



# **KAA-8R/KAA-8R-S Universal Actuator Instruction manual**

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## 1. Overview

### 1.1 Overview devices

The manual refers to the following devices: (Order Code respectively printed in bold type):

- **KAA-8R-10/KAA-8R-10S** Universal Actuator 8-fold, 230V AC, 10A.
  - ⊙ 4 Channels for shutter motors up to 600W, Manual control or 8 Channels for switching outputs for ohmic loads up to 2300W.
  - ⊙ Any supposable mixed form of switching outputs and shutter output possible.
  - ⊙ Build-in with KNX secure function(Only for KAA-8R-10S).
- **KAA-8R/KAA-8R-S** Universal Actuator 8-fold, 230V AC, 16A.
  - ⊙ 4 Channels for shutter motors up to 600W, Manual control or 8 Channels for switching outputs for ohmic loads up to 3680W.
  - ⊙ Any supposable mixed form of switching outputs and shutter output possible.
  - ⊙ Build-in with KNX secure function(Only for KAA-8R-S).

### 1.2 Usage & possible applications

The universal actuator has its field of applications always if you ask flexibility. It can be parameterized as well as an adequate switching actuator.

Further, there is the possibility of embedding the channel into automatic blocks and activate different scenes. At activation of the automatic function, absolute position can be approached via 1 Bit object. This function is e.g. very suitable for the start-up of sunblind positions, which are called via a brightness sensor. Additional weather alarms are parameterize able, which can call determined functions at the universal actuator.

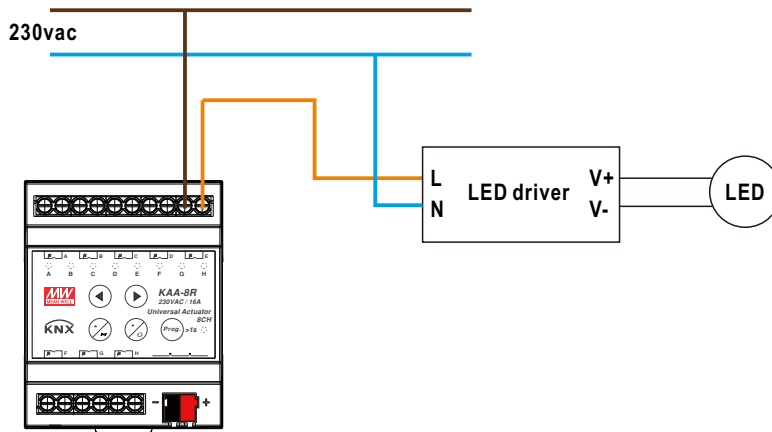
Additional a manual control of the shutter/blinds can be switched on or off.

Parameterized as switching actuator, the settings switching output and staircase are available. At the configuration switch, all settings are available which are necessary for a comprehensive parameterization. As well On-/Off-delay, normally opened mode or normally closed mode, cyclic sending, central function, logical functions as scene function are adjustable. Additional the reset behavior and the blocking behavior can be set.

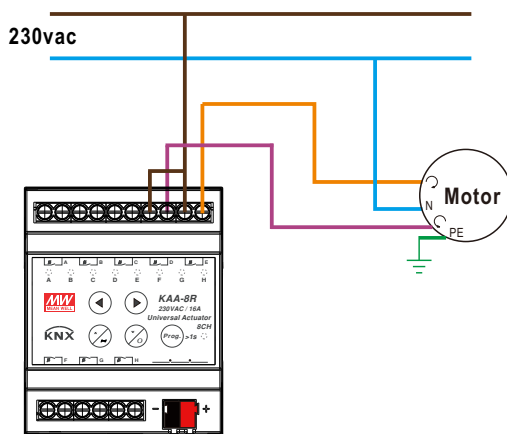
Via the staircase function an automatic switch off after a determined time can be adjusted.

### 1.3 Exemplary applications

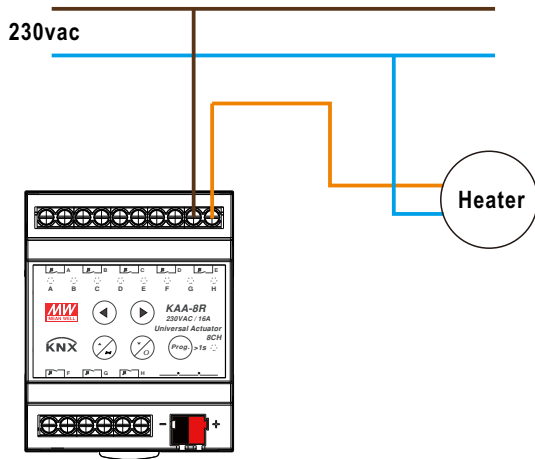
#### Application 1: Work with non-dimmable driver



#### Application 2: Work with shutter/blind control



### Application 3: work with Heater



#### 1.4 Structure & Handling

The universal actuator (KAA-8) contains of a programming button as well as a programming-LED, which shows a activated programming button. The universal actuator works with 230V AC. Every channel of the MRDC device contains of a status-LEDs. The status-LEDs show an active run-up or an active run-down command.

With the buttons left/right you can chose the channel and with the buttons up/down you can move the channel down or up. The following illustration shows a 8-fold universal actuator:

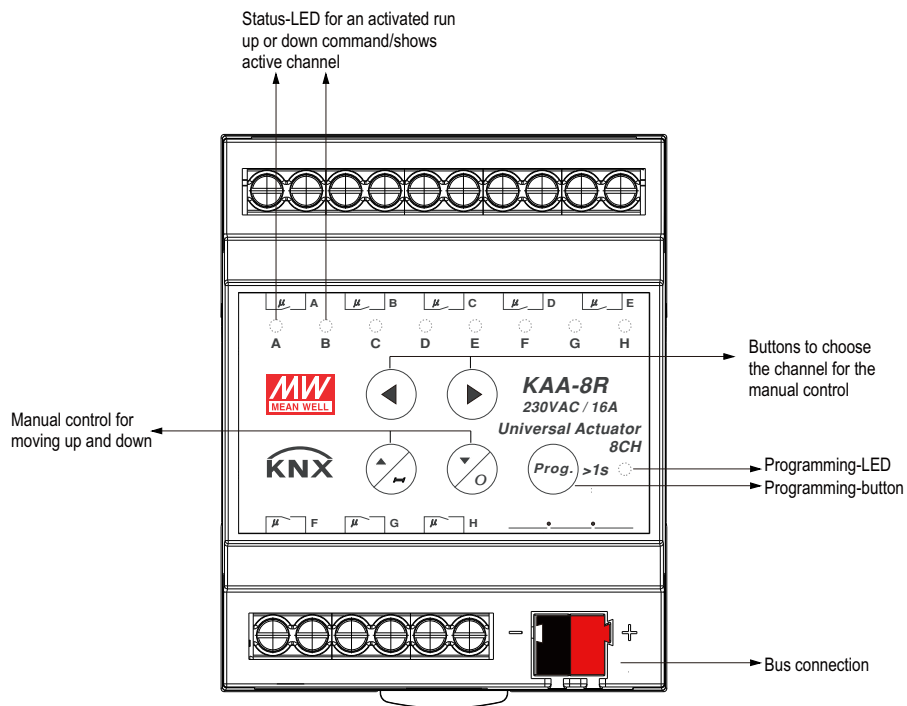


Illustration 5: Overview hardware module (KAA-8R)

## 1.5 Wiring

- Use wires with an adequate cross-section.
- Use suitable mounting tools to do the wiring and mounting.
- The maximum number of bus devices connected is 256.
- The maximum length of a line segment is 350 m, measured along the line between the power supply and the furthest bus device.
- The maximum distance between two bus devices cannot exceed 700 m.
- The maximum length of a bus line is 1000 m, keeping into account all segments.

