

# Shutter/blind actuator 1gang 6A flush-mounted

## 75341002

## Technical Documentation



<b>Design:</b> FM (flush-mounted type)	
<b>Article-no.:</b> 7534 10 02	
<b>ETS search path:</b> Shutter / Shutter / Shutter/blind actuator 1gang 6A flush-mounted	
<b>Functional description:</b> <p>The shutter/blind actuator receives telegrams from sensors via the Instabus and controls a shutter or blind motor with its output. Both travel directions are mechanically interlocked. With sun protection or positioning telegrams, the actuator offers moreover the possibility of moving shutters, blinds and slats into any desired position. On reception of a storm warning, the actuator is capable of moving shutters or blinds into a predefined safety position and to lock them up in this position.</p> <p>The device is equipped with two extension inputs which - depending on parameterization - can act directly on the shutter/blind output (local control / double-sided push-button principle) or alternatively as binary inputs on the Instabus. The connected potential-free switch or push-button contacts are sensed against a common reference potential at the shutter/blind actuator. As a binary input, the device can transmit telegrams for switching or dimming, for shutter/blind control or for value transmitter applications (dimming value transmitter, light scene extension). Connecting 230 V signals or other external voltages to the extension inputs is not permitted.</p> <p>The shutter/blind actuator is supplied from the Instabus and needs therefore no additional external power supply.</p>	
<b>Illustration:</b>	<b>Dimensions:</b> <p>Ø: 53 mm</p> <p>Height (H): 28 mm</p>
<b>Controls:</b> <p><b>A</b> Low-voltage connecting wires</p> <p>red (RD): bus (+)</p> <p>black (BK): bus (-)</p> <p>green (GN): extension input 1</p> <p>white (WH): reference potential (com)</p> <p>yellow (YE): extension input 2</p> <p>brown (BN): reference potential (com)</p> <p><b>B</b> Load connection wires</p> <p>black (BK): L (phase connection)</p> <p>brown (BN): ▲ (travel direction UP)</p> <p>magenta (PK): ▼ (travel direction DOWN)</p> <p><b>C:</b> Programming button / LED (red)</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 results in shorter lifetime)
<b>Mounting position:</b>	any
<b>Minimum spacings:</b>	none
<b>Type of fastening:</b>	e.g. placing into deep flush-mounting box (Ø 60 mm x 60 mm)
<b>Instabus EIB supply</b>	
<b>Cable type:</b>	YY 6 x 0.6 mm; red: bus (+) / black: bus (-)
<b>Voltage:</b>	21 – 32 V DC SELV
<b>Power consumption:</b>	typically 150 mW
<b>Connection:</b>	approx. 33 cm ready-made; connecting terminal (0.6 – 0.8 mm)
<b>External supply</b>	
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<b>Response to voltage failure:</b>	Outputs: depending on parameterization (cf. "parameter description")
	Inputs: no reaction
<b>Response to bus voltage return:</b>	Outputs: depending on parameterization (cf. "parameter description")
	Inputs: depending on parameterization (cf. "parameter description")

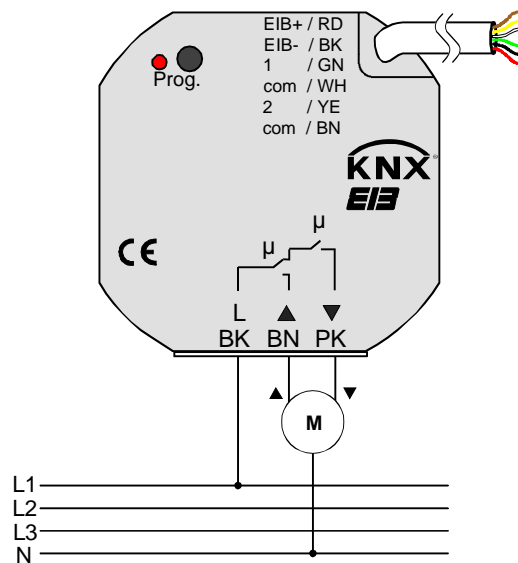
<b>Input:</b>	
<b>Number:</b>	2 (depending on parameterization either as extension inputs for button local control of the actuator or as independent binary inputs acting on the bus)
<b>Cable type:</b>	YY 6 x 0.6 mm green: extension input 1 white: reference potential (com) yellow: extension input 2 brown: reference potential (com)
<b>Cable length:</b>	approx. 33 cm ready-made, extendible to 5 m max.
<b>Scanning voltage:</b>	approx. – 19 V DC referred to "com"; continuous signal
<b>Loop resistance:</b>	max. 2 kOhm for safe "1" signal detection (rising edge)

<b>Output:</b>	
<b>Number:</b>	1
<b>Cable type:</b>	3 x H05 V-K 1.5 mm <sup>2</sup> with ferrules
<b>Cable length:</b>	approx. 20 cm ready-made
<b>Switch type:</b>	1 change-over contact + 1 make contact, potential-free relay contacts (μ-contact), bistable
<b>Switching voltage:</b>	230 V AC; 50 / 60 Hz
<b>Switching capacity:</b>	max. 1 motor 1,000 VA

**Connecting diagram:**

**Terminals:**

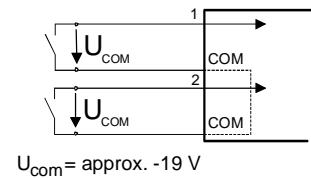
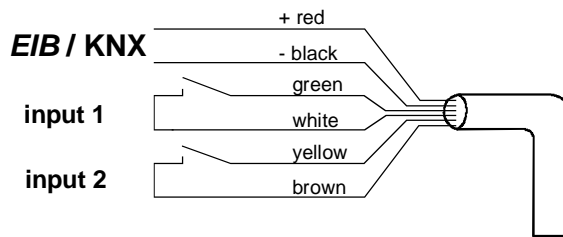
**Load connection:**



**Connecting diagram:**

**Terminals:**

**Bus connection and connection of extensions:**



A spacing of 4 mm minimum between extra low-voltage lines (bus and extension inputs) and the load lines (230 V) must be ensured (see fig. A).

It is recommended to install the shutter/blind actuator in two interconnected flush-mounting boxes (see fig. B). One of the boxes (A) can accommodate besides the bus and extension connections also a series switch (C), whereas the other box (B) accommodates the shutter/blind actuator and the 230 V terminals. The 6-wire connecting cable (D) is led through the box junction.

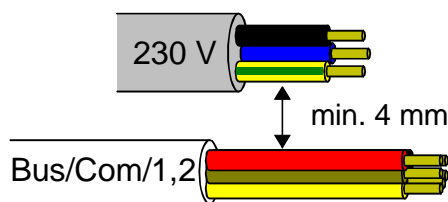


Fig. A

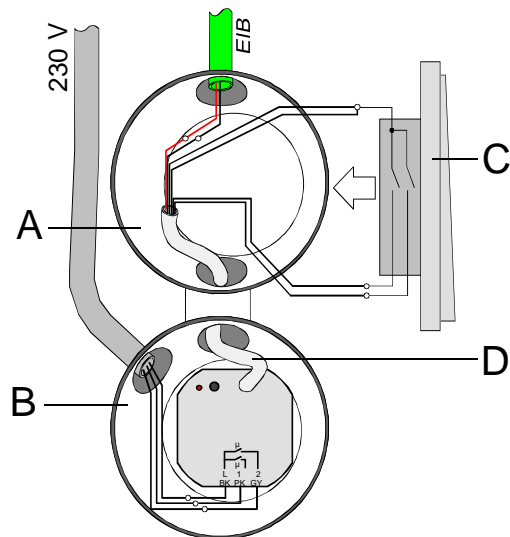
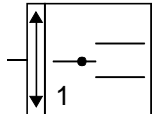











Fig. B



**Hardware information**

- ⚠ Never connect the mains voltage (230 V) or other external voltages to the extension inputs. Connecting an external voltage endangers the electrical safety of the entire KNX/EIB system (SELV / no electrical insulation). Persons may be put at risk and devices and installations may suffer irreparable damage.
- Make sure during the installation that there is always sufficient insulation between the mains voltage and the bus or the extensions. A minimum spacing of 4 mm must be ensured between the bus/extension wires and the mains wires.
- Non-used wires of the 6-wire connecting cable must be insulated with respect to one another and with respect to external voltages.
- To avoid EMC disturbances, the lines to the inputs should not be laid parallel to lines and cables carrying mains voltage.
- If motors are to be connected in parallel to an output, it is absolutely indispensable to observe the corresponding instructions of the motor manufacturers to avoid irreparable damage to the motors. If necessary, use supplementary isolating relays.
- Use only shutters or blinds with end position limit switches (mechanical or electronic). The limit switches of the motors connected must be checked for correct adjustment.



