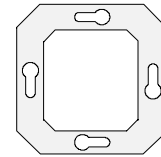


### 2-gang standard push button sensor 'TSM'



### Sensor

<b>Product name</b>	2-gang standard push button sensor 'TSM'	
<b>Design:</b>	flush-mounted (UP)	
<b>Article no.</b>	2072 TSM	
<b>ETS search path</b>	Push button / Push button 2-gang / 2-gang standard push button sensor 'TSM'	
<b>Issue:</b>	21.09.2005	
<b>Functional description:</b>		
<p>The 2-gang standard push button sensor 'TSM' is plugged onto a flush-mounted bus coupling unit (BCU) (cf. connection diagram). After a press on the key, the push button sensor will transmit software-dependent telegrams to the KNX / EIB. These may be telegrams for switching, pushbutton operation, dimming or for shutter control. It is also possible to program value-transmitting functions such as dimming value transmitter or light-scene extension units. A blue operation LED can serve as orientation lighting</p>		
<b>Layout:</b>	<b>Dimensions:</b>	<b>Controls:</b>
	<p>Width: 70 mm (without frame)</p> <p>Height: 70 mm (without frame)</p> <p>Depth: 7 mm (without PEI)</p>	<p>A: 2 rockers (keys 1 to 4: key-press on upper and lower half of respective rocker)</p> <p>The device is operated with the corresponding push button sensor module covers. The covers must be ordered separately: 2 x FD..902 TSA..</p> <p>Covers with article nos. FD..90x TSA NA.. can be labelled. For labelling, commercial-grade foils can be printed with the JUNG inscription software and inserted into the keys.</p> <p>B: 2 status LEDs (red), one per rocker</p> <p>C: 1 operation LED (blue)</p>
<b>Technical Data</b>		
<b>Type of protection:</b>	IP 20	
<b>Safety class:</b>	III	
<b>Mark of approval:</b>	KNX / EIB	
<b>Ambient temperature:</b>	-5 °C ... +45 °C	
<b>Storage / transport temperature:</b>	-25 °C ... +70 °C (storage above +45 °C reduces the lifetime)	
<b>Mounting position:</b>	any	
<b>Minimum distances:</b>	none	
<b>Type of fastening:</b>	plugging onto flush-mounted (BCU 1)	
<b>KNX / EIB supply</b>		
<b>Voltage:</b>	21 – 32 V DC (SELV) via flush-mounted BCU	
<b>Power consumption:</b>	typically 150 mW	
<b>Connection:</b>	2 x 5-pole pin contact strip	
<b>External supply</b>	---	

### Response to bus voltage failure

**Bus voltage only:**

object values are deleted, LEDs extinguished

### Response on return of bus voltage

**Bus voltage only:**

no reaction

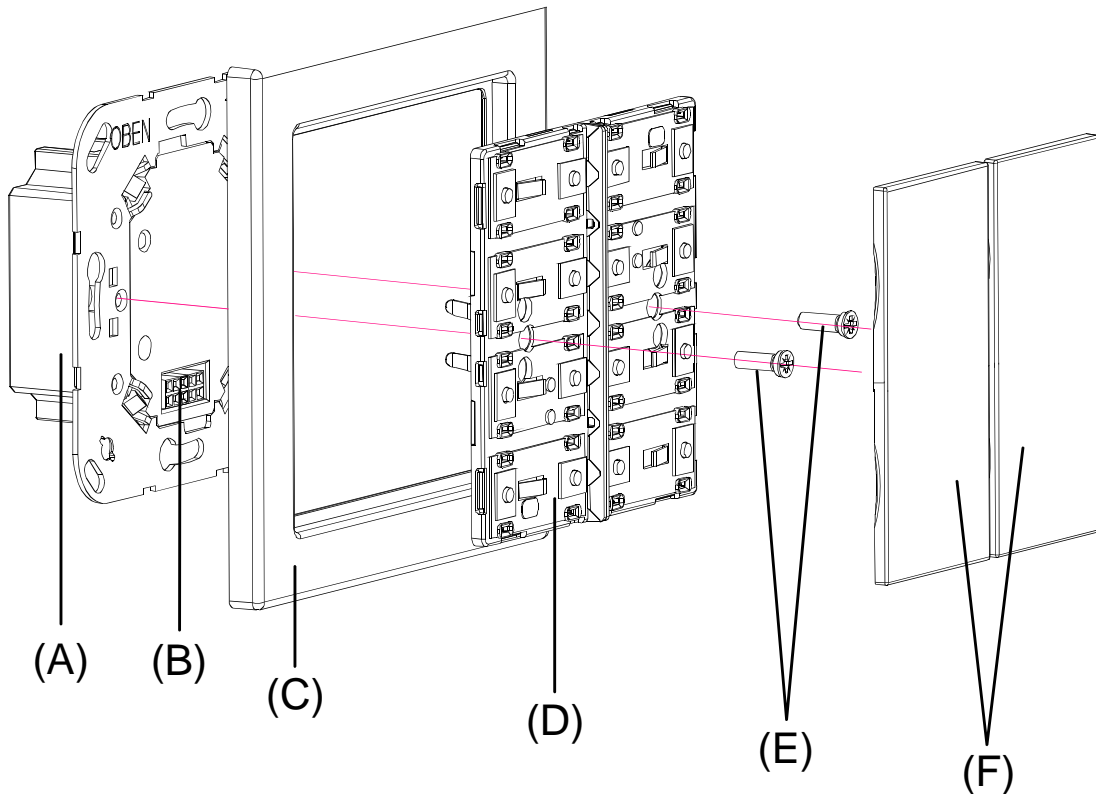
**Input:**

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**Output:**

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### Connection and terminals:



### Fitting:

- Connect the KNX/EIB bus coupling unit (A) to the KNX/EIB and install in a flush-mounting box. If possible, program the bus coupler beforehand with the physical address.
- Plug the 2-gang standard push button sensor 'TSM' (D) together with decorative frame (C) on the KNX/EIB bus coupling unit in such a way that both devices are interconnected via user interface (B).
- Fasten the 2-gang standard push button sensor 'TSM' with the plastic screws (E) supplied with the device to the KNX/EIB bus coupling unit. The screws serve as a protection against removal or theft. Tighten the plastic screws without using force. Important: Use only the plastic screws supplied with the device. Metal screws are not admissible. Risk of irreparable damage to the device caused by electrostatic discharge.
- Install the push button sensor module covers (F: key rockers). The covers must be ordered separately: The covers must be snapped one after another onto the 2-gang standard push button sensor 'TSM'. Make sure the covers are fitted in correct position (marking TOP on the inside). The covers are installed permanently by snapping them onto the device.

### Hardware remarks

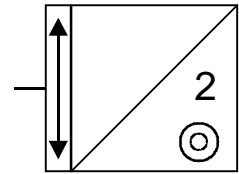
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### Software description

ETS search path

Push button / Push button 2-gang / 2-gang standard push button sensor 'TSM'

ETS symbol:






PEI type                      04<sub>Hex</sub>                      4<sub>Dec</sub>                      2 inputs / 2 outputs




#### Applications:

No.	Summarized description:	Name:	Version:
1	Switching, status	Switching, status 100312	1.2
2	Switching, acknowledgement	Switching, acknowledgement 100A12	1.2
3	Dimming	Dimming 102A01	0.1
4	Shutter	Shutter 102B01	0.1
5	Shutter with status object	Shutter with status object 108C01	0.1
6	Dimming / shutter	Dimming / shutter 103A01	0.1
7	Switching / dimming	Switching / dimming 103C01	0.1
8	Switching / shutter	Switching /shutter 103B01	0.1
9	Switching / pushbutton operation	Switching / pushbutton operation 103101	0.1
10	Value transmitter	Value transmitter 101C01	0.1

<b>Application:</b>		1. Switching, status 100312		
<b>Executable from mask version:</b>		1.0		
<b>Number of addresses (max):</b>		10	<b>dynamic table handling</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Number of assignments (max):</b>		10	<b>maximum length of table</b>	20
<b>Communication objects</b>		2		
Object	Function	Name:	Type	Flag
<input checked="" type="checkbox"/> 0	Switching	Rocker 1	1 bit	C, W, T
<input checked="" type="checkbox"/> 1	Switching	Rocker 2	1 bit	C, W, T
<b>Object description</b>				
<b>Objects:</b>				
<input checked="" type="checkbox"/> 0 - 1	Switching	1-bit object for the transmission of switching telegrams (ON, OFF)		
<b>Scope of functions</b>				
<ul style="list-style-type: none"> <li>• Function of operating LED and of status LED parameterizable</li> <li>• Command on key press parameterizable (ON, OFF)</li> </ul>				


Parameters		
Description:	Values:	Remarks:
 General		
Operation LED	OFF ON	Defines the status of the operation LED.
Command on pressing of key 1/3	OFF ON	Defines the command transmitted on pressing of key 1/3.
Command on pressing of key 2/4	OFF ON	Defines the command transmitted on pressing of key 2/4.
 Rocker 1		
Function status LED	OFF ON	Determines the status of the operation LED.
 Rocker 2		
Function status LED	OFF ON	Defines the status of the operation LED.
<b>Software remarks</b>		
<ul style="list-style-type: none"> <li>The status LEDs indicate the current state of the object. If a key is pressed (e.g. ON) and if the push button sensor does <u>not</u> get a positive acknowledgement (IACK) from an addressed actuator, the object status is updated, but the corresponding status LED is <u>not</u> lit up.</li> </ul>		


<b>Application:</b>		2. Switching, acknowledgement 100A12		
<b>Executable from mask version:</b>		1.0		
<b>Number of addresses (max):</b>		8	<b>dynamic table handling:</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Number of assignments (max):</b>		9	<b>maximum length of table:</b>	17
<b>Communication objects</b>		2		
Object	Function	Name	Type	Flag
<input checked="" type="checkbox"/> 0	Switching	Rocker 1	1 bit	C, W, T
<input checked="" type="checkbox"/> 1	Switching	Rocker 2	1 bit	C, W, T
<b>Object description</b>				
<b>Objects:</b>				
<input checked="" type="checkbox"/> 0 - 1	Switching:	1-bit object for the transmission of switching telegrams (ON, OFF)		
<b>Scope of functions</b>				
<ul style="list-style-type: none"> <li>• Function of operating LED and of status LED parameterizable</li> <li>• Command on key-press parameterizable (ON, OFF)</li> </ul>				

