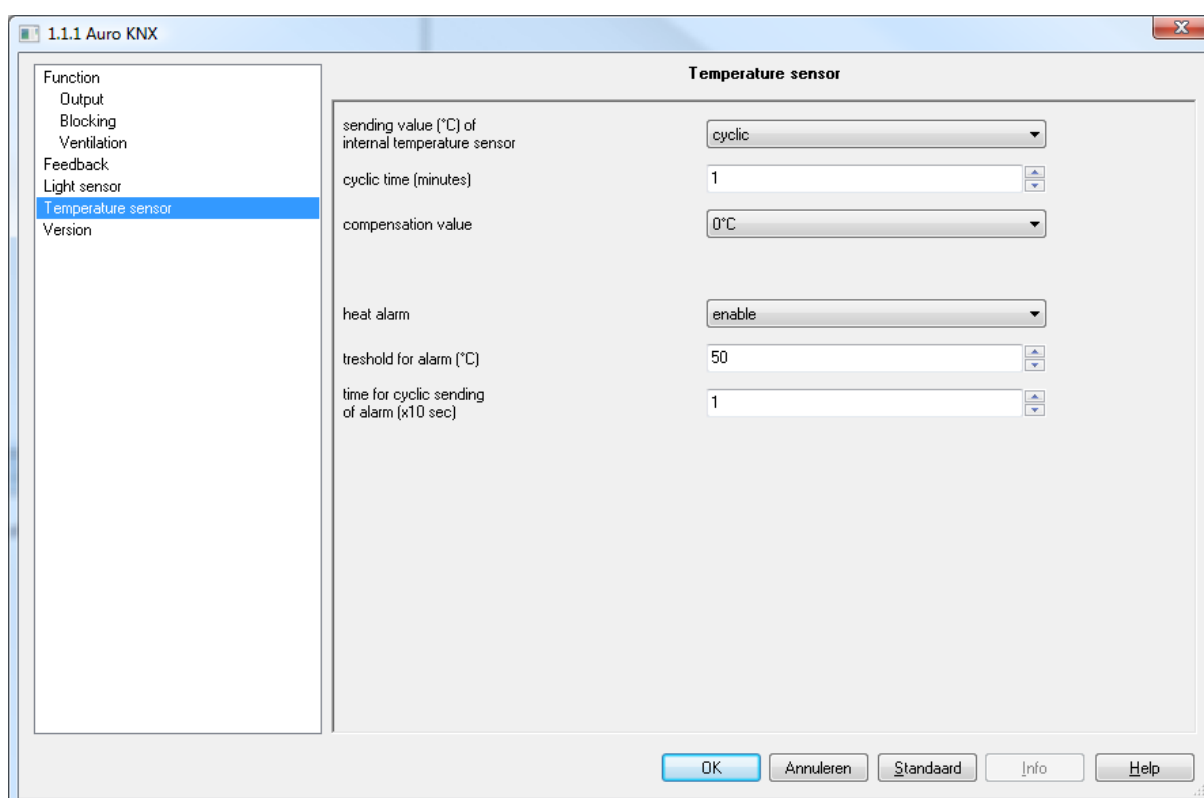
## 4.3 Light sensor



Parameter	Description
Sending value (lux) of internal light sensor	<p>This parameter enables or disables the light sensor.</p> <p><u>Settings:</u>                      Disable                      Enable</p> <p><u>Communication objects:</u>                      10: light level</p> <p><i>Remark: The measured lux value will not be updated while the led feedback is on.</i></p>
Cyclic time (minutes)	<p>This parameter sets the cycle time to broadcast the lux value.</p> <p><u>Settings:</u>                      Value between 1 and 60</p>

Lux compensation factor x0.1	<p>This parameter sets the lux compensation factor. The measured lux value will be multiplied with this compensation factor and be transmitted to the bus.</p> <p><b>Remark:</b> The Auro will only use the original measured lux value in relation to the threshold for light dependent switching. The compensated value will be ignored.</p> <p><u>Settings:</u> Value between 1 and 100</p>
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## 4.4 Temperature sensor

