



The switch sensor application module is placed on a flush-mounted bus coupler or a flush-mounted switch actuator/sensor.

The 3-fold switch sensor can send e.g. switching, dimming or shutter control telegrams to EIB actuators as well as store and retrieve up to 6 lightscenes.

All the individual functions of the operating elements can also be called up using an infrared hand-held transmitter.

Information such as fault or status messages can be shown on the integrated display.

The display works in three modes:

- Display of incoming telegrams
- Operational support
- Continuous display

A signal tone can be activated when information is received.

Each operating element has a status LED as well as a backlit labelling field.

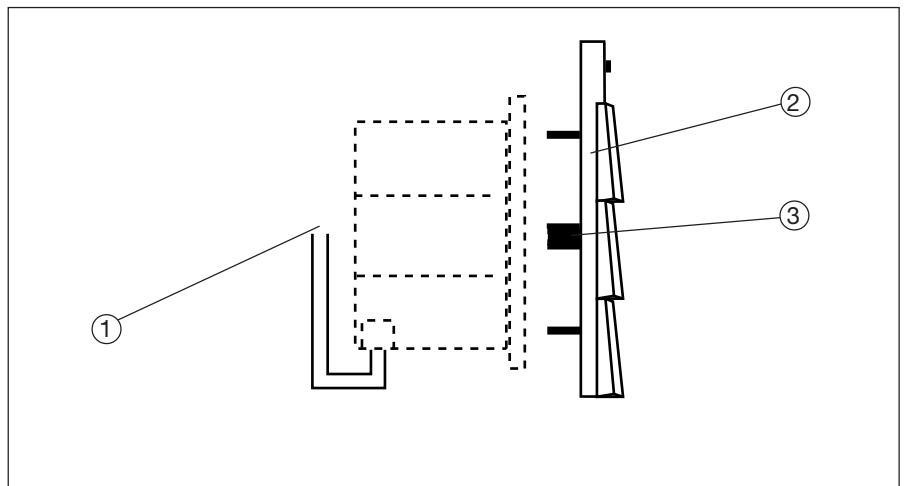
#### Technical data

<b>Power supply</b>	- EIB	24 VDC, via the bus line
<b>Operating and display elements</b>	- 3 rockers each with 2 switch contacts	
	- LCD with 15 characters	
	- 3 two-colour LEDs	red / green
	- 3 backlit labelling fields	
<b>Connections</b>	- IR receiver	
	- Flush-mounted bus coupler or - Flush-mounted switch actuator/sensor	10-pole plug connector
<b>Type of protection</b>	- IP 20, EN 60 529 mounted on the bus coupler	
<b>Ambient temperature range</b>	- Operation	- 5 °C ... 45 °C
	- Storage	-25 °C ... 55 °C
	- Transport	-25 °C ... 70 °C
<b>Design</b>	- Busch-triton®	
<b>Colour</b>	- amber	
	- obsidian	
	- palladium	
	- titanium	
	- platinum	
	- bronze	
	- studio white, matt	
	- alabaster/studio white	
	- hansa blue	
	- cobalt blue	
	- diamond black	
	- alpine white	
	- light grey	
	- champagne metallic	
<b>Mounting</b>	- latched onto flush-mounted insert	
<b>Dimensions</b>	- 97 x 90 mm (H x W)	
<b>Weight</b>	- 0.07 kg	
<b>Certification</b>	- EIB-certified	
<b>CE norm</b>	- in accordance with the EMC guideline and the low voltage guideline	

Application programs	Number of communication objects	Max. number of group addresses	Max. number of associations
<b>For flush-mounted bus coupler:</b>			
IR LCD Switch Dim Shutter Lightscene /10	19	19	19
<b>For flush-mounted switch actuator/sensor:</b>			
IR LCD Switch Dim Shutter Lightscene /9	19	19	19
<b>For 1-fold switch-/dimactuator, FM:*</b>			
Switch Dim Shutter Flex. allocation Logic Status /3	10	16	21

\* A detailed description of the applications for the flush-mounted, compact devices can be found in the technical manual, chapter "Sensor/actuator combinations, FM"

**Circuit diagram**



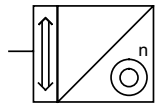
1 Bus terminal

2 Application module  
 3 10-pole plug

**Note**

When installing two Busch-triton® switch sensors horizontally, a distance of 112 mm is recommended (using 2 flush-type spacers e.g. 2 x Kaiser spacers 91).

### IR LCD Switch Dim Shutter Lightscene /10



#### Selection in ETS2

- ABB
  - └ Push Button triton
  - └ Push button, 3-fold

The application program is specifically for the 3-fold Busch-triton® switch sensor with LCD application module in connection with a flush-mounted bus coupler.

The Busch-triton® switch sensor can be used for switching, dimming and shutter control as well as for controlling lightscenes. Various parameters and communication objects can be used for the rockers depending on the number of lightscenes and the assignment of the rockers.

No lightscenes are available in the default setting. The number of lightscenes can be set using the parameter "Number of lightscenes". The rockers that are to be assigned lightscenes can be selected via the parameter "Lightscenes are available".

The rockers of the Busch-triton® switch sensor that are not used for lightscene control each have the same set of parameters. With the parameter "Operation mode of rocker", the basic switch, dimming or shutter control function can be selected. Depending on this setting, different parameters and objects are available for the rockers. There is a common parameter "Push button action interpreted as long from" for all the rockers that are used for dimming or shutter control. Normally, the switch sensor detects a long push button action if a rocker is pressed for longer than 420 ms.

If a rocker is to have no function, the parameter "Operation mode of rocker" should be set to "no function / display operation". No communication objects are then displayed and the rocker is only used for selecting different displays.

