5-fold Busch-triton® switch sensor with LCD, FM

Type: 6325-xx

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

The 5-fold switch sensor can send e.g. switching, dimming or shutter control commands 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

Power supply	– EIB	24 VDC, via the bus line
Operating and display elements	– 5 rockers each with 2 switch contacts	
	– 1 LCD with 16 characters	
	– Auxiliary push button	
	– 5 two-colour LEDs	red / green
	– 5 backlit labelling fields	
	– IR receiver	
Connections	– Flush-mounted bus coupler or – Flush mounted switch actuator/sensor	10-pole plug connector
Type of protection	– IP 20, EN 60 529 mounted on the bus coupler	
Ambient temperature range	– Operation	- 5 °C … 45 °C
	– Storage	-25 °C … 55 °C
	– Transport	-25 °C … 70 °C
Design	– Busch-triton®	
Colour	– amber obsidian palladium titanium platinum bronze studio white, matt alabaster/studio white hansa blue cobalt blue diamond black alpine white light grey champagne metallic	
Mounting	– latched onto flush-mounted insert	
Dimensions	– 159.4 x 90 mm (H x W)	
Weight	– 0.13 kg	
Certification	– EIB-certified	
CE norm	– in accordance with the EMC guideline and the low voltage guideline	

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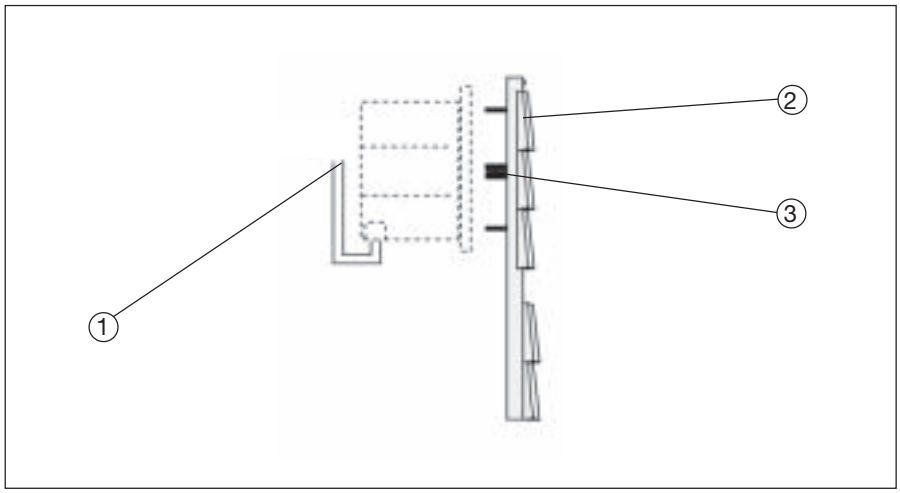
Application programs	Number of communication objects	Max. number of group addresses	Max. number of associations
For **bus coupler FM**:			
IR LCD Switch Dim Shu. Lightscene /2	18	21	21
IR LCD Switch Dim Shu. /1	18	18	18
For **Switch actuator / -sensor**:			
IR LCD Switch Dim Shutter Lightscene /1	18	21	21
IR LCD Switch Dim Shutter /2	18	18	18
For 1-fold **switch-/dimmactuator, FM:***			
Switch Dim Shutter Flex. allaocation 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”

Wiring 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).

5-fold Busch-triton® switch sensor with LCD, FM

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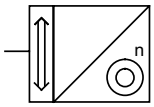
IR LCD Switch Dim Shu. Lightscene /2



Selection in ETS2

– ABB
  └Push Button triton
    └Push button, 5-fold

The application program is specifically for the 5-fold Busch-triton® switch sensor 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 setting selected in the parameters “Number of lightscenes” and “Lightscenes are available”.

Four lightscenes are available in the default setting which can be retrieved via rockers 4 and 5. By changing the parameter “Lightscenes are available”, the other rockers can also be used for controlling lightscenes.

The rockers of the Busch-triton® switch sensor which are not used for controlling lightscenes each have the same set of parameters. With the parameter “Operation mode of the rocker”, the basic switching, 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 400 ms.

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 five 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 function of the auxiliary push button on the Busch-triton® switch sensor.

LCD

When two lightscenes are used, the display of the Busch-triton® switch sensor can represent the values of three different communication objects. If four or six lightscenes are used, there are five communication objects available for the display.

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 the object value for 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. This 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 each of the rockers that are not used for lightscene control so that they can carry out switching operations. For simple applications, it is also possible to set the parameter “Number of switch functions” so that the rocker only has 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 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 on either the left or right hand side. If the rocker is pressed on either side for a short period, 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 the backlighting of the text fields is switched on, the LEDs can be selected for use either as an orientation light or for status display with the parameter “Operation mode of LED”.

It is possible to assign the colours (red or green) of the object values “0” or “1” for the LEDs that are used for status display.

If used as an orientation light, the LED can either glow always red or always green or can also 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 reassign parameters as 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 “Storage of lightscenes”. To be able to use this function, the correct transmitting group addresses and flags must be assigned to the actuators.

The lightscenes are designed according to the following process.

1. The number of lightscenes and their respective rocker assignment can be set in the “General” parameter window.
2. For each of the groups of actuators 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
   12 ... 17 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 available for switching, dimming or shutter control. The parameter setting “no function/display operation” must be selected for unassigned rockers.

If one 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.

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Application example:

In a training room, there are three groups of luminaires above the seminar participants (lamps 1, 2 and 3) and one group of luminaires (lamp 4) above the lecture area. The room can be made darker using two electrically driven shutters.

From door 1, it should be possible to individually switch and dim the lamps above the seminar participants and the lamps in the lecture area. It should also be possible to recall two lightscenes (base lighting and OFF).

From door 2, it should be possible to switch and dim the lamps in the lecture area, operate the shutters separately and recall four lightscenes (base lighting, OFF, lecture without projection and lecture with projection).

Two 5-fold Busch-triton® switch sensors, four switch/dimming actuators and two shutter actuators are used.

The Busch-triton® switch sensor at door 1 has the following parameter settings:
Number of lightscenes:
2
Lightscenes are available:
Rocker 5
Function of the auxiliary push button:
storage of lightscenes
Operation mode of rocker 1:
dimming sensor
Operation mode of rocker 2:
dimming sensor
Operation mode of rocker 3:
dimming sensor
Operation mode of rocker 4:
dimming sensor
Operation mode of rocker 5:
Rocker is assigned two lightscenes
IR area:
white
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 E:
switch or shutter actuator (1 bit)
Type of actuator group F:
switch or shutter actuator (1 bit)

The 1 bit and 4 bit communication objects of rockers 1 .. 4 are linked with the corresponding objects of actuators for lamps 1 ... 4. The 1 byte communication objects of actuator groups A ... D are linked with the 1 byte objects of the dimming actuators and the 1 bit communication objects of actuator groups E ... F are linked with the 1 bit objects of the shutter actuators.