Type	Relay terminals (A, B, C, D, E, F, G, H)	KNX bus terminal (BUS±)
<b>Solid wire</b>	0.5 ~ 4.0mm <sup>2</sup>	0.6 ~ 0.8Φ
<b>Stranded wire</b>	0.5 ~ 2.5mm <sup>2</sup>	-----
<b>American wire gauge</b>	12 ~ 26AWG	20 ~ 22AWG
<b>Wire stripping length</b>	8mm (0.315")	5mm (0.196")
<b>Screwdriver</b>	4mm Slotted	-----
<b>Recommended tightening torque</b>	5 kgf-cm (4.4 lb-in)	-----

## 1.6 Functions

The functionality is the same for all channels. Depending on the hardware module the device contains of up to eight channels. At the first step, every channel can be selected as not active, Switch/Staircase/switch impulse, heating control with PWM

### • not active

The channel becomes no more functions allocated. There are no more opportunities to parameterize the channel.

### • Switch, Staircase, switch impulse, heating control with PWM

Every channel of the pair of channels can be selected individually as switch or staircase, switch impulse...etc. at the next step.

If the channel is selected as switch, different switching actions can be parameterized. Additional actions, like logic functions and scene functions, can be parameterized.

If the channel is selected as staircase, a staircase function, which causes an automatic cutout after an adjusted time, can be parameterized. Additional settings for the adjustment of the staircase function are available. Like switch, staircase function, you can find corresponding setting when selecting "switch impulse" or "heating control with PWM". Please find detail information in Later chapter.

### • Blinds, Shutter

Afterwards the pair of channels A/B to O/P or rather G/H can be divided into shutter or blinds. In principle the functions for shutter and blinds are the same. But there is no movement for slats at the shutter configuration.

If a channel is selected as shutter/blinds, the user has different possibilities to parameterize the movement of a shutter or blinds. By different settings for the travel time, the actuator can be adapted to every kind of shutter/blinds. Furthermore you can adjust a pause at change of direction and a switch on delay or a switch off delay for the motor. Also you can restrict the driving area or move the shutter by giving absolutely driving commands. By using scene or automatic functions you can select more shutters with only one driving command. There are also preferences for weather alarms.

### 1.6.1 Overview at general setting and functions

	Parameter	Descriptions
General settings	Channel selection	<ul style="list-style-type: none"> <li>• not active</li> <li>• switch, stair case</li> <li>• blinds, shutter</li> </ul>
	Startup Timeout	After the device is powered on, the delay of relay closed/separated.
	Manual Operation	Whether to allow manual operation from device front panel
	Eco Mode, switch LED's off after	Eco mode
	send "operation" cyclic (0=not active)	Use to periodically report device status

Chart 1: Overview general setting and functions

### 1.6.2 Overview functions at the switch/staircase mode/switch impulse/heating control with PWM

Group of functions	Functions
Group addresses	number of objects/connections=dynamic (freely assignable of the user)
Reset behavior	behavior at bus power breakdown
	behavior at bus power up
	startup timeout
Relay mode	normally closed/ normally opened
Switch functions	switching
	central switching function
Time functions	on-delay
	off-delay
Staircase light functions	time for staircase
	pre-warning (with adjustable warning and pre-warning time)
	manual off
	Extend time on/off
Forced control /priority functions	locking function
	logic functions (AND/ OR)
Scenes	scene function for up to 8 scenes per channel
State functions	feedback function
Switch impulse functions	Impulse time
	locking function
Heating control with PWM	PWM function
	Emergency mode

Chart 2: Overview functions for switch, staircase mode

### 1.6.3 Overview function at the blinds, shutter

<b>General settings</b>	Channel selection	<ul style="list-style-type: none"> <li>• not active</li> <li>• shutter</li> <li>• blinds</li> </ul>
<b>Blind functions</b>	Moving times	<ul style="list-style-type: none"> <li>• time for movement</li> <li>• different times for up and down</li> <li>• step time for blinds</li> <li>• duration of blinds adjustment</li> <li>• pause at change direction</li> <li>• switch on and switch off delay motor</li> <li>• positions of blinds at end of driving</li> </ul>
<b>Shutter functions</b>	Moving times	<ul style="list-style-type: none"> <li>• time for movement</li> <li>• different times for up and down</li> <li>• short time operation</li> <li>• pause at change direction</li> <li>• switch on and switch off delay motor</li> </ul>
<b>Shutter &amp; Blind functions</b>	Objects for absolute position	<ul style="list-style-type: none"> <li>• active/not active</li> <li>• driving to reference</li> <li>• reaction after driving to reference</li> </ul>
	Position start up via 1 Bit object	<ul style="list-style-type: none"> <li>• move to 0-100% via 1 bit-object</li> <li>• conditions for driving adjustable</li> <li>• action for abolishment adjustable</li> </ul>
	Central objects	<ul style="list-style-type: none"> <li>• reaction of the central objects for every channel activated/deactivated</li> </ul>
	Scenes	<ul style="list-style-type: none"> <li>• for every channel activated/deactivated</li> </ul>
	Automatic functions	<ul style="list-style-type: none"> <li>• for every channel activated/deactivated</li> </ul>

<b>Scene functions</b>		<ul style="list-style-type: none"> <li>• every channel can react on up to eight scenes with absolute driving command</li> <li>• adjustable scene numbers</li> </ul>
<b>Alarm functions</b>	Order of alarms	<ul style="list-style-type: none"> <li>• adjustment of the alarm priority</li> </ul>
	Action of reset of alarms	<ul style="list-style-type: none"> <li>• no action</li> <li>• drive to former position</li> <li>• drive to bottom/top</li> </ul>
	Wind alert/ rain alert/frost alert	<ul style="list-style-type: none"> <li>• active/not active</li> <li>• cycle time</li> <li>• reaction on alert</li> </ul>
<b>Block functions</b>	Blocking	<ul style="list-style-type: none"> <li>• separate activated</li> <li>• action for activating &amp; deactivating separate parameterize able</li> </ul>
	Blocking absolute position	<ul style="list-style-type: none"> <li>• separate activated</li> </ul>
	Block universal mode	<ul style="list-style-type: none"> <li>• separate activated</li> <li>• free parameterize able</li> <li>• different block functions adjustable</li> </ul>

### 1.7 Settings at the ETS-Software

Selection at the product database:

Manufacturer: MEANWELL Enterprises Co. Ltd

Product family: Output

Product type: Universal actuator

Product name: addicted to the used type, e.g.: KAA-8R universal actuator 8-fold, 16A

Order number: addicted to the used type, e.g.: KAA-8R

### 1.8 Starting up

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

- (1) Connect the interface with the bus, e.g. MEANWELL USB interface KSI-01U
- (2) Switching the power supply
- (3) Set bus power up
- (4) Press the programming button at the device (red programming LED lights)
- (5) Loading of the physical address out of the ETS-Software by using the interface (red LED goes out, as well this process was completed successful)
- (6) Loading of the application, with requested parameterization
- (7) If the device is enabled you can test the requested functions (also possible by using the ETS-Software)



## 2. KNX Data Secure

KNX Data Secure is supported in ETS5 from version 5.5.0. KNX Data Secure signs and encrypts the communication telegram therefore the KNX Data Secure devices are protected against unauthorized access.