Parameters												
Description:	Values:	Remarks:										
 General												
Operation LED	OFF <b>ON</b>	Defines the status of the operation LED.										
LED ON-time rocker 1 and 2	<table border="0"> <tr> <td>0.75 s</td> <td>4.5 s</td> </tr> <tr> <td>1.5 s</td> <td>6.0 s</td> </tr> <tr> <td>2.25 s</td> <td>10 s</td> </tr> <tr> <td><b>2.7 s</b></td> <td>15 s</td> </tr> <tr> <td>3.0 s</td> <td>20 s</td> </tr> </table>	0.75 s	4.5 s	1.5 s	6.0 s	2.25 s	10 s	<b>2.7 s</b>	15 s	3.0 s	20 s	Defines the time during which the status LEDs of rockers 1 and 2 are on in case of a positive acknowledgement from an addressed actuator.
0.75 s	4.5 s											
1.5 s	6.0 s											
2.25 s	10 s											
<b>2.7 s</b>	15 s											
3.0 s	20 s											
Command on pressing of keys 1/3	OFF <b>ON</b>	Defines the command transmitted on pressing of key 1/3.										
Command on pressing of keys 2/4	<b>OFF</b> ON	Defines the command transmitted on pressing of key 2/4.										
 Rocker 1												
Function status LED	OFF <b>ON</b>	Defines the status of the status LED.										
 Rocker 2												
Function status LED	OFF <b>ON</b>	Defines the status of the status LED.										
<b>Software remarks</b> <ul style="list-style-type: none"> <li>The status LED is on for a parameterizable time in case of a positive acknowledgement from an addressed actuator. If a key is pressed (e.g. ON) and if the push button sensor does <u>not</u> get a positive acknowledgement (IACK) from an addressed actuator, the object status is updated, but the corresponding status LED is <u>not</u> lit up.</li> </ul>												


<b>Application:</b>		3. Dimming 102A01		
<b>Executable from mask version:</b>		1.0		
<b>Number of addresses (max):</b>		6	<b>dynamic table handling:</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Number of assignments (max):</b>		6	<b>maximum length of table:</b>	12
<b>Communication objects</b>		4		
Object	Function	Name	Type	Flag
<input checked="" type="checkbox"/> 0	Switching	Rocker 1	1 bit	C, W, T
<input checked="" type="checkbox"/> 1	Switching	Rocker 2	1 bit	C, W, T
<input type="checkbox"/> 2	Dimming	Rocker 1	4 bit	C, T
<input type="checkbox"/> 3	Dimming	Rocker 2	4 bit	C, T
<b>Object description</b>				
<b>Objects:</b>				
<input checked="" type="checkbox"/> 0 - 1	Switching:	1-bit object for the transmission of switching telegrams (ON, OFF)		
<input type="checkbox"/> 2 - 3	Dimming:	4-bit object for change of relative brightness between 0 and 100 %		
<b>Scope of functions</b>				
<ul style="list-style-type: none"> <li>Function of operating LED and of status LED parameterizable</li> </ul>				




Parameters		
Description:	Values:	Remarks:
 General		
Operation LED	OFF ON	Defines the status of the operation LED.
Function status LED	OFF ON	Defines the status of the status LED.
<b>Software remarks</b> <ul style="list-style-type: none"> <li>The status LED indicates the current status of the switching object. If a key is pressed (e.g. ON) and if the push button sensor does <u>not</u> get a positive acknowledgement (IACK) from an addressed actuator, the object status is updated and the corresponding status LED is lit up.</li> </ul>		

<b>Application:</b>		4. Shutter 102B01		
<b>Executable from mask version:</b>		1.0		
<b>Number of addresses (max):</b>		8	<b>dynamic table handling:</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Number of assignments (max):</b>		8	<b>maximum length of table:</b>	16
<b>Communication objects</b>		4		
Object	Function	Name	Type	Flag
<input type="checkbox"/> 0	Short-time operation	Rocker 1	1 bit	C, W, T
<input type="checkbox"/> 1	Short-time operation	Rocker 2	1 bit	C, W, T
<input type="checkbox"/> 2	Long-time operation	Rocker 1	1 bit	C, W, T
<input type="checkbox"/> 3	Long-time operation	Rocker 2	1 bit	C, W, T
<b>Object description</b>				
<b>Objects:</b>				
<input type="checkbox"/> 0 – 1	Short-time operation	1-bit object for short-time operation of a shutter		
<input type="checkbox"/> 2 - 3	Long-time operation	1-bit object for long-time operation of a shutter		
<b>Scope of functions</b>				
<ul style="list-style-type: none"> <li>Function of operation LED parameterizable</li> </ul>				
<b>Parameters</b>				
<b>Description:</b>	<b>Values:</b>	<b>Remarks:</b>		
 General				
Operation LED	OFF ON	Defines the status of the operation LED.		

<b>Application:</b>		5. Shutter with status object 108C01			
<b>Executable from mask version:</b>		1.2			
<b>Number of addresses (max):</b>		8	<b>dynamic table handling:</b>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Number of assignments (max):</b>		9	<b>maximum length of table:</b>		17
<b>Communication objects:</b>		7			
Object	Function	Name	Type	Flag	
<input type="checkbox"/>   0	Short-time operation	Rocker 1	1 bit	C, T	
<input type="checkbox"/>   1	Short-time operation	Rocker 2	1 bit	C, T	
<input type="checkbox"/>   2	Long-time operation	Rocker 1	1 bit	C, T	
<input type="checkbox"/>   3	Long-time operation	Rocker 2	1 bit	C, T	
<b>Object for status function (only when status LED = status indicator):</b>					
<input type="checkbox"/>   4	Status	Status LED 1	1 bit	C, W	
<input type="checkbox"/>   5	Status	Status LED 2	1 bit	C, W	
<b>Object for operation LED (only when operation LED = status indicator):</b>					
<input checked="" type="checkbox"/>   6	Status	Operation LED	1 bit	C, W	
<b>Object description</b>					
<b>Objects:</b>					
<input type="checkbox"/>   0 - 1	Short-time operation	1-bit object for short-time operation of a shutter			
<input type="checkbox"/>   2 - 3	Long-time operation	1-bit object for long-time operation of a shutter			
<input checked="" type="checkbox"/>   4 - 5	Status	1-bit object for status LED control			
<input checked="" type="checkbox"/>   6	Status	1-bit object for operation LED control			
<b>Scope of functions</b>					
<ul style="list-style-type: none"> <li>Both, the operation and also the status LED can be controlled by separate objects (status indication) or be permanently on or off. The status LEDs can additionally act as key-press indicators.</li> <li>Operating concept for shutter control parameterizable</li> <li>Time between short-time and long-time operation and slat adjustment time (time during which a long-time command (Move) can be terminated by releasing the key at the input) presettable depending on operating concept.</li> <li>Rocker configuration and key functions presettable.</li> </ul>					