The Busch-triton® switch sensor at door 2 has the following parameter settings:
Number of lightscenes:
4
Lightscenes are available:
Rockers 4 and 5
Function of auxiliary push button:
storage of lightscenes
Operation mode of rocker 1:
dimming sensor
Operation mode of rocker 2:
shutter sensor
Operation mode of rocker 3:
shutter sensor
Operation mode of rocker 4:
Rocker is assigned two lightscenes
Operation mode of rocker 5:
Rocker is assigned two lightscenes
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 E:
switch or shutter actuator (1 bit)
Type of actuator group F:
switch or shutter actuator (1 bit)

The 1 bit and 4 bit communication objects of rocker 1 are linked with the objects of the actuator for lamp 4. The 1 bit communication objects for rockers 2 and 3 are linked with the objects of the shutter actuators. The 1 byte communication objects of the actuator groups A ... D are linked with the 1 byte objects of the dimming actuators while the 1 bit communication objects of the actuator groups E ... F are linked with the 1 bit objects of the shutter 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 ac-

tuator groups for lightscenes 1 and 2 (switch sensor - door 1) or 1 ... 4 (switch sensor - door 2) can still be corrected at a later date. Possible combinations are for example:

Lightscene 1: Base lighting
Actuator group A: 80%,
Actuator group B: 80%,
Actuator group C: 80%,
Actuator group D: 80%,
Actuator group E: UP,
Actuator group F: UP

Lightscene 2: OFF
Actuator group A: 0%,
Actuator group B: 0%,
Actuator group C: 0%,
Actuator group D: 0%,
Actuator group E: UP,
Actuator group F: UP

Lightscene 3: Lecture without projection
Actuator group A: 70%,
Actuator group B: 70%,
Actuator group C: 70%,
Actuator group D: 95%,
Actuator group E: UP,
Actuator group F: UP

Lightscene 4: Lecture with projection
Actuator group A: 40%,
Actuator group B: 40%,
Actuator group C: 40%,
Actuator group D: 20%,
Actuator group E: DOWN,
Actuator group F: DOWN

The preset options of the actuator groups can be individually reassigned by the customer while the installation is in operation. A prerequisite for this is that the read flags should be set for the communication objects of the dimmers. The read flag should not be set for the shutter actuators and the fourth rocker of the second switch sensor so that the motors are not accidentally put in motion during the storing of lightscenes.

The definition of the lightscenes follows the steps below.

1. The required values of the lamps are set via the rockers of the switch sensor or via 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 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 switch sensor‘s LEDs 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 i.e. the 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, 3 byte object value and 4 lightscenes on rockers 4 and 5

No.	Type	Object name	Function
0	1 bit	LCD object 0	Switch
1	1 bit	LCD object 1	Switch
2	1 bit	LCD object 2	Switch
3	1 bit	LCD object 3	Switch
4	1 bit	LCD object 4	Switch
5	1 bit	Backlighting/LED	Switch
6	1 bit	Rocker 1 left	Telegr. switch
7	1 bit	Rocker 1 right	Telegr. switch
8	1 bit	Rocker 2 left	Telegr. switch
9	1 bit	Rocker 2 right	Telegr. switch
10	1 bit	Rocker 3 left	Telegr. switch
11	1 bit	Rocker 3 right	Telegr. switch
12	1 bit	Actuator group A	Telegr. switch
13	1 bit	Actuator group B	Telegr. switch
14	1 bit	Actuator group C	Telegr. switch
15	1 bit	Actuator group D	Telegr. switch
16	1 bit	Actuator group E	Telegr. switch
17	1 bit	Actuator group F	Telegr. switch

Communication objects
for switch sensor with two switch functions and 2 lightscenes on rocker 5

No.	Type	Object name	Function
...			
3	1 bit	Backlighting/LED	Switch
4	1 bit	Rocker 1 left	Telegr. switch
5	1 bit	Rocker 1 right	Telegr. switch
6	1 bit	Rocker 2 left	Telegr. switch
7	1 bit	Rocker 2 right	Telegr. switch
8	1 bit	Rocker 3 left	Telegr. switch
9	1 bit	Rocker 3 right	Telegr. switch
10	1 bit	Rocker 4 left	Telegr. switch
11	1 bit	Rocker 4 right	Telegr. switch
...			

Communication objects
for switch sensor with two switch functions and 6 lightscenes on rockers 1 to 3

No.	Type	Object name	Function
...			
7	1 bit	Backlighting/LED	Switch
8	1 bit	Rocker 3 left	Telegr. switch
9	1 bit	Rocker 3 right	Telegr. switch
10	1 bit	Rocker 4 left	Telegr. switch
11	1 bit	Rocker 4 right	Telegr. switch
...			

Communication objects
for 4 lightscenes on rockers 4 and 5 with dimming actuator

No.	Type	Object name	Function
...			
12	1 byte	Actuator group A	Telegr. brightness value
13	1 byte	Actuator group B	Telegr. brightness value
14	1 byte	Actuator group C	Telegr. brightness value
15	1 byte	Actuator group D	Telegr. brightness value
16	1 byte	Actuator group E	Telegr. brightness value
17	1 byte	Actuator group F	Telegr. brightness value

Communication objects
for switch sensor with one switch sensor and 4 lightscenes on rockers 4 and 5

No.	Type	Object name	Function
...			
5	1 bit	Backlighting/LED	Switch
6	1 bit	Rocker 1	Telegr. switch
8	1 bit	Rocker 2	Telegr. switch
10	1 bit	Rocker 3	Telegr. switch
...			

Communication objects
for dimming sensor and 4 lightscenes on rockers 4 and 5

No.	Type	Object name	Function
...			
6	1 bit	Rocker 1 -short	Telegr. switch
7	4 bit	Rocker 1 -long	Telegr. dimming
8	1 bit	Rocker 2 -short	Telegr. switch
9	4 bit	Rocker 2 -long	Telegr. dimming
10	1 bit	Rocker 3 -short	Telegr. switch
11	4 bit	Rocker 3 -long	Telegr. dimming
...			

Communication objects
for shutter sensor and 4 lightscenes on rockers 4 and 5

No.	Type	Object name	Function
...			
6	1 bit	Rocker 1 -short	Telegr. move shutter Up-Down
7	1 bit	Rocker 1 -long	Telegr. lamella adj./stop
8	1 bit	Rocker 2 -short	Telegr. move shutter Up-Down
9	1 bit	Rocker 2 -long	Telegr. lamella adj./stop
10	1 bit	Rocker 3 -short	Telegr. move shutter Up-Down
11	1 bit	Rocker 3 -long	Telegr. lamella adj./stop
...			