#### Fault protection

The fault protection function causes only one basic function to be triggered when any of the rockers of the switch sensor are pressed. For example, pressing one of the three rockers via communication object no. 1 "Fault protection" switches the base lighting alternately on or off.

The fault protection system can be permanently activated or for example be timed to switch on or off via the EIB using object no. 0 "Fault protection Off/On". If the parameter "Function of auxiliary push button" is set to "Interrupt fault protection", the three rockers can be used according to the parameter settings once the auxiliary push button has been pressed.

#### Backlighting

The backlit text fields display the functions of the rockers even in the dark. Using the communication object "Backlighting/LED", the backlighting and status LEDs can if required be switched on or off.

The auxiliary push button can also be used for manual switching. The parameter "Function of auxiliary push button" must be set to "Backlighting and LED on/off". When the auxiliary push button is pressed, not only is the lighting of the switch sensor switched on or off but a telegram is sent via the communication object "Backlighting/LED". It is therefore possible to switch on the lighting for several Busch-triton® switch sensors at the same time via a common group address.

By default, the backlighting switches on after bus voltage recovery. This can also be changed via the parameter "Behaviour of text field illumination...".

#### IR

In addition to using the rockers, the Busch-triton® switch sensor can also be controlled remotely via an infrared hand-held transmitter. The rockers and the auxiliary push button can be assigned individually to the white or blue infrared area of the hand-held transmitter. The relevant setting must then be selected via the slide switch on the hand-held transmitter. The MEMO button on the transmitter corresponds to the function of the auxiliary push button on the Busch-triton® switch sensor. Push buttons 1 to 3 of the hand-held transmitter correspond to the rockers of the Busch-triton® switch sensor.

### LCD

The display of the Busch-triton® switch sensor can represent the values of five different communication objects.

In order to display switching states, relative variables such as brightness values, physical variables such as temperature values, the current time or date, it is possible to parameterise individually the object value of each LCD object from 1 bit to 3 bytes.

The input of the display text and several further settings is carried out using the Busch LCD management software. The software is available free of charge on the EIB CD-ROM/diskette. The function of the software is described in the Software/visualisation chapter. When entering the settings, you should ensure that the data (objects) of ETS2 and the display management software match.

### Switch

In the default setting of the Busch-triton® switch sensor, there are two 1 bit communication objects available for switching for the rockers that are not assigned lightscenes. For simple applications, it is also possible to set the parameter "Number of switch functions" so that the rocker is only assigned one communication object.

The parameter "Working mode of the rocker" determines which value the switch sensor sends when the left or the right side of the rocker is pressed.

### Dim

If the operation mode of the rocker is set to "dimming sensor", the rocker has the communication objects "Rocker ... -short" for switching and "Rocker ... -long" for dimming.

When carrying out a switching operation, the rocker can either be pressed briefly on the left, on the right or in the middle. The switch sensor always toggles in this case.

For dimming, it is determined via the parameter "Dimming direction" which side of the rocker must be pressed and held down in order to dim up or down. When the rocker is released, the switch sensor sends the telegram "Stop dimming".

### Shutter

If the operation mode of the rocker is set to "shutter sensor", the switch sensor sends "Move shutter up/down" telegrams when it is pressed for a long period. If the rocker is pressed briefly, it sends "Adjust lamella/stop" telegrams.

The parameter "Shutter direction" determines which side of the rocker must be pressed in order to move the shutter up or down.

### LED

If no lightscenes are being used, each LED has its own communication object. If the LED of a rocker that functions as a switch sensor is to toggle when it is operated, the LED communication object should be assigned the same group address as the switching object of the rocker.

If lightscenes are used, each LED takes on the value of a communication object. The communication object is indicated in the parameter "Operation mode of LED".

The following applies in both cases: If the backlighting of the text fields is switched on, the LEDs can be used as an orientation light or for status display via the parameter "Operation mode of LED".

If the LEDs are used for status display, it is possible to set which colour (red or green) is assigned to the object values "0" or "1".

If the setting "Orientation light" is selected for the LEDs, they can either glow always red or always green or can be switched off.

### Lightscenes

In lightscene mode, up to six scenes with up to six different groups of actuators can be controlled without special lightscene modules.

The lightscenes can be preset via the device parameters. The user can then individually assign new parameter settings if required while the installation is in operation. The auxiliary push button is used for storing new lightscenes (parameters). To do this, the parameter “Function of auxiliary push button” must be set to “Saving lightscenes”. To be able to use this function, the transmitting group addresses and flags must be assigned correctly when configuring the actuators.

The lightscenes are configured according to the following process.

1. The number of lightscenes and their respective rocker assignment is set on the “General” parameter page.
2. For each of the actuator groups A ... F, it must be determined with the parameter “Type of actuator group ...” whether they use 1 bit communication objects (switch or shutter actuators) or 8 bit communication objects (dimming actuators). Depending on this setting, the ETS2 program displays various parameters and communication objects. Communication objects 13 ... 18 are used for the control of actuator groups A ... F.
3. For each of the lightscenes, values can be preset for the actuator groups on their own parameter page.
4. The rockers that are not used for lightscenes are still available for switching, dimming or shutter control. The parameter setting “no function / display operation” must be selected for unassigned rockers.

If a rocker is used for recalling lightscenes, the LED indicates which side of the rocker has been pressed. It glows green when the left side is pressed and red when the right side is pressed. If two rockers are used, the LED of the rocker that was last operated lights up.

### Application example:

In a training room, there are two groups of luminaires above the seminar participants (lamps 1 and 2) and one group of luminaires (lamp 3) above the lecture area. The room can be made darker using an electrically driven shutter.

From door 1, it should be possible to switch and dim the lamps above the seminar participants individually and to operate the shutter.

From door 2, it should be possible to switch and dim the lights in the lecture area and to recall various lightscenes.

Two Busch-triton® switch sensors, three switch/dimming actuators and one shutter actuator are to be used.

