

State 10/2017

# Technical Manual



## MDT Brightness Sensor

SCN-LSD01.01

## 1 Content

1 Content.....	2
2 Overview.....	3
2.1 Overview Devices .....	3
2.2 Usage & Areas of use.....	3
2.3 Exemplary circuit diagram.....	3
2.4 Installation & instructions for mounting .....	4
2.5 Functions .....	5
2.5.1 Übersicht Funktionen .....	6
2.6. Settings at the ETS-Software .....	7
2.7. Starting up .....	7
3 Communication objects.....	8
3.1 Overview.....	8
3.2 Default-settings of the communication objects.....	9
4 Reference ETS-Parameter .....	10
4.1 General .....	10
4.2 Brightness.....	12
4.3 Calibration brightness value.....	14
4.3.1 Approach at Teach-In .....	16
4.4 Constant level light.....	18
4.4.1 General settings/ Main principle regulation .....	18
4.4.2 Available settings.....	22
4.4.3 Scenes.....	26
4.4.4 Approach at Start-Up.....	26
5 Index .....	27
5.1 List of illustrations .....	27
5.2 List of tables.....	28
6 Attachment.....	29
6.1 Statutory requirements.....	29
6.2 Routine disposal .....	29
6.3 Assemblage.....	29
6.4 Datasheet .....	30

## 2 Overview

### 2.1 Overview Devices

The Manual refers to the following devices (Order ID respectively printed in bold letters):

- **SCN-LSD01.01** Brightness sensor, 1 Pyro-Detector, constant level light control
  - 1 Pyro-Detector, differentiating Day-/Night-Mode programmable, sending screen for brightness adjustable, switching options for brightness parameterizable, constant level light control for up to 3 zones

### 2.2 Usage & Areas of use

The MDT brightness sensor/controller can be used for the brightness control and detection in rooms. By using an intelligent proportional constant level light control, the light can be kept on the same level all over the room. Simultaneously the brightness sensor/controller helps saving energy. The constant level light control controls up to 3 zones (wall, main and window). Furthermore the brightness sensor can be used for a detailed display of the current measured brightness, e.g. for a visualization.

### 2.3 Exemplary circuit diagram

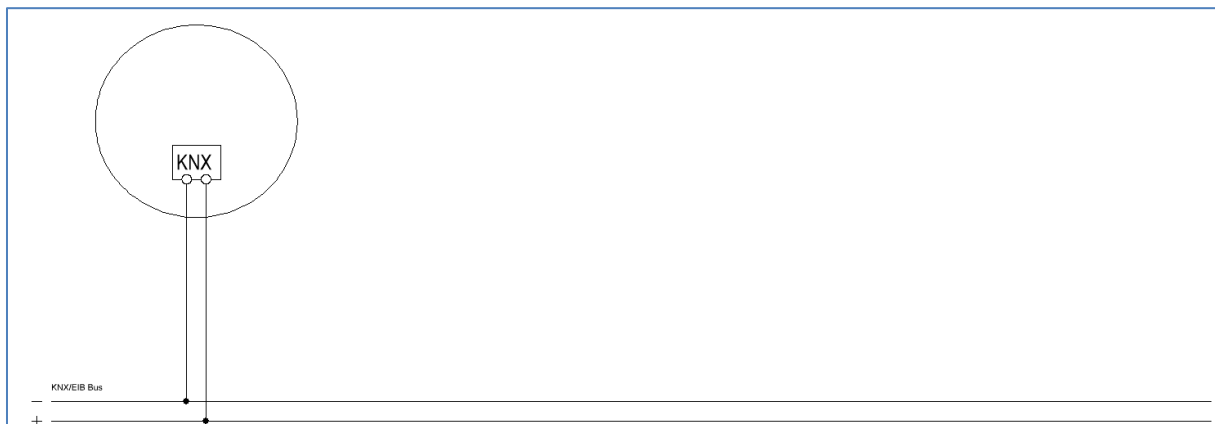


Figure 1: Exemplary circuit diagram

## 2.4 Installation & instructions for mounting

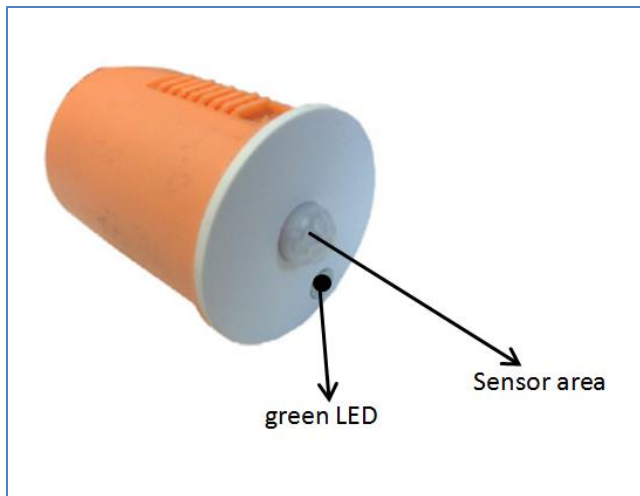


Figure 2: Adjustment of the sensors and LEDs

The green LED is for the status display of the constant level light control and for the display of the progress of the TeachIn mode. A continuous green luminous LED shows an active control. The display behavior at the TeachIn mode is described at 4.3.1 Approach at Teach-In.

The sensor area of the brightness sensor/controller must not be covered for getting best measurement and controlling results.

The sensor should be mounted at the ceiling in the middle of the room so that the sensor area is vertical to the ceiling respectively the floor.

For programming the brightness sensor/controller, the device must be got out of the orange box.

Now the programming button and red programming LED can be seen at the outlets of the inner box.

## 2.5 Functions

The functions of the brightness sensor/controller are divided in the areas general settings, settings for the light control, the HCV-channel, the sending behavior, the calibration for the brightness value and according to the hardware type, the constant level light control.