Communication objects
for 1 bit (switching) LCD object value

No.	Type	Object name	Function
0	1 bit	LCD object 0	Switch
1	1 bit	LCD object 1	Switch
2	1 bit	LCD object 2	Switch
3	1 bit	LCD object 3	Switch
4	1 bit	LCD object 4	Switch
...			

Communication objects
for 1 byte (value) LCD object value

No.	Type	Object name	Function
0	1 byte	LCD object 0	Value
1	1 byte	LCD object 1	Value
2	1 byte	LCD object 2	Value
3	1 byte	LCD object 3	Value
4	1 byte	LCD object 4	Value
...			

Communication objects
for 2 byte (value) LCD object value

No.	Type	Object name	Function
0	2 byte	LCD object 0	Value
1	2 byte	LCD object 1	Value
2	2 byte	LCD object 2	Value
3	2 byte	LCD object 3	Value
4	2 byte	LCD object 4	Value
...			

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

No.	Type	Object name	Function
0	3 byte	LCD object 0	Time/date
1	3 byte	LCD object 1	Time/date
2	3 byte	LCD object 2	Time/date
3	3 byte	LCD object 3	Time/date
4	3 byte	LCD object 4	Time/date
...			

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

General:	
– Object for backlighting switches	**text field and status LED** only text field LED
– Behaviour of text field illumination after bus voltage recovery	**ON** OFF
– Function of auxiliary push button	no function / display operation **storage of lightscenes**
– Number of lightscenes	2 / **4** / 6
if 2 lightscenes are selected:	
– Lightscenes are available	Rocker 1 Rocker 2 Rocker 3 Rocker 4 **Rocker 5**
if 4 lightscenes are selected:	
– Lightscenes are available	Rockers 1 and 2 Rockers 2 and 3 Rockers 3 and 4 **Rockers 4 and 5**
if 6 lightscenes are selected:	
– Lightscenes are available	**Rockers 1 to 3** Rockers 2 to 4 Rockers 3 to 5
– Waiting time between telegrams when activating lightscenes (140 ms)	**0**
– IR area	blue **white** no IR
– Push button action interpreted as long from	280 ms / **420 ms** / 560 ms / 700 ms / 800 ms
Separate for each rocker:	
if lightscenes are assigned:	
– Rocker is assigned two lightscenes	**<— NOTE**
if no lightscenes are assigned:	
– Operation mode of rocker	no function / display operation shutter sensor dimming sensor **switch sensor**

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for switch sensor operation mode:	
– Number of switch functions	**2 functions => 2 objects** 1 function => 1 object
if 1 function is selected:	
– Working mode of rocker	**TOGGLE** left = OFF, right = ON left = ON, right = OFF
if 2 functions are selected:	
– Working mode of rocker	**left = TOGGLE, right = TOGGLE** 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 operation mode:	
– Dimming direction	**left = darker, right = brighter** left = brighter, right = darker
for shutter sensor operation mode	
– Shutter direction	**left = DOWN, right = UP** left = UP, right = DOWN
– Operation mode of LED	orientation light **indicates object value**
for display of object value:	
– Colour of the LED	**OFF = green, ON = red** OFF = red, ON = green
for orientation light:	
– Colour of the LED	**always green** always red always OFF

Actuator types:	
Separate for each actuator group:	
– Type of actuator group A ... F	**switch or shutter actuator (1 bit)** dimming actuator (8 bit)
Separate for each lightscene:	
for switch or shutter actuator:	
– Preset actuator group A ... F	**OFF / UP** ON / DOWN
for dimming actuator:	
– Preset actuator group A ... F	**0 %** / 5 % / ... / 95 % / 100 %

Display:	
Separate for each LCD object:	
– Type of LCD object no. 0 ... 4	**3 byte (time/date)** 2 byte (value) 1 byte (value) 1 bit (switch)

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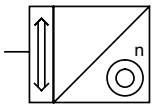
IR LCD Switch Dim Shu. /1



Selection in ETS2

– ABB
  └Push Button triton
    └Push button, 5-fold

The application program is specifically for the 5-fold Busch-triton® switch sensor application module in connection with a flush-mounted bus coupler.

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

The rockers of the Busch-triton® switch sensor 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 400 ms.

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 five rockers can be used for different functions after pressing the auxiliary push button for approximately 5 seconds.

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 five 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 function of 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 the object value for each LCD object from 1 bit to 3 bytes.

If more than one piece of text is to be displayed, it is possible to exchange the text messages either automatically or after a fixed period or on receipt of a new telegram or by manually pressing a push button (scrolling).

The input of the display text and several further settings is carried out using the Busch LCD management software. This 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 the rockers for switching. For simple applications, it is also possible to set the parameter “Number of switch functions” so that the rocker only has 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 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 on either the left or right hand side. If the rocker is pressed on either side for a short period, 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 the backlighting of the text fields is switched on, the LEDs can be selected for use either as an orientation light or to display the value of a communication object with the parameter “Operation mode of LED”.

It is possible to assign the colours (red or green) of the object values “0” or “1” for the LEDs that are used for status display.

If used as an orientation light, the LED can either glow always red or always green or can also be switched off.

Application example:

In a meeting room, there are two groups of luminaires that can be switched and dimmed separately. The room can be made darker using two electrically driven shutter motors.

Occupants are normally only able to switch the lights on and off.

One 5-fold Busch-triton® switch sensor, two switch/dimming actuators and two shutter actuators are used.

5-fold Busch-triton® switch sensor with LCD, FM

Type: 6325-xx

The Busch-triton® switch sensor at the door has the following parameter settings:
Function of auxiliary push button:
interrupt fault protection
Operation mode of rocker 1:
dimming sensor
Operation mode of LED:
indicates object value
Colour of LED:
OFF = green, ON = red
Operation mode of rocker 2:
dimming sensor
Operation mode of LED:
indicates object value
Colour of LED:
OFF = green, ON = red
Operation mode of rocker 3:
display operation
Operation mode of rocker 4:
shutter sensor
Operation mode of LED:
orientation light
Colour of LED:
always OFF
Operation mode of rocker 5:
shutter sensor
Operation mode of LED:
orientation light
Colour of LED:
always OFF

The 1 bit communication object no. 1 “Fault protection” of the auxiliary push button is linked with the 1 bit communication objects of the two dimming actuators.

The 1 bit and 4 bit communication objects for rockers 1 and 2 are linked with the corresponding objects of the two dimming actuators.