The Busch-triton® switch sensor at door 1 has the following parameter settings:

Number of lightscenes:

0

Function of auxiliary push button:

no function/display operation

IR area:

white

Operation mode of rocker 1:

dimming sensor

Operation mode of rocker 2:

dimming sensor

Operation mode of rocker 3:

shutter sensor

The 1 bit and 4 bit communication objects of rockers 1 and 2 are linked with the corresponding objects of the actuators for lamps 1 and 2. The objects of rocker 3 are linked with the objects of the shutter actuator.

The Busch-triton® switch sensor at door 2 has the following parameter settings:

Number of lightscenes:

4

Lightscenes are available:

Rockers 1 and 2

Function of auxiliary push button:

Saving lightscenes

Operation mode of rocker 1:

Lightscenes

Operation mode of rocker 2:

Lightscenes

Operation mode of rocker 3:

Dimming sensor

IR area:

blue

Type of actuator group A:

dimming actuator (8 bit)

Type of actuator group B:

dimming actuator (8 bit)

Type of actuator group C:

dimming actuator (8 bit)

Type of actuator group D:

switch or shutter actuator (1 bit)

The 1 bit and 4 bit communication objects of rocker 3 are linked with the objects of the actuator for lamp 3. The 1 byte communication objects of the actuator groups A ... C are linked with the 1 byte objects of the dimming actuators.

Due to the fact that different IR areas are assigned for the two Busch-triton® switch sensors, the lecturer can operate all the functions comfortably from any position.

The various preset options of the actuator groups for lightscenes 1 ... 4 can still be corrected later. Possible combinations are for example:

Lightscene 1: Base lighting

Actuator group A: 80%,

Actuator group B: 80%,

Actuator group C: 80%,

Actuator group D: UP

Lightscene 2: OFF

Actuator group A: 0%,

Actuator group B: 0%,

Actuator group C: 0%,

Actuator group D: UP

Lightscene 3: Lecture without projection

Actuator group A: 70%,

Actuator group B: 70%,

Actuator group C: 95%,

Actuator group D: UP

Lightscene 4: Lecture with projection

Actuator group A: 40%,

Actuator group B: 40%,

Actuator group C: 20%,

Actuator group D: DOWN

The preset options of the actuator groups can be modified individually by the customer when the system is in operation. A prerequisite for this is that the read flags must be set for the communication objects of the actuators. If shutter actuators are to be integrated into lightscene control, several points should be noted:

- If the read flags of the communication objects are set for shutter actuators or sensors, the motors can be set in motion during the storing of lightscenes.
- With most motors, it is not possible to indicate a set position precisely. Usually only the upper and lower limit positions can therefore be stored.

The definition of the lightscenes follows the steps below.

1. The required values of the lamps are set via the rockers of the switch sensors or the infrared hand-held transmitter.
2. The auxiliary push button of the switch sensor is pressed in order to prepare for the storing of lightscenes. The LEDs of the switch sensor glow orange in order to indicate this.
3. The rocker that is to recall this lightscene later is pressed.
4. The Busch-triton® switch sensor sends a "Read value" telegram for each of the groups of actuators and stores the 1 byte values of the dimming actuators.
5. After storing the values, the LEDs glow either red or green.

In order to have a clear assignment of the LEDs of the switch sensors to the dimming actuators even when lightscenes are being used, the 1 bit communication objects of the dimming actuators can be used for status display. For this purpose, the transmission flags are set for the 1 bit communication objects of the dimming actuators and the objects are linked with the LEDs. The correct assignment of the transmitting group addresses which ETS2 displays as the first group address of an object should be observed.

**Communication objects**  
for switch sensor with two switch functions

No.	Type	Object name	Function
2	3 byte	LCD object 1	Time/date
3	3 byte	LCD object 2	Time/date
4	3 byte	LCD object 3	Time/date
5	3 byte	LCD object 4	Time/date
6	3 byte	LCD object 5	Time/date
7	1 bit	LED 1	Change of colour
8	1 bit	LED 2	Change of colour
9	1 bit	LED 3	Change of colour
10	1 bit	Backlighting/LED	Switching
13	1 bit	Rocker 1 left	Telegr. switch
14	1 bit	Rocker 1 right	Telegr. switch
15	1 bit	Rocker 2 left	Telegr. switch
16	1 bit	Rocker 2 right	Telegr. switch
17	1 bit	Rocker 3 left	Telegr. switch
18	1 bit	Rocker 3 right	Telegr. switch

**Communication objects**  
for switch sensor with one switch function and fault protection

No.	Type	Object name	Function
0	1 bit	Fault protection Off/On	Input telegr.
1	1 bit	Fault protection	Telegr. switch
...			
13	1 bit	Rocker 1	Telegr. switch
15	1 bit	Rocker 2	Telegr. switch
17	1 bit	Rocker 3	Telegr. switch

**Communication objects**  
for dimming sensor

No.	Type	Object name	Function
...			
13	1 bit	Rocker 1 -short	Telegr. switch
14	4 bit	Rocker 1 -long	Telegr. dimming
15	1 bit	Rocker 2 -short	Telegr. switch
16	4 bit	Rocker 2 -long	Telegr. dimming
17	1 bit	Rocker 3 -short	Telegr. switch
18	4 bit	Rocker 3 -long	Telegr. dimming

**Communication objects**  
for shutter sensor

No.	Type	Object name	Function
...			
13	1 bit	Rocker 1 -long	Telegr. move shutter Up-Down
14	1 bit	Rocker 1 -short	Telegr. lamella adj./stop
15	1 bit	Rocker 2 -long	Telegr. move shutter Up-Down
16	1 bit	Rocker 2 -short	Telegr. lamella adj./stop
17	1 bit	Rocker 3 -long	Telegr. move shutter Up-Down
18	1 bit	Rocker 3 -short	Telegr. lamella adj./stop