The following menus are shown and can be parametrized further:

- **General**  
The general settings are used for the basic settings of the brightness sensor/controller. The using of the day/night object, and the presence object as well as the force control release time and a cyclic heartbeat can be configured in this menu.
- **Brightness**  
Settings for the sending of the measured brightness value and a threshold value can be adjusted here.
- **Calibration brightness value**  
The correction of the measured brightness value can be adjusted by a steady parameter or via the Teach-In object.
- **Constant level light**  
In this menu all settings for the control of the constant level light function can be done. So the brightness sensor/controller can control up to 3 light bands, which are divided into main, wall and window. The detector achieves constant light in the whole room via an intelligent, proportional Master/Slave control. So the detector can compensate outer factors as sun light.

### 2.5.1 Übersicht Funktionen

<b>General settings</b>	general	<ul style="list-style-type: none"> <li>• cyclic heartbeat telegram</li> <li>• Day-/Night-object</li> </ul>
<b>Brightness value</b>	Sending behavior	<ul style="list-style-type: none"> <li>• at changes</li> <li>• cyclic sending</li> <li>• threshold adjustable</li> <li>• Hysteresis adjustable</li> <li>• Object value adjustable</li> <li>• sending filter adjustable</li> </ul>
	Calibration	<ul style="list-style-type: none"> <li>• via Parameters</li> <li>• via Teach-In</li> </ul>
<b>Constant level light function</b>	Constant level light settings	<ul style="list-style-type: none"> <li>• up to 3 light bands controllable</li> <li>• inzone controlnovative proportionale</li> <li>• control parameter adjustable</li> <li>• Start-Up behavior adjustable</li> <li>• extended individual settings available</li> </ul>
	Sending behavior	<ul style="list-style-type: none"> <li>• cyclic sending activatable</li> </ul>

Table 1: Overview functions

## 2.6. Settings at the ETS-Software

Selection at the product database:

Manufacturer: MDT Technologies

Product family: Control

Product type: Brightness sensor

Medium Type: Twisted Pair (TP)

Product name: SCN-LSD01.01

Order number: SCN-LSD01.01

## 2.7. Starting up

After wiring the allocation of the physical address and the parameterization of every channel follow:

- (1) Connect the interface with the bus, e.g. MDT USB interface
- (2) set bus power up
- (3) Press the programming button at the device (red programming LED lights)
- (4) Loading of the physical address out of the ETS-Software by using the interface (red LED goes out, as well this process was completed successful)
- (5) Loading of the application, with requested parameterization
- (6) If the device is enabled you can test the requested functions (also possible by using the ETS-Software)

## 3 Communication objects

### 3.1 Overview

The communication objects are divided into the categories of the submenus.

The object 0 is for the day/night switchover and can be activated via the general settings.

The objects 1 and 2 refer to the menu brightness in which the specific settings for this object can be done. They contain the current measured brightness value and the threshold value.

After these objects, the objects for the Teach-In function follows. The Teach-In function is for the internal brightness compensation, especially for the constant light function.

Then the objects 5-14 follows, which are responsible for the constant light function.

The object 15-“Output Heartbeat” can be parametrized in the general settings.



### 3.2 Default-settings of the communication objects

The following table shows the default settings of the communication objects:

Default settings									
Nr.	Name	Function	Length	Priority	C	R	W	T	U
0	Input Day/Night	Switch	1 Bit	Low	X	X		X	
1	Threshold switch brightness	Switch	1 Bit	Low	X	X		X	
2	Brightness value	Brightness value	2 Byte	Low	X	X		X	
3	Input TeachIn	Start calibration	1 Bit	Low	X		X		
4	Input TeachIn	Status absolute dimming value	1 Byte	Low	X		X		
5	Constant light	Switch On/Off	1 Bit	Low	X		X		
6	Constant light	General Switch On/Off	1 Bit	Lw	X		X		
7	Constant light	Dimming relative	4 Bit	Low	X		X		
8	Constant light	Dimming absolute	1 Byte	Low	X		X		
10	Constant light	Lock object	1 Bit	Low	X		X		
11	Constant light	Scene	1 Byte	Low	X		X		
12	Constant light	Output dimming absolute main	1 Byte	Low	X	X		X	
13	Constant light	Output dimming absolute wall	1 Byte	Low	X	X		X	
14	Constant light	Output dimming absolute window	1 Byte	Low	X	X		X	
15	Output heartbeat	Status	1 Bit	Low	X	X		X	

Table 2: Default settings communication objects

You can see the default values for the communication objects from the upper chart. According to requirements the priority of the particular communication objects as well as the flags can be adjusted by the user. The flags allocate the function of the objects in the programming thereby stands C for communication, R for Read, W for write, T for transmit and U for update.

## 4 Reference ETS-Parameter

### 4.1 General

The following figure shows the submenu for the general settings:

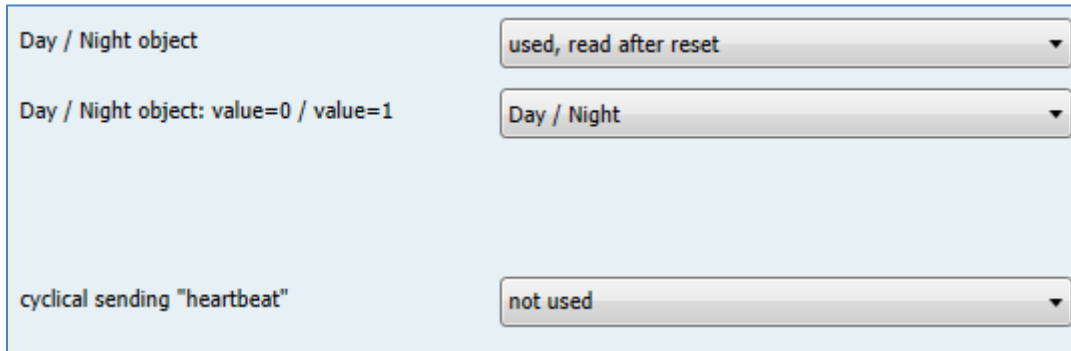


Figure 3: General settings

The following table shows the available settings for this submenu:

ETS-Text	Dynamic range [Default value]	Comment
Day/Night object	<ul style="list-style-type: none"> <li>not used</li> <li>use</li> <li><b>use, read after reset</b></li> </ul>	Adjustment if a day/night object shall be used and definition of the usage after reset
Day/Night object value = 0/ value = 1	<ul style="list-style-type: none"> <li><b>Day/Night</b></li> <li>Night/Day</li> </ul>	Polarity of the day/night object
Cyclical sending “heartbeat”	<ul style="list-style-type: none"> <li><b>not used</b></li> <li>2min -24h</li> </ul>	shows object for the cyclic observation of the detector

Table 3: Dynamic range general settings

The functions are described at the following pages:

- Day/Night object**

By using the day/night object, the Brightness sensor/controller can be switched into a day or night mode. So extended functions in the submenus are available for configuring the Brightness sensor/controller for a day and a night mode. For example different dimming levels can be adjusted for day (e.g. 100%) and night (e.g. 30%) or a orientation light can be switched on via a second switching object at night.
- Cyclical sending “heartbeat”**

The function Cyclical sending “heartbeat” shows an object, which can be used for the cyclically observation of the Brightness sensor/controller. By using a superior control, it can be supervised if the Brightness sensor/controller is still on the bus or not. Especially in complex systems, the cancellation of lines or devices can be detected automatically.

Die nachfolgende Tabelle zeigt die relevanten Kommunikationsobjekte:

Number	Name	Length	Usage
0	Input Day/Night	1 Bit	Switchover for day/night

Table 4: Communication object general

## 4.2 Brightness

The following figure shows the available settings for the brightness detection:

Brightness	
send brightness on change of	50 Lux
cyclical sending of light value	not used
value for switching the threshold switch	300 Lux
hysteresis of threshold switch	30 Lux
object value on day for On	On
object value on night for On	On
object value for Off	Off
send on day only	On and Off
send on night only	On and Off

Figure 4: Settings brightness

The following table shows the available settings for these parameters:

ETS-Text	Dynamic range [Default value]	Comment
Send brightness on change of	<ul style="list-style-type: none"> <li>not used</li> <li>20 Lux – 1800 Lux [50 Lux]</li> </ul>	Minimum rate of change for sending the current brightness
Cyclical sending of light value	<ul style="list-style-type: none"> <li>not used</li> <li>5s – 30min</li> </ul>	Adjustment of a determined time span for sending the current brightness
Value for switching the threshold switch	60Lux – 1000 Lux [300 Lux]	Adjustment of the threshold for switching
Hysteresis of threshold switch	5 Lux– 200 Lux [30 Lux]	Distance between value for switching ON and OFF
Object value on day for On	<ul style="list-style-type: none"> <li>ON</li> <li>OFF</li> </ul>	Adjustment of the polarity
Object value on night for On	<ul style="list-style-type: none"> <li>ON</li> <li>OFF</li> </ul>	Adjustment of the polarity
Object value for off	<ul style="list-style-type: none"> <li>ON</li> <li>OFF</li> </ul>	Adjustment of the polarity

Send on day only	<ul style="list-style-type: none"> <li>• send nothing</li> <li>• only ON</li> <li>• only OFF</li> <li>• <b>ON and OFF</b></li> </ul>	Sending filter at day mode
Send on night only	<ul style="list-style-type: none"> <li>• send nothing</li> <li>• only ON</li> <li>• only OFF</li> <li>• <b>ON and OFF</b></li> </ul>	Sending filter at night mode

Table 5: Settings brightness

At the Menu brightness the sending behavior for the measured brightness value can be adjusted. The measured brightness value can be send at determined changes or at determined times. Additional a treshold can be defined. This threshold can be adjusted with a hysteresis for preventing of frequently switching. The effect of the hysteresis shows the following figure:

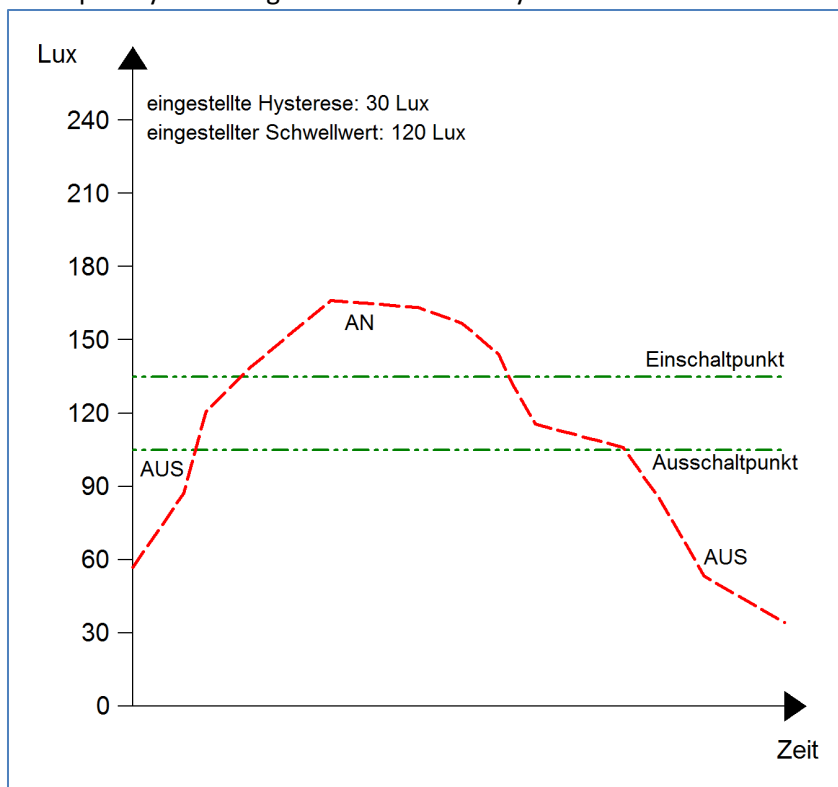


Figure 5: Hysteresis brightness threshold

Further more the polarity and the sending behavior can be adjusted by the parameters Object value for day/night/off and “Send on day/night only”.