In the ETS Catalog, the KNX Secure products can be clearly recognized by the Secure icon:

  KAA-8R-10S Universal Actuator, 8-fold, 10A, MDRC

  KAA-8R-S Universal Actuator, 8-fold, 16A, MDRC

As soon as a "KNX-Secure" device is included in the project, the ETS requests a project password. If no password is entered, the device is without activation of secure mode. However, the password can also be set or changed later in the project overview.

### 2.1 Start-up with KNX Data Secure

For secure communication, the FDSK (Factory Device Setup Key) is required. If a KNX product supports "KNX Data Secure", the ETS requires the input of the FDSK. This device-specific key is printed on the device label and can either be entered by keyboard or read by using a code scanner or the camera from a PC or laptop.

Example of FDSK on device label:

# MEAN WELL

AFRO04-HWZ3JO  
K4YDZN-WTILLR  
4OBU7Y-3IVXYR



0162E770F6CE


After entering the FDSK, the ETS generates a device-specific tool key. The ETS sends the tool key to the device to be configured via the bus. The transmission is encrypted and authenticated with the original and previously entered FDSK key.

The device only accepts the tool key for further communication with the ETS. The FDSK key is no longer for further communication used, unless the device is reset to the factory setting. In this case, all set safety-related data will be deleted.

The ETS generates as many runtime keys as needed for the group communication you want to protect. The ETS sends the runtime keys to the device to be configured via the bus. Transmission takes place by encrypting and authenticating them via the tool key. The FDSK is saved in the project and can be viewed in the project overview.

Also, all keys of this project can be exported (backup).

During project planning, it can be defined subsequently which functions/ objects are to communicate securely. All objects with encrypted communication are identified by the "Secure" icon in the ETS.

The icon is: 

## 2.2 Start-up without KNX Data Secure

Alternatively, the device can also be put into operation without KNX Data Secure. In this case, the device is unsecured and behaves like any other KNX device without KNX Data Secure function.

To start up the device without KNX Data Secure, select the device in the 'Topology' or 'Devices' section and then set the 'Secure start up' option in the 'Properties' area of the 'Settings' tab to 'Disabled'.

Properties

Settings Comments Information

Name  
KAA-8R-S Universal Actuator, 8-fold, 16A, MDRC

Individual Address  
1.1 . 1 Park

Description

Last Modified 2021/10/20 15:10  
Last Downloaded 2021/10/18 17:30  
Serial Number 0162:7BF53A59

Secure Commissioning  
Deactivated  
Activated  
Deactivated ✓

## 2.3 Products That Support KNX Data Secure

- KAA-8R-S
- KAA-8R-10S

## 3. Communication Objects

### 3.1 Global communication objects

The central communication objects are standardly shown. They contain as well the communication objects, which are only valid for corresponding functions.

### 3.2 Default settings of the central communication objects

The following chart shows the default settings of the global communication objects:

Default settings								
Nr.	Object Function	Length	Priority	C	R	W	T	U
1	Manual Control	1 Bit	Low	X		X		
2	Switch On/Off	1 Bit	Low	X		X		
3	Operation	1 Bit	Low	X	X			
4	Shutter up/down	1 Bit	Low	X		X		
5	Slats adjustment/ stop	1 Bit	Low	X		X		
6	Stop	1 Bit	Low	X		X		
7	Absolute position	1 Bit	Low	X		X		
8	Absolute position of slats	1 Bit	Low	X		X		

Chart 3: Overview functions for blinds, shutter

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

### 3.3 Default settings of the communication objects for each functions

The following chart shows the default settings of the communication objects, if the pair of channels is selected as shutter/blinds:

Default settings										
Nr.	Name	Object Function	Length	Priority	C	R	W	T	U	
17	Channel A	Switch On/Off	1 Bit	Low	X		X			
18	Channel A	Lock	1 Bit	Low	X		X			
19	Channel A	State	1 Bit	Low	X	X		X		
20	Channel A	Inverted State	1 Bit	Low	X	X		X		
21	Channel A	Forced Control	2 Bit	Low	X		X			
		Priority ON/ Priority OFF	1 Bit	Low	X		X			
22	Channel A	Scene\scene number	1 Byte	Low	X		X			
		Scene\scene control	1 Byte	Low	X		X			
23	Channel A	Logic1	1 Bit	Low	X		X			
24	Channel A	Logic2	1 Bit	Low	X		X			
25	Channel A	Threshold switch\percentage	1 Byte	Low	X		X			
		Threshold switch\ratio	1 Byte	Low	X		X			
		Threshold switch\pulses	2 Byte	Low	X		X			
		Threshold switch\temperatur	2 Byte	Low	X		X			
		Threshold switch\lux	2 Byte	Low	X		X			
26	Channel A	Service required	1 Bit	Low	X	X		X		
27	Channel A	Response operating hours\ time lag(s)	4 Byte	Low	X	X		X		
		Response operating hours \time(h)	2 Byte	Low	X	X		X		
		Time to next service\ time lag(s)	4 Byte	Low	X	X		X		
		Time to next service\ time(h)	2 Byte	Low	X	X		X		
28	Channel A	Reset Operation hours	1 Bit	Low	X		X			
		Reset Service	1 Bit	Low	X		X			

Default settings									
Nr.	Name	Object Function	Length	Priority	C	R	W	T	U
29	Channel A	Staircase light	1 Bit	Low	X		X		
30	Channel A	Staircase light with time	1 Byte	Low	X		X		
31	Channel A	Prewarning	1 Bit	Low	X		X		
32	Channel A	Switch impulse	1 Bit	Low	X		X		
33	Channel A	State Emergency Mode	1 Bit	Low	X	X		X	
34	Channel A	Control Value	1 Byte	Low	X		X		
<b>+18</b>	<b>next pair of channels</b>								

Chart 4: Default settings of the communication objects for each functions

#### 4. Reference ETS-Parameter – Switch for different application

##### 4.1 General setting

The following illustration shows the menu of General setting.

The blocks I and II can be activated or deactivated separately. If an automatic block gets activated, the according communication objects appear. There are four communication objects for every block, respectively one for every automatic function.