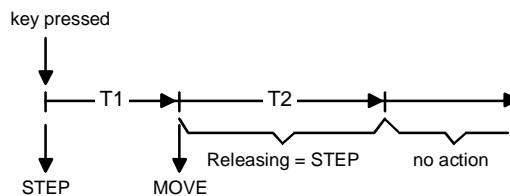
Parameters		
Description:	Values:	Remarks:
 General		
Operation LED function	LED always ON LED always OFF <b>Status indication</b> Inverted status indication	Defines the functioning of the operation LED.  In the status indication (also inverted status indication) setting, the LED is controlled via object 6.
Operating concept	<b>Step – Move – Step</b> Move – Step Step – Move Move – Step or Step	Defines the operating concept (cf. software remarks).
Time between short- and long-time operation, base	0.5 ms <b>8 ms</b> 130 ms 2.1 s 33s	Defines the time base up to long-time operation. Time = base • factor Depending on parameter "Operating concept"
Time between short- and long-time operation, factor (2...255)	3 ... 255; <b>30</b>	Defines the time factor up to long-time operation.  Presetting: 8 ms • 30 = 240 ms Depending on parameter "Operating concept"
Slat adjustment time, base	0 ms 0.5 ms <b>8 ms</b> 130 ms 2.1 s 33s	Time during which a long-time operation for slat adjustment can be terminated by releasing the key.  Time = base • factor Depending on parameter "Operating concept"
Slat adjustment time, factor (1...255)	3 ... 255; <b>250</b>	Time during which a long-time operation for slat adjustment can be terminated by releasing the key.  Presetting: 8 ms • 255 = 2.0 s Depending on parameter "Operating concept"

 Rocker 1		
Function status LED	LED always ON LED always OFF <b>Status indication</b> Inverted status indication Key-press indication	Defines the functioning of the status LED.  In the status indication (also inverted status indication) setting, the LED is controlled via object 4.  In the "Key-press indication" setting, the LED lights up during the time of a press on <u>any of the keys of the push button sensor</u> .
Rocker configuration	<b>Key 1 and 2</b> Key 1 and 3	Defines the rocker configuration and thus the evaluation of the keys.  The rocker 1 function is assigned to the two keys 1 and 2 on the left. The function is activated in this case by a press on the upper and lower part of the the lefthand rocker.  The rocker 1 function is assigned to the two keys at the top. The function is activated in this case by a press on the upper left and the upper right key.  The rocker 2 function is then always activated by the two keys remaining free after assignment of the rocker 1 function.
Key function	<b>Key 1 UP, key 2 DOWN</b> Key 1 DOWN, key 2 UP  or  <b>Key 1 UP, key 3 DOWN</b> Key 1 DOWN, key 3 UP  * Depending on parameter "Rocker configuration"	This parameter defines the key command (UP or DOWN) for the two keys assigned depending on the parameter "Rocker function".

### Software remarks

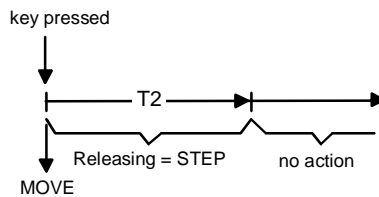
Operating concept Step–Move–Step:

A press on the key triggers a Step telegram. The time T1 between short-time and long-time operation is started. Releasing the key before time T1 has elapsed does not trigger another telegram. If the key is still pressed when the time elapses, a Move telegram is transmitted. Slat adjustment time T2 is started. If the key is released while slat adjustment is still in progress, the push button sensor transmits a Step telegram. If time T2 has elapsed when the key is being released, no further telegram will be transmitted.



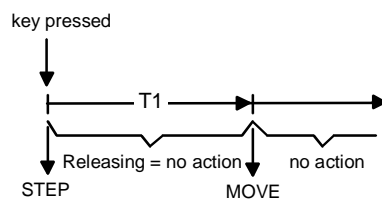
Operating concept Move–Step:

A press on the key triggers a Move telegram. Slat adjustment time T2 is started. Releasing the key before the slat adjustment time has elapsed causes a Step telegram to be transmitted. If time T2 has elapsed when the key is being released, no further telegram will be transmitted.



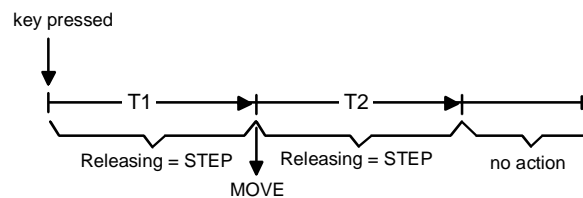
Operating concept Step–Move:

A press on the key triggers a Step telegram. The time T1 between short- and long-time operation is started. Releasing the key before time T1 has elapsed does not trigger another telegram. If the key is still pressed when the time elapses, a Move telegram is transmitted. Releasing the key after this point of time will not trigger any further actions.