The following table shows the relevabt communication objects:

Number	Name	Length	Usage
1	Threshold switch brightness	1 Bit	sends the adjusted value at exceedance or undercut
2	Brightness value	2 Byte	measured brightness value

Table 6: Communication objects brightness

### 4.3 Calibration brightness value

The following figure shows the available settings for the calibration of the brightness value:

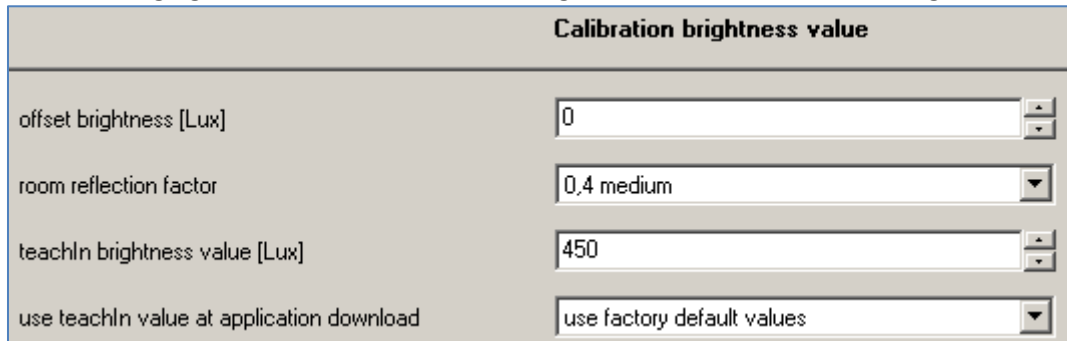


Figure 6: Calibration brightness value

The following chart shows the available settings for this parameter:

ETS-Text	Dynamic range [Default value]	Comment
Offset brightness [Lux]	-100 – 100 [0]	Increasing/Decreasing by the adjusted value
Room reflection factor	<ul style="list-style-type: none"> <li>• 1</li> <li>• 0,7 very high</li> <li>• 0,5 high</li> <li>• <b>0,4 medium</b></li> <li>• 0,3 low</li> <li>• 0,25 low</li> <li>• 0,2 very low</li> </ul>	Reflection factor of the environment; indicates how much light is reflected back (1=100% / 0=0%)
TeachIn brightness value[Lux]	200-1000 [450]	Comparison value for external import
Use TeachIn value at application download	<ul style="list-style-type: none"> <li>• hold TeachIn values</li> <li>• <b>Use factory default values</b></li> </ul>	Adjustment if the Brightness sensor/controller shall keep the TeachIn values after a download or use the factory default values

Table 7: Calibration brightness value

Consecutively the parameters are described in detail:

- **Offset brightness**

The correction of the brightness value is a simple offset of the measured brightness value. So at a value of -50, the measured value is reduced by 50. By this setting the Brightness sensor/controller would send at a value of 400 at measured value of 450.

- **Reflection factor**

The reflection factor indicates how much of the emitted light is reflected by the environment back to the light source. The value 1 means that 100% of the emitted light is reflected back to the light source. At dark floors, a value of 0,25, is recommended.

Die nachfolgende Tabelle dient als Orientierung um den Reflexionsfaktor an Ihren Raum anzupassen:

Metalle, Farbanstriche, Baustoffe	Reflexionsgrad
Aluminium, hochglänzend	0,80-0,85
Aluminium, mattiert	0,50-0,70
Stahl, poliert	0,50-0,60
Weiß	0,70-0,80
Hellgelb	0,60-0,70
Hellgrün, hellrot, hellblau, hellgrau	0,40-0,50
beige, ocker, orange, mittelgrau	0,25-0,35
Dunkelgrau, dunkelrot, dunkelblau	0,10-0,20
Putz, weiß	0,70-0,85
Gips	0,70-0,80
Beton	0,30-0,50
Ziegel, rot	0,10-0,20
Glas, klar	0,05-0,10

Table 8: List of reflection factors

If no TeachIn is performed, the measured brightness can be corrected with the reflection factor. If a TeachIn is performed, the brightness value is corrected automatically. The TeachIn must not be changed after the TeachIn process.

The Adjustment via TeachIn is especially for the constant light function important. The approach is described at the following chapter. Oft werden in der Lichtplanung folgende Standardwerte verwendet: Decke: 0,7 Wand: 0,5 Boden: 0,3

### 4.3.1 Approach at Teach-In

For using the whole advantages of the intelligent constant light control, the Brightness sensor/controller must be adjusted once via the Teach-In process. Therefore a luxmeter is needed. The approach is as follows:

1. Adjust the parameter "TeachIn brightness value" to the desired brightness value. Mostly 400-500 Lux are used.
2. Adjust the Parameter "Use TeachIn value at application download" from "Use factory default values" to "hold TeachIn values". den gewünschten Wert.
3. Make the desired settings for the constant light function. (have a look at chapter 4.5) Aktivieren Sie die Regelung mit den gewünschten Einstellungen
4. Connect the communication objects for the different light groups with the objects of the dimming actuator
5. Connect the object "4-Status absolute dimming value" with the status object of the dimming actuator for the light group in the middle.
6. Connect the object "3-Calibration start" with a new group address, if the calibration shall be activated via the ETS (Group monitor) or with a push button.
7. Download the application.
8. The room must be darkened or the measurement must be performed in the twilight. The Brightness sensor/controller teaches the brightness and dimming values via the Teach-In function. If the Teach-In is performed at day-/sunlight the measurement is disturbed and the saves wrong values.
9. Activate the Teach-In function by sending a logical 0 to the object 3. The green LED in the Brightness sensor/controller starts flashing with a 1s rhythm. Sending a logical 0 again causes an interruption of the Teach-In process.
10. Change the brightness value by sending dimming values (absolute or relative) until the Luxmeter shows the adjusted value (TeachIn brightness value) at the desired height.
11. Now send a logical 1 to the object 3. The red and green LED flashes alternating.
12. The Brightness sensor/controller adjusts now the brightness measurement, teaches the appropriated dimming value and learns the brightness value at different dimming values.
13. After successful end of the Teach-In process, the green LED flashes fast for 10 seconds. The control is started again automatically and adjusts the brightness to the reference value. If an error occurs, the process is aborted and the red LED flashes fast for 10 seconds. This can occur if for example no valid dimming value is available (status). Check point 5 and start the process again.
14. If the parameter "use switch on dimming value" is adjusted to "calculate switch on value", the switch on value is calculated automatically now.