The communication objects are shown at the following chart:

Number	Function area	Name	Length	Usage
9	Automatic Block I	automatic position 1	1 Bit	Call of the first automatic position at block I
10	Automatic Block I	automatic position 2	1 Bit	Call of the second automatic position at block I
11	Automatic Block I	automatic position 3	1 Bit	Call of the third automatic position at block I
12	Automatic Block I	automatic position 4	1 Bit	Call of the fourth automatic position at block I
13	Automatic Block II	automatic position 1	1 Bit	Call of the first automatic position at block II
14	Automatic Block II	automatic position 2	1 Bit	Call of the second automatic position at block II
15	Automatic Block II	automatic position 3	1 Bit	Call of the third automatic position at block II
16	Automatic Block II	automatic position 4	1 Bit	Call of the fourth automatic position at block II

Parameter	Dynamic range [Default value]	Description
Startup Timeout	2 ~ 60s [2s]	After the device is powered on, the delay of relay closed/separated. The manual operation allows the relay to be normally controlled during the delay wait. If there is Object Communication, it will be recorded first and will not respond. The delay ends and the corresponding action is executed.
Manual Operation	<ul style="list-style-type: none"> <li>• active</li> <li>• disable</li> <li>• lockable over object</li> </ul>	Whether to allow manual operation from device front panel. Lockable over object: Means to enable or disable the Manual Operation from device front panel via this object.
Eco Mode, switch LED's off after	<ul style="list-style-type: none"> <li>• not active</li> <li>• 30S · 1min · 2min · 5min</li> <li>• 10min · 20min · 30min</li> <li>• 40min · 50min · 60min</li> </ul>	Power saving mode. After the set time delay, turn off the LED on the panel.
send "Operation" cyclic (0=not active)	0~30000min [0s]	Use to periodically report device status. It is independent Operation Object

#### 4.2 Channel selection

To operate the universal actuator as switching actuator, at first the each channel, e.g. Channel A, must be selected as "switching", "staircase light", "Switch impulse"...etc. At the next step, for each channel can be selected if the channel shall operate as switch for different application.

The following illustration shows the submenu channel selection:

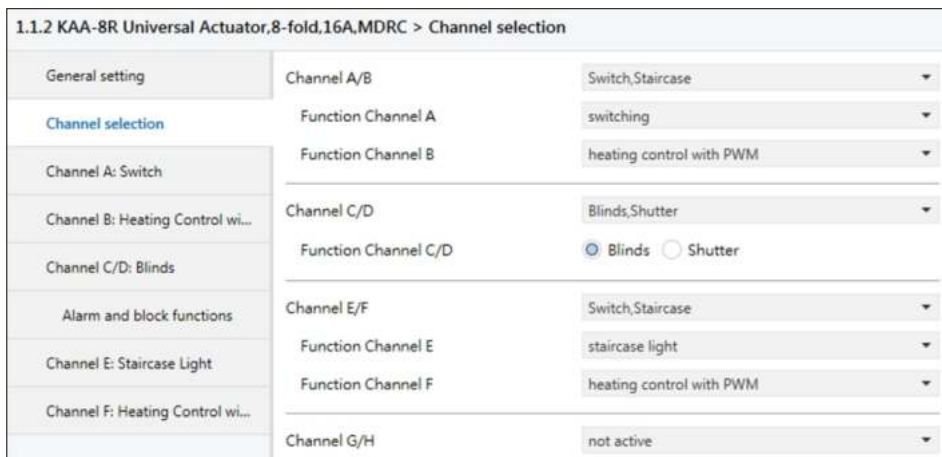


Illustration 6: Channel selection

The following chart shows the available settings for the channel selection:

ETS-text	Dynamic range [default value]	comment
Channel A	<ul style="list-style-type: none"> <li>• not active</li> <li>• Switch, staircase</li> <li>• Blinds, Shutter</li> </ul>	Selection, if a pair of channels shall operate as switching actuator or as shutter actuator. Not active deactivates the pair of channels.
Channel A	<ul style="list-style-type: none"> <li>• not active</li> <li>• switching</li> <li>• staircase light</li> <li>• switch impulse</li> <li>• heating control with PWM</li> </ul>	At the switching/staircase light/switch impulse mode/heating control with PWM. These settings are available.
•		
•		
Channel H		
Channel A/B	<ul style="list-style-type: none"> <li>• Blinds</li> <li>• Shutter</li> </ul>	At the Blinds/Shutter mode, Blinds or Shutter are selectable
•		
•		
Channel G/H		

Chart 6: Available settings channel selection for switch/staircase

Each channel can operate as switch.

At the chapter 3.4, the switching actuator mode is described. Each channel can be parameterized as well as switching output or as its described function

## 5.Switch, Staircase

The following parameters, which are described at the headings 5.3.x, are only available at channels selected as switch.

### 5.1 Overview

By choosing a channel as switch, a sub menu, called Channel A Switching, appears for this channel at the left drop down menu. The sub menu is shown at the following illustration:

#### fold,16A,MDRC > Channel A: Switch

Output mode	<input checked="" type="radio"/> normally open <input type="radio"/> normally closed
On delay	<input type="text" value="0"/> s
Off delay	<input type="text" value="0"/> s
Central function	<input checked="" type="radio"/> not active <input type="radio"/> active
Send state	<input type="text" value="at change"/>
Send state cyclic(0=not active)	<input type="text" value="0"/> s
Additional inverted state	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Behavior at locking	<input type="text" value="no change"/>
Behavior at unlocking	<input type="text" value="no change"/>
Priority/Forced control	<input type="text" value="not active"/>
Behavior after bus power up	<input type="text" value="no change"/>
Behavior after bus power down	<input type="text" value="no change"/>
<hr/>	
Logic function	<input checked="" type="radio"/> not active <input type="radio"/> active
Scenes	<input checked="" type="radio"/> not active <input type="radio"/> active
Threshold switch	<input checked="" type="radio"/> not active <input type="radio"/> active
Operation hours counter	<input checked="" type="radio"/> not active <input type="radio"/> active

Illustration 28: Switching output

The chart shows the possible settings for switching outputs:

ETS-text	Dynamic range [default value]	comment
Output mode	<ul style="list-style-type: none"> <li>• <b>normally opened</b></li> <li>• normally closed</li> </ul>	Operation mode of the channel
On-Delay	0...30000 sec <b>[0=no delay]</b>	Switch on delay of the channel in seconds
Off-Delay	0...30000 sec <b>[0=no delay]</b>	Switch off delay of the channel in seconds
Central function	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Activates the central function for this channel
Send state	<ul style="list-style-type: none"> <li>• <b>no send, passive state object</b></li> <li>• <b>at change</b></li> <li>• at change and lock</li> <li>• always at input of telegram</li> </ul>	<p>Set whether to send the telegram of "Status"</p> <p>No send, passive state object: do not send</p> <p>At change: sent when the current output status changes</p> <p>At change and lock: sent when the current state changes or during the lock state</p> <p>Note1: When the channel is locked, if the locking/unlocking behavior is set to no change, the locking/unlocking will not send the "State" because the status will not change; but if the switch telegram is sent during the locking period, Upload the current actual "State" (although the output status has not changed)</p> <p>Note2: During the channel locking =&gt;unlocking if there is no change on output state , "State" is not uploaded; if there is a state change, "State" needs to be uploaded.</p> <p>Note3: During the channel unlocking=&gt;locking, if if there is no change on output state, "State" is not uploaded; if there is a state change, "State" needs to be uploaded.</p> <p>Always at input of telegram: As long as the message of the "Switch" type is received, it will be sent regardless of the output status, even if it is in the locking state.</p>
Send state cyclic · (0=not active)	0~30000s	Set whether to send "State" telegram periodically.
	Additional inverted state <ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	<p>If the Additional inverted state is activated, the "Inverted State" message is sent.</p> <p>This activation will add an "Inverted State" Object that coexists with the "State" Object.</p> <p>Not active, "Inverted State" Object does not appear.</p>
Behavior at locking	<ul style="list-style-type: none"> <li>• Off</li> <li>• On</li> <li>• <b>no change</b></li> </ul>	<p>Action for activating the locking process.</p> <p>Note: Locking has the highest priority</p>