<b>Software description</b>				
ETS search path:				ETS symbol:
Shutter / Shutter / Shutter/blind actuator 1gang 6A flush-mounted				
PEI Type	00 Hex	0 Dez	No adapter used	
<b>Applications:</b>				
No.	Short description:	Name:	Version:	
1	Single-channel control of a motor with safety function and sun protection. Two additional extension inputs.	Shutter / blind, 2 inputs 207301	0.1	
<b>Application:</b> 1. Shutter / blind, 2 inputs 207301				
<b>Executable from mask version:</b> 1.2				
<b>Number of addresses (max):</b> 26		<b>dynamic table handling</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>Number of assignments (max):</b> 27		<b>maximum length of table</b>	53	
<b>Communication objects:</b> 11				
<b>Objects for the binary inputs (extension inputs), if acting on the bus:</b>				
<b>Function:</b> no function (for all 2 inputs <sup>2</sup> )				
<b>No further input objects</b>				
<b>Function:</b> "Switching" (for all 2 inputs <sup>2</sup> )				
<b>Object</b>	<b>Function</b>	<b>Name</b>	<b>Type</b>	<b>Flag</b>
 1 - 2	Switching object X.1 (X = 1 to 2)	Input 1 – Input 2	1 bit	C, W, T, (R) <sup>1</sup>
 9 - 10	Switching object X.2 (X = 1 to 2)	Input 1 – Input 2	1 bit	C, W, T, (R) <sup>1</sup>
<b>Function:</b> "Dimming" (for all 2 inputs <sup>2</sup> )				
<b>Object</b>	<b>Function</b>	<b>Name</b>	<b>Type</b>	<b>Flag</b>
 1 - 2	Switching	Input 1 – Input 2	1 bit	C, W, T, (R) <sup>1</sup>
 9 - 10	Dimming	Input 1 – Input 2	4 bit	C, T, (R) <sup>1</sup>
<b>Function:</b> "Shutter/blind" (for all 2 inputs <sup>2</sup> )				
<b>Object</b>	<b>Function</b>	<b>Name</b>	<b>Type</b>	<b>Flag</b>
 1 - 2	Short operation (STEP)	Input 1 – Input 2	1 bit	C, T, (R) <sup>1</sup>
 9 - 10	Long operation (MOVE)	Input 1 – Input 2	1 bit	C, T, (R) <sup>1</sup>
<b>Function:</b> "Value transmitter" (Function: Dimming value transmitter for all 2 inputs <sup>2</sup> )				
<b>Object</b>	<b>Function</b>	<b>Name</b>	<b>Type</b>	<b>Flag</b>
 1 - 2	Value	Input 1 – Input 2	1 byte	C, T, (R) <sup>1</sup>
<b>Function:</b> "Value transmitter" (Function: Light scene extension with / without storage function for all 2 inputs <sup>2</sup> )				
<b>Object</b>	<b>Function</b>	<b>Name</b>	<b>Type</b>	<b>Flag</b>
 1 - 2	Light scene extension	Input 1 – Input 2	1 byte	C, T, (R) <sup>1</sup>
<b>Function:</b> Disable (for all 2 inputs <sup>3</sup> )				
<b>Object</b>	<b>Function</b>	<b>Name</b>	<b>Type</b>	<b>Flag</b>
 17 - 18	Disable	Input 1 – Input 2	1 bit	C, W, (R) <sup>1</sup>
<sup>1</sup> : Objects marked (R) permit read-out of the object status (set R flag). <sup>2</sup> : The "No function", "Switching", "Dimming", "Shutter/blind" and "Value transmitter" functions can be selected per input. The names of the communication objects and the object table (dynamic object structure) will change accordingly. <sup>3</sup> : A disable function is not available if the inputs are parameterized for "No function"				

**Objects for the output:**


**Function: Output**

Object	Function	Name	Type	Flag
 0	Short operation (STEP)	Shutter/blind output	1 bit	C, W, (R) <sup>1</sup>
 4	Long operation (MOVE)	Shutter/blind output	1 bit	C, W, (R) <sup>1</sup>

**Function: Safety function**

Object	Function	Name	Type	Flag
 12	Safety function	Safety 1	1 bit	C, W, (R) <sup>1</sup>
 13	Safety function	Safety 2	1 bit	C, W, (R) <sup>1</sup>










**Function: Sun protection function**

Object	Function	Name	Type	Flag
 14	Sun protection function	Sun protection	1 bit	C, W, (R) <sup>1</sup>






<sup>1</sup>: Objects marked (R) permit read-out of the object status (set R flag).

**Object description**

Objects for the binary inputs (extension inputs):

 1 – 2	Switching object X.1:	1-bit object for transmitting switching telegrams (ON, OFF) (1 <sup>st</sup> switching object)
 9 – 10	Switching object X.2:	1-bit object for transmitting switching telegrams (ON, OFF) (2 <sup>nd</sup> switching object)
 1 – 2	Switching:	1-bit object for transmitting switching telegrams (ON, OFF) for the dimming function
 9 – 10	Dimming:	4-bit object for relative brightness variation between 0 and 100 %
 1 – 2	Short operation (STEP):	1-bit object for STEP operation of a shutter or blind
 9 – 10	Long operation (MOVE):	1-bit object for MOVE operation of a shutter or blind
 1 – 2	Value:	1-byte object for transmitting value telegrams (0 - 255)
 1 – 2	Light scene extension	1-byte object for recalling and storing light scenes (1 - 64)
 17 – 18	Disable:	1-bit object for disabling individual binary inputs (polarity parameterizable)

Objects for the output:

 0	Short operation (STEP):	1-bit object for STEP operation of a shutter / blind
 4	Long operation (MOVE):	1-bit object for MOVE operation of a shutter / blind
 12	Safety function:	1-bit object for receiving an alarm or safety message (safety 1) (polarity parameterizable)
 13	Safety function:	1-bit object for receiving an alarm or safety message (safety 2) (polarity parameterizable)
 14	Sun protection function:	1-bit object for activating the sun protection function(s) (polarity parameterizable)

## **Scope of functions**

### **Inputs:**

#### **General**

- Mode of functioning of the inputs parametrizable:
  - function as extension inputs for double-sided actuation of button acting directly on shutter/blind output (input 1 → output UP / input 2 → output DOWN) (state-of-delivery setting)
  - function as general binary inputs acting separately on the bus

Function as binary inputs to the bus:

- Switching, dimming, shutter/blind and value transmitter functions freely assignable to the max. 2 inputs
- Disable object for disabling of individual inputs (polarity of disable object presettable)
- Delay on return of bus voltage and debouncing time centrally adjustable
- Response to bus voltage return separately parameterizable for each input
- Telegram rate limitation generally parameterizable for all inputs

#### **Switching function**

- Two independent switching objects available for each input (switching commands individually parameterizable)
- Command for rising and falling edge individually adjustable (ON, OFF, TOGGLE, no reaction).
- Independent cyclical transmission of switching objects depending on edge or on object value selectable.

#### **Dimming function**

- Single-sided and double-sided actuation
- Time between dimming and switching and dimming step width presettable
- Telegram repetition and stop telegram transmission possible

#### **Shutter/blind function**

- Command for rising edge adjustable (no function, UP, DOWN, TOGGLE)
- Operation concept parameterizable ("step - move - step" resp. "move - step")
- Time between STEP and MOVE operation presettable (only with "step - move - step")
- Lamella (slat) adjustment time presettable (time during which a "MOVE" command can be terminated by releasing a push-button on the input)

#### **Value transmitter and light scene extension functions**

- Edge (push-button as n.o. contact, push-button as n.c. contact, switch) and value for edge parameterizable
- Value change in push-button mode possible with long press on the button for value transmitter
- In light scene extension with storage function, a light scene can be stored without preceding recall

### **Output:**

- One channel for a shutter / blind motor
- Type adjustable (shutter or blind)
- Switch-over delay during travel direction change adjustable
- Priority assignment to incoming telegrams parameterizable for sun protection and parameterize (STEP / MOVE)
- Automatic sun protection function for brightness-dependent moving of a shutter or blind into a parameterized position
- Safety function with cyclical checking and assigning to shutter or blind channels
- Movement into parametrizable limit position on reception of safety message
- Response to failure and return of bus voltage adjustable

## Functional description of the inputs

### Mode of functioning of the inputs

The shutter/blind actuator is equipped with two extension inputs which - depending on parameterization - can act directly on the shutter/blind output (local control / double-sided button principle) or alternatively as binary inputs on the Instabus.

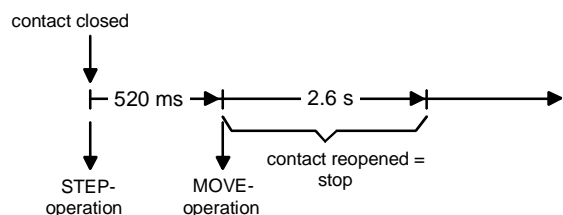
In the state as delivered (unprogrammed actuator), the extension inputs act directly on the shutter/blind output. This means that the actuator can be commissioned and operated already 'on site' simply by connecting the bus voltage and without further sensors.

#### • Inputs acting on shutter/blind output

The extension inputs act like an external sensor and with the predefined times for STEP and MOVE operation only internally directly on the shutter/blind output. In accordance with the double-sided operation principle, input 1 controls the UP direction and input 2 the DOWN direction. In acc. with the 'step-move-step' operating concept, the relay outputs react as follows:

Input	Contact at input	Actuation *	Relay switching state
1	closed (rising edge)	short	STEP operation UP / Stop
	open (falling edge)	long	MOVE operation UP
2	closed (rising edge)	---	no reaction or stop **
	open (falling edge)	---	no reaction or stop **

\*: The time after which a MOVE operation is executed is fixed at approx. 520 ms. The lamella (slat) adjustment time is approx. 2.6 s.



\*\*: If the contact at the input is reopened before the MOVE operation has been started, only the STEP operation is completely executed. If - after starting of the MOVE operation - the contact at the input is being reopened during the slat adjustment time, the actuator will stop the shutter/blind output. There is no response after opening of the contact.

For direct action, the extension inputs do not have parameters of their own so that the parameter cards for the inputs are not available. The last selected extension signal is always the one that is executed. The time for STEP operation of the shutter/blind output should not be less than 520 ms.

After return of bus voltage, the actuator responds to changes of the extension signal state only after the time parameterized for the "Delay on return of bus voltage" has elapsed.

During the delay, pulse edges or signals present at the inputs are not evaluated and disregarded. The time of delay is generally parameterized for all inputs and also for the outputs.

#### • Inputs acting separately on bus

The inputs of the shutter/blind actuator act independently of the shutter/blind output and separately on the Instabus KNX/EIB. Depending on parameterization, the functions "Switching", "Dimming", "Shutter/blind" or "Value transmitter" can be selected for each input (cf. "Parameter description"). When "No function" is selected, the corresponding input is deactivated.

When the "Shutter/blind" setting is selected, the extension objects can be combined via group addresses with the objects of the shutter/blind outputs. The actuator can thus be controlled via its own inputs even if the extension signals are set for acting on the bus (e.g. group control of several actuators).