The communication objects of rockers 4 and 5 for raising and lowering the shutters and for lamella adjustment are linked with the corresponding objects of the shutter actuators.

In general the switch sensor operates with an active fault protection system. The lamps are switched each time any of the rockers is operated.

Once the auxiliary push button has been pressed, company employees can switch or dim the two lamps separately via the two upper rockers and control the shutters via the two lower push buttons. It is possible to retrieve the text that has been specified using the display management software via rocker 3. If none of the rockers has been pressed after approximately five seconds, the fault protection system becomes active again.

There is also the possibility of time-dependent shutter control.

Communication objects

No.	Type	Object name	Function
2	1 bit	Backlighting/LED	Switch
3	1 bit	Rocker 1 left	Telegr. switch
4	1 bit	Rocker 1 right	Telegr. switch
5	1 bit	Rocker 2 left	Telegr. switch
6	1 bit	Rocker 2 right	Telegr. switch
7	1 bit	Rocker 3 left	Telegr. switch
8	1 bit	Rocker 3 right	Telegr. switch
9	1 bit	Rocker 4 left	Telegr. switch
10	1 bit	Rocker 4 right	Telegr. switch
11	1 bit	Rocker 5 left	Telegr. switch
12	1 bit	Rocker 5 right	Telegr. switch
13	3 byte	LCD object 13	Time/date
14	3 byte	LCD object 14	Time/date
15	3 byte	LCD object 15	Time/date
16	3 byte	LCD object 16	Time/date
17	3 byte	LCD object 17	Time/date

Communication objects
with fault protection

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

Communication objects
for switch sensor with one switch function

No.	Type	Object name	Function
...			
3	1 bit	Rocker 1	Telegr. switch
5	1 bit	Rocker 2	Telegr. switch
7	1 bit	Rocker 3	Telegr. switch
9	1 bit	Rocker 4	Telegr. switch
11	1 bit	Rocker 5	Telegr. switch
...			

Communication objects
for dimming sensor

No.	Type	Object name	Function
...			
3	1 bit	Rocker 1 -short	Telegr. switch
4	4 bit	Rocker 1 -long	Telegr. dimming
5	1 bit	Rocker 2 -short	Telegr. switch
6	4 bit	Rocker 2 -long	Telegr. dimming
7	1 bit	Rocker 3 -short	Telegr. switch
8	4 bit	Rocker 3 -long	Telegr. dimming
9	1 bit	Rocker 4 -short	Telegr. switch
10	4 bit	Rocker 4 -long	Telegr. dimming
11	1 bit	Rocker 5 -short	Telegr. switch
12	4 bit	Rocker 5 -long	Telegr. dimming
...			

Communication objects
for shutter sensor

No.	Type	Object name	Function
...			
3	1 bit	Rocker 1 -long	Telegr. move shutter Up-Down
4	1 bit	Rocker 1 -short	Telegr. lamella adj./stop
5	1 bit	Rocker 2 -long	Telegr. move shutter Up-Down
6	1 bit	Rocker 2 -short	Telegr. lamella adj./stop
7	1 bit	Rocker 3 -long	Telegr. move shutter Up-Down
8	1 bit	Rocker 3 -short	Telegr. lamella adj./stop
9	1 bit	Rocker 4 -long	Telegr. move shutter Up-Down
10	1 bit	Rocker 4 -short	Telegr. lamella adj./stop
11	1 bit	Rocker 5 -long	Telegr. move shutter Up-Down
12	1 bit	Rocker 5 -short	Telegr. lamella adj./stop
...			

Communication objects
for 1 bit (switch) LCD object value

No.	Type	Object name	Function
...			
13	1 bit	LCD object 13	Switch
14	1 bit	LCD object 14	Switch
15	1 bit	LCD object 15	Switch
16	1 bit	LCD object 16	Switch
17	1 bit	LCD object 17	Switch

Communication objects
for 1 byte (value) LCD object value

No.	Type	Object name	Function
...			
13	1 byte	LCD object 13	Value
14	1 byte	LCD object 14	Value
15	1 byte	LCD object 15	Value
16	1 byte	LCD object 16	Value
17	1 byte	LCD object 17	Value

Communication objects
for 2 byte (value) LCD object value

No.	Type	Object name	Function
...			
13	2 byte	LCD object 13	Value
14	2 byte	LCD object 14	Value
15	2 byte	LCD object 15	Value
16	2 byte	LCD object 16	Value
17	2 byte	LCD object 17	Value

Communication objects
for 3 byte (value) LCD object value

No.	Type	Object name	Function
...			
13	3 byte	LCD object 13	Time/date
14	3 byte	LCD object 14	Time/date
15	3 byte	LCD object 15	Time/date
16	3 byte	LCD object 16	Time/date
17	3 byte	LCD object 17	Time/date

5-fold Busch-triton® switch sensor with LCD, FM

Type: 6325-xx

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

General:	
– Object for backlighting switches	**text field and status LED** only text field LED
– Behaviour of text field illumination after bus voltage recovery	**ON** OFF
– Function of auxiliary push button	no function / display operation interrupt fault protection (approx. 5 s) **text field and status LED on/off**
– IR area	blue **white** no IR
– Push button action interpreted as long from	280 ms / **420 ms** / 560 ms / 700 ms / 800 ms
Separate for each rocker:	
– Operation mode of rocker	no function / display operation shutter sensor dimming sensor **switch sensor**
for switch sensor operation mode:	
– Number of switch functions	**2 functions => 2 objects** 1 function => 1 object
if 1 function is selected:	
– Working mode of rocker	**TOGGLE** left = OFF, right = ON left = ON, right = OFF
– Operation mode of LED	orientation light **indicates object value**
for display of object value:	
– Colour of the LED	**OFF = green, ON = red** OFF = red, ON = green
for orientation light:	
– Colour of the LED	**always green** always red always OFF
if 2 functions are selected:	
– Working mode of rocker	**left = TOGGLE, right = TOGGLE** 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
– Operation mode of LED	orientation light **indicates object value**
for display of object value:	
– Colour of the LED	**OFF = green, ON = red** OFF = red, ON = green
for orientation light:	
– Colour of the LED	**always green** always red always OFF

for dimming sensor operation mode:	
– Dimming direction	**left = darker, right = brighter** left = brighter, right = darker
– Operation mode of LED	orientation light **indicates object value**
for display of object value:	
– Colour of the LED	**OFF = green, ON = red** OFF = red, ON = green
for orientation light:	
– Colour of the LED	**always green** always red always OFF

for shutter sensor operation mode:	
– Shutter direction	**left = DOWN, right = UP** left = UP, right = DOWN
– Operation mode of LED	**orientation light** indicates object value
for display of object value:	
– Colour of the LED	**OFF = green, ON = red** OFF = red, ON = green
for orientation light:	
– Colour of the LED	**always green** always red always OFF

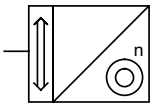
if no function / display operation is selected:
– no setting options

Display:	
Separate for each LCD object:	
– Type of LCD object no. …	1 bit 1 byte 2 byte **3 byte (time/date)**

5-fold Busch-triton® switch sensor with LCD, FM

Type: 6325-xx

IR LCD Switch Dim Shutter Lightscene /1



Selection in ETS2

– ABB
  └Push Button triton
    └Push button, 5-fold for 1SA

The application program is specifically for the 5-fold Busch-triton® switch sensor application module in connection 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. Various parameters and communication objects can be used for the five rockers depending on the setting selected in the parameters “Number of lightscenes” and “Lightscenes are available”.