ETS-text	Dynamic range [default value]	comment
Behavior at unlocking	<ul style="list-style-type: none"> <li>• Off</li> <li>• On</li> <li>• <b>no change</b></li> <li>• previous state, catch up on switching</li> <li>• previous state</li> </ul>	Action for deactivating the unlocking process
Priority/Forced control	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• 2 Bit force control</li> <li>• 1 Bit Priority on</li> <li>• 1 Bit Priority off</li> </ul>	Priority control Not active: not active 2 bit force control: 00/01 No Control, "10"-priority, Off; "11"-priority, On 1 bit Priority On: "1" - enabled; "0" - released 1 bit Priority Off: "1" - enabled; "0" - released
	Release time for forced control ( <b>0=not active</b> ): 0-600min	0: indicates that the forced control is always valid unless an Object message is received to release the command; 1-600min: Forced control maintains the setting range of time. When time is up, the forced control is automatically released.
	Behavior after forced control: <ul style="list-style-type: none"> <li>• Off</li> <li>• On</li> <li>• <b>no change</b></li> <li>• previous state, catch up on switching</li> <li>• previous state</li> </ul>	Previous state, catch up on Switching: If the actuator receives "Switch" type telegram during the forced control, it will record it. After forced control remove, the corresponding action will be performed on the output channel according to the latest set of "Switch" type telegram values received previously.  Previous state: After the forced control ends, the relay output channel will restore the state value before the forced control.
Behavior after bus power up	<ul style="list-style-type: none"> <li>• <b>no change</b></li> <li>• off</li> <li>• on</li> </ul>	Action for a bus power return. If the actuator receives "Switch" type telegram during waiting the power up. After the bus power up, the value of the Switch type telegram is used and the bus power up setting is ignored.
Behavior after bus power down	<ul style="list-style-type: none"> <li>• <b>no change</b></li> <li>• off</li> <li>• on</li> </ul>	Action for a bus power breakdown
Logic function	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Whether the logic function is enabled or not
Scenes	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Whether the scene function is enabled or not
Threshold switch	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Whether the threshold control function is enabled or not
Operation hours counter	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Whether the operation time statistics function is enabled or not

Chart 38: Switching output

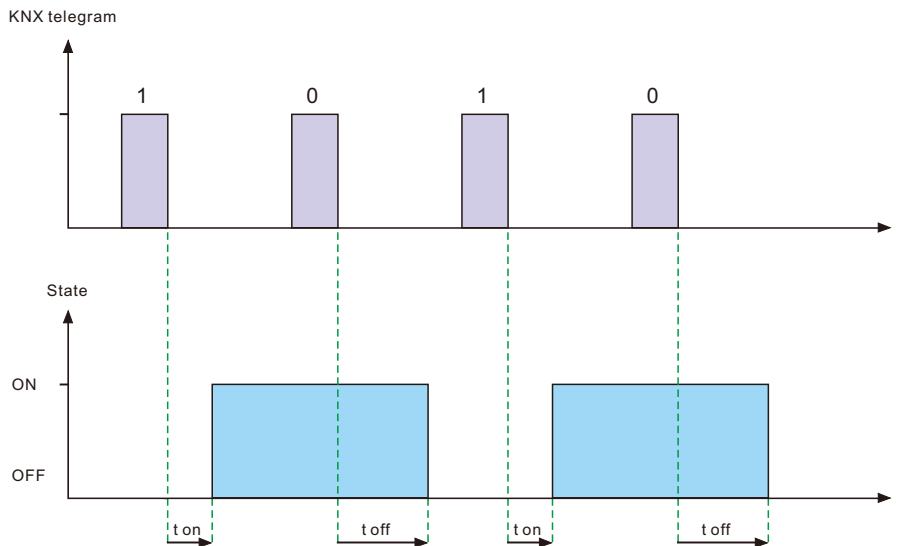
## 5.2 On/Off delay

On delay	<input type="text" value="0"/>	s
Off delay	<input type="text" value="0"/>	s

The following illustration shows the setting options at the ETS-Software:



The on-delay causes a delayed switch of the channel. At sending an on-signal to the channel, first the adjusted on delay time expires and afterwards the channel will be switched on.  
 The off delay works on the same principle. At sending an off-signal, first the adjusted off delay time expires and afterwards the channel will be switched off.  
 Both functions work as well alone as combined. By adjusting "0 seconds" for a delay the function is switched off.  
 The following diagram describes the combination of on and off delay:



### 5.3 Logic function

The following illustration shows the setting options at the ETS-Software:

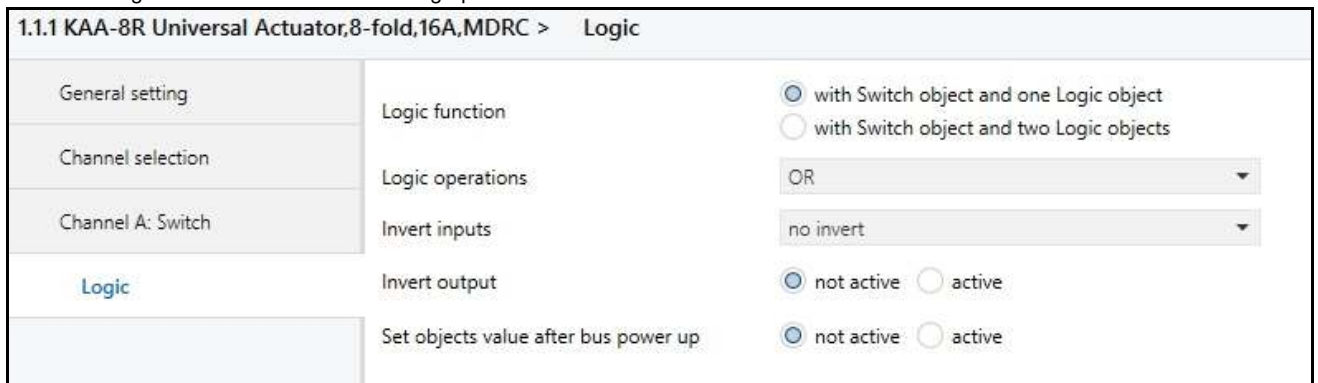


Illustration 30: Logic function

The logic function can be activated with one or two objects. The objects are the inputs of the logic block. Furthermore you can choose between an AND-function and an OR-function.