**Communication objects**  
for 6 lightscenes with switch actuator

No.	Type	Object name	Function
0	3 byte	LCD object 1	Time/date
1	3 byte	LCD object 2	Time/date
2	3 byte	LCD object 3	Time/date
3	3 byte	LCD object 4	Time/date
4	3 byte	LCD object 5	Time/date
8	1 bit	Backlighting/LED	Switching
13	1 bit	Actuator group A	Telegr. switch
14	1 bit	Actuator group B	Telegr. switch
15	1 bit	Actuator group C	Telegr. switch
16	1 bit	Actuator group D	Telegr. switch
17	1 bit	Actuator group E	Telegr. switch
18	1 bit	Actuator group F	Telegr. switch

**Communication objects**  
for lightscenes with dimming actuator

No.	Type	Object name	Function
...			
13	1 byte	Actuator group A	Teleg. brightness value
14	1 byte	Actuator group B	Teleg. brightness value
15	1 byte	Actuator group C	Teleg. brightness value
16	1 byte	Actuator group D	Teleg. brightness value
17	1 byte	Actuator group E	Teleg. brightness value
18	1 byte	Actuator group F	Teleg. brightness value

**Communication objects**  
for 2 lightscenes on rocker 1 and  
switch sensor with two switch functions  
on rockers 2 and 3

No.	Type	Object name	Function
0	3 byte	LCD object 1	Time/date
1	3 byte	LCD object 2	Time/date
2	3 byte	LCD object 3	Time/date
3	3 byte	LCD object 4	Time/date
4	3 byte	LCD object 5	Time/date
8	1 bit	Backlighting/LED	Switching
9	1 bit	Rocker 2 left	Teleg. switch
10	1 bit	Rocker 2 right	Teleg. switch
11	1 bit	Rocker 3 left	Teleg. switch
12	1 bit	Rocker 3 right	Teleg. switch
13	1 bit	Actuator group A	Teleg. switch
14	1 bit	Actuator group B	Teleg. switch
15	1 bit	Actuator group C	Teleg. switch
16	1 bit	Actuator group D	Teleg. switch
17	1 bit	Actuator group E	Teleg. switch
18	1 bit	Actuator group F	Teleg. switch

**Communication objects**  
for 1 bit (switch) LCD object value

No.	Type	Object name	Function
2	1 bit	LCD object 1	Switching
3	1 bit	LCD object 2	Switching
4	1 bit	LCD object 3	Switching
5	1 bit	LCD object 4	Switching
6	1 bit	LCD object 5	Switching
...			

**Communication objects**  
for 1 byte (value) LCD object value

No.	Type	Object name	Function
2	1 byte	LCD object 1	Value
3	1 byte	LCD object 2	Value
4	1 byte	LCD object 3	Value
5	1 byte	LCD object 4	Value
6	1 byte	LCD object 5	Value
...			

**Communication objects**  
for 2 byte (value) LCD object value

No.	Type	Object name	Function
2	2 byte	LCD object 1	Value
3	2 byte	LCD object 2	Value
4	2 byte	LCD object 3	Value
5	2 byte	LCD object 4	Value
6	2 byte	LCD object 5	Value
...			

**Communication objects**  
for 3 byte (time/date) LCD object value

No.	Type	Object name	Function
2	3 byte	LCD object 1	Time/date
3	3 byte	LCD object 2	Time/date
4	3 byte	LCD object 3	Time/date
5	3 byte	LCD object 4	Time/date
6	3 byte	LCD object 5	Time/date
...			



**Parameters**

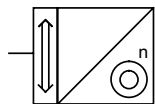
The default setting for the values is **printed in bold type**.

<b>General:</b>	
- Object for backlighting switches	<b>text field and status LED</b> only text field LED
- Behaviour of text field illumination after bus recovery	<b>ON</b> OFF
- Number of lightscenes	<b>0 / 2 / 4 / 6</b>
- If 2 lightscenes are selected: - Lightscenes are available	<b>Rocker 1 / Rocker 2 / Rocker 3</b>
- If 4 lightscenes are selected: - Lightscenes are available	<b>Rockers 1 and 2 / Rockers 2 and 3</b>
- If 6 lightscenes are selected: - Lightscenes are available	<b>Rockers 1 to 3</b>
<b>With lightscenes:</b>	
- Function of auxiliary push button	no function / display operation <b>Save lightscenes</b>
<b>Without lightscenes:</b>	
- Function of auxiliary push button	<b>no function / display operation</b> Interrupt fault protection Backlighting and LED on/off
- IR area of auxiliary push button (MEMO)	<b>no IR</b> white blue
- Wait state between telegrams by activating lightscenes (base 140 ms)	<b>0</b>
- Push button action interpreted as long from	280 ms / <b>420 ms</b> / ... / 2.1 s
<b>Separate for each rocker:</b>	
- Rocker is assigned to IR push button Only if rocker is assigned:	<b>no IR</b> / 1 / 2 / 3 / 4 / 5
- IR area	<b>white</b> blue
<b>With lightscenes:</b>	
- Rocker is assigned two lightscenes	<b>← NOTE</b>
<b>Without lightscenes:</b>	
- Operation mode of rocker	no function / display operation Shutter sensor Dimming sensor <b>Switch sensor</b>