Four lightscenes are available in the default setting which can be retrieved via rockers 4 and 5. By changing the parameter “Lightscenes are available”, the other rockers can also be used for controlling lightscenes.

The rockers of the Busch-triton® switch sensor which are not used for controlling lightscenes each have the same set of parameters. With the parameter “Operation mode of the rocker”, the basic switching, 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 400 ms.

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...”.

Relay

Using the parameter “Relay connected with”, it is possible to control the relay locally using one of the rockers as well as via the bus. It is therefore possible to select one communication object that is used for switching, dimming or shutter control.

IR

In addition to using the rockers, the Busch-triton® switch sensor can also be controlled remotely via an infrared hand-held transmitter. The five 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 function of the auxiliary push button on the Busch-triton® switch sensor.

LCD

When two lightscenes are used, the display of the Busch-triton® switch sensor can represent the values of three different communication objects. If four or six lightscenes are used, there are five communication objects available for the display.

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 the object value for 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. This 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 each of the rockers that are not used

for lightscene control so that they can carry out switching operations. For simple applications, it is also possible to set the parameter “Number of switch functions” so that the rocker only has 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 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 on either the left or right hand side. If the rocker is pressed on either side for a short period, 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 the backlighting of the text fields is switched on, the LEDs can be selected for use either as an orientation light or for status display with the parameter “Operation mode of LED”.

It is possible to assign the colours (red or green) of the object values “0” or “1” for the LEDs that are used for status display.

If used as an orientation light, the LED can either glow always red or always green or can also 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 reassign parameters as 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 “Storage of lightscenes”. To be able to use this function, the correct transmitting group addresses and flags must be assigned to the actuators.

The lightscenes are configured according to the following process.

1. The number of lightscenes and their respective rocker assignment can be set in the “General” parameter window.
2. For each of the groups of actuators 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
   12 ... 17 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 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.

5-fold Busch-triton® switch sensor with LCD, FM

Type: 6110 U-500 + 6325-xx

Application example:

Dimmable lamps are installed in the sleeping area of a hotel room and in the entrance of the room. There is also a switchable reading lamp near the bed. The room can be made darker using an electrically driven shutter. The light in the adjoining bathroom can be dimmed and a fan can be operated.

From the door, it should be possible to control the dimmable lamps in the sleeping area, entrance hall and bathroom separately. The fan is to be switched together with the light in the bathroom. In addition, it should be possible to operate the shutter.

Two lightscenes can be recalled with a push button action:

1. All the lamps are switched almost to maximum brightness and the shutter is raised when the room is being cleaned.
2. All the lamps are switched off and the shutters are raised when the occupant leaves the room.

From the bed, it should be possible to dim the lamps in the sleeping area and in the entrance hall and to switch the reading lamp. It should also be possible to operate the shutter.

Two lightscenes can be recalled with a push button action:

1. The lamps in the bathroom and the entrance hall are dimmed to semi brightness when the occupant is walking through the room at night and the reading lamp is switched off.
2. All the lamps are switched off when the occupant goes to sleep.

Two 5-fold Busch-triton® switch sensors each with a flush-mounted switch actuator/sensor, three switch/dimming actuators and one shutter actuator are used.

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

Number of lightscenes:
  2
Lightscenes are available:
  Rocker 5
Function of auxiliary push button:
  no function
Operation mode of rocker 1:
  dimming sensor
Operation mode of rocker 2:
  dimming sensor
Operation mode of rocker 3:
  dimming sensor
Operation mode of rocker 4:
  shutter sensor
Operation mode of rocker 5:
  Rocker is assigned two lightscenes
IR area:
  no IR
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)
Type of actuator group E:
  switch or shutter actuator (1 bit)

The two lightscenes are defined as follows:

Lightscene 1: Base lighting
  Actuator group A: 80%,
  Actuator group B: 80%,
  Actuator group C: 80%,
  Actuator group D: ON,
  Actuator group E: UP
Lightscene 2: OFF
  Actuator group A: 0%,
  Actuator group B: 0%,
  Actuator group C: 0%,
  Actuator group D: OFF,
  Actuator group E: UP

The 1 bit and 4 bit communication objects of rockers 1 ... 3 are linked with the corresponding objects of the actuators for the lamps in the entrance hall, sleeping area and the bathroom.

The transmission flag is set for the switching objects of the dimming actuators. The status LEDs and the relay of the switch actuator/sensor can thus be controlled even when retrieving lightscenes.

The two objects of rocker 4 are linked with the corresponding objects of the shutter actuator.

The 1 byte communication objects of actuator groups A ... C are linked with the 1 byte objects of the dimming actuators. The 1 bit communication object of actuator group D is linked with the object of rocker 3 of the second switch sensor. The 1 bit communication object of actuator group E is linked with the object of the shutter actuator for raising/lowering the shutter.

The Busch-triton® switch sensor at the bed has the following parameter settings:
Number of lightscenes:
2
Lightscenes are available:
Rocker 5
Function of the auxiliary push button:
no function
Operation mode of rocker 1:
dimming sensor
Operation mode of rocker 2:
dimming sensor
Operation mode of rocker 3:
switch sensor,
1 function => 1 object,
working mode TOGGLE
Operation mode of rocker 4:
shutter sensor
Operation mode of rocker 5:
Rocker is assigned two lightscenes
IR area:
no IR
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)
Type of actuator group E:
switch or shutter actuator (1 bit)

The two lightscenes are defined as follows:
Lightscene 1: Passage lighting
Actuator group A: 40%,
Actuator group B: 0%,
Actuator group C: 40%,
Actuator group D: OFF
Lightscene 2: OFF
Actuator group A: 0%,
Actuator group B: 0%,
Actuator group C: 0%,
Actuator group D: OFF

The 1 bit and 4 bit communication objects of rockers 1 and 2 are linked with the corresponding objects of the actuators for the lamps in the entrance hall and the sleeping area.