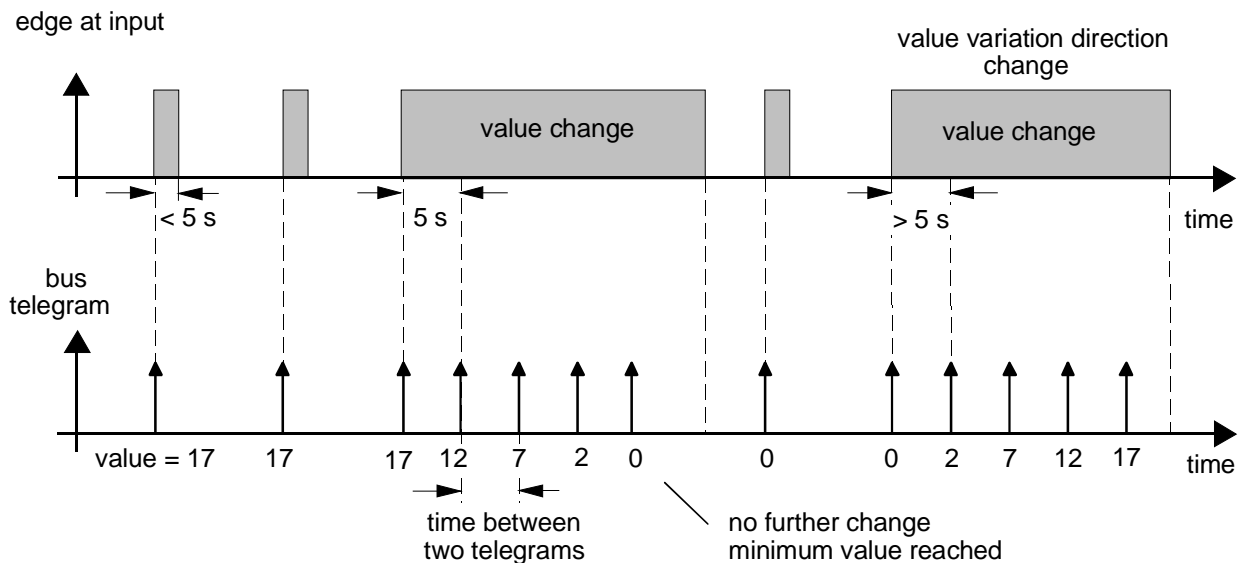
The functional description of the inputs on the following pages is valid only if the extensions are set for acting on the bus.

### Dimming value transmitter: change by means of long key press

In the event of dimming value transmitter parameterization, the value to be transmitted can be changed by means of a long key-press ( $> 5$  s) if the value is to be transmitted on the rising or the falling edge. In this case, the programmed value is increased by the parameterized step width and transmitted. After releasing of the input contact, the value last transmitted remains stored. On the next long key-press, the direction of value change is reversed.

Example:

Value (0...255)      17  
 Step width (1...10)    5



Important:

- During value variation there is no overrun and no underrun. When the maximum (255) resp. the minimum (0) value is reached, no more telegrams are transmitted.
- To ensure that the concerned lighting switches off or on with the max. value during value variation, the limit values (values "0" resp. "255") are always transmitted when the limits of the variation range are reached. This is also the case when the parameterized step width does not directly account for these values (cf. example above: step width = 5; value "2" is transmitted, thereafter value "0").  
 To ensure that the original starting value can be set again during a new change (change of variation direction), the first value jump will not correspond to the preset step width (cf. example above: step width = 5; value "0" is transmitted, thereafter values "2", "7" etc.).
- When values are changed, the newly set values are stored in the RAM.  
 After a bus voltage failure or a bus reset, the changed values will be replaced by the values originally parameterized in the ETS.



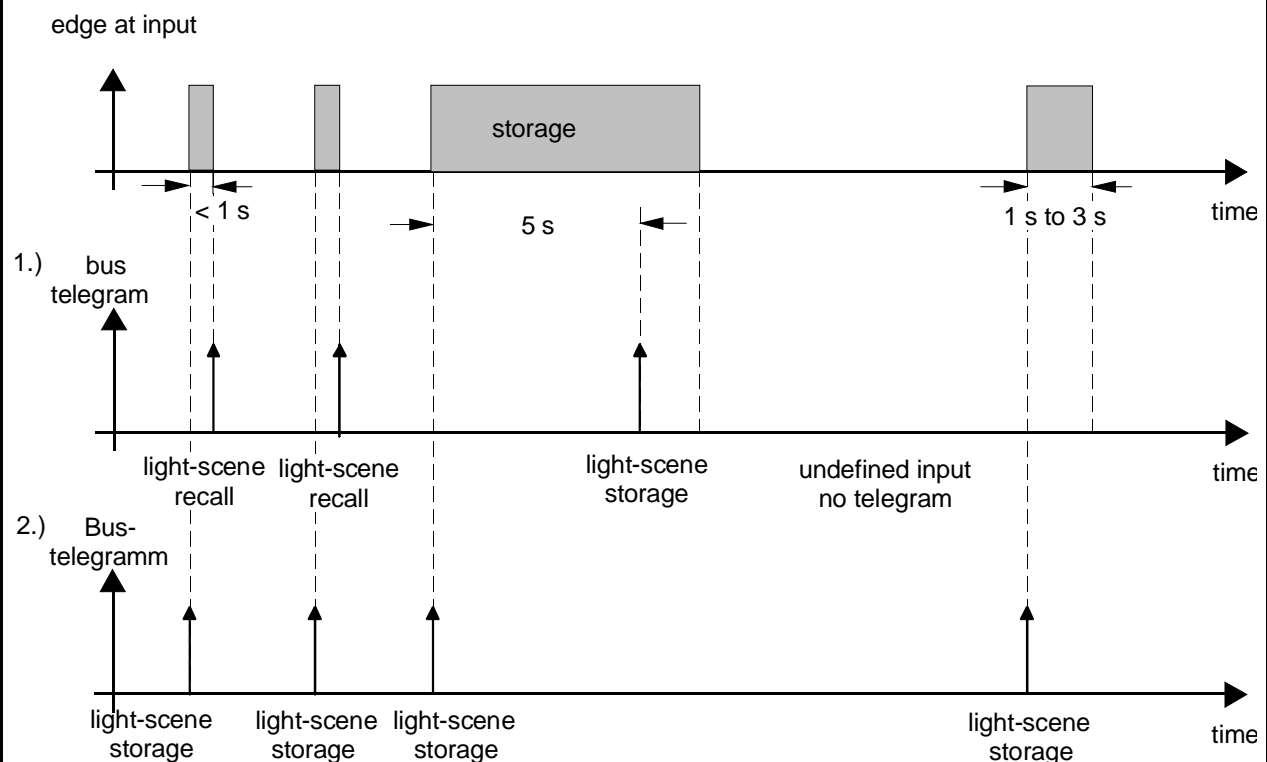
### Light scene extension with / without storage function

In a parameterization as light scene extension without storage function it is possible to recall a light scene. In case of a rising edge, a falling edge or a rising and a falling edge, the parameterized light scene number is transmitted immediately.

In a parameterization as light scene extension with storage function it is possible to generate a storage telegram depending on the light scene to be transmitted. A long actuation of the n.o. contact (rising edge) or of the n.c. contact (falling edge) causes the corresponding storage telegram to be transmitted. In this case, the time for a long press is parameterizable (however not below 5 s). After a short press < 1 s, the parameterized light scene number (without storage telegram) is transmitted. If the actuation is longer than 1 s, but shorter than 5 s, no telegram will be transmitted at all. In addition, it is possible to transmit only a storage telegram without preceding light scene recall. In this case, the "Storage function only" parameter must be set to "YES".

Examples for light scene extension with storage function:

- 1.) Storage function only = NO
- 2.) Storage function only = YES



Storage function only = NO:

If a rising or a falling edge is detected at the input (depending on parameterization), the timer is started. If the key is released within the first second, the corresponding light scene is recalled immediately. If the key is pressed longer, the storage telegram is transmitted after 5 s.

Storage function only = YES:

The storage telegram is transmitted immediately after detection of the corresponding edge.

#### **Response to return of bus voltage**

It is possible to define separately for each input whether a reaction or what kind of reaction is to take place on return of bus voltage so that a defined telegram can be transmitted to the bus depending on the input signal or by forced control.

The defined reaction takes place only after the parameterized "Delay on return of bus voltage" has elapsed. While the delay is active, any edges or signals present at the inputs are not evaluated and disregarded. The delay is generally parameterized for all inputs and also for the outputs.

It is possible to parameterize a general telegram rate limitation. In this case, no telegram is transmitted within the first 17 s after bus voltage return.

It should be noted that the parameterized "Delay on return of bus voltage" is active also during this time and that the parameterized reaction on bus voltage return is not executed if the delay elapses within the first 17 seconds.

#### **Disable function**

Each input can be independently configured for a certain reaction at the beginning or at the end of disable. It is also possible to parameterize the input for "No reaction". Only in this case will dimming or shutter control procedures or value changes in progress before activation of the disable function continue to be executed until the end when disable is active. In all other cases, the parameterized command will be transmitted immediately at the beginning of disable. During an active disable, edges or signals at the corresponding inputs are not evaluated.

Updates on disable objects (disable or enable) will always lead to the transmission of the corresponding command parameterized for "the beginning resp. the end of disabling".

During an active disable, no cyclical transmission takes place via the disable input.

If cyclical transmission did take place before activation of the disable function, no cyclical transmission will take place anymore at the end of disable when "No reaction" is parameterized. In this case, the object value will again be transmitted cyclically only after an update on the switching object. In all other cases, the object value will again be transmitted cyclically after the end of disable.