**3-fold Busch-triton® switch sensor with LCD, FM**  
 Type: 6323-xx

For switch sensor:	
- Number of switch functions	<b>2 Functions =&gt; 2 Objects</b> 1 Function => 1 Object
If 1 function is selected:	
- Working mode of rocker	<b>TOGGLE</b> left = OFF, right = ON left = ON, right = OFF
If 2 functions are selected:	
- Working mode of rocker	<b>left = TOGGLE, right = TOGGLE</b> left = TOGGLE, right = OFF left = OFF, right = TOGGLE left = OFF, right = OFF left = TOGGLE, right = ON left = OFF, right = ON left = ON, right = TOGGLE left = ON, right = OFF left = ON, right = ON
For dimming sensor:	
- Dimming direction	<b>left = darker, right = brighter</b> left = brighter, right = darker
For shutter sensor:	
- Shutter direction	<b>left = down, right = up</b> left = up, right = down
With lightscenes:	
- Operation mode of LED	Orientation light <b>Shows value of object rocker...</b>
Without lightscenes:	
- Operation mode of LED	Orientation light <b>Shows value of object</b>
For display of object value:	
- Colour of LED	<b>OFF = green, ON = red</b> OFF = red, ON = green
For orientation light:	
- Colour of LED	<b>always green</b> always red always off
Actuator types:	
Separate for each actuator type:	
- Type of actuator group A ... F	<b>switch or shutter actuator (1 bit)</b> dimming actuator (8 bit)
Separate for each lightscene:	
For switch or shutter actuator:	
- Preset actuator group A ... F	<b>OFF / UP</b> ON / DOWN
For dimming actuator:	
- Preset actuator group A ... F	<b>0 % / 5 % / ... / 95 % / 100 %</b>
Display:	
Separate for each LCD object:	
- Type of LCD object no. ...	1 bit (Switch) 2 byte (Value) 1 byte (Value) <b>3 byte (Time/date)</b>

### IR LCD Switch Dim Shutter Lightscene /9



#### Selection in ETS2

- ABB
  - └ Push Button triton
  - └ Push button, 3-fold for 1 SA

The application program is specifically for the 3-fold Busch-triton® switch sensor with LCD application module in combination with a flush-mounted switch actuator/sensor.

The Busch-triton® switch sensor can be used for switching, dimming and shutter control as well as for controlling lightscenes.

No lightscenes are available in the default setting. If lightscenes are to be used, the parameter “Number of lightscenes” should be set to the required number. Depending on the number of lightscenes and the setting in the parameter “Lightscenes are available”, various parameters and communication objects can be used for the rockers.

The rockers of the Busch-triton® switch sensor that are not used for lightscene control each have the same set of parameters. With the parameter “Operation mode of rocker”, the basic switch, dimming or shutter control function can be selected. Depending on this setting, different parameters and objects are made available for the rockers. There is a common parameter “Push button action interpreted as long from” for all the rockers that are used for dimming or shutter control.

If the operation mode of the rocker is set to “no function / display operation”, it is possible to alternate between 5 different displays using the rocker.

#### Fault protection

The fault protection function causes only one basic function to be triggered when any of the rockers of the switch sensor are pressed. For example, pressing one of the three rockers via communication object no. 1 “Fault protection” switches the base lighting alternately on or off.

The fault protection system can be permanently activated or for example be timed to switch on or off via the EIB using object no. 0 “Fault protection Off/ On”. If the parameter “Function of auxiliary push button” is set to “Interrupt fault protection”, the three rockers can be used according to the parameter settings once the auxiliary push button has been pressed.

#### Backlighting

The backlit text fields display the functions of the rockers even in the dark. Using the communication object “Backlighting/LED”, the backlighting and status LEDs can if required be switched on or off.

The auxiliary push button can also be used for manual switching. The parameter “Function of auxiliary push button” must be set to “Backlighting and LED on/off”. When the auxiliary push button is pressed, not only is lighting of the switch sensor switched on or off but a telegram is sent via the communication object “Backlighting/LED”. It is therefore possible to switch on the lighting for several Busch-triton® switch sensors at the same time via a common group address.

By default, the backlighting switches on after bus voltage recovery. This can also be changed via the parameter “Behaviour of text field illumination...”.

#### Relay

The relay contact can be parameterised for various applications as a normally open or normally closed contact.

The relay output has its own communication object “Actuator”. The relay output can thus be switched via the EIB independently of the Busch-triton® switch sensor. If the relay is to be controlled for example by a rocker of the Busch-triton® switch sensor, the corresponding communication objects need to be linked with a common group address.

The parameter “Logical connection” is used if the relay output is to be assigned a logic function. A logic AND or OR function can be assigned. A further communication object then becomes available.

The actuator can also send its status to the EIB. To do this, the parameter “Status response” must be set to “yes”.

#### IR

In addition to using the rockers, the Busch-triton® switch sensor can also be operated remotely via an infrared hand-held transmitter. The rockers and the auxiliary push button can be assigned to the white or blue infrared area of the hand-held transmitter. The relevant setting must then be selected via the slide switch on the hand-held transmitter. The MEMO button on the transmitter corresponds to the auxiliary push button on the Busch-triton® switch sensor.

#### LCD

The display of the Busch-triton® switch sensor can represent the values of five different communication objects.

In order to display switching states, relative variables such as brightness values, physical variables such as temperature values, the current time or date, it is possible to parameterise individually the object value of each LCD object from 1 bit to 3 bytes.

The input of the display text and several further settings is carried out using the Busch LCD management software. The software is available free of charge on the EIB CD-ROM/diskette. The function of the software is described in the Software/visualisation chapter. When entering the settings, you should ensure that the data (objects) of ETS2 and the display management software match.

#### Switch

There are two 1 bit communication objects available for switching for the rockers that are not assigned lightscenes. For simple applications, it is also possible to set the parameter “Number of switch functions” so that the rocker is only assigned one communication object.

The parameter “Working mode of the rocker” determines which value the switch sensor sends when the left or the right side of the rocker is pressed.

#### Dim

If the operation mode of the rocker is set to “dimming sensor”, the rocker has the communication objects “Rocker ... -short” for switching and “Rocker ... -long” for dimming.