The transmission flag is set for the switching objects of the dimming actuators. The status LEDs can thus be controlled even when retrieving lightscenes.

The communication object of rocker 3 is linked with the objects of actuator group D for the two switch sensors.

The two objects of rocker 4 are linked with the corresponding objects of the shutter actuator.

The 1 byte communication objects of actuator groups A and C are linked with the 1 byte objects of the dimming actuators. The 1 bit communication object of actuator group D is linked with the object of rocker 3 of the second switch sensor. The 1 bit communication object of actuator group E is not required by this switch sensor so that the hotel guest can freely decide whether he wants to sleep with the shutter open or closed.

In this case the auxiliary push buttons are not used for storing lightscenes so that hotel guests do not unintentionally change the set lightscenes. The read flags should therefore not be set for the communication objects that are 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.

Communication objects
for switch sensor with two switch functions, 3 byte object value and 4 lightscenes on rockers 4 and 5

No.	Type	Object name	Function
0	1 bit	LCD object 0	Switch
1	1 bit	LCD object 1	Switch
2	1 bit	LCD object 2	Switch
3	1 bit	LCD object 3	Switch
4	1 bit	LCD object 4	Switch
5	1 bit	Backlighting/LED	Switch
6	1 bit	Rocker 1 left	Telegr. switch
7	1 bit	Rocker 1 right	Telegr. switch
8	1 bit	Rocker 2 left	Telegr. switch
9	1 bit	Rocker 2 right	Telegr. switch
10	1 bit	Rocker 3 left	Telegr. switch
11	1 bit	Rocker 3 right	Telegr. switch
12	1 bit	Actuator group A	Telegr. switch
13	1 bit	Actuator group B	Telegr. switch
14	1 bit	Actuator group C	Telegr. switch
15	1 bit	Actuator group D	Telegr. switch
16	1 bit	Actuator group E	Telegr. switch
17	1 bit	Actuator group F	Telegr. switch

Communication objects
for switch sensor with two switch functions and 2 lightscenes on rocker 5

No.	Type	Object name	Function
...			
3	1 bit	Backlighting/LED	Switch
4	1 bit	Rocker 1 left	Telegr. switch
5	1 bit	Rocker 1 right	Telegr. switch
6	1 bit	Rocker 2 left	Telegr. switch
7	1 bit	Rocker 2 right	Telegr. switch
8	1 bit	Rocker 3 left	Telegr. switch
9	1 bit	Rocker 3 right	Telegr. switch
10	1 bit	Rocker 4 left	Telegr. switch
11	1 bit	Rocker 4 right	Telegr. switch
...			

Communication objects
for switch sensor with two switch functions and 6 lightscenes on rockers 1 to 3

No.	Type	Object name	Function
...			
7	1 bit	Backlighting/LED	Switch
8	1 bit	Rocker 3 left	Telegr. switch
9	1 bit	Rocker 3 right	Telegr. switch
10	1 bit	Rocker 4 left	Telegr. switch
11	1 bit	Rocker 4 right	Telegr. switch
...			

Communication objects
for 4 lightscenes on rockers 4 and 5 with dimming actuator

No.	Type	Object name	Function
...			
12	1 byte	Actuator group A	Telegr. brightness value
13	1 byte	Actuator group B	Telegr. brightness value
14	1 byte	Actuator group C	Telegr. brightness value
15	1 byte	Actuator group D	Telegr. brightness value
16	1 byte	Actuator group E	Telegr. brightness value
17	1 byte	Actuator group F	Telegr. brightness value

Communication objects
for switch sensor with one switch function and 4 lightscenes on rockers 4 and 5

No.	Type	Object name	Function
...			
5	1 bit	Backlighting/LED	Switch
6	1 bit	Rocker 1	Telegr. switch
8	1 bit	Rocker 2	Telegr. switch
10	1 bit	Rocker 3	Telegr. switch
...			

Communication objects
for dimming sensor and 4 lightscenes on rockers 4 and 5

No.	Type	Object name	Function
...			
6	1 bit	Rocker 1 -short	Telegr. switch
7	4 bit	Rocker 1 -long	Telegr. dimming
8	1 bit	Rocker 2 -short	Telegr. switch
9	4 bit	Rocker 2 -long	Telegr. dimming
10	1 bit	Rocker 3 -short	Telegr. switch
11	4 bit	Rocker 3 -long	Telegr. dimming
...			

Communication objects
for shutter sensor and 4 lightscenes on rockers 4 and 5

No.	Type	Object name	Function
...			
6	1 bit	Rocker 1 -short	Telegr. move shutter Up-Down
7	1 bit	Rocker 1 -long	Telegr. lamella adj./stop
8	1 bit	Rocker 2 -short	Telegr. move shutter Up-Down
9	1 bit	Rocker 2 -long	Telegr. lamella adj./stop
10	1 bit	Rocker 3 -short	Telegr. move shutter Up-Down
11	1 bit	Rocker 3 -long	Telegr. lamella adj./stop
...			

Communication objects
for 1 bit (switch) LCD object value

No.	Type	Object name	Function
0	1 bit	LCD object 0	Switch
1	1 bit	LCD object 1	Switch
2	1 bit	LCD object 2	Switch
3	1 bit	LCD object 3	Switch
4	1 bit	LCD object 4	Switch
...			

Communication objects
for 1 byte (value) LCD object value

No.	Type	Object name	Function
0	1 byte	LCD object 0	Value
1	1 byte	LCD object 1	Value
2	1 byte	LCD object 2	Value
3	1 byte	LCD object 3	Value
4	1 byte	LCD object 4	Value
...			

Communication objects
for 2 byte (value) LCD object value

No.	Type	Object name	Function
0	2 byte	LCD object 0	Value
1	2 byte	LCD object 1	Value
2	2 byte	LCD object 2	Value
3	2 byte	LCD object 3	Value
4	2 byte	LCD object 4	Value
...			

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

No.	Type	Object name	Function
0	3 byte	LCD object 0	Time/date
1	3 byte	LCD object 1	Time/date
2	3 byte	LCD object 2	Time/date
3	3 byte	LCD object 3	Time/date
4	3 byte	LCD object 4	Time/date
...			