The behavior of the LED and its meaning can be extracted from the chart below:

LED behavior	State
LED blinks short on, long off	TeachIn is active; Sensor is in TeachIn Mode
LED blinks short on, long off	TeachIn mode is in progress
green LED blinks for 10sec in the rythm 1:1	TeachIn mode was successfully finished
grüne LED blinkt schnell	TeachIn mode failed

Table 9: LED behaviour at Teach-In

The following chart shows the relevant communication objects:

Number	Name	Length	Usage
3	Calibration start	1 Bit	starts the alignment via Teach-In
4	Status absolute dimming value	1 Byte	must be connected to the status value of the dimming actuator

Table 10: Communication objects Teach-In

## 4.4 Constant level light

By using the new proportional Master/Slave Constant level light regulation, the light of the room can be controlled intelligent so that outer light has no influence to the light in the room. Up to three light groups can be controlled in a way that the brightness all over the room has the same level independent of outer influences of the sun or other lights. The light control helps saving energy.

Notice: The light groups should be set to one light group or one light group and HCV. A Constant level light regulation of to light groups/zones is not reasonable.

The following figure shows the principal of the constant level light control:

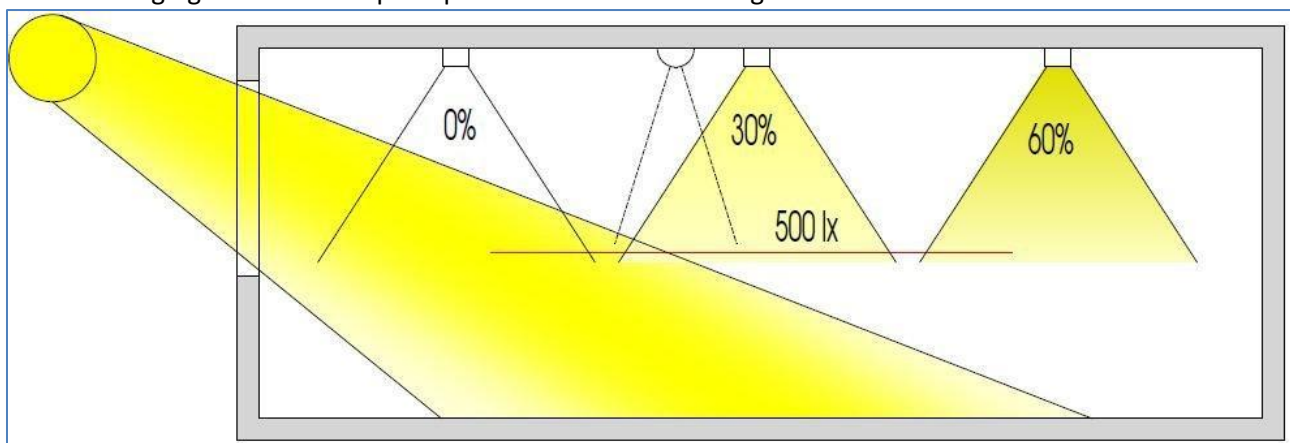


Figure 7: Overview proportional zone control

### 4.4.1 General settings/ Main principle regulation

The following figure shows the available settings for the general settings of the constant level light regulation:

Constant light	
constant light control	enabled
Control out sun light	normal
select light-band	light group main + wall + window
influence proportional wall control	medium (x0,7)
influence proportional window control	medium (x1,6)

Figure 8: General settings constant level light regulation

The following table shows the available settings for configuring the constant level light regulation:

ETS-Text	Dynamic range [Default value]	Comment
Constant light control	<ul style="list-style-type: none"> <li>• <b>disabled</b></li> <li>• enabled</li> </ul>	Activation/Deactivation of the constant level light regulation
Control out sunlight	<ul style="list-style-type: none"> <li>• <b>normal</b></li> <li>• few</li> <li>• very few</li> </ul>	defines the influence of the solar radiation to the regulation
Selection light band	<ul style="list-style-type: none"> <li>• 1 light group</li> <li>• light group main + wall</li> <li>• light group main + window</li> <li>• <b>light group main + wall + window</b></li> </ul>	Selection of the light bands, which shall be controlled
Influence proportional wall control	<ul style="list-style-type: none"> <li>• no change (x 1)</li> <li>• very low (x 1,2)</li> <li>• low (x 1,4)</li> <li>• <b>medium (x 1,6)</b></li> <li>• high (x 1,8)</li> <li>• very high (x 2)</li> </ul>	defines the influence of the light group wall to the constant level light regulation
Influence proportional window control	<ul style="list-style-type: none"> <li>• no change (x 1)</li> <li>• very low (x 0,9)</li> <li>• low (x 0,8)</li> <li>• <b>medium (x 0,7)</b></li> <li>• high (x 0,6)</li> <li>• very high (x 0,5)</li> </ul>	defines the influence of the light group window to the constant level light regulation

Table 11: General settings of the Constant level light regulation

The parameter “Influence proportional zone control” indicates the influence of the light group to the constant light control. The setting “no change” (x 1) switches the linearity of the regulation off and all light groups light always with the same brightness. The setting “very high” (x 0,5 at window and 2 at wall) deactivates means that the difference between the absolute dimming values of wall and window is very high.

If a room shall be controlled via the constant level light control, it is recommended to use the TeachIn function to get best results.

The influences of the light groups wall and window must be adapted to the specific conditions in the room. Simplified you can say as larger the room as greater must be the difference of the controlling parameter to 1. But it is recommended to check the parameters always locally and adapt them if necessary.

The regulation can be aligned via the parameter “Control out sunlight”. If the Brightness sensor/controller compensated solar radiation too strong, the value of this parameter should be set to few or very few. An alternative method is installing the Brightness sensor/controller more into the middle of the room.