When carrying out a switching operation, the rocker can either be pressed briefly on the left, on the right or in the middle. The switch sensor always toggles in this case.

For dimming, it is determined via the parameter “Dimming direction” which side of the rocker must be pressed and held down in order to dim up or down. When the rocker is released, the switch sensor sends the telegram “Stop dimming”.

#### Shutter

If the operation mode of the rocker is set to “shutter sensor”, the switch sensor sends “Move shutter up/down” telegrams when it is pressed for a long period. If the rocker is pressed briefly, it sends “Adjust lamella/stop” telegrams.

The parameter “Shutter direction” determines which side of the rocker must be pressed in order to move the shutter up or down.

#### LED

Using the parameter “Operation mode of LED”, the LEDs can be selected for use either as an orientation light or for status display.

If the LEDs are used for status display, it is possible to set which colour (red or green) is assigned to the object values “0” or “1”.

If the setting “Orientation light” is selected for the LEDs, they can either glow always red or always green or can be switched off.

#### Lightscenes

In lightscene mode, up to six scenes with up to six different groups of actuators can be controlled without special lightscene modules.

The lightscenes can be preset via the device parameters. The user can then individually assign new parameter settings if required while the installation is in operation. The auxiliary push button is used for storing new lightscenes (parameters). To do this, the parameter “Function of auxiliary push button” must be set to “Saving lightscenes”. To be able to use this function, the transmitting group addresses and flags must be assigned correctly when configuring the actuators.

The lightscenes are configured according to the following process:

1. The number of lightscenes and their respective rocker assignment is set on the “General” parameter page.
2. For each of the actuator groups A ... F, it must be determined with the parameter “Type of actuator group ...” whether they use 1 bit communication objects (switch or shutter actuators) or 8 bit communication objects (dimming actuators). Depending on this setting, the ETS2 program displays various parameters and communication objects. Communication objects 13 ... 18 are used for the control of actuator groups A ... F.
3. For each of the lightscenes, values can be preset for the actuator groups on their own parameter page.
4. The rockers that are not used for lightscenes are still available for switching, dimming or shutter control. The parameter setting “no function / display operation” must be selected for unassigned rockers.

If a rocker is used for recalling lightscenes, the LED indicates which side of the rocker has been pressed. It glows green when the left side is pressed and red when the right side is pressed. If two rockers are used, the LED of the rocker that was last operated lights up.

#### Application example:

Dimmable ceiling lamps are installed in a hotel room. There is also a switchable reading lamp near the bed. The light in the adjoining bathroom can also be switched.

The dimmable ceiling lamps in the living/sleeping area and the lights in the bathroom are to be controlled separately from the door. It should be possible to recall two lightscenes with one push button action:

1. All the lamps are switched to maximum brightness when the room is being cleaned.
  2. All the lamps are switched off when the occupants leave the room.
- The current time, date, room temperature and room number should be indicated on the LCD display.

The dimmable ceiling lamps in the living/sleeping area and the reading lamp are to be controlled separately from the bed. It should be possible to recall two lightscenes with one push button action:

1. The ceiling lamps are dimmed to semi-brightness when the occupant is walking through the room during the night and the lights in the bathroom are switched on.
  2. All the lamps are switched off when the occupant goes to sleep.
- The same information that was displayed for the switch sensor at the door is indicated on the display.

Two 3-fold Busch-triton® switch sensors each with a flush-mounted switch/actuator sensor and a switch/dimming actuator are to be used. The relay of the switch actuator/sensor at the door switches the lighting in the bathroom. The relay of the switch actuator/sensor at the bed switches the reading lamp.

The Busch-triton® switch sensor at the door has the following parameter settings:

Number of lightscenes:

2

Lightscenes are available:

Rocker 1

Function of auxiliary push button:

Backlighting and LED on/off

Operation mode of rocker 1:

Rocker is assigned two lightscenes

<p>Operation mode of rocker 2: dimming sensor</p> <p>Operation mode of rocker 3: switch sensor (1 function)</p> <p>Rocker is assigned to IR push button: no IR</p> <p>Type of actuator group A: dimming actuator (8 bit)</p> <p>Type of actuator group B: switch or shutter actuator (1 bit)</p> <p>Type of actuator group C: switch or shutter actuator (1 bit)</p> <p>The two lightscenes are defined as follows: Lightscene 1: Base lighting Actuator group A: 100%, Actuator group B: ON, Actuator group C: ON Lightscene 2: OFF Actuator group A: 0%, Actuator group B: OFF, Actuator group C: OFF</p> <p>The Busch-triton® switch sensor near the bed has the following parameter settings: Number of lightscenes: 2 Lightscenes are available: Rocker 1 Function of auxiliary push button: Backlighting and LED on/off Operation mode of rocker 1: Rocker is assigned two lightscenes Operation mode of rocker 2: dimming sensor Operation mode of rocker 3: switch sensor (1 function) Rocker is assigned to IR push button: no IR Type of actuator group A: dimming actuator (8 bit) Type of actuator group B: switch or shutter actuator (1 bit) Type of actuator group C: switch or shutter actuator (1 bit)</p> <p>The two lightscenes are defined as follows: Lightscene 1: Passage lighting Actuator group A: 50%, Actuator group B: ON, Actuator group C: OFF Lightscene 2: OFF Actuator group A: 0%, Actuator group B: OFF, Actuator group C: OFF</p>	<p>The connections of the communication objects are similar for both switch sensors.</p> <p>The 1 bit and 4 bit communication objects of rocker 2 are linked with the corresponding objects of the dimming actuators.</p> <p>The 1 bit communication object of rocker 3 is linked with the actuator object.</p> <p>The transmission flag is set for the switching objects of the dimming actuator. The status LEDs can thus be controlled even when retrieving lightscenes.</p> <p>The 1 byte communication object of actuator group A is linked with the 1 byte object of the dimming actuator. The 1 bit communication object of actuator group B is linked with the object of rocker 3 from the same switch sensor. The 1 bit communication object of actuator group C is linked with the object of rocker 3 from the other switch sensor.</p> <p>The LCD objects are linked with the corresponding group addresses for the time, date etc. When programming with the Busch LCD management software, it is important to note the corresponding assignment of the objects.</p> <p>In this case the auxiliary push buttons are not used for storing lightscenes so that hotel guests do not unintentionally change the set lightscene. The read flags should therefore not be used for shutter control in both sensors and the actuator. This prevents the shutter from being accidentally set in motion if there is ever a requirement to parameterise the lightscenes locally.</p>
---	---