5-fold Busch-triton® switch sensor with LCD, FM

Type: 6110 U-500 + 6325-xx

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

General:	
– Object for backlighting switches	**text field and status LED** only text field LED
– Behaviour of text field illumination after bus voltage recovery	**ON** OFF
– Function of auxiliary push button	no function / display operation **storage of lightscenes**
– Number of lightscenes	2 / **4** / 6
if 2 lightscenes are selected:	
– Lightscenes are available	Rocker 1 Rocker 2 Rocker 3 Rocker 4 **Rocker 5**
if 4 lightscenes are selected:	
– Lightscenes are available	Rockers 1 and 2 Rockers 2 and 3 Rockers 3 and 4 **Rockers 4 and 5**
if 6 lightscenes are selected:	
– Lightscenes are available	**Rockers 1 to 3** Rockers 2 to 4 Rockers 3 to 5
– Waiting time between telegrams when activating lightscenes (140 ms)	**0**
– IR area	blue **white** no IR
– Push button action interpreted as long from	280 ms / **420 ms** / 560 ms / 700 ms / 800 ms
if 2 lightscenes are selected:	
– Relay connected with	Object 4 Object 6 Object 8 Object 10
if 4 lightscenes are selected:	
– Relay connected with	Object 6 Object 8 Object 10
if 6 lightscenes are selected:	
– Relay connected with	Object 8 Object 10
Separate for each rocker:	
if lightscenes are assigned:	
– Rocker is assigned two lightscenes	**<— NOTE**
if no lightscenes are assigned:	
– Operation mode of rocker	no function / display operation shutter sensor dimming sensor **switch sensor**

5-fold Busch-triton® switch sensor with LCD, FM

Type: 6110 U-500 + 6325-xx

for switch sensor operation mode:	
– Number of switch functions	**2 functions => 2 objects** 1 function => 1 object
if 1 function is selected:	
– Working mode of rocker	**TOGGLE** left = OFF, right = ON left = ON, right = OFF
if 2 functions are selected:	
– Working mode of rocker	**left = TOGGLE, right = TOGGLE** 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 operation mode:	
– Dimming direction	**left = darker, right = brighter** left = brighter, right = darker
for shutter sensor operation mode:	
– Shutter direction	**left = DOWN, right = UP** left = UP, right = DOWN
– Operation mode of LED	orientation light **indicates object value**
for display of object value:	
– Colour of theLED	**OFF = green, ON = red** OFF = red, ON = green
for orientation light:	
– Colour of the LED	**always green** always red always OFF

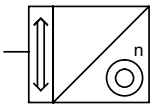
Actuator types:	
Separate for each actuator group:	
– Type of actuator group A ... F	**switch or shutter actuator (1 bit)** dimming actuator (8 bit)
Separate for each lightscene:	
for switch or shutter actuator:	
– Preset actuator group A ... F	**OFF / UP** ON / DOWN
for dimming actuator:	
– Preset actuator group A ... F	**0 %** / 5 % / ... / 95 % / 100 %

Display:	
Separate for each LCD object:	
– Type of LCD object no. 0 ... 4	**3 byte (time/date)** 2 byte (value) 1 byte (value) 1 bit (switch)

5-fold Busch-triton® switch sensor with LCD, FM

Type: 6110 U-500 + 6325-xx

IR LCD Switch Dim Shutter /2



Selection in ETS2

– ABB
  └Push Button triton
    └Push button, 5-fold for 1SA

The application program is specifically for the 5-fold Busch-triton® switch sensor application module in connection with a flush-mounted switch actuator/ sensor.

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

The rockers of the Busch-triton® switch sensor 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 rokkers 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 400 ms.

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 five rockers can be used for different functions after pressing the auxiliary push button for approximately 5 seconds.

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 five 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 function of the auxiliary push button on the Busch-triton® switch sensor.

Relay

Using the parameter “Relay connected with”, it is possible to control the relay locally using one of the rockers as well as via the bus. It is therefore possible to select one communication object that is used for switching, dimming or shutter control.

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 the object value for each LCD object from 1 bit to 3 bytes.

If more than one piece of text is to be displayed, it is possible to exchange the text messages either automatically or after a fixed period or on receipt of a new telegram or by manually pressing a push button (scrolling).

The input of the display text and several further settings is carried out using the Busch LCD management software. This 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 the rockers for switching. For simple applications, it is also possible to set the parameter “Number of switch functions” so that the rocker only has 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 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 on either the left or right hand side. If the rocker is pressed on either side for a short period, 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 the backlighting of the text fields is switched on, the LEDs can be selected for use either as an orientation light or for status display with the parameter “Operation mode of LED”.

It is possible to assign the colours (red or green) of the object values “0” or “1” for the LEDs that are used for status display.

If used as an orientation light, the LED can either glow always red or always green or can also be switched off.

5-fold Busch-triton® switch sensor with LCD, FM

Type: 6110 U-500 + 6325-xx

Application example:

In a lecture theatre, there is one group of dimmable downlighters above the seminar participants, one group of dimmable spotlights above the lecture area and two groups of switchable wall floodlights. The room can be made darker using two electrically driven shutter motors.

The seminar participants are normally only able to switch the lights on and off.

Two 5-fold Busch-triton® switch sensors with switch actuator/sensors, two dimming actuators and and two shutter actuators are used.

The two Busch-triton® switch sensors at the doors have almost identical parameter settings:
Function of auxiliary push button:
  interrupt fault protection
Operation mode of rocker 1:
  switch sensor,
  2 functions,
  left = TOGGLE, right = TOGGLE
Operation mode of LED:
  indicates object value
Colour of LED:
  OFF = green, ON = red
Operation mode of rocker 2:
  dimming sensor
Operation mode of LED:
  indicates object value
Colour of LED:
  OFF = green, ON = red
Operation mode of rocker 3:
  dimming sensor
Operation mode of LED:
  indicates object value
Colour of LED:
  OFF = green, ON = red
Operation mode of rocker 4:
  shutter sensor
Operation mode of LED:
  orientation light
Colour of LED:
  always OFF
Operation mode of rocker 5:
  shutter sensor
Operation mode of LED:
  orientation light
Colour of LED:
  always OFF

The parameter “IR area” is set differently for the two switch sensors so that they do not both send telegrams when using remote control.

The relays of the switch actuators/sensors each switch one group of wall floodlights.

The connection of group addresses to the communication objects is almost identical. Only the two objects for rokker 1 are linked with the other objects of the other switch sensor. It is therefore possible to switch both groups of wall floodlights separately when the fault protection function is deactivated.

The 1 bit communication object no. 1 “Fault protection” of the auxiliary push button is linked with the 1 bit communcation objects “Rocker 1 left” for both switch sensors. When the fault protection function is active, generally both groups of wall floodlights are switched.

The 1 bit and 4 bit communication objects of rockers 1 and 2 are linked with the corresponding objects of the two dimming actuators.

The communication objects of rockers 4 and 5 for raising and lowering the shutters and for lamella adjustment are linked with the corresponding objects of the shutter actuators.

In general the switch sensor operates with an active fault protection system. The wall floodlights are switched each time any of the rockers is pressed.