#### **Cyclical transmission**

The object value transmitted is always the object value internally or externally followed up in the switching objects. For this reason, the object value is transmitted cyclically even if "No reaction" is assigned to a rising or a falling edge. Cyclical transmission takes place also directly after the return of bus voltage, if the parameterized value of the telegram after bus voltage return corresponds to the object value parameterization for cyclical transmission. If telegram rate limitation is enabled, cyclical transmission will take place at the earliest after 17 seconds. During an active disable, no cyclical transmission takes place via the disabled input.

#### **Functional description for the shutter/blind output**

##### **Short operation (STEP) / long operation (MOVE) / moving-times / switch-over delay**

The shutter/blind actuator can be adapted to the moving-times of the shutters or blinds under control.

##### **Determination of short operation (STEP)**

The STEP operation mode is needed, for instance, to adjust the slat angle of a blind or to adjust the 'gap width' of a roller shutter. In most cases, the STEP operation is effected by depressing a shutter/blind touch sensor permitting manual intervention in the shutter/blind control cycle. When the actuator receives a STEP command while the shutter/blind is in motion, the movement is stopped immediately by the shutter/blind actuator. With the "Short operation time base" and "Short operation time factor" parameters, it is possible to define the time for STEP operation. The time fixed should correspond to ca.  $\frac{1}{4}$  of the complete MOVE operation-time of a slat or to the time needed for opening the shutter segments in case of a roller shutter. If the factor is set to "0", the reception of a STEP command will only result in a stop when the shutter or blind is in motion. There is no reaction in this case, when the shutter/blind is stationary.

##### **Determination of long operation (MOVE)**

The MOVE operation mode is needed for the adjustment of the shutter or blind height. The MOVE operation is initiated by a long press on a shutter/blind touch sensor or, for instance, by a superordinate time control and can always be stopped by an incoming STEP command. An uninterrupted MOVE operation moves the blind of the shutter into the limit positions (completely open or completely closed). The MOVE operation is adjusted with the "Long operation time base" and the "Long operation time factor" parameter. The MOVE operation-time must be adjusted in such a way that the shutter/blind is in any case in one of the limit positions after the end of MOVE operation. The time to be adjusted is therefore at least as long as the MOVE operation-time from the lower to the upper limit position. It is recommended to add an 'extra time' of 20 %.

In MOVE operation, the full time required for a MOVE movement is always used for any moving direction regardless of the position occupied by the shutter or blind.

A MOVE operation can be retriggedered by an incoming new MOVE command.

If the time factor is set to "0", the output is permanently energized during a MOVE operation depending on the direction of movement. This setting may be necessary for certain types of motors (observe the instructions of the motor manufacturers). Even an 'infinite' MOVE operation can be interrupted by a STEP command.

##### **Switch-over delay (break during change of direction)**

To protect the motors from being irreparably damaged, a fixed break can be parameterized for each change-over of the travel direction. During the break, no direction is active (stop). The "Break during change of direction" parameter can be set for change-over breaks of 0.5 s, 1 s (default), 1.5 s and 2 s. The necessary parameter value can be found in the technical documents of the motor used.

The switch-over delay for a direction change caused by bus voltage failure is invariably set to 125 ms. In the unprogrammed state, the actuator is factory-adjusted to a switch-over delay of 1 s.

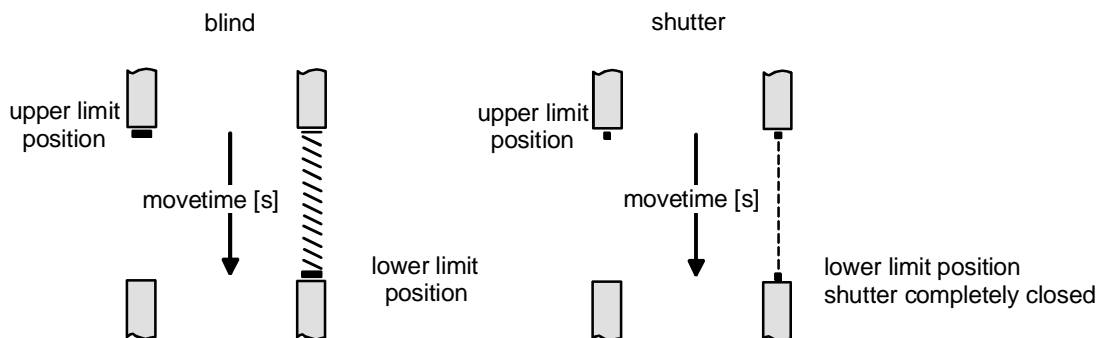
### Determination of moving-times for blinds and lamellas (slats) or shutters

A sun protection move means bringing the shutter or blind into a position predefined in the ETS. When the sun protection function is enabled, the moving-times for shutters or blinds and slats must still be specified because of the imprecision of the times for MOVE or STEP operation (in most cases, rough estimates).

To achieve precise positioning with the sun protection function, it is essential to exactly register and to incorporate the moving-times determined into the "movement time" parameters. It is recommended to perform several time measurements and to take the average of these values.

#### *Determination of the moving-time for shutter or blind:*

The time that needs to be determined is the actual time required to move the shutter or blind from the upper limit position into the lower limit position.

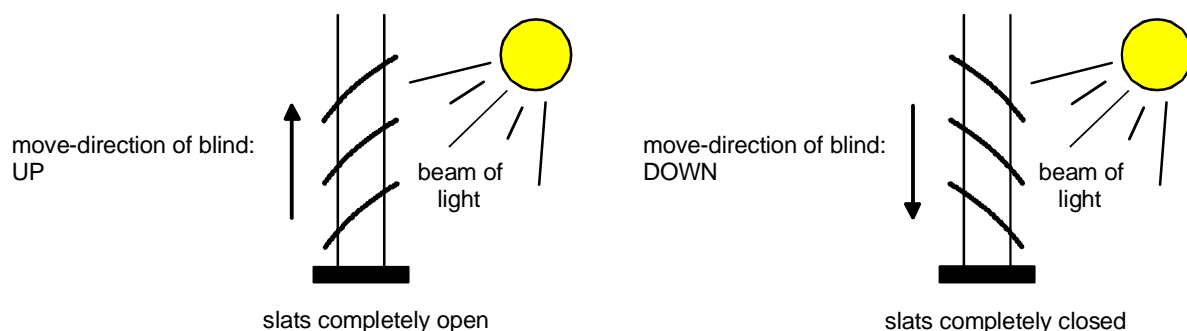


#### Info:

The motors connected can be moved into the limit positions either by manual control of the extensions when the actuator is not programmed or by MOVE commands when programmed.

#### *Determination of the moving-time for slats (only if "Shutter/blind type = blind"):*

The actual time needed by the slat to move from the completely open to the completely closed position (blind moving down) must be determined.



#### Important:

- The shutter/blind actuator is designed for controlling the most common types of blinds. The actuator assumes that the slats are completely closed when the blind moves downwards and completely open when the blind moves upwards.
- For the operation of blinds, the moving-time of the blind must be longer than the moving-time of the slats to prevent malfunction.

### **Sun protection function**

The actuator has a sun protection function for the shutter/blind output. The sun protection function can be activated via a separate object.

### **Sun protection response / sun protection positioning**

The response of the shutter/blind output at the beginning and at the end of a sun protection function can be predefined.

#### *Response at the beginning of a sun protection function:*

The sun protection function comprises three steps.

1. Reference move into the upper limit position even if the shutter or blind is already at the upper stop. A reference move is executed with the parameterized MOVE operation-time. In the event of a sun protection positioning to 100 %, positioning takes place without a reference move directly at the lower limit stop.
2. Positioning of the blind / shutter: The actuator moves the blind or the shutter to the predefined sun protection position. For computing the necessary time for a down move, the actuator makes use of the precise "Shutter / blind movement time" parameterized in the ETS.
3. Positioning of the slats: Only if "Shutter/blind type = blind", will the slats be positioned in the parameterized position after the sun protection move. For computing the necessary slat moving-time, the actuator makes use of the precise "Slat movement time" parameterized in the ETS. It is important to remember that the actuator is designed for controlling the most usual types of blinds. The actuator assumes that the slats are completely closed during a downward move and that they open during an upward move.  
If "Shutter/blind type = shutter", there is no positioning of the slats during sun protection.

#### *Response at the end of the sun protection function:*

At the end of automatic sun protection, the actuator deactivates the shutter/blind output immediately and moves the shutter/blind into the respective limit position for "move upwards" or "move downwards" commands. If the response at the end of the sun protection function is parameterized for "No reaction" or for "Stop", no new move will be started. If the sun protection function is deactivated by "No reaction" while a sun protection positioning move is still in progress, the move will be completely terminated. If the sun protection function is deactivated by "Stop" while a sun protection positioning move is still in progress, the move will be stopped immediately.

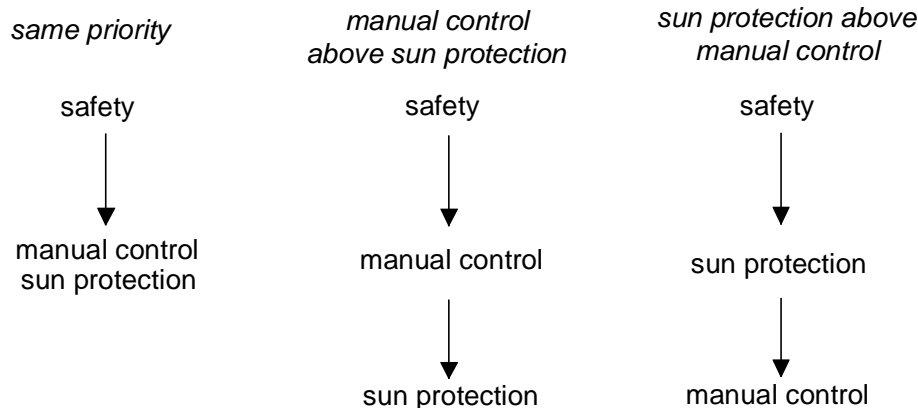
#### *Information on sun protection function:*

- Sun protection moves incl. the reference move before sun protection cannot be retriggered.
- After return of bus voltage, the sun protection function is always deactivated.
- An object update of the sun protection object from "deactivated" to "deactivated" shows no reaction. An update from "activated" to "activated" restarts the sun protection function only if this function has been interrupted beforehand by, for instance, a safety function.
- The safety function interrupts the sun protection function. A safety-locked output cannot be influenced by a sun protection function.  
A sun protection can only be active again after deactivation of the safety lock and after a new telegram update of the sun protection object on the shutter/blind output.