The following diagram shows the dimming behavior for the 3 light groups at different solar irradiation. The TeachIn value is achieved, at this example, at an absolute dimming value of 80% with 450Lux. The influences are both set to medium.

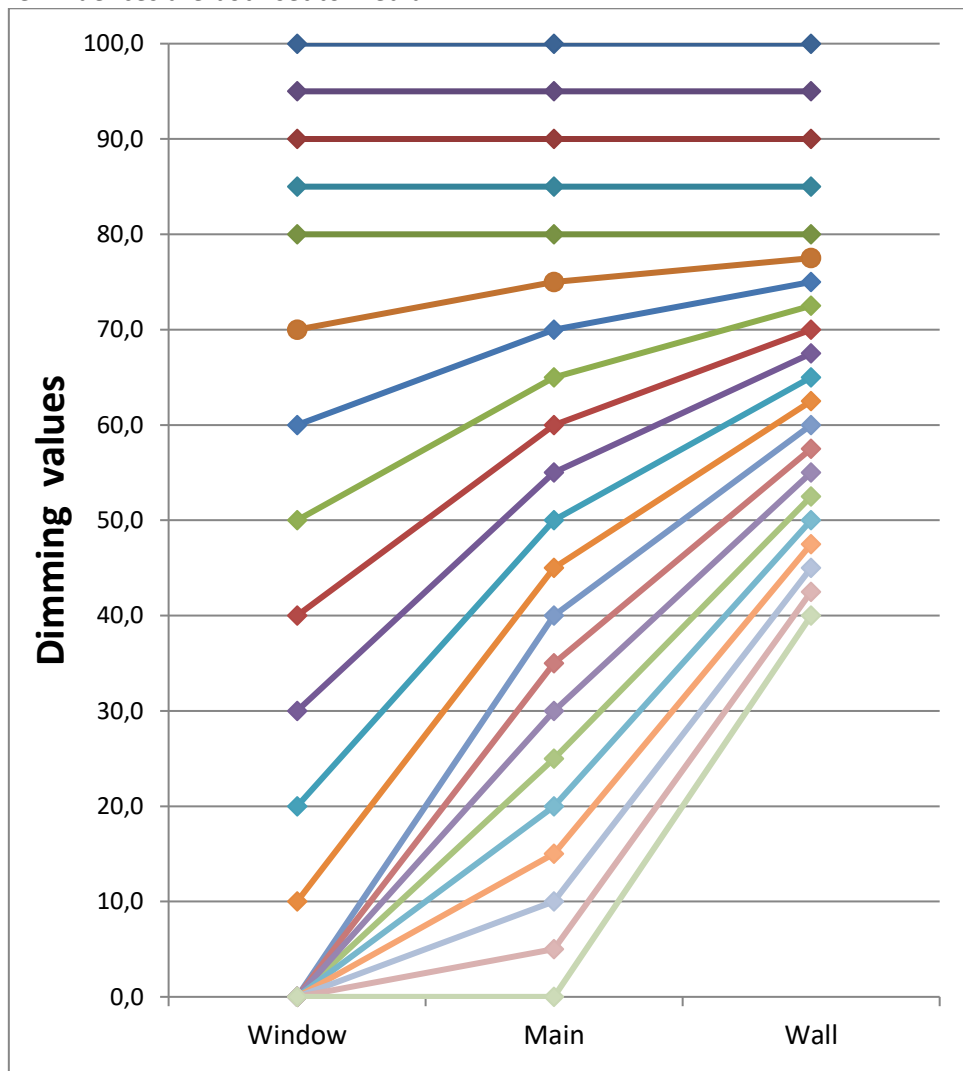


Figure 9: Behavior proportional zone control

The diagram shows that the light at the window is dimmed more than the light at the main band and the wall.

If the solar irradiation decreases, all light bands will be dimmed again to 80%.

If the illumination is set from e.g. 450Lux to 300Lux (via relative dimming, absolute dimming or scene), the comprehension of the control factor will automatically set at the right dimming value. In this case, e.g. at 50%. Without solar irradiation the three light bands regulate to 300 Lux with a dimming value of 50%. With solar irradiation, the dimming values below 50% shift appropriate. By using the new “proportional Master/Slave Constant level light regulation” all disadvantages of the commercially available “Offset Master/Slave Constant level light regulation” with constant offset are fixed.

The following diagram shows the influence of the different control parameters to the regulation:

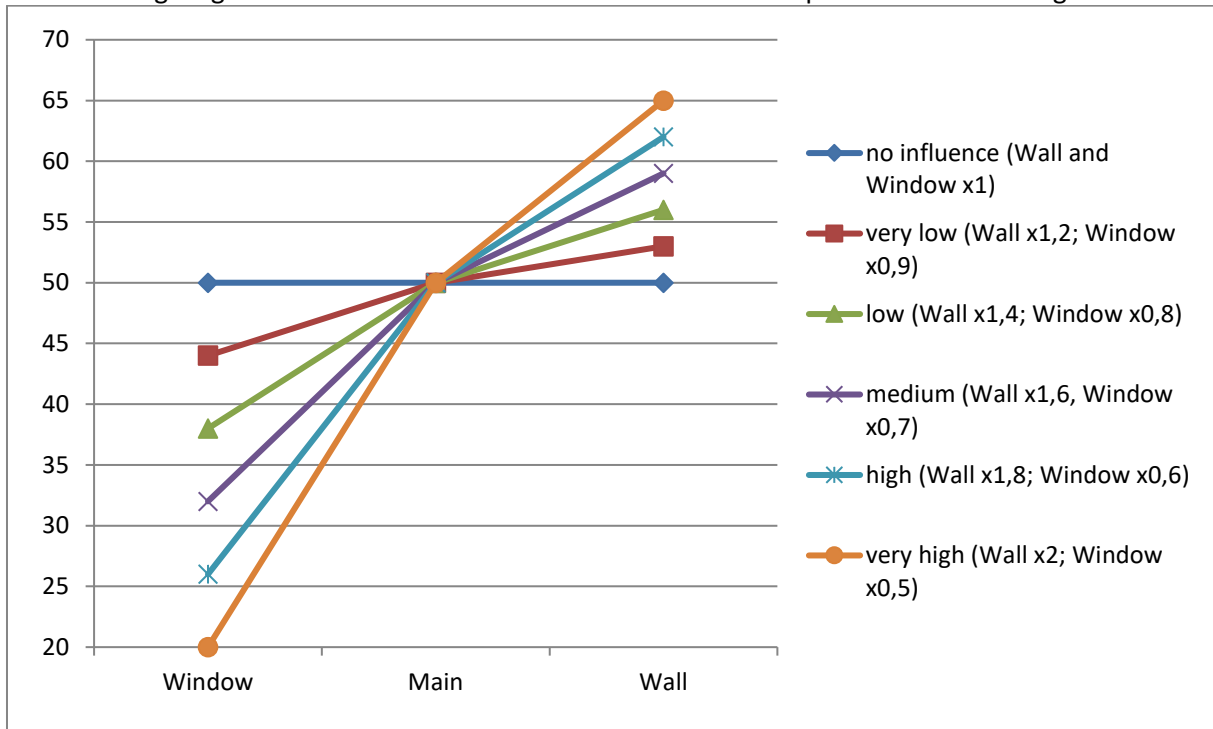


Figure 10: Influence control parameters

#### 4.4.2 Available settings

The following figure shows the available specific settings for the constant level light control:

constant light control	enabled
Control out sun light	few
select light-band	light group main + wall + window
influence proportional wall control	medium (x0,7)
influence proportional window control	medium (x1,6)
switch On control delay	5 s
use switch on dimming value	calculate switch on value
brightness value [Lux] for switch on	use parameter value
use Day / Night object	use for next switch on
setpoint on day	450 lx
setpoint on night	100 lx
cyclical sending of dimming value	15 s
send dimming value on change of	1%
CL behavior at relative dimming	use new dimming value
relative dimming time	20 s
standby / orientationlight	not used
lock object active	No

Figure 11: Available settings constant light control

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
<b>Settings switching behavior/Regulation</b>		
Switch on control delay	1s – 5min [5s]	Adjustment of the delay between activation and start of regulation
Use switch on dimming value	<ul style="list-style-type: none"> <li>• <b>Parameter (select dimming value)</b></li> <li>• TeachIn (tached dimming value)</li> <li>• <b>Calculate switch on value</b></li> </ul>	Adjustment of the power up value
Brightness value [Lux] for switch on	<ul style="list-style-type: none"> <li>• use last dimming setpoint</li> <li>• <b>use parameter value</b></li> </ul>	Adjustment if the last setpoint shall be calculated from relative dimming, the scenes or being load from the parameters
Use day/night object	<ul style="list-style-type: none"> <li>• <b>not used</b></li> <li>• use for next switch on</li> <li>• use directly and for next switch on</li> </ul>	Activates the usage of the day/night switchover. At activated day/night switchover, two setpoints (day and night) are shown otherwise only one setpoint is shown
Preset setpoint at day	100 – 750 Lux [450 Lux]	Setpoint for day mode
Preset setpoint at night	100 – 750 Lux [100 Lux]	Setpoint for night mode
<b>Settings for the dimming behavior</b>		
Cyclical sending of dimming value	<ul style="list-style-type: none"> <li>• <b>not used</b></li> <li>• 12 s -10 min</li> </ul>	defines the time for the cyclic sending of the dimming value
Send dimming value on change of	0-20% [2%]	defines the minimal change for sending the dimming value
CL behavior at relative dimming	<ul style="list-style-type: none"> <li>• <b>use new dimming value</b></li> <li>• Disable CL control</li> </ul>	Adjustment if regulation stays active at relative dimming
Relative dimming time	5 – 60s [20 s]	defines the time for dimming from 0 to 100%

Table 12: Settings Constant light control - 1

ETS-Text	Dynamic range [Default value]	Comment
<b>Settings standby/orientation light</b>		
Standby/Orientationlight	<ul style="list-style-type: none"> <li>• not used</li> <li>• used</li> </ul>	Setting if the light shall stay on after switching off
Standby setpoint	100 – 750 Lux [100 Lux]	Value for the standby mode
Standby time	<ul style="list-style-type: none"> <li>• 1s – 60min</li> <li>• [15s]</li> </ul>	Length of standby mode
<b>Settings lock object</b>		
Lock object active	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>	activates the force control
Lock object value = 1	<ul style="list-style-type: none"> <li>• off</li> <li>• on (100%)</li> <li>• no change (hold value)</li> <li>• select value</li> </ul>	Adjustment of the action at activation
Value set (only by „select value“)	0-100% [0%]	defines the value for active force control
Lock object value = 0	<ul style="list-style-type: none"> <li>• off</li> <li>• on (100%)</li> <li>• no change (hold value)</li> <li>• restore previous state</li> </ul>	Adjustment of the action at deactivation

Table 13: Settings Constant light control - 2

The parameters are described below:

- **Adjustment switching behavior/Regulation**

The general settings for the constant level light regulation can be done here.

The parameter “Use switch on dimming value” defines the start-up value of the regulation. It can be calculated directly by the internal calculating routine or power up with a fixed value.

Also the time between powering up and starting calculation can be defined.

The parameter “Brightness value [Lux] for switch on” defines if the regulation shall work with the parameterized value or the last setpoint, which can be set by a relative or absolute dimming value or via the scene function.

Further more the regulation can be parameterized with different values for day and night via the parameter “Use day/night object”.



- **Settings dimming behavior**

The dimming value can be sent as well cyclical as at a fixed percental rate of change. The parameter “CL behavior at relative dimming” defines if the regulation shall be switched off at relative dimming or work with the new value.

- **Settings standby/orientation light**

The standby/orientation light defines shading of the room after cutout of the constant light control. That means, that the controller does not switch the lights off, but switches to the adjusted value.

- **Settings lock object**

This parameter activates an additional lock object, which locks the constant level light control and switches the output in a fixed state.