When you have activated the logic function, the logic block has to be satisfied before switching the channel. As long as the logic function is not satisfied, the channel does not react to any signal.

The chart shows the possible settings for Logic function:

ETS-text	Dynamic range [default value]	Comment
Logic function	<ul style="list-style-type: none"> <li>• <b>with Switch object and one Logic object</b></li> <li>• with Switch object and two Logic objects</li> </ul>	<p><b>With Switch object and one Logic object</b></p> <p>The calculated result of the switch object and logic1 object as the executing value of the output channel.</p> <p><b>With Switch object and two Logic object</b></p> <p>The calculated result of the switch object and logic1,logic2 object as the executing value of the output channel.</p> <p>Note: The Switch object mentioned here is not limited to the "Switch On/Off" Object. It is also included for the Switch brought by Object such as "Scene" and "Threshold switch".</p>
Logic operations	<ul style="list-style-type: none"> <li>• <b>OR</b></li> <li>• AND</li> <li>• XOR</li> <li>• gate opened with Logic object=0</li> <li>• gate opened with Logic object=1</li> </ul>	<p><b>OR</b> : At least one input is active (=1)</p> <p><b>AND</b> : All inputs are active (=1)</p> <p><b>XOR</b> : Only one input is active (=1)</p> <p>gate opened with Logic object=0 : The output can be switched via the switching object if all logic objects have the value 0</p> <p>gate opened with Logic object=1 : The output can be switched via the switching object if all logic objects have the value 1</p>
Invert inputs (with Switch object and one Logic object)	<ul style="list-style-type: none"> <li>• <b>no invert</b></li> <li>• invert object Switching</li> <li>• invert Logic object1</li> <li>• invert object Switching &amp; Logic object1</li> </ul>	<p>Whether to invert the input of the objects such as switch, logic1, etc. (in the case of one logic Object)</p> <p>Note: Invert object Switching is not only limited to the "Switch On/Off" Object. It also works on "Switch" brought by Objects such as "Scene" and "Threshold switch".</p>
Invert inputs: (with Switch object and two Logic object)	<ul style="list-style-type: none"> <li>• <b>no invert</b></li> <li>• invert object Switching</li> <li>• invert Logic object1</li> <li>• invert Logic object2</li> <li>• invert object Switching &amp; Logic object1</li> <li>• invert object Switching &amp; Logic object2</li> <li>• invert Logic object1 &amp; Logic object2</li> <li>• invert object Switching &amp; Logic object1 &amp; Logic object2</li> </ul>	<p>Whether to invert the input of the objects such as switch, logic1, logic2, etc. (in the case of two Logic Objects)</p>
Invert output	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	<p>Whether to invert the calculated results of the output</p>
Set objects value after bus power up	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	<p>It is used to set the initial values of three objects: switch, Logic1, and logic2 after the actuator is powered on.</p> <ul style="list-style-type: none"> <li>• If the setting is not activated, the default value of the three objects is "0", and the Logic operation is not executed after power-on.</li> <li>• If the setting is activated, a Logic operation is executed and output after power-on.</li> </ul>

The following chart shows the relevant communication objects:

Number	Name	Length	Usage
23	Logic 1	1 Bit	Logic object 1, is the first input for the logic block
24	Logic 2	1 Bit	Logic object 2, is the second input for the logic block

Chart 39: Communication objects logic

According to the chosen logic operation only one or both objects have to become a 1-signal. The following chart shows the both logic operations with two objects:

AND-Connection			OR-Connection		
Logic 1	Logic 2	Channel switchable?	Logic 1	Logic 2	Channel switchable?
0	0	No	0	0	No
0	1	No	0	1	Yes
1	0	No	1	0	Yes
1	1	Yes	1	1	Yes

Chart 40: Logic operations

#### 5.4 Scene function

When functions of different groups (e.g. light, heating ) shall be changed simultaneously with only one keystroke, it is practical to use the scene function. By calling a scene, you can switch the lights to a specific value, drive the shutter to an absolute position, switch the heating to the day mode and switch the power supply of the sockets on. The telegrams of these functions can have as well different formats as different values with different meaning (e.g. "0" for switch the lights off and open the shutters). If there were no scene function, you would have to send a single telegram for every actuator to get the same function.

The scene function of the switch actuator enables you to connect the channels of the switch actuator to a scene control. For that, you have to assign the value to the appropriated space (scene A..H). It is possible to program up to 8 scenes per switching output. When you activate the scene function at the switching output, a new sub menu for the scenes appears at the left drop down menu. There are settings to activate single scenes, set values and scene numbers and switch the memory function on/off at this sub menu.

Scenes are activated by receiving their scene numbers at the communication object for the scenes. If the memory function of the scenes is activated, the current value of the channel will be saved at the called scene number.

The communication objects of the scenes have always the length of 1 byte.

The following illustration shows the setting options at the ETS-Software for activating the scene function:

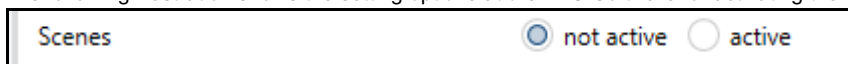


Illustration 31: Scene function

The following chart shows the relevant communication object:

Number	Name	Length	Usage
22	Scene	1 Byte	Call of the scene

Chart 41: Communication object scene

For calling a certain scene, you have to send the value for the scene to the communication object. The value of the scene number is always one number less than the adjusted scene number. For calling scene 1, you have to send a "0". The scene numbers have the numbers from 1 to 64, but the values for the scenes only from 0 to 63.

If you want to call scenes by a binary input or another KNX device, you have to set the same number at the calling device as at the receiving device. The calling device, e.g. a binary input, sends automatically the right value for calling the scene.

There are up to 8 storage options for scenes at every channel.

Learn scene  not active  active

---

Scene A  not active  active

Scene number

Behavior of scene

Scene B  not active  active

Scene C  not active  active

Scene D  not active  active

Scene E  not active  active

Scene F  not active  active

Scene G  not active  active

Scene H  not active  active

These 8 storage options can get any of the possible 64 scene numbers.