#### Priority evaluation with enabled sun protection function

The safety function has the highest priority of all bus-controlled functions.

If the sun protection function is generally enabled, the priority evaluation can be defined with the "Priority" parameter on the "Shutter/blind output, General" card. On this card, the telegram evaluation with respect to the sun protection object and the STEP or MOVE objects (manual control) can be preset. Operation of the actuator from the extensions is equivalent to manual control.



Three cases must be distinguished:

1. 'Manual control' has the *same priority* as 'Sun protection':  
This parametrization permits stopping the sun protection function by a STEP or a MOVE operation. In this case, the parameterized "Response at the end of automatic sun protection" is not executed. The sun protection is not automatically restarted.  
The sun protection is restarted only if an object update "active" depending on polarity is made.
2. 'Manual control' has *higher priority* than 'Sun protection':  
In this setting, automatic sun protection is stopped by a STEP or a MOVE operation. The parameterized "Response at the end of automatic sun protection" is not executed and it is still possible to restart the sun protection function. The sun protection can be reactivated only after the shutter or blind has been moved by uninterrupted MOVE operation into the upper limit position (enabling move). If the enabling move has not yet occurred or if it is not yet terminated, all attempts to activate the sun protection will be disregarded.  
On return of bus voltage or after programming of the device, an enabling move into the upper limit position is required in order to activate the sun protection function. Enabling can be effected by an automatic upward move after bus voltage return ("Response to bus voltage return = moving up").  
A safety function has no influence on sun protection enabling.
3. 'Sun protection' has *higher priority* than 'Manual control' (default):  
In this setting, an activated sun protection function cannot be stopped by a STEP or a MOVE operation. Manual control commands can be executed only after the automatic sun protection has been deactivated completely.

### **Safety function**

The actuator has a safety function which can be activated by two safety objects. The shutter/blind output can be assigned separately to the first or to the second safety object or alternatively to both.  
If the output is to respond to both objects, the safety objects are linked by logic OR. In this case, the safety lock is activated as soon as one of the objects is active. Similarly, the output channel will be released only after both objects are deactivated.

The polarity of both safety objects is separately adjustable.

### **Safety response**

The response of the shutter/blind output at the beginning and at the end of a safety function can be preset.

#### **"Response at the beginning of safety lock":**

The actuator moves the shutter or blind alternatively into one of the limit stop position, if the safety response is parameterized for "Moving up" or "Moving down". With these settings, the shutter or blind is locked up in the limit position after the end of the safety move. If the safety response at the beginning of the safety function is parameterized for "No reaction", no move is started and the output channels are locked in the actual position. With respect to all other bus-controllable functions of the actuator, the safety function has the highest priority. This means that all functions in progress for the outputs concerned as, for instance, active sun protection or MOVE and STEP commands will be aborted and the safety response executed.

#### **"Response the end of safety lock":**

At the end of a safety function, the actuator immediately re-enables the output channel when the setting is "Moving up" or "Moving down" and moves the shutter/blind into the corresponding limit stop positions. If the response at the end of a safety function is parameterized for "No reaction", the output is enabled without starting a new move. If enabling occurs by "No reaction" while a safety move is still in progress, the output is enabled without interrupting the move.

A sun protection interrupted by a safety function will not be continued after safety release.

### **Cyclical monitoring**

The safety objects can be cyclically monitored for the reception of telegrams.

When monitoring is enabled, the actuator expects a telegram update on both safety objects. If no telegrams are received during the monitoring time, the safety function will be activated.

The safety function can be deactivated again when a safety unlock command is received.

The cycle time of the transmitters should be shorter than the monitoring time parameterized in the shutter/blind actuator in order to ensure that at least one telegram can be received during the monitoring time.

### Delivery state

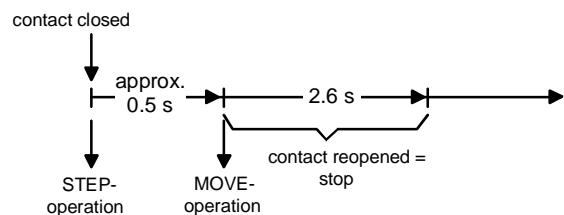
In the state of the actuator as delivered (actuator not programmed), the extension inputs act directly on the shutter/blind output. For this reason, the actuator can be commissioned and operated already 'on site' only by connecting the bus voltage and without needing sensors.

On connection of the bus voltage, no moving direction is energized (stop). After return of bus voltage, the actuator responds to state changes of the extension signals only after 390 ms (delay after bus voltage return). Within the delay, any signals or edges present on the inputs are not evaluated and disregarded.

When the bus voltage is applied, the extension inputs control the shutter/blind output as follows:

Input	Contact at input	Actuation *	Relay switching state
1	closed (rising edge)	short	STEP operation UP / Stop
	open (falling edge)	---	MOVE operation UP no reaction or stop **
2	closed (rising edge)	short	STEP operation DOWN / Stop
	open (falling edge)	---	MOVE operation DOWN no reaction or stop **

\*: The operation concept is "step-move-step". The time after which a MOVE operation (MOVE), is executed is fixed at approx. 0.5 s.




\*\*: The operation concept is "step-move-step". If the contact at the input is reopened before the MOVE operation has been started, only the STEP operation is completely executed. If - after starting of the MOVE operation - the contact at the input is being reopened during the slat adjustment time (approx. 2.6 s) the actuator will stop the shutter/blind output. There is no other reaction after opening of the contact.


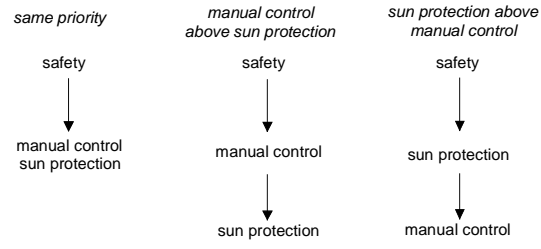
The extension signal executed is always the last signal chosen.


In the event of bus voltage failure, the actuator shows no reaction. No group addresses are preprogrammed at the factory.

In the unprogrammed state of the actuator, a switch-over delay of 1 s is factory-adjusted. MOVE operation of the shutter/blind output is set to 63 s and STEP operation to approx. 0.5 s.





Parameters		
Description	Values:	Comment:
 General		
Mode of functioning of inputs	<b>Inputs acting on shutter/blind output</b>  Inputs acting separately on bus	Defines whether the extension inputs of the actuator act directly on the shutter/blind output (local operation) or, as an alternative, separately from each other as binary inputs on the Instabus KNX/EIB.  Only if "Mode of functioning of inputs = inputs acting separately on bus " are the input parameter cards active.  The setting " Mode of functioning of inputs = inputs acting on shutter/blind output" corresponds to the delivery state.
Delay on return of bus voltage Base	130 ms                      34 s 260 ms                     1.1 min 520 ms                    2.2 min <b>1 s</b> 4.5 min 2.1 s                      9 min 4.2 s                      18 min 8.4 s                      35 min 17 s                        1.2 h	After return of bus voltage, the application program of the actuator can be disabled for a defined period of time before the corresponding reactions take place. During this time, no signals present on the inputs will be evaluated and the outputs will not change their status. Defines the time base of the delay period.  $\text{Time} = \text{Base} \cdot \text{Factor}$
Delay on return of bus voltage Factor (3...127)	3 bis 127, <b>17</b>	Defines the time factor of the delay period.  $\text{Time} = \text{Base} \cdot \text{Factor}$  Presetting: $1 \text{ s} \cdot 17 = 17 \text{ s}$
Debouncing time for binary inputs Factor (10...255) * 0.5 ms	0 to 255, <b>60</b>	Defines the software debouncing time in common for all binary inputs. A signal edge at the input will be evaluated with a delay corresponding to the time defined.  $\text{Time} = 0.5 \text{ ms} \cdot \text{Factor}$  Presetting: $0.5 \text{ ms} \cdot 20 = 10 \text{ ms}$
Telegram rate limitation	enabled <b>disabled</b>	The telegram rate limitation can be enabled or disabled. When the telegram rate limitation is enabled, no telegrams will be transmitted in the first 17 s after bus voltage return.
Telegrams per 17 s	<b>30</b> 60 100 127	When the telegram rate limitation is enabled, the maximum number of telegrams in 17 s can be preset here.


Parameters		
Description	Values:	Comment:
 Shutter/blind output, General		
Shutter/blind type (HA)	<b>Blind</b>	The actuator controls only blinds.
	Shutter	The actuator controls only shutters.
Safety function (HA)	<b>disabled</b>	Enables the safety function.
	enabled	
Sun protection function (HA)	<b>disabled</b>	Enables the sun protection function.
	enabled	
Priorities (HA)	Same priority for manual control and sun protection	Defines the priority evaluation for sun protection and manual control.
	Manual control higher than sun protection	
	<b>Sun protection higher than manual control</b>	 <p>Important: An incoming safety message always has the highest priority.</p>
Response after bus voltage failure		Defines the response of the shutter/blind output on bus voltage failure.
	<b>Moving UP</b>	The shutter/blind moves up on bus voltage failure.
	Moving DOWN	The shutter/blind moves down on bus voltage failure.
	Stop	The shutter/blind stops on bus voltage failure.
	No reaction	No reaction.
Response to bus voltage return		Defines the response of the shutter/blind actuator on return of bus voltage.
	Moving UP	The shutter/blind moves up on bus voltage return.
	Moving DOWN	The shutter/blind moves down on bus voltage return.
	<b>Stop</b>	The shutter/blind stops on bus voltage return.