The following states are available:

- Off: The output is switched off (0%).
- On: The output is switched on (100%):
- No change: The current absolute value is hold.
- Select value(only at lock): The adjusted absolute value is called.
- Restore previous state(only at unlock): The absolute value which had the constant light before locking is called again.

At Unlocking the setttings On and Off will not turn the constant level light control on again. So the constant level light control is switched off. The settings “No change” and “Restore previous state” will switch the constant level light control on again.

The following table shows the relevant communication objects for the constant ligh control:

Number	Name	Length	Usage
5	Switch on/off	1 Bit	external object for activating the regulation
6	General switch on/off	1 Bit	switches all light groups on/off
7	Dimming relative	4 Bit	manual adjustment of the current brightness
8	Dimmin absolute	1 Byte	Adjustment current brightness of new absolute value
10	Lock object	1 Bit	Locking the regulation
12	Output dimming absolute main	1 Byte	Output for main group
13	Output dimming absolute wall	1 Byte	Output for wall group
14	Output dimming absolute window	1 Byte	Output for window group

Table 14: Communication objects constant light control

### 4.4.3 Scenes

The following figure shows the available settings for the scene function of the constant light control:

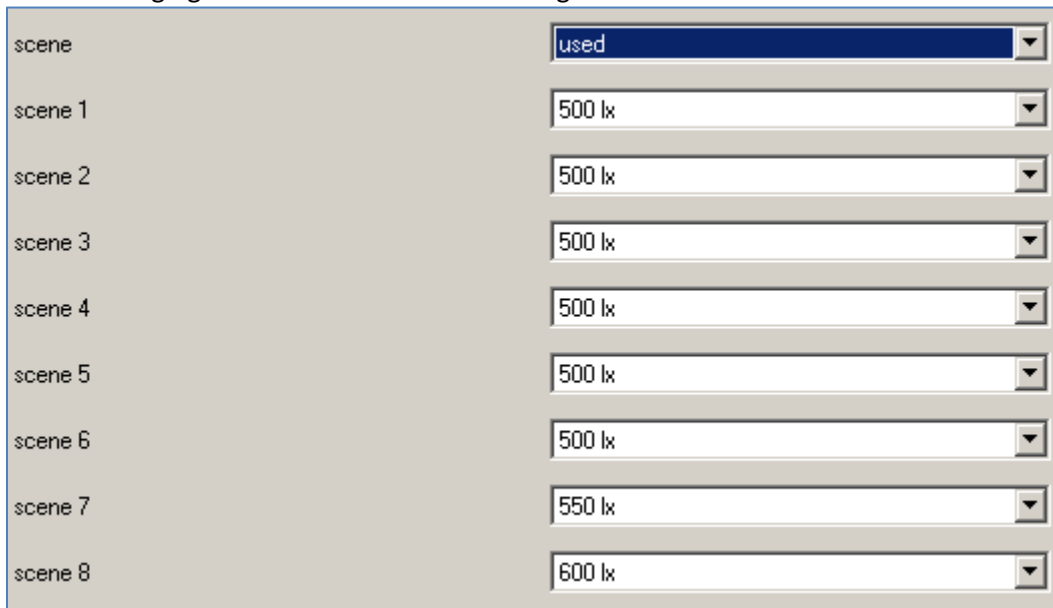


Figure 12: Scene function constant light control

The constant light control can get a new setpoint via the scene function, by sending the scene number at the communication object for the scenes. The regulation takes the adjusted value as new setpoint.

The following table shows the communication object for the setpoint of the scene function:

Number	Name	Length	Usage
11	Scene	1 Bit	Reading in of the scene

Table 15: Communication object scene function

### 4.4.4 Approach at Start-Up

For activating the constant level light regulation, the following steps are necessary:

1. Parameterizing the Brightness sensor/controller as desired including TeachIn function (Submenu Calibration brightness value), Constant light and General.
2. Connecting of all necessary objects
3. Run TeachIn function as described in 4.3.1 Approach at Teach-In
4. Now the constant light control is adjusted completely

## 5 Index

### 5.1 List of illustrations

Figure 1: Exemplary circuit diagram.....	3
Figure 2: Adjustment of the sensors and LEDs.....	4
Figure 3: General settings.....	10
Figure 4: Settings brightness .....	12
Figure 5: Hysteresis brightness threshold .....	13
Figure 6: Calibration brightness value.....	14
Figure 7: Overview proportional zone control .....	18
Figure 8: General settings constant level light regulation .....	18
Figure 9: Behavior proportional zone control .....	20
Figure 10: Influence control parameters.....	21
Figure 11: Available settings constant light control .....	22
Figure 12: Scene function constant light control .....	26

## 5.2 List of tables

Table 1: Overview functions.....	6
Table 2: Default settings communication objects.....	9
Table 3: Dynamic range general settings .....	10
Table 4: Communication object general .....	11
Table 5: Settings brightness .....	13
Table 6: Communication objects brightness.....	13
Table 7: Calibration brightness value .....	14
Table 8: List of reflection factors.....	15
Table 9: LED behaviour at Teach-In.....	17
Table 10: Communication objects Teach-In.....	17
Table 11: General settings of the Constant level light regulation.....	19
Table 12: Settings Constant light control - 1 .....	23
Table 13: Settings Constant light control - 2 .....	24
Table 14: Communication objects constant light control .....	25
Table 15: Communication object scene function.....	26

## 6 Attachment

### 6.1 Statutory requirements

The above-described devices must not be used with devices, which serve directly or indirectly the purpose of human, health- or lifesaving. Further the devices must not be used if their usage can occur danger for humans, animals or material assets.

Do not let the packaging lying around careless, plastic foil/ -bags etc. can be a dangerous toy for kids.

### 6.2 Routine disposal

Do not throw the waste equipment in the household rubbish. The device contains electrical devices, which must be disposed as electronic scrap. The casing contains of recyclable synthetic material.

### 6.3 Assemblage



#### **Risk for life of electrical power!**

All activities on the device should only be done by an electrical specialist. The county specific regulations and the applicable EIB-directives have to be observed.

## 6.4 Datasheet