Illustration 32: Sub function scene

The chart shows the possible settings for scenes, which are identical for all channels. The settings are available at the sub menu for the scenes:

ETS-text	Dynamic range [default value]	Comment
Learn scene	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	not active : The Learn scene function is not enabled Object Value corresponds to DPT17.001 scene number. active : Enable the Learn scene feature. Object Value corresponds to DPT 18.001 scene control.
Scene A	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Whether to enable the setting of scene A
	<ul style="list-style-type: none"> <li>• Scene number : 1-64</li> <li>• Behavior of scene : <b>off / on / lock / unlock</b></li> </ul>	Note about the behavior of scene: Behavior of scene = unlock · When the corresponding Scene number is received, the channel is at lock state (locked by the lock object), then the Scene Object can release the lock state of the channel.
----		

ETS-text	Dynamic range [default value]	Comment
Scene H	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	<p>Whether to enable the setting of scene H.</p> <p>Supports up to 8 scene settings at every channel.</p>
	<ul style="list-style-type: none"> <li>• Scene number : 1-64</li> <li>• Behavior of scene : <b>off</b> / on / lock / unlock</li> </ul>	

### 5.5 Threshold switch

The following illustration shows the setting options at the ETS-Software:

Value setting	1Byte percent value (0-100%) ▼
Behavior of Channel at lower deviation	not active ▼
Behavior of Channel at exceedance	not active ▼

The chart shows all possible settings operation hours counter function:

ETS-text	Dynamic range [default value]	Comment
Value setting	<ul style="list-style-type: none"> <li>• <b>1 Byte percent value(0-100%)</b></li> <li>• 1 Byte value(0-255)</li> <li>• 2 Byte value(0-65500)</li> <li>• 2 Byte temperature value(-100-250°C)</li> <li>• 2 Byte brightness value(0-100000Lux)</li> </ul>	Threshold setting, 5 types of threshold
Behavior of Channel at lower deviation	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• off</li> <li>• on</li> </ul>	Behavior of Channel at lower threshold
	<p>Lower threshold&lt; :</p> <ul style="list-style-type: none"> <li>• 0-100%</li> <li>• 0-255</li> <li>• 0-65500</li> <li>• -100~250°C</li> <li>• 0-100000 Lux</li> </ul>	<p>Threshold setting: five threshold ranges correspond to the above five threshold types</p> <p>Threshold comparison: compare to the value sent by the "Threshold switch" Object.</p> <p>If the value sent by the "Threshold switch" Object is less than the threshold, the action set by "Behavior of Channel at lower deviation" is executed.</p>
Behavior of Channel at exceedance	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• off</li> <li>• on</li> </ul>	Behavior of Channel at higher threshold

ETS-text	Dynamic range [default value]	Comment
	Upper threshold> : <ul style="list-style-type: none"> <li>• 0-100%</li> <li>• 0-255</li> <li>• 0-65500</li> <li>• -100~250°C</li> <li>• 0-100000 Lux</li> </ul>	Threshold setting: five threshold ranges correspond to the above five threshold types  Threshold comparison: compare to the value sent by the "Threshold switch" Object.  If the value sent by the "Threshold switch" Object is less than the threshold, the action set by "Behavior of Channel at exceedance" is executed.

### 5.6 Operation hours counter function

The following illustration shows the setting options at the ETS-Software:

Type of operation hours counter  operation hours counter  
 reverse counter to the service

Select data type  4Byte value in s (DPT 13.100)  
 2Byte value in h (DPT 7.007)

Send status of operation hours every(0=not active)  h

Send operation hours smaller cyclic

The chart shows all possible settings operation hours counter function:

ETS-text	Dynamic range [default value]	Comment
Type of operation hours counter	<ul style="list-style-type: none"> <li>• <b>operation hours counter</b></li> <li>• reverse counter to the service</li> </ul>	There are 2 type of operation hours counter  <u>operation hours counter</u> : The operation hours counter counts up the operation hours when the relay is closed.  Note: After the output channel is set to the ON state, the counting operation time is started. When the output channel is turned OFF, the timing is paused, but the timing is not cleared. After the OFF state, although the timer is paused, the count value is still reported at regular intervals, which is equivalent to the same timer value for each report. °  <u>reverse counter to the service</u> : The reverse counter to service counts from the adjusted service interval to zero when the relay is closed and reports a service message at zero.  Note: During countdown, the countdown starts after the output channel is turned ON. When the output channel is turned OFF, the countdown is suspended. When the countdown reaches zero, a service telegram is generated. Please refer to the Database Object Description table.

ETS-text	Dynamic range [default value]	Comment
Select data type	<ul style="list-style-type: none"> <li>• 4Byte value in s(DPT13.100)</li> <li>• 2Byte value in h(DPT7.007)</li> </ul>	Set the data type of the uploaded telegram
operation hours counter	Send status of operation hours every (0=not active): 0 -10000 h	Upload "operation hours counter" counting value regularly in "hours" time units
	Send operation hours small cyclic: <ul style="list-style-type: none"> <li>• not active</li> <li>• 10min</li> <li>• 20min</li> <li>• 30min</li> </ul>	Upload operation hours counting value regularly in smaller time units
reverse counter to the service	Send status of Service hours every (0=not active) : 0-10000h	Upload the count down the remaining time value of "reverse counter to the service" regularly in "hours" time units
	Send service status at intervals: 0-60000h [0h]	Start value of Countdown

## 5.7 Staircase Light

The following parameters, which are described at the headings 4.5.x, are only available at channels selected as staircase.

### 5.7.1 Overview

By choosing a channel as staircase, a sub menu, called Channel A Staircase, appears for this channel at the left drop down menu.

The sub menu is shown at the following illustration:

Output mode	<input checked="" type="radio"/> normally open <input type="radio"/> normally closed
Additional switching object	<input checked="" type="radio"/> not active <input type="radio"/> active
Time of staircase light	120 s
Prewarning	not active
Manual switching off	<input checked="" type="radio"/> not active <input type="radio"/> active
Extend time staircase light	restart time
Time factor for object "Staircase light with time"	1 s
Central function	<input checked="" type="radio"/> not active <input type="radio"/> active
Send state	at change
Send state cyclic(0=not active)	0 s
Additional inverted state	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Behavior at locking	no change
Behavior at unlocking	<input checked="" type="radio"/> Off <input type="radio"/> start time of staircase light
Priority/Forced control	not active
Behavior after bus power up	State before bus power down
Behavior after bus power down	no change
<hr/>	
Scenes	<input checked="" type="radio"/> not active <input type="radio"/> active

Illustration 34: Staircase

The chart shows all possible settings for staircase outputs:

ETS-text	Dynamic range [default value]	Comment
Output mode	<ul style="list-style-type: none"> <li>• <b>normally open</b></li> <li>• normally closed</li> </ul>	Operation mode of the channel
Additional switching object	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	The Switch Object can controls the On/Off of the Channel and has no staircase time limit.
Time of staircase light	1-30000s [120s]	Duration of the switching process
Prewarning	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• Light on-off</li> <li>• prewarning object</li> <li>• Light on/off and prewarning object</li> </ul>	<p>Prewarning mode setting before the stair light is turned off</p> <p>Note: If set to "<b>prewarning object</b>" or <b>Light on/off and prewarning object</b>" "prewarning object" will send Value=1 after "Time of staircase light "ends. After the Prewarning is over, the "prewarning object" will send Value=0. Declare the end of a complete staircase light action.</p>
	<p>Light on-off</p> <p>Prewarning duration :0 - 30000s</p> <p>[1s]</p>	This parameter will be shown when Prewarning is set to the Light on-off and Light on/off and prewarning mode. When stair light operating time is end, it enters a short time to turn off the light. This parameter corresponds to: Light-Off time.
	<p>Light on-off</p> <p>Prewarning time : 0 - 30000s</p> <p>[10s]</p>	<p>This parameter will be shown when Prewarning is set to the <b>Light on-off</b> and <b>Light on/off and prewarning mode</b>.</p> <p>After the above Light-Off time is over, Light-On will be restarted. This parameter corresponds to: Light-On time. After the Light-On operating time is over, Output is OFF and the entire process ends.</p>
Manual switching off	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Activation of the manual turn off of the staircase
Extend time staircase light	<ul style="list-style-type: none"> <li>• no extend time</li> <li>• <b>restart time</b></li> <li>• add time</li> </ul>	<p>During the stair light operating time, the stair light is triggered again, the processing mode for time.</p> <p><b>No extend time:</b> no longer expands the time, it is equivalent to ignore the new trigger.</p> <p><b>Restart time:</b> restart counting time</p> <p><b>Add time:</b> superimpose the remaining Light On time to the new stair light on time.</p>
Time factor for object "Staircase light with time"	<ul style="list-style-type: none"> <li>• <b>1s</b></li> <li>• 10s</li> <li>• 1min</li> </ul>	The time value sent by the Object "Staircase light with time", the time unit corresponding to it. For example, if Object Value=10 and Time factor is set to "0s" it means that the lighting time of Staircase light is 10*10=100s.
Central function	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Set whether this channel is responsive to central function's unified control