### Operating concept Step-Move or Step


A press on the key starts time T1 between short- and long-time operation. At this time, no telegram will be transmitted. Releasing the key before time T1 has elapsed will cause a Step telegram to be transmitted. Only if the key is kept pressed after time T1 has elapsed, will the push button sensor trigger a Move telegram. Slat adjustment time T2 is started. If the key is released while slat adjustment is still in progress, the push button sensor transmits a Step telegram. If the time has elapsed when the key is being released, no further telegram will be transmitted.





<b>Application:</b>		6. Dimming / shutter 103A01		
<b>Executable from mask version:</b>		1.1		
<b>Number of addresses (max):</b>		6	<b>dynamic table handling:</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Number of assignments (max):</b>		4	<b>maximum length of table:</b>	10
<b>Communication objects:</b>		4		
Object	Function	Name	Type	Flag
<input checked="" type="checkbox"/> 0	Switching	Rocker	1 bit	C, W, T
<input checked="" type="checkbox"/> 1	Dimming	Rocker	4 bit	C, T
<input checked="" type="checkbox"/> 2	Short-time operation	Rocker	1 bit	C, W, T
<input checked="" type="checkbox"/> 3	Long-time operation	Rocker	1 bit	C, W, T
<b>Object description</b>				
<b>Objects:</b>				
<input checked="" type="checkbox"/> 0	Switching:	1-bit object for the transmission of switching telegrams (ON, OFF)		
<input checked="" type="checkbox"/> 1	Dimming:	4-bit object for change of relative brightness between 0 and 100 %		
<input checked="" type="checkbox"/> 2	Short-time operation	1-bit object for short-time operation of a shutter		
<input checked="" type="checkbox"/> 3	Long-time operation	1-bit object for long-time operation of a shutter		
<b>Scope of functions</b>				
<ul style="list-style-type: none"> <li>• Function of operation LED and ON-time of status LED in case of key-press indication and "Dimming" function parameterizable Status indication with "Dimming" function possible</li> <li>• Rocker 1 as a function of rocker 2 (or vice versa) parameterizable as dimming or shutter sensor</li> <li>• Key functions (ON/brighter OFF/darker or UP / DOWN) can be parameterized</li> <li>• Time between switching and dimming, dimming step and transmission of stop telegrams possible with dimming sensor</li> <li>• Time between two telegrams and number of steps before continuous run (slat adjustment) presettable in shutter operation</li> </ul>				




Parameters		
Description:	Values:	Remarks:
 General		
Operation LED	OFF ON	Defines the status of the operation LED.
Rocker configuration	<b>Rocker 1: dimming</b> <b>Rocker 2: shutter</b>  Rocker 1: shutter Rocker 2: dimming	Defines the function of the individual rockers.
 Function Dimming		
Function of status LED	<b>as status indicator</b>  as key-press indicator  always OFF  always ON	Defines the operation of the status LED.  The status LED indicates the status of the switching object.  The status LED light up when a key is pressed.  The status LED is always off.  The status LED is always on
LED ON-time	0.75 s; 2.25 s; <b>3 s</b> ; 4.5 s; 6 s; 10 s; 15 s	Defines the time during which the status LED is on when a key is pressed. Only if "Status LED function = key-press indicator").
Key function.	<b>1/3 = brighter (ON)</b> <b>2/4 = darker (OFF)</b>  1/3 = darker (OFF) 2/4 = brighter (ON)	Defines the command transmitted on pressing of the keys.
Time between switching and dimming, base	<b>130 ms</b> ; 260 ms; 520 ms; 1 s; 2.1 s; 4.2 s; 8,4 s; 17 s; 34 s 1.1 min; 2.2 min; 4.5 min; 9 min; 18 min; 35 min; 1.2 h	Defines the time base for a key-press to send a telegram Time = base • factor
Time between switching and dimming, factor (2...127)	2 ... 127; <b>3</b>	Defines the time factor for a key-press to send a dimming telegram Time = base • factor  Presetting: 130 ms • 3 = 390 ms
Increase brightness by	<b>100 %</b> 6 % 50 %    3 % 26 %    1.5 % 12.5 %	Defines the maximum dimming step performed on reception of a relative dimming telegram (brighter).
Reduce brightness by	<b>100 %</b> 6 % 50 %    3 % 26 %    1.5 % 12.5 %	Defines the maximum dimming step performed on reception of a relative dimming telegram (darker).



Send stop telegram ?	<b>YES</b> NO	Defines whether a dimming procedure in progress is to stop when the key is released (YES).
 Function: Shutter		
Key function	<b>1/3 = UP, 2/4 = DOWN</b> 1/3 = DOWN, 2/4 = UP	Defines the command transmitted on pressing the keys.
Number of steps before continuous run (1...30)	1 ... 30; <b>1</b>	<p>A short-time telegram (STEP) permits adjusting the slats of a shutter.</p> <p>This parameter defines how many short-time telegrams are transmitted before a continuous run (MOVE) after a long key-press.</p>
Time between two telegrams, base	0.5 ms; 8 ms; <b>130 ms</b> 2.1 s; 33 s	<p>Defines the time base between two telegrams. (Time between STEP – STEP or between STEP – MOVE)</p> <p>Time = base • factor</p>
Time between two telegrams, factor (2...255)	2 ... 255; <b>10</b>	<p>Defines the time factor between two telegrams. (Time between STEP – STEP or between STEP – MOVE)</p> <p>Time = base • factor</p> <p>Presetting: 130 ms • 10 = 1.3 ms</p>
<b>Software remarks</b> <ul style="list-style-type: none"> <li>• For editing all of the parameters, the access must be set to "full access".</li> <li>• The status LED indicates either the current status of the switching object or a key-press. If a key is pressed (e.g. ON) and if the push button sensor does not get a positive acknowledgement (IACK) from an addressed actuator, the object status is updated and the corresponding status LED is lit up.</li> </ul>		

<b>Application:</b>		7. Switching / dimming 103C01		
<b>Executable from mask version:</b>		1.1		
<b>Number of addresses (max):</b>		7	<b>dynamic table handling:</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Number of assignments (max):</b>		8	<b>maximum length of table:</b>	15
<b>Communication objects:</b>		4		
Object	Function	Name	Type	Flag
<input checked="" type="checkbox"/> 0	Switching	Key 1 / 3	1 bit	C, W, T
<input checked="" type="checkbox"/> 1	Switching	Key 2 / 4	1 bit	C, W, T
<input checked="" type="checkbox"/> 2	Switching (dimming)	Rocker	1 bit	C, W, T
<input checked="" type="checkbox"/> 3	Dimming	Rocker	4 bit	C, T
<b>Object description</b>				
<b>Objects:</b>				
<input checked="" type="checkbox"/> 0 - 2	Switching:	1-bit object for the transmission of switching telegrams (ON, OFF)		
<input checked="" type="checkbox"/> 3	Dimming:	4-bit object for change of relative brightness between 0 and 100 %		
<b>Scope of functions</b>				
<ul style="list-style-type: none"> <li>• Function of operation LED and ON-time of status LED in case of key-press indication parameterizable</li> <li>• Status indication possible</li> <li>• Rocker 1 as a function of rocker 2 (or vice versa) parameterizable as switching or dimming sensor</li> <li>• Key functions (ON / OFF / TOGGLE or ON/brighter OFF/darker can be parameterized</li> <li>• Time between switching and dimming, dimming step and transmission of stop telegrams possible with dimming sensor</li> </ul>				

Parameters		
Description:	Values:	Remarks:
 General		
Operation LED	OFF ON	Defines the status of the operation LED.
Rocker configuration	<b>Rocker 1: dimming</b> <b>Rocker 2: switching</b>  Rocker 1: switching Rocker 2: dimming	Defines the function of the individual rockers.
 Function: Switching		
Function of status LED	<b>as status indicator</b>  as key-press indicator  always OFF  always ON	Defines the operation of the status LED.  The status LED indicates the status of the switching object.  The status LED light up when a key is pressed.  The status LED is always off.  The status LED is always on.
LED ON-time	0.5 s; 1 s; <b>2.1 s</b> ; 4.2 s; 8.4 s	Defines the time during which the status LED is on when a key is pressed. Only if "Status LED function = key-press indicator").
Command on pressing of key 1/3	press = ON, release = ON press = ON, release = OFF <b>press = ON, release = ---</b> press = OFF, release = ON press = OFF, release = OFF press = ON, release = --- press = TOGGLE, release = TOGGLE press = TOGGLE, release = --- press = ---, release = ON press = ---, release = OFF press = ---, release = TOGGLE press = ---, release = ---	Defines the command transmitted on pressing or on releasing of key 1/3.
Command on pressing of key 2/4	press = ON, release = ON press = ON, release = OFF press = ON, release = --- press = OFF, release = ON press = OFF, release = OFF <b>press = OFF, release = ---</b> press = TOGGLE, release = TOGGLE press = TOGGLE, release = --- press = ---, release = ON press = ---, release = OFF press = ---, release = TOGGLE press = ---, release = ---	Defines the command transmitted on pressing or on releasing of key 2/4.

 Function: Dimming		
Function of status LED	<p><b>as status indicator</b></p> <p>as key-press indicator</p> <p>always off</p> <p>always ON</p>	<p>Defines the operation of the status LED.</p> <p>The status LED indicates the status of the switching object.</p> <p>The status LED light up when a key is pressed.</p> <p>The status LED is always off.</p> <p>The status LED is always on</p>
LED ON-time	0.5 s; 1 s; <b>2.1 s</b> ; 4.2 s; 8.4 s	<p>Defines the time during which the status LED is on when a key is pressed.</p> <p>Only if "Status LED function = key-press indicator").</p>
Key function	<p><b>1/3 = brighter(ON)</b> <b>2/4 = darker(OFF)</b></p> <p>1/3 = darker(OFF) 2/3 = brighter(ON)</p>	<p>Defines the command transmitted on pressing of the keys.</p>
Time between switching and dimming, base	<p><b>130 ms</b>; 260 ms; 520 ms; 1 s; 2.1 s; 4.2 s; 8.4 s; 17 s; 34 s 1.1 min; 2.2 min; 4.5 min; 9 min; 18 min; 35 min; 1.2 h</p>	<p>Defines the time base for a key-press to send a telegram</p> <p>Time = base • factor</p>
Time between switching and dimming, factor (2...127)	2 ... 127; <b>3</b>	<p>Defines the time factor for a key-press to send a dimming telegram</p> <p>Time = base • factor</p> <p>Presetting: 130 ms • 3 = 390 ms</p>
Increase brightness by	<p><b>100 %</b>    6 % 50 %    3 % 26 %    1.5 % 12.5 %</p>	<p>Defines the maximum dimming step performed on reception of a relative dimming telegram (brighter).</p>
Reduce brightness by	<p><b>100 %</b>    6 % 50 %    3 % 26 %    1.5 % 12.5 %</p>	<p>Defines the maximum dimming step performed on reception of a relative dimming telegram (darker).</p>
Send stop telegram ?	<b>YES</b> NO	<p>Defines whether a dimming procedure in progress is to stop when the key is released (YES).</p>
<p><b>Software remarks</b></p> <ul style="list-style-type: none"> <li>For editing all of the parameters, the access must be set to "full access".</li> <li>The status LED indicates either the current status of the switching object or a key-press. If a key is pressed (e.g. ON) and if the push button sensor does <u>not</u> get a positive acknowledgement (IACK) from an addressed actuator, the object status is updated and the corresponding status LED is lit up.</li> </ul>		

<b>Application:</b>		8. Switching /shutter 103B01		
<b>Executable from mask version:</b>		1.1		
<b>Number of addresses (max):</b>		9	<b>dynamic table handling:</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Number of assignments (max):</b>		11	<b>maximum length of table:</b>	20
<b>Communication objects:</b>		4		
Object	Function	Name	Type	Flag
<input type="checkbox"/> 0	Switching	Key 1 / 3	1 bit	C, W, T
<input type="checkbox"/> 1	Switching	Key 2 / 4	1 bit	C, W, T
<input type="checkbox"/> 2	Short-time operation	Rocker	1 bit	C, W, T
<input type="checkbox"/> 3	Long-time operation	Rocker	1 bit	C, W, T
<b>Object description</b>				
<b>Objects:</b>				
<input type="checkbox"/> 0 - 1	Switching:	1-bit object for the transmission of switching telegrams (ON, OFF)		
<input type="checkbox"/> 2	Short-time operation	1-bit object for short-time operation of a shutter		
<input type="checkbox"/> 3	Long-time operation	1-bit object for long-time operation of a shutter		
<b>Scope of functions</b>				
<ul style="list-style-type: none"> <li>• Function of operation LED and ON-time of status LED in case of key-press indication parameterizable</li> <li>• Status indication possible</li> <li>• Rocker 1 as a function of rocker 2 (or vice versa) parameterizable as switching or shutter sensor</li> <li>• Key functions (ON / OFF / TOGGLE or UP / DOWN) can be parameterized</li> <li>• Time between two telegrams and number of steps before continuous run (slat adjustment) presettable in shutter operation</li> </ul>				

Parameters		
Description:	Values:	Remarks:
 General		
Operation LED	OFF ON	Defines the status of the operation LED.
Rocker configuration	Rocker 1: shutter Rocker 2: switching  <b>Rocker 1: switching</b> <b>Rocker 2: shutter</b>	Defines the function of the individual rockers.
 Function: Switching		
Function of status LED	as status indicator  <b>as key-press indicator</b>  always OFF  always ON	Defines the operation of the status LED.  The status LED indicates the status of the switching object.  The status LED light up when a key is pressed.  The status LED is always off.  The status LED is always on.
LED ON-time	0.75 s; 2.25 s; <b>3 s</b> ; 4.5 s; 6 s; 10 s; 15 s	Defines the time during which the status LED is on when a key is pressed. Only if "Status LED function = key-press indicator").
Command on pressing of key 1/3	<b>press = ON, release = ---</b> press = OFF, release = --- press = TOGGLE, release = --- press = ---, release = ON press = ---, release = OFF press = ---, release = TOGGLE press = ON, release = OFF press = OFF, release = ON press = ON, release = ON press = OFF, release = OFF press = TOGGLE, release = TOGGLE press = ---, release = ---	Defines the command transmitted on pressing or on releasing of key 1/3.
Command on pressing of key 2/4	press = ON, release = --- <b>press = OFF, release = ---</b> press = TOGGLE, release = --- press = ---, release = ON press = ---, release = OFF press = ---, release = TOGGLE press = ON, release = OFF press = OFF, release = ON press = ON, release = ON press = OFF, release = OFF press = TOGGLE, release = TOGGLE press = ---, release = ---	Defines the command transmitted on pressing or on releasing of key 2/4.

 Function: Shutter




Key function.	<b>1/3 = UP, 2/4 = DOWN</b> 1/3 = DOWN, 2/4 = UP	Defines the command transmitted on pressing of the keys.
Number of steps before continuous run (1...30)	1 ... 30; <b>1</b>	A short-time telegram (STEP) permits adjusting the slats of a shutter.  This parameter defines how many short-time telegrams are transmitted before a continuous run (MOVE) after a long key-press.
Time between two telegrams, base	0.5 ms; <b>8 ms</b> ; 130 ms; 2.1 s; 33 s	Defines the time base between two telegrams. (Time between STEP – STEP or between STEP – MOVE)  Time = base • factor
Time between two telegrams, factor(2...255)	2 ... 255; <b>46</b>	Defines the time factor between two telegrams. (Time between STEP – STEP or between STEP – MOVE)  Time = base • factor  Presetting: 8 ms • 46 = 368 ms

**Software remarks**






- For editing all of the parameters, the access must be set to "full access".
- The status LED indicates either the current status of the switching object or a key-press. If a key is pressed (e.g. ON) and if the push button sensor does not get a positive acknowledgement (IACK) from an addressed actuator, the object status is updated and the corresponding status LED is lit up.



<b>Application:</b>		9. Switching / pushbutton operation 103101		
<b>Executable from mask version:</b>		1.0		
<b>Number of addresses (max):</b>		11	<b>dynamic table handling:</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Number of assignments (max):</b>		11	<b>maximum length of table:</b>	22
<b>Communication objects:</b>		6		
Object	Function	Name	Type	Flag
<input type="checkbox"/> 0	Switching	Key 1	1 bit	C, W, T
<input type="checkbox"/> 1	Switching	Key 2	1 bit	C, W, T
<input type="checkbox"/> 2	Switching	Key 3	1 bit	C, W, T
<input type="checkbox"/> 3	Switching	Key 4	1 bit	C, W, T
<input type="checkbox"/> 4	LED control	Status LED 1	1 bit	C, W, T
<input type="checkbox"/> 5	LED control	Status LED 2	1 bit	C, W, T
<b>Object description</b>				
<b>Objects:</b>				
<input type="checkbox"/> 0 - 3	Switching:	1-bit object for the transmission of switching telegrams (ON, OFF)		
<input type="checkbox"/> 4 - 5	LED control:	1-bit object for status LED control		
<b>Scope of functions</b>				
<ul style="list-style-type: none"> <li>• Function of operation LED can be parameterized and status indication controlled by means of objects</li> <li>• Key functions (ON / OFF / TOGGLE) can be parameterized</li> </ul>				

Parameters		
Description:	Values:	Remarks:
 General		
Operation LED	OFF ON	Defines the status of the operation LED.
 Rocker 1		
Function of status LED	ON  LED always ON  LED always OFF	Defines the operation of the status LED.  The status LED indicates the object status of the LED control object.  The status LED is always on.  The status LED is always off.
Command on pressing of key 1	press = ON, release = ON press = ON, release = OFF <b>press = ON, release = ---</b> press = OFF, release = ON press = OFF, release = OFF press = OFF, release = --- press = TOGGLE, release = --- press = ---, release = ON press = ---, release = OFF press = ---, release = TOGGLE press = ---, release = ---	Defines the command transmitted on pressing or on releasing of key 1.
Command on pressing of key 2	press = ON, release = ON press = ON, release = OFF press = ON, release = --- press = OFF, release = ON press = OFF, release = OFF <b>press = OFF, release = ---</b> press = TOGGLE, release = --- press = ---, release = ON press = ---, release = OFF press = ---, release = TOGGLE press = ---, release = ---	Defines the command transmitted on pressing or on releasing of key 2.
 Rocker 2		
See rocker 1		

<b>Application:</b>		10. Value transmitter 101C01		
<b>Executable from mask version:</b>		1.0		
<b>Number of addresses (max):</b>		1	<b>dynamic table handling:</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Number of assignments (max):</b>		1	<b>maximum length of table:</b>	2
<b>Communication objects:</b>		1		
Object	Function	Name	Type	Flag
<input type="checkbox"/>   0	Value / light-scene	Rockers	1 byte	C, T
<b>Object description</b>				
<b>Objects:</b>				
<input type="checkbox"/>   0	Value / light-scene	1-byte object for transmitting value telegrams of for recalling light-scenes		
<b>Scope of functions</b>				
<ul style="list-style-type: none"> <li>• Function of operating LED and of status LED parameterizable</li> <li>• Mode of operation (value transmitter / light-scene recall with / without storage function) freely selectable</li> <li>• Values (1 byte) or light-scene numbers (1...8) for all keys individually parameterizable</li> </ul>				

Description:	Values:	Remarks:
 General		
Operation LED	OFF ON	Defines the status of the operation LED.
Function status LED	OFF ON	Defines the status of the status LED.
Mode of operation	Value transmitter  <b>Light-scene recall without storage function</b>  Light-scene recall with storage function	Defines the function of the push button sensor.
 Rocker 1 with "Mode of operation = value transmitter"		
Value (0...255) key 1	0 ... 255; <b>1</b>	Defines the value transmitted when key 1 is pressed.
Value (0...255) key 2	0 ... 255; <b>3</b>	Defines the value transmitted when key 2 is pressed.
 Rocker 1 with "Mode of operation = light-scene recall with / without storage function"		
Light-scene (1...8) Key 1	1 ... 8; <b>1</b>	Defines the value transmitted when key 1 is pressed.
Light-scene (1...8) Key 2	1 ... 8; <b>3</b>	Defines the value transmitted when key 2 is pressed.
 Rocker 2 with "Mode of operation = value transmitter"		
Value (0...255) key 1	0 ... 255; <b>2</b>	Defines the value transmitted when key 1 is pressed.
Value (0...255) key 2	0 ... 255; <b>4</b>	Defines the value transmitted when key 2 is pressed.
 Rocker 2 with "Mode of operation = light-scene recall with / without storage function"		
Light-scene (1...8) Key 1	1 ... 8; <b>2</b>	Defines the value transmitted when key 1 is pressed.
Light-scene (1...8) Key 2	1 ... 8; <b>4</b>	Defines the value transmitted when key 2 is pressed.

**Software remarks**

- Light-scene extension unit:

When a key is pressed for more than 1 s, the parameterized light-scene is recalled and the pertaining status LED switched on for about 1 s. If a key is pressed during a light-scene recall with storage function for more than 5 s, a storage telegram corresponding to the parameterized light-scene will be transmitted and the status LED is lit up for 4 s. Pressing a key with storage function for a time between 1 s and 5 s is without effect.

The status LED lights up after a key-press only in conjunction with a positive acknowledgement (IACK) from an addressed actuator.

- Value transmitter:

The status LED lights up after a key-press only in conjunction with a positive acknowledgement (IACK) from an addressed actuator.