<b>Parameters</b>		
<b>Description</b>	<b>Values:</b>	<b>Comment:</b>
 <b>Shutter/blind output, Times</b>		
Short operation Time base	<b>8 ms</b> 130 ms 2.1 s 33 s	Defines the time base for short operation (STEP).  Step-time = Factor • Base
Short operation Time factor (0...255) (0 = only stop)	0 to 255, <b>64</b>	Defines the time factor for short operation (STEP). Presetting: 8 ms • 64 = 512 ms
Long operation Time base	8 ms 130 ms <b>2.1 s</b> 33 s	Defines the time base for long operation (MOVE). MOVE operation-time = Factor • Base
Long operation Time factor (0...255) (0 = infinite)	0 to 255, <b>30</b>	Defines the time factor for long operation (MOVE). Presetting: 2.1 s • 30 = 63 s
Blind movement time Time base (HA)	8 ms 130 ms <b>2.1 s</b> 33 s	Defines the time base for the blind moving-time from upper to lower limit position.  Only if "Shutter/blind type = blind" and sun protection function enabled.
Blind movement time Time factor (0...255) (HA)	0 to 255, <b>30</b>	Defines the time factor for the blind moving-time from upper to lower limit position. Presetting: 2.1 s • 30 = 63 s  Only if "Shutter/blind type = blind" and sun protection function enabled.
Shutter movement time Time base (HA)	8 ms 130 ms <b>2.1 s</b> 33 s	Defines the time base for the shutter moving-time from upper to lower limit position.  Only if "Shutter/blind type = shutter" and sun protection function enabled.
Shutter movement time Time factor (0...255) (HA)	0 to 255, <b>30</b>	Defines the time factor for the shutter moving-time from upper to lower limit position. Presetting: 2.1 s • 30 = 63 s  Only if "Shutter/blind type = shutter" and sun protection function enabled.
Slat movement time Time base (HA)	8 ms <b>130 ms</b> 2.1 s 33 s	Defines the time base for the slat moving-time from upper to lower limit position.  Only if "Shutter/blind type = blind" and sun protection function enabled.


Slat movement time Time factor (0...255) (HA)	0 to 255, <b>30</b>	Defines the time factor for the slat moving-time from upper to lower limit position. Presetting: 2.1 s • 30 = 63 s  Only if "Shutter/blind type = blind" and sun protection function enabled.
Break during change of direction	0.5 s <b>1.0 s</b> 1.5 s 2.0 s	Defines the break during a change of direction (switch-over delay).  The switch-over delay in the event of a change of travel direction caused by bus voltage failure is fixed at 125 ms. In the unprogrammed state of the shutter/blind actuator, the switch-over delay is factory-adjusted to 1 s.

<b>Parameters</b>		
<b>Description</b>	<b>Values:</b>	<b>Comment:</b>
 Shutter/blind output, Sun protection	(only if "Sun protection function = enabled") (HA)	
Sun protection active at object value (HA)	<b>1 (0 = sun protection deactivated)</b>  0 (1 = sun protection deactivated)	Defines the polarity of the sun protection object.
Sun protection position Blind (0...100 %) (HA)	0 to 100 %; <b>50</b>	When the automatic sun protection is active, the blind position thus preset is approached from the upper limit position.  Only if "Shutter/blind type = blind".
Sun protection position Shutter (0...100 %) (HA)	0 to 100 %; <b>50</b>	When the automatic sun protection is active, the shutter position thus preset is approached from the upper limit position.  Only if "Shutter/blind type = shutter"
Sun protection position Slat (0...100 %) (HA)	0 to 100 %; <b>50</b>	When the automatic sun protection is active, the slats move to the position thus preset.  Only if "Shutter/blind type = blind".
Response at the end of automatic sun protection (HA)	<b>No reaction</b>  Moving UP  Moving DOWN  Stop	Defines the reaction of the shutter/blind output after deactivation of the sun protection.  No reaction.  The shutter/blind moves up after sun protection.  The shutter/blind moves down after sun protection.  The shutter/blind stops at the end of sun protection.

Parameters		
Description	Values:	Comment:
 Shutter/blind output, Safety	(only if "Safety function = enabled") (HA)	
Safety function activated by (HA)	<b>Safety object 1</b>	The shutter/blind output can be assigned separately to the first or to the second safety object or alternatively to both objects.  The shutter/blind output responds only to the first safety object.
	Safety object 2	The shutter/blind output responds only to the second safety object.
	Safety object 1 OR 2	The shutter/blind output responds to both safety objects. The objects are linked by logic OR. In this case, the safety lock goes active as soon as one of the objects is active. Similarly, the output channel will be released only after both objects are deactivated.
Safety lock with object value for safety object 1 (HA)	0 (safety unlock = 1)	Defines the polarity of safety object 1.
	<b>1 (safety unlock = 0)</b>	Only if "Safety function activated by = safety object 1" or "Safety function activated by = safety object1 OR 2".
Safety lock with object value for safety object 2 (HA)	0 (safety unlock = 1)	Defines the polarity of safety object 2.
	<b>1 (safety unlock = 0)</b>	Only if "Safety function activated by = safety object 2" or "Safety function activated by = safety object1 OR 2".
Cyclical monitoring time for safety object (HA)	<b>None</b> 1; 2; 3; 4; 5; 6; 7; 8 min. 10; 11; 12; 20; 40 min. 1; 2 h	Setting of monitoring time for both safety objects.
Response at the beginning of safety lock (HA)	No reaction	Defines the reaction of the shutter/blind output at the beginning of a safety function.  No reaction.
	<b>Moving UP</b>	The shutter/blind moves up when safety function.
	Moving DOWN	The shutter/blind moves down when safety function.
Response at the end of safety lock (HA)	<b>No reaction</b>	Defines the reaction of the shutter/blind output on safety release.  No reaction.
	Moving UP	The shutter/blind moves up on safety release.
	Moving DOWN	The shutter/blind moves down on safety release.

Parameters		
Description	Values:	Comment:
 Input 1	(only if "Mode of functioning of inputs = inputs acting separately on bus ")	
Function of input 1	No function <b>Switching</b> Dimming Shutter/blind Value transmitter	Defines the function of input 1.
Function of input 1 = " <b>No function</b> "		
No further parameters		
Function of input 1 = " <b>Switching</b> "		
Command on rising edge Switching object 1.1	No reaction <b>ON</b> OFF TOGGLE	Defines the command transmitted with a rising edge via switching object 1.1. "TOGGLE" switches over the object value.
Command on falling edge Switching object 1.1	No reaction ON <b>OFF</b> TOGGLE	Defines the command transmitted with a falling edge via switching object 1.1. "TOGGLE" switches over the object value.
Command on rising edge Switching object 1.2	<b>No reaction</b> ON OFF TOGGLE	Defines the command transmitted with a rising edge via switching object 1.2. "TOGGLE" switches over the object value.
Command on falling edge Switching object 1.2	<b>No reaction</b> ON OFF TOGGLE	Defines the command transmitted with a falling edge via switching object 1.2. "TOGGLE" switches over the object value.
Response to bus voltage return		Permits defining the reaction that is to take place after return of bus voltage. The parameterized delay after return of bus voltage must have elapsed before the reaction defined will be executed.
	<b>No reaction</b>	No reaction.
	Transmit current input status	The current input state corresponding to the parameterization for rising and falling edge is transmitted.
	Transmit ON telegram	Transmits an ON signal.
	Transmit OFF telegram	Transmits an OFF signal.


Cyclical transmission?	<p><b>No cyclical transmission</b></p> <p>Repeat when ON</p> <p>Repeat when OFF</p> <p>Repeat when ON and OFF</p>		<p>Cyclical transmission can be realized via the switching objects depending on the object value.</p> <p>No cyclical transmission.</p> <p>Cyclical transmission active when the object value is "ON".</p> <p>Cyclical transmission active when the object value is "OFF".</p> <p>Cyclical transmission always active independent of object value.</p>
Time base for cyclical transmission Switching object 1.1	<p><b>1 s</b>                      1.1 min</p> <p>2.1 s                      2.2 min</p> <p>4.2 s                      4.5 min</p> <p>8.4 s                      9 min</p> <p>17 s                        18 min</p> <p>34 s                        35 min</p> <p>1.1 min                  1.2 h</p> <p>34 s</p>		<p>Defines the time base for cyclical transmission via switching object 1.1.</p> <p>Time = Base • Factor</p>
Time base for cyclical transmission Switching object 1.2	<p>1 s                        1.1 min</p> <p>2.1 s                      2.2 min</p> <p>4.2 s                      4.5 min</p> <p>8.4 s                      9 min</p> <p>17 s                        18 min</p> <p>34 s                        35 min</p> <p>1.1 min                  1.2 h</p> <p>34 s</p> <p><b>No cyclical transmission via switching object X.2</b></p>		<p>Defines the time base for cyclical transmission via switching object 1.2.</p> <p>Cyclical transmission via switching object 1.2 can be disabled when "No cyclical transmission via switching object X.2" is selected.</p> <p>Time = Base • Factor</p>
Time base for cyclical transmission Switching object 1.1 and 1.2 Factor (3...127)	3 to 127, <b>60</b>		<p>Defines the time base for cyclical transmission via both switching objects.</p> <p>Time = Base • Factor</p> <p>Presetting: 1 s · 60 = 60 s</p>

 Input 1, Disable (HA)		
Disable function (HA)	enabled <b>disabled</b>	The disable function can be enabled or disabled.
Polarity of disabling object (HA)	<b>disable = 1 (enable = 0)</b> disable = 0 (enable = 1)	This parameter defines the polarity of the disable object.
Response at the beginning of disabling Switching objects 1.1 and 1.2 (HA)	<b>No reaction</b> ON OFF TOGGLE	When disable is active, both switching objects are disabled. This parameter defines the command transmitted at the beginning of disable via both switching objects. "TOGGLE" toggles the object values.
Response at the end of disabling Switching objects 1.1 and 1.2 (HA)	<b>No reaction</b> ON OFF transmit current input status	When disable is active, both switching object are disabled.  This parameter defines the command transmitted at the end of disable via both switching objects. With "Transmit current input status", the current input status will be transmitted corresponding to the parameterization for the rising and the falling edge.