ETS-text	Dynamic range [default value]	Comment
Send state	<ul style="list-style-type: none"> <li>• no send</li> <li>• <b>at change</b></li> <li>• at change and lock</li> <li>• always at input of telegram</li> </ul>	Set whether to send the telegram of "Status"  <b>no send</b> :  <b>at change</b> : Sent when the current output status changes  <b>at change and lock</b> : Sent when the current state changes or during lock  For related explanations, refer to the previous Switch mode.
Send state cyclic (0=not active)	0~30000s <b>[0s]</b>	Set whether to send "Status" telegram periodically.
	Additional inverted state: <ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	If the Additional inverted state is activated, the message "inverted state" is sent.
Behavior at locking	<ul style="list-style-type: none"> <li>• off</li> <li>• on</li> <li>• <b>no change</b></li> </ul>	Action for activating the blocking process.
Behavior at unlocking	<ul style="list-style-type: none"> <li>• <b>off</b></li> <li>• start time of staircase light</li> </ul>	Action for deactivating the blocking process
Priority/Forced control	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• 2 Bit force control</li> <li>• 1Bit priority On</li> <li>• 1Bit priority Off</li> </ul>	<b>2 bit force control</b> : 00/01 No Control , "10"priority , Off ; "11"-priority , On  1 bit Priority On : "1"enabled ; "0"removed 1 bit Priority Off : "1"enabled ; "0"removed  For related explanations, refer to the previous Switch mode.
	Release time for forced control <b>(0=not active):</b> 0-600min	<b>0</b> : indicates that the forced control is always valid unless an Object message is received to release the command;  <b>1-600min</b> : Forced control maintains the setting range of time. When the time is end, the forced control is automatically removed.  For related explanations, refer to the previous Switch mode.
	Behavior after forced control: <ul style="list-style-type: none"> <li>• <b>off</b></li> <li>• Start time of Staircase Light</li> </ul>	<b>OFF</b> : Output channel is set to OFF state  <b>Start time of Staircase Light</b> : After the forced control is over, the output channel will execute a complete Staircase Light process.

ETS-text	Dynamic range [default value]	Comment
Behavior after bus power up	<ul style="list-style-type: none"> <li>• off</li> <li>• start time of staircase light</li> <li>• <b>state before bus power down</b></li> </ul>	<p>bus power up, the actuator will execute the corresponding action type on the relay output channel Off : Output channel is set to OFF state</p> <p><b>start time of staircase light</b> : Start stair light output</p> <p><b>state before bus power down</b> : Restore the state before power down. If the staircase light output=ON state before power failure, the complete output flow of the staircase light will be executed after power-on; if the staircase light output=OFF state before power failure, the action will not be performed after power-on, only report it. State.</p>
Behavior after bus power down	<ul style="list-style-type: none"> <li>• off</li> <li>• on</li> <li>• <b>no change</b></li> </ul>	<p>If bus power down is detected, the actuator will perform the corresponding action on the relay output.</p>
Scenes	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	<p>Whether to activate the scene function.</p> <p>The scene function settings of Staircase Light are the same as those of Switch mode.</p> <p>The difference is:</p> <p>"On" \ "Off" in Behavior of Scene</p> <p>"On" means to start the Staircase Light process "Off" means to turn off the Staircase Light output (Manual switching off is required to be Active)</p>

### 5.7.2 Staircase time

The following illustration shows the setting options at the ETS-Software:

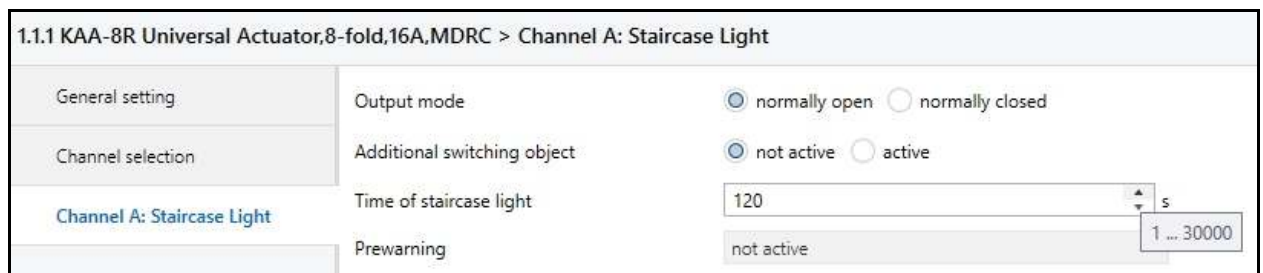


Illustration 35: Staircase time

The staircase function is activated by choosing a channel as staircase. This function enables an automatic turn off of the channel after an adjusted time, called "time for staircase". The time for staircase can be parameterized freely. By sending an "on-signal" at the communication object, the channel is switched on and the time runs out. After the time is ran out, the channel is switched off automatically. There are a lot of further functions to adjust the staircase function. These functions are described at the following segments.

The following chart shows the relevant communication object:

Number	Name	Length	Usage
29	Staircase light	1 Bit	Calling of the staircase function

Chart 45: Communication object staircase

### 5.7.3 Scenes (Staircase Light)

ETS-text	Dynamic range [default value]	Comment
Learn scene	<ul style="list-style-type: none"> <li>• not active</li> <li>• active</li> </ul>	<p><b>not active</b> : The Learn scene function is not enabled Object Value corresponds to DPT17.001 scene number.</p> <p><b>active</b> : Enable the Learn scene feature. Object Value corresponds to DPT 18.001 scene control.</p>
Scene A	<ul style="list-style-type: none"> <li>• not active</li> <li>• active</li> </ul>	Whether to enable the setting of scene A
	<ul style="list-style-type: none"> <li>• Scene number : 1-64</li> <li>• Behavior of scene : <b>off / on / lock / unlock</b></li> </ul>	<p>Note about the behavior of scene: Behavior of scene = unlock · When the corresponding Scene number is received, the channel is at lock state (locked by the lock object), then the Scene Object can release the lock state of the channel.</p> <