**Communication objects**  
for switch sensor with two switch  
functions without lightscenes

No.	Type	Object name	Function
2	3 byte	LCD object 1	Time/date
3	3 byte	LCD object 2	Time/date
4	3 byte	LCD object 3	Time/date
5	3 byte	LCD object 4	Time/date
6	3 byte	LCD object 5	Time/date
7	1 bit	Actuator	Switching
10	1 bit	Backlighting/LED	Switching
13	1 bit	Rocker 1 left	Telegr. switch
14	1 bit	Rocker 1 right	Telegr. switch
15	1 bit	Rocker 2 left	Telegr. switch
16	1 bit	Rocker 2 right	Telegr. switch
17	1 bit	Rocker 3 left	Telegr. switch
18	1 bit	Rocker 3 right	Telegr. switch

**Communication objects**  
for switch sensor with one switch  
function without lightscenes

No.	Type	Object name	Function
...			
13	1 bit	Rocker 1	Telegr. switch
15	1 bit	Rocker 2	Telegr. switch
17	1 bit	Rocker 3	Telegr. switch

**Communication objects**  
for fault protection

No.	Type	Object name	Function
0	1 bit	Fault protection Off/On	Input telegr.
1	1 bit	Fault protection	Telegr. switch
...			

**Communication objects**  
for status response and AND  
connection without lightscenes

No.	Type	Object name	Function
...			
7	1 bit	Actuator	Switching
8	1 bit	Actuator	OR connection
9	1 bit	Actuator	Status
...			

**Communication objects**  
for status response and AND  
connection with lightscenes

No.	Type	Object name	Function
...			
5	1 bit	Actuator	Switching
6	1 bit	Actuator	OR connection
7	1 bit	Actuator	Status
...			

**Communication objects**  
for OR connection

No.	Type	Object name	Function
...			
7	1 bit	Actuator	Switching
8	1 bit	Actuator	AND connection
...			

**Communication objects**

for switch sensor with 2 switch functions and 2 lightscenes with switch actuators assigned to rocker 1

No.	Type	Object name	Function
0	3 byte	LCD object 1	Time/date
1	3 byte	LCD object 2	Time/date
2	3 byte	LCD object 3	Time/date
3	3 byte	LCD object 4	Time/date
4	3 byte	LCD object 5	Time/date
5	1 bit	Actuator	Switching
8	1 bit	Backlighting/LED	Switching
9	1 bit	Rocker 2 left	Teleg. switch
10	1 bit	Rocker 2 right	Teleg. switch
11	1 bit	Rocker 3 left	Teleg. switch
12	1 bit	Rocker 3 right	Teleg. switch
13	1 bit	Actuator group A	Teleg. switch
14	1 bit	Actuator group B	Teleg. switch
15	1 bit	Actuator group C	Teleg. switch
16	1 bit	Actuator group D	Teleg. switch
17	1 bit	Actuator group E	Teleg. switch
18	1 bit	Actuator group F	Teleg. switch

**Communication objects**

for lightscenes with dimming actuators

No.	Type	Object name	Function
...			
13	1 byte	Actuator group A	Teleg. brightness value
14	1 byte	Actuator group B	Teleg. brightness value
15	1 byte	Actuator group C	Teleg. brightness value
16	1 byte	Actuator group D	Teleg. brightness value
17	1 byte	Actuator group E	Teleg. brightness value
18	1 byte	Actuator group F	Teleg. brightness value

**Communication objects**

for dimming sensor without lightscenes

No.	Type	Object name	Function
...			
13	1 bit	Rocker 1 -short	Teleg. switch
14	4 bit	Rocker 1 -long	Teleg. dimming
15	1 bit	Rocker 2 -short	Teleg. switch
16	4 bit	Rocker 2 -long	Teleg. dimming
17	1 bit	Rocker 3 -short	Teleg. switch
18	4 bit	Rocker 3 -long	Teleg. dimming

**Communication objects**

for shutter sensor without lightscenes

No.	Type	Object name	Function
...			
13	1 bit	Rocker 1 -long	Teleg. move shutter Up-Down
14	1 bit	Rocker 1 -short	Teleg. lamella adj./stop
15	1 bit	Rocker 2 -long	Teleg. move shutter Up-Down
16	1 bit	Rocker 2 -short	Teleg. lamella adj./stop
17	1 bit	Rocker 3 -long	Teleg. move shutter Up-Down
18	1 bit	Rocker 3 -short	Teleg. lamella adj./stop

**Communication objects**

for 1 bit (switch) LCD object value without lightscenes

No.	Type	Object name	Function
2	1 bit	LCD object 1	Switching
3	1 bit	LCD object 2	Switching
4	1 bit	LCD object 3	Switching
5	1 bit	LCD object 4	Switching
6	1 bit	LCD object 5	Switching
...			



**Communication objects**  
for 1 byte (value) LCD object value  
without lightscenes

No.	Type	Object name	Function
2	1 byte	LCD object 1	Value
3	1 byte	LCD object 2	Value
4	1 byte	LCD object 3	Value
5	1 byte	LCD object 4	Value
6	1 byte	LCD object 5	Value
...			