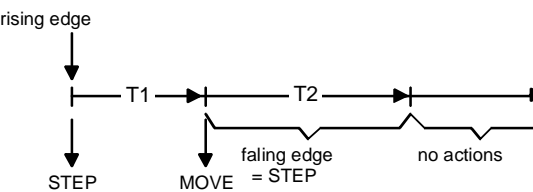
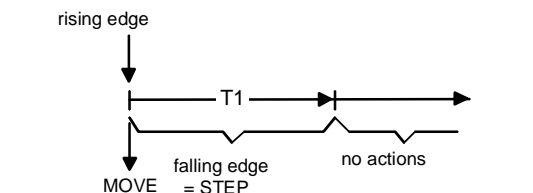
Function of input 1 = " <b>Dimming</b> "		
Operation		Defines the response to a rising edge on the input.
	Operation with one button: brighter / darker (TOGGLE)	After a brief press of the button at the input, the object value of the switching object is toggled and a corresponding telegram transmitted. A long press triggers a dimming telegram (brighter / darker). The dimming direction is stored only internally and toggled for successive dimming cycles.
	<b>Operation with two buttons: brighter (ON)</b>	A short press of the button on the input sends an ON telegram, whereas a long press triggers a dimming telegram (brighter).
	Operation with two buttons: darker (OFF)	A short press of the button on the input sends an OFF telegram, whereas a long press triggers a dimming telegram (darker).
	Operation with two buttons: brighter (TOGGLE)	A short press of the button on the input toggles the object value of the switching object and sends a corresponding telegram, whereas a long press triggers a dimming telegram (brighter).
	Operation with two buttons: darker (TOGGLE)	A short press of the button on the input toggles the object value of the switching object and sends a corresponding telegram, whereas a long press triggers a dimming telegram (darker).




Time between switching and dimming Base	<b>130 ms</b> 260 ms 520 ms 1 s	Time after which the dimming function is executed ("long press"). Time = Base • Factor
Time between switching and dimming Factor (4...127)	4 to 127, <b>4</b>	Time after which the dimming function is executed ("long press"). Time = Base • Factor Presetting: 130 ms • 4 = 520 ms
Response to bus voltage return	<b>No reaction</b> Transmit ON telegram Transmit OFF telegram	The reaction taking place after bus voltage return can be defined. If a delay after bus voltage return is parameteriz., this delay must have elapsed before the defined reaction will take place.  No reaction. Transmits an ON signal. Transmits an OFF signal.
Increase brightness by	<b>100 %</b> 6 % 50 %      3 % 25 %      1.5 % 12.5 %	A dimming telegram permits increasing the brightness by a max. value of X %. This parameter defines the max. dimming step width of a dimming telegram. The parameter is independent of the preset mode of operation.
Reduce brightness by	<b>100 %</b> 6 % 50 %      3 % 25 %      1.5 % 12.5 %	A dimming telegram permits reducing the brightness by a max. value of X %. This parameter defines the max. dimming step width of a dimming telegram. The parameter is independent of the preset mode of operation.
Transmit stop telegram?	<b>YES</b> NO	When a button on the input is released (falling edge), a stop telegram is transmitted or not.
Repeat telegram ?	YES <b>NO</b>	Cyclical repetition of dimming telegrams during a long press.
Time between two telegrams Base	<b>130 ms</b> 260 ms 520 ms 1 s	Time between two telegrams when telegram repetition is selected. After this time, a new telegram will be sent. Only if "Repeat telegram ?" = "YES". Time = Base • Factor
Time between two telegrams Factor (3...127)	3 to 127, <b>10</b>	Time between two telegrams when telegram repetition is selected. After this time, a new dimming telegram will be sent. Only if "Repeat telegram ?" = "YES". Time = Base • Factor Presetting: 130 ms • 10 = 1.3 s

Parameters		
Description	Values:	Comment:
 Input 1, Disable (HA)		
Disable function (HA)	enabled <b>disabled</b>	The disable function can be enabled or disabled.
Disable object polarity (HA)	<b>disable = 1 (enable = 0)</b> disable = 0 (enable = 1)	This parameter defines the polarity of the disable object.
Response at the beginning of disabling (HA)	<b>No reaction</b> ON OFF TOGGLE	This parameter defines the command transmitted at the beginning of disable via the switching object. "TOGGLE" toggles the object values.
Response at the end of disabling (HA)	<b>No reaction</b> OFF	This parameter defines the command transmitted at the end of disable via the switching object.

Function of input 1 = "Shutter/blind"		
Command on rising edge	No function  UP  <b>DOWN</b>   TOGGLE	Defines the response to a rising edge at the input.  Input deactivated.  A brief press triggers a STEP telegram (UP), a long press triggers a MOVE telegram (up).  A brief press triggers a STEP telegram (DOWN), a long press triggers a MOVE telegram (down).  This setting toggles the travel direction internally for each long press (MOVE). When a STEP telegram is transmitted by a brief press, this STEP always occurs in opposite direction to the last MOVE. Several successive STEP telegrams occur in the same direction.
Response to bus voltage return	<b>No reaction</b>  UP  DOWN	The reaction taking place after bus voltage return can be defined. If a delay after bus voltage return is parameterized, this delay must have elapsed before the defined reaction will take place.  No reaction.  Transmits a MOVE (UP) command.  Transmits a MOVE (DOWN) command.


Operation concept	<p><b>step - move - step</b> move - step</p>	<p>Defines the telegram sequence after a key-press (rising edge).</p> <p>Step – move – step:</p>  <p>A rising edge sends a STEP and time T1 (time between short- and MOVE operation) is started. This STEP serves the purpose of stopping a continuous move. When a falling edge is detected within T 1, the binary input sends no further telegram.</p> <p>If no falling edge has been detected during T 1, the binary input automatically sends a MOVE after T1 and starts time T 2 (slat adjusting time). If a falling edge is then detected within T 2, the binary input sends a STEP. This function is used for the adjustment of the slats. T2 should correspond to the time required for a slat rotation through 180°.</p> <p>Move – step:</p>  <p>A rising edge at the input sends a MOVE and time T1 (slat adjusting time) is started. If a falling edge is detected within T 1, the binary input sends a STEP. This function is used for the adjustment of the slats. T1 should correspond to the time needed for a slat rotation through 180°.</p>
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Time between STEP and MOVE operation 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 34 s	Time after which the MOVE operation function is executed. Only with operation concept = "Step - move - step"  Time = base • factor
Time between STEP and MOVE operation Factor (4...127)	4 to 127, <b>4</b>	Time after which the MOVE operation function is executed. Only with operation concept = "Step - move - step"  Time = base • factor  Presetting: 130 ms • 4 = 520 ms
Lamella (slat) adjustment time 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 34 s	Time during which a MOVE telegram for slat adjustment can be terminated by releasing the push-button at the input  Time = base • factor
Lamella (slat) adjustment time Factor (3...127)	3 to 127, <b>20</b>	Time during which a MOVE telegram for slat adjustment can be terminated by releasing the push-button at the input  Time = base • factor  Presetting: 130 ms • 20 = 2.6 s

<b>Parameters</b>		
<b>Description</b>	<b>Values:</b>	<b>Comment:</b>
 <b>Input 1, Disable (HA)</b>		
Disable function (HA)	enabled <b>disabled</b>	The disable function can be enabled or disabled.
Polarity of disabling object (HA)	<b>disable = 1 (enable = 0)</b> disable = 0 (enable = 1)	This parameter defines the polarity of the disable object.
Response at the beginning of disabling (HA)	<b>No reaction</b> DOWN UP TOGGLE	This parameter defines the command transmitted at the beginning of disable via the MOVE object. "TOGGLE" toggles the travel direction last executed (stored internally).
Response at the end of disabling (HA)	<b>No reaction</b> DOWN UP TOGGLE	This parameter defines the command transmitted at the end of disable via the MOVE object. "TOGGLE" toggles the travel direction last executed (stored internally).


<b>Function of input 1 = "Value transmitter"</b>		
Function as	<b>Value transmitter</b> Light scene recall without storage function Light scene recall with storage function	Defines the function to be executed.
<b>Value transmitter function = "Dimming value transmitter"</b>		
Transmit value	<b>On rising edge (push-button as n.o. contact)</b> On falling edge (push-button as n.c. contact) On rising and falling edge (switch)	Defines the edge that triggers an action.
Value on rising edge (0...255)	0 to 255, <b>100</b>	Defines the value transmitted on a rising edge.  Only if "Transmit value = on rising edge (push-button as n.o. contact)" and "Transmit value = on rising and falling edge (switch)".
Value on falling edge (0...255)	0 to 255, <b>0</b>	Defines the value transmitted on a falling edge.  Only if "Transmit value = on falling edge (push-button as n.c. contact)" and "Transmit value = on rising and falling edge (switch)".