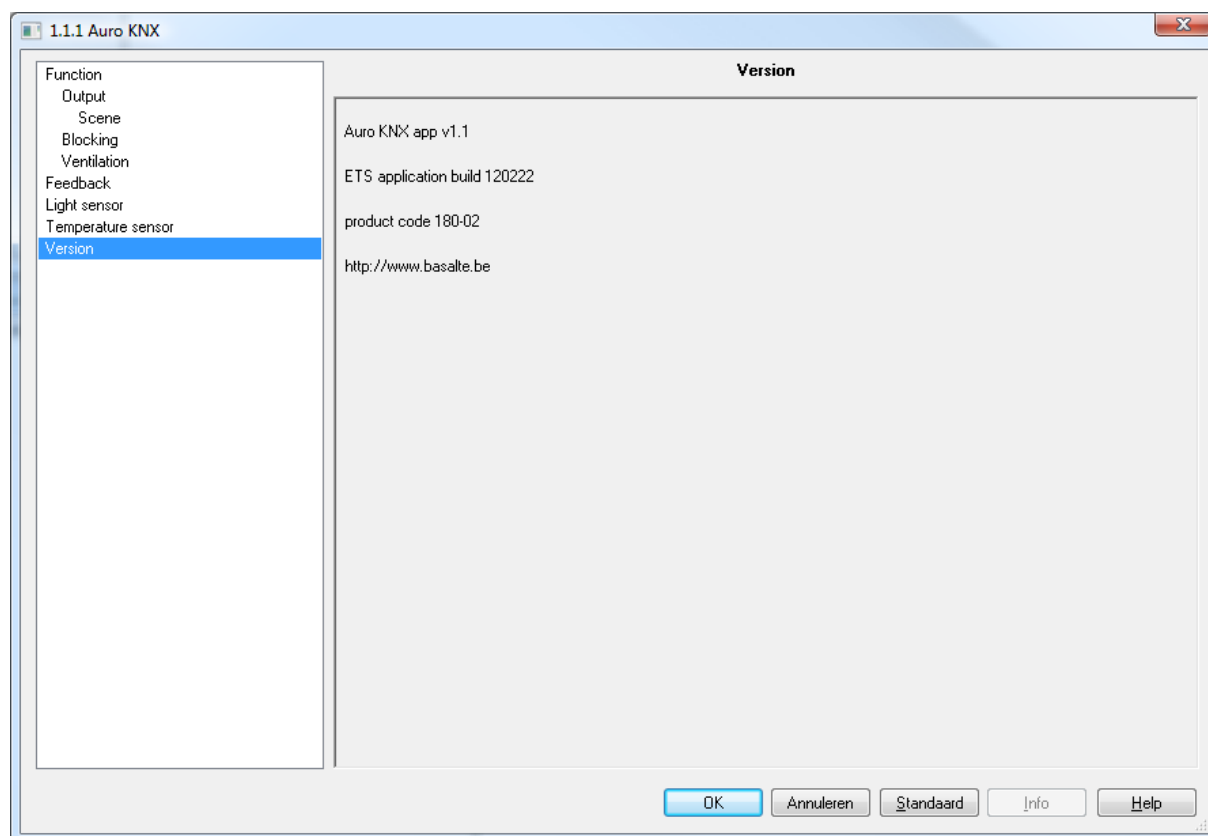


Parameter	Description
Sending value (°C) of internal temperature sensor	<p>This parameter disables or defines the behaviour to broadcast the internal temperature.</p> <p><u>Settings:</u> Disable Cyclic Delta temp</p> <p><u>Communication objects:</u> 11: temperature</p>



Cyclic time (minutes)	<p>This parameter sets the cycle time to broadcast the temperature value.</p> <p><u>Settings:</u> Value between 1 and 60</p>
Delta temp (x0.5°C)	<p>This parameter defines the difference in temperature required to trigger the broadcast of the temperature value.</p> <p><u>Settings:</u> Value between 1 and 10</p>
Compensation value	<p>This parameter sets the compensation value of the internal temperature sensor.</p> <p><u>Settings:</u> -3°C -2.5°C -2°C -1.5°C -1°C -0.5°C 0°C 0.5°C 1°C 1.5°C 2°C 2.5°C 3°C</p>
Heat alarm	<p>This parameter enables or disables the heat alarm.</p> <p><u>Settings:</u> Disable Enable</p> <p><u>Communication objects:</u> 21: heat alarm</p>
Threshold for alarm (°C)	<p>This parameter sets the threshold temperature for the heat alarm.</p> <p><u>Settings:</u> Value between 30 and 70</p>
Time for cyclic sending of alarm (x10 sec)	<p>This parameter sets the interval time between the heat alarm commands.</p> <p><u>Settings:</u> Value between 1 and 60</p>

### 4.5 Version



Text	Description
Auro KNX app 1.1	The software version of the application In this case: v1.1
ETS application build	This is the build number of the application In this case: 120221
Product code	The product code for the Auro KNX In this case: 180-02
<a href="http://www.basalte.be">http://www.basalte.be</a>	The website from basalte

### 5. Appendix

#### 5.1 List of communication objects

Communi- cation object	Name	Function	Input/ Output	Data length	Data type	Flags
0	Light	On/off	Output	1 bit	Switch	C-T
1	Light	Dim value	Output	1 byte	Scaling	C-T
2	Scene	Scene number	Output	1 byte	Unsigned	C-T
3	All off	Off	Output	1 bit	Switch	C-T
4	Motion	On/off	Output	1 bit	Switch	C-T
5	Day/night	On/off	Input	1 bit	Switch	C-W
6	Light threshold status	On/off	Output	1 bit	Switch	C-T
7	Blocking	On/off	Input	1 bit	Switch	C-W
8	Trigger	On/off	Input	1 bit	Switch	C-W
9	Trigger	On/off	Output	1 bit	Switch	C-T
10	Light level	Lux value	Output	2 byte	Lux	C-T
11	Temperature	Internal value	Output	2 byte	Temp	C-T
12	Light threshold	On/off	Input	2 byte	Lux	C-W
13	Light threshold during day	Lux value	Input	2 byte	Lux	C-W
14	Light threshold during night	Lux value	Input	2 byte	Lux	C-W
15	Ventilation	On/off	Input	1 bit	Switch	C-T
16	Light status	On/off	Input	1 bit	switch	C-W
17	Timeout	Seconds	Input	2 byte	Unsigned	C-W
18	Timeout during day	Seconds	Input	2 byte	Unsigned	C-W
19	Timeout during night	Seconds	Input	2 byte	Unsigned	C-W
20	Led feedback	On/off	Input	1 bit	Switch	C-W
21	Heat alarm	On/off	Output	1 bit	Switch	C-T