The lecturer can execute the same functions via remote control. The IR area can be set as required as both switch sensors react to different settings but carry out the same functions.

5-fold Busch-triton® switch sensor with LCD, FM

Type: 6110 U-500 + 6325-xx

Communication objects
for switch sensor with two switch functions without fault protection

No.	Type	Object name	Function
2	1 bit	Backlighting/LED	Switch
3	1 bit	Rocker 1 left	Telegr. switch
4	1 bit	Rocker 1 right	Telegr. switch
5	1 bit	Rocker 2 left	Telegr. switch
6	1 bit	Rocker 2 right	Telegr. switch
7	1 bit	Rocker 3 left	Telegr. switch
8	1 bit	Rocker 3 right	Telegr. switch
9	1 bit	Rocker 4 left	Telegr. switch
10	1 bit	Rocker 4 right	Telegr. switch
11	1 bit	Rocker 5 left	Telegr. switch
12	1 bit	Rocker 5 right	Telegr. switch
13	3 byte	LCD object 13	Time/date
14	3 byte	LCD object 14	Time/date
15	3 byte	LCD object 15	Time/date
16	3 byte	LCD object 16	Time/date
17	3 byte	LCD object 17	Time/date

Communication objects
with fault protection

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

Communication objects
for switch sensor with one switch function

No.	Type	Object name	Function
...			
3	1 bit	Rocker 1	Telegr. switch
5	1 bit	Rocker 2	Telegr. switch
7	1 bit	Rocker 3	Telegr. switch
9	1 bit	Rocker 4	Telegr. switch
11	1 bit	Rocker 5	Telegr. switch
...			

Communication objects
for dimming sensor

No.	Type	Object name	Function
...			
3	1 bit	Rocker 1 -short	Telegr. switch
4	4 bit	Rocker 1 -long	Telegr. dimming
5	1 bit	Rocker 2 -short	Telegr. switch
6	4 bit	Rocker 2 -long	Telegr. dimming
7	1 bit	Rocker 3 -short	Telegr. switch
8	4 bit	Rocker 3 -long	Telegr. dimming
9	1 bit	Rocker 4 -short	Telegr. switch
10	4 bit	Rocker 4 -long	Telegr. dimming
11	1 bit	Rocker 5 -short	Telegr. switch
12	4 bit	Rocker 5 -long	Telegr. dimming
...			

Communication objects
for shutter sensor

No.	Type	Object name	Function
...			
3	1 bit	Rocker 1 -long	Telegr. move shutter Up-Down
4	1 bit	Rocker 1 -short	Telegr. lamella adj./stop
5	1 bit	Rocker 2 -long	Telegr. move shutter Up-Down
6	1 bit	Rocker 2 -short	Telegr. lamella adj./stop
7	1 bit	Rocker 3 -long	Telegr. move shutter Up-Down
8	1 bit	Rocker 3 -short	Telegr. lamella adj./stop
9	1 bit	Rocker 4 -long	Telegr. move shutter Up-Down
10	1 bit	Rocker 4 -short	Telegr. lamella adj./stop
11	1 bit	Rocker 5 -long	Telegr. move shutter Up-Down
12	1 bit	Rocker 5 -short	Telegr. lamella adj./stop
...			

No.	Type	Object name	Function
...			
13	1 bit	LCD object 13	Switch
14	1 bit	LCD object 14	Switch
15	1 bit	LCD object 15	Switch
16	1 bit	LCD object 16	Switch
17	1 bit	LCD object 17	Switch

No.	Type	Object name	Function
...			
13	1 byte	LCD object 13	Value
14	1 byte	LCD object 14	Value
15	1 byte	LCD object 15	Value
16	1 byte	LCD object 16	Value
17	1 byte	LCD object 17	Value

No.	Type	Object name	Function
...			
13	2 byte	LCD object 13	Value
14	2 byte	LCD object 14	Value
15	2 byte	LCD object 15	Value
16	2 byte	LCD object 16	Value
17	2 byte	LCD object 17	Value

No.	Type	Object name	Function
...			
13	3 byte	LCD object 13	Time/date
14	3 byte	LCD object 14	Time/date
15	3 byte	LCD object 15	Time/date
16	3 byte	LCD object 16	Time/date
17	3 byte	LCD object 17	Time/date

5-fold Busch-triton® switch sensor with LCD, FM

Type: 6110 U-500 + 6325-xx

General:	
– Object for backlighting switches	**text field and status LED** only text field LED
– Behaviour of text field illumination after bus voltage recovery	**ON** OFF
– Function of auxiliary push button	no function / display operation interrupt fault protection (approx. 5s) **text field and status LED on/off**
– IR area	blue **white** no IR
– Push button action interpreted as long from	280 ms / **420 ms** / 560 ms / 700 ms / 800 ms
– Relay connected with	**Object 3** / Object 5 / Object 7 / Object 9 / Object 11
Separate for each rocker:	
– Operation mode of rocker	no function / display operation shutter sensor dimming sensor **switch sensor**
for switch sensor operation mode:	
– Number of switch functions	**2 functions => 2 Objekte** 1 Funktion => 1 Objekt
if 1 function is selected:	
– Working mode of rocker	**TOGGLE** left = OFF, right = ON left = ON, right = OFF
– Operation mode of LED	orientation light **indicates object value**
for display of object value:	
– Colour of the LED	**OFF = green, ON = red** OFF = red, ON = green
for orientation light:	
– Colour of the LED	**always green** always red always OFF
if 2 functions are selected:	
– Working mode of rocker	**left = TOGGLE, right = TOGGLE** 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
– Operation mode of LED	orientation light **indicates object value**
for display of object value:	
– Colour of the LED	**OFF = green, ON = red** OFF = red, ON = green
for orientation light:	
– Colour of the LED	**always green** always red always OFF

for dimming sensor operation mode:	
– Dimming direction	**left = darker, right = brighter** left = brighter, right = darker
– Operation mode of LED	orientation light **indicates object value**
for display of object value:	
– Colour of the LED	**OFF = green, ON = red** OFF = red, ON = green
for orientation light:	
– Colour of the LED	**always green** always red always OFF

for shutter sensor operation mode:	
– Shutter direction	**left = DOWN, right = UP** left = UP, right = DOWN
– Operation mode of LED	**orientation light** indicates object value
for display of object value:	
– Colour of the LED	**OFF = green, ON = red** OFF = red, ON = green
for orientation light:	
– Colour of the LED	**always green** always red always OFF

if no function / display operation is selected:
– no setting options

Display:	
Separate for each LCD object:	
– Type of LCD object no. …	1 bit 1 byte 2 byte **3 byte (time/date)**