Response to bus voltage return		<p>Permits defining the reaction that is to take place after return of bus voltage. If a delay after return of bus voltage has been parameterized, this delay must have elapsed before the reaction defined will be executed.</p> <p><b>No reaction</b></p> <p>No reaction</p> <p>Reaction as with rising edge</p> <p>The value parameterized for the rising edge will be transmitted.</p> <p>Only if "Transmit value = on rising edge (push-button as n.o. contact)" and "Transmit value = on rising and falling edge (switch)".</p> <p>Reaction as with falling edge</p> <p>The value parameterized for the falling edge will be transmitted.</p> <p>Only if "Transmit value = on falling edge (push-button as n.c. contact)" and "Transmit value = on rising and falling edge (switch)".</p> <p>Transmit current input status</p> <p>The current status of the inputs corresponding to the parameterization for rising and falling edge will be transmitted.</p> <p>Only if "Transmit value = on rising and falling edge (switch)".</p>
Value change by long press?	YES NO	<p>With a long press (&lt; 5 s), the current value can be cyclically reduced or increased by the parameterized step width (see below) and transmitted. After this value variation, the value last transmitted remains stored. The parameter defines whether a value change is possible. Only if "Transmit value = on rising edge (push button as n.o. contact)" and "Transmit value = on falling edge (push button as n.c. contact)"</p>
Time between two telegrams Base	130 ms 260 ms <b>520 ms</b> 1 s	<p>Time base for the time between two cyclical telegrams for value change.</p> <p>Only if "Value change by long press ?= YES"</p>
Time between two telegrams Factor (3...127)	3 to 127, <b>3</b>	<p>Time factor for the time between two cyclical telegrams for value change.</p> <p>Only if "Value change by long press ?= YES"</p> <p>Time = Base • Factor</p> <p>Presetting: 520 ms • 3 = 1.56 s</p>
Step width (1...10)	1 to 10, <b>10</b>	<p>Width of the step by which the set value will be reduced or increased by a long press.</p> <p>Only if "Change value by long press ?= YES"</p>


<b>Parameters</b>		
<b>Description</b>	<b>Values:</b>	<b>Comment:</b>
 <b>Input 1, Disable (HA)</b>		
Disable function (HA)	enabled <b>disabled</b>	The disable function can be enabled or disabled.
Disable object polarity (HA)	<b>disable = 1 (enable = 0)</b> disable = 0 (enable = 1)	This parameter defines the polarity of the disable object.
Response at the beginning of disabling (HA)	<b>No reaction</b>	This parameter defines the reaction taking place at the beginning of disable.  No reaction
	Reaction as with rising edge	The value parameterized for the rising edge will be transmitted.  Only if "Transmit value = on rising edge (push-button as n.o. contact)" and "Transmit value = on rising and falling edge (switch)".
	Reaction as with falling edge	The value parameterized for the falling edge will be transmitted.  Only if "Transmit value = on falling edge (push-button as n.c. contact)" and "Transmit value = on rising and falling edge (switch)".
	Transmit current input status	The current status of the inputs corresponding to the parameterization for rising and falling edge will be transmitted.  Only if "Transmit value = on rising and falling edge (switch)".
Response at the end of disabling (HA)	<b>No reaction</b>	This parameter defines the reaction taking place at the end of disable.  No reaction
	Reaction as with rising edge	The value parameterized for the rising edge will be transmitted.  Only if "Transmit value = on rising edge (push-button as n.o. contact)" and "Transmit value = on rising and falling edge (switch)".
	Reaction as with falling edge	The value parameterized for the falling edge will be transmitted.  Only if "Transmit value = on falling edge (push-button as n.c. contact)" and "Transmit value = on rising and falling edge (switch)".
	Transmit current input status	The current status of the inputs corresponding to the parameterization for rising and falling edge will be transmitted.  Only if "Transmit value = on rising and falling edge (switch)".


Value transmitter function = "Light scene extension without storage function"		
Transmit light scene number	<b>On rising edge (push-button as n.o. contact)</b> On falling edge (push-button as n.c. contact) On rising and falling edge (switch)	Defines the edge that triggers an action.
Light scene on rising edge (1...64)	1 to 64, 1	Defines the light scene transmitted on a rising edge.  Only if "Transmit light scene number = on rising edge (push-button as n.o. contact)" and "Transmit value = on rising and falling edge (switch)"
Light scene on falling edge (1...64)	1 to 64, 1	Defines the light scene transmitted on a falling edge.  Only if "Transmit light scene number = on falling edge (push-button as n.c. contact)" and "Transmit value = on rising and falling edge (switch)"
Response to bus voltage return	<b>No reaction</b>	Permits defining the reaction that is to take place after return of bus voltage. If a delay after return of bus voltage has been parameterized, this delay must have elapsed before the reaction defined will be executed.
	Reaction as with rising edge	No reaction
	Reaction as with falling edge	The value parameterized for the rising edge will be transmitted.  Only if "Transmit light scene number = on rising edge (push button as n.o. contact)" and "Transmit light scene number = on rising and falling edge (switch)"
	Transmit current input status	The light scene parameterized for the falling edge will be transmitted.  Only if "Transmit light scene number = on falling edge (push button as n.c. contact)" and "Transmit light scene number = on rising and falling edge (switch)"
		The current status of the inputs corresponding to the parameterization for rising and falling edge will be transmitted.  Only if "Transmit light scene number = on rising and falling edge (switch)"



<b>Parameters</b>		
<b>Description</b>	<b>Values:</b>	<b>Comment:</b>
 <b>Input 1, Disable (HA)</b>		
Disable function (HA)	enabled <b>disabled</b>	The disable function can be enabled or disabled.
Disable object polarity (HA)	<b>disable = 1 (enable = 0)</b> disable = 0 (enable = 1)	This parameter defines the polarity of the disable object.
Response at the beginning of disabling (HA)	<b>No reaction</b>	This parameter defines the reaction taking place at the beginning of disable.  No reaction
	Reaction as with rising edge	The value parameterized for the rising edge will be transmitted.  Only if "Transmit value = on rising edge (push-button as n.o. contact)" and "Transmit value = on rising and falling edge (switch)"
	Reaction as with falling edge	The value parameterized for the falling edge will be transmitted.  Only if "Transmit value = on falling edge (push-button as n.c. contact)" and "Transmit value = on rising and falling edge (switch)"
	Transmit current input status	The current status of the inputs corresponding to the parameterization for rising and falling edge will be transmitted.  Only if "Transmit value = on rising and falling edge (switch)".
Response at the end of disabling (HA)	<b>No reaction</b>	This parameter defines the reaction taking place at the end of disable.  No reaction
	Reaction as with rising edge	The value parameterized for the rising edge will be transmitted.  Only if "Transmit value = on rising edge (push-button as n.o. contact)" and "Transmit value = on rising and falling edge (switch)"
	Reaction as with falling edge	The value parameterized for the falling edge will be transmitted.  Only if "Transmit value = on falling edge (push-button as n.c. contact)" and "Transmit value = on rising and falling edge (switch)".
	Transmit current input status	The current status of the inputs corresponding to the parameterization for rising and falling edge will be transmitted.  Only if "Transmit value = on rising and falling edge (switch)".

Value transmitter function = "Light scene extension with storage function"		
Transmit light scene number	<b>On rising edge (push-button as n.o. contact)</b> On falling edge (push-button as n.c. contact)	Defines the edge that triggers an action.
Light scene on rising edge (1...64)	1 to 64, <b>1</b>	Defines the light scene transmitted on a rising edge.  Only if "Transmit light scene number = on rising edge (push button as n.o. contact)"
Light scene on falling edge (1...64)	1 to 64, <b>1</b>	Defines the light scene transmitted on a falling edge.  Only if "Transmit light scene number = on falling edge (push button as n.c. contact)"
Response to bus voltage return		Permits defining the reaction that is to take place after return of bus voltage. If a delay after return of bus voltage has been parameterized, this delay must have elapsed before the reaction defined will be executed.
	<b>No reaction</b>	No reaction
	Reaction as with rising edge	The light scene parameterized for the rising edge will be transmitted.  Only if "Transmit light scene number = on rising edge (push-button as n.o. contact)"
	Reaction as with falling edge	Defines the light scene transmitted on a falling edge.  Only if "Transmit light scene number = on falling edge (push-button as n.c. contact)"
Storage function only ?	YES <b>NO</b>	It is possible to send only a storage telegram without preceding light scene recall.
Time of a long press for storage Base	130 ms <sup>1)</sup> 260 ms <sup>2)</sup> <b>520 ms</b> <sup>3)</sup> 1 s <sup>4)</sup>	Time base for the time of a long press to transmit a storage telegram.  Only if "Storage function only? = NO"
Time of a long press for storage		Time = Base x Factor
Factor (24...127) <sup>1)</sup>	24 to 127, <b>38</b> <sup>1)</sup>	Time factor for the time of a long press to transmit a storage telegram  Only if "Storage function only? = NO"
Factor (13...127) <sup>2)</sup>	13 to 127, <b>19</b> <sup>2)</sup>	
Factor (9...127) <sup>3)</sup>	9 to 127, <b>10</b> <sup>3)</sup>	
Factor (4...127) <sup>4)</sup>	4 to 127, <b>5</b> <sup>4)</sup>	
		Time = Base x Factor
		Presetting: 520 ms x 10 = 5.2 s
		Important: The factor range depends on the selected base. Therefore, only times > 3 s can be parameterized.

Parameters		
Description	Values:	Comment:
 Input 1, Disable (HA)		
Disable function (HA)	enabled <b>disabled</b>	The disable function can be enabled or disabled.
Disable object polarity (HA)	<b>disable = 1 (enable = 0)</b> disable = 0 (enable = 1)	This parameter defines the polarity of the disable object.
Response at the beginning of disabling (HA)	<b>No reaction</b>	No reaction
	Reaction as with rising edge	The value parameterized for the rising edge will be transmitted.  Only if "Transmit value = on rising edge (push-button as n.o. contact)"
	Reaction as with falling edge	The value parameterized for the falling edge will be transmitted.  Only if "Transmit value = on falling edge (push-button as n.c. contact)"
Response at the end of disabling (HA)	<b>No reaction</b>	No reaction
	Reaction as with rising edge	The value parameterized for the rising edge will be transmitted.  Only if "Transmit value = on rising edge (push-button as n.o. contact)"
	Reaction as with falling edge	The value parameterized for the falling edge will be transmitted  Only if "Transmit value = on falling edge (push-button as n.c. contact)"

Parameters		
Description	Values:	Comment:
 Input 2 see input 1		

Software information
To permit editing of all parameters, access in the ETS must be set to "High access" (HA).