**Communication objects**  
for 2 byte (value) LCD object value  
without lightscenes

No.	Type	Object name	Function
2	2 byte	LCD object 1	Value
3	2 byte	LCD object 2	Value
4	2 byte	LCD object 3	Value
5	2 byte	LCD object 4	Value
6	2 byte	LCD object 5	Value
...			

**Communication objects**  
for 3 byte (time/date) LCD object value  
without lightscenes

No.	Type	Object name	Function
2	3 byte	LCD object 1	Time/date
3	3 byte	LCD object 2	Time/date
4	3 byte	LCD object 3	Time/date
5	3 byte	LCD object 4	Time/date
6	3 byte	LCD object 5	Time/date
...			

**Parameters**

The default setting for the values is **printed in bold type**.

<b>General:</b>	
- Object for backlighting switches	<b>text field and status LEDs</b> only text field LEDs
- Behaviour of text field illumination after bus voltage recovery	<b>ON</b> OFF
- Function of auxiliary push button	<b>no function / display operation</b> Interrupt fault protection (approx. 5 s) Backlighting and LED on/off
- IR area of auxiliary push button (MEMO)	white <b>no IR</b> blue
- Number of lightscenes	<b>0 / 2 / 4 / 6</b>
If 2 lightscenes are selected:	
- Lightscenes are available	<b>Rocker 1</b> Rocker 2 Rocker 3
If 4 lightscenes are selected:	
- Lightscenes are available	<b>Rockers 1 and 2</b> Rockers 2 and 3
If 6 lightscenes are selected:	
- Lightscenes are available	<b>Rockers 1 to 3</b>
- Wait state between telegrams by activating lightscenes (140 ms)	<b>0</b>
- Push button action interpreted as long from	280 ms / <b>420 ms</b> / ... / 2.1 s
<b>Separate for the relay contact:</b>	
- Switch function	<b>Normally open contact</b> Normally closed contact
- Operation mode	<b>Normal operation</b> Staircase lighting function
If "normal operation" is selected:	
- Switch ON delay	<b>no</b> yes
If "yes" is selected:	
- Time base for switch ON delay	0.5 ms / 8 ms / <b>130 ms</b> / 2.1 s / 33 s
- Time factor for switch ON delay (1 ... 255)	<b>10</b>
- Switch OFF delay	<b>no</b> yes
If "yes" is selected:	
- Time base for switch OFF delay	0.5 ms / 8 ms / 130 ms / <b>2.1 s</b> / 33 s
- Time factor for switch OFF delay (1 ... 255)	<b>85</b>
If "staircase lighting function" is selected:	
- Switch ON delay	<b>no</b> yes
If "yes" is selected:	
- Time base for switch ON delay	0.5 ms / 8 ms / <b>130 ms</b> / 2.1 s / 33 s
- Time factor for switch ON delay (1 ... 255)	<b>10</b>
- Time base for staircase lighting function	0.5 ms / 8 ms / 130 ms / <b>2.1 s</b> / 33 s
- Time factor for staircase lighting function (1 ... 255)	<b>85</b>
- Reset switch ON delay	no <b>yes</b>

**3-fold Busch-triton® switch sensor with LCD, FM**  
 Type: 6323-xx

- Logical connection	<b>no logical connection</b> AND connection OR connection
- Status response	<b>no</b> yes

Separate for rockers 1 to 3:  
 With lightscenes:

- Rocker is assigned two lightscenes	<b>&lt;— NOTE</b>
- Rocker is assigned to IR push button	<b>no IR / 1 / 2 / 3 / 4 / 5</b>
If rocker is assigned to push button:	
- IR area	<b>white</b> blue

Without lightscenes:

- Operation mode of rocker	no function / display operation Shutter sensor Dimming sensor <b>Switch sensor</b>
----------------------------	---

For switch sensor:

- Number of switch functions	<b>2 Functions =&gt; 2 Objects</b> 1 Function => 1 Object
If 1 function is selected:	
- Working mode of the rocker	<b>TOGGLE</b> left = OFF, right = ON left = ON, right = OFF
If 2 functions are selected:	
- Working mode of the rocker	<b>left = TOGGLE, right = TOGGLE</b> left = TOGGLE, right = OFF left = OFF, right = TOGGLE left = OFF, right = OFF left = TOGGLE, right = ON left = OFF, right = ON left = ON, right = TOGGLE left = ON, right = OFF left = ON, right = ON

For dimming sensor:

- Dimming direction	<b>left = darker, right = brighter</b> left = brighter, right = darker
---------------------	---

For shutter sensor:

- Shutter direction	<b>left = down, right = up</b> left = up, right = down
---------------------	---

- Operation mode of LED	Orientation light <b>Shows value of object rocker ...</b>
For display of object value:	
- Colour of LED	<b>OFF = green, ON = red</b> OFF = red, ON = green
For orientation light:	
- Colour of LED	<b>always green</b> always red always off

- Rocker is assigned to IR push button	<b>no IR / 1 / 2 / 3 / 4 / 5</b>
If rocker is assigned to push button:	
- IR area	<b>white</b> blue

Actuator types for lightscenes:

Separate for each actuator group:	
- Type of actuator group A ... F	<b>switch or shutter actuator (1 bit)</b> dimming actuator (8 bit)

Separate for each lightscene:

For switch or shutter actuator:	
- Preset actuator group A ... F	<b>OFF / UP</b> ON / DOWN

For dimming actuator:	
- Preset actuator group A ... F	<b>0 % / 5 % / ... / 95 % / 100 %</b>

Display:

Separate for each LCD object:	
- Type of LCD object no. 1 ... 5	1 bit (Switch) 1 byte (Value) 2 byte (Value) <b>3 byte (Time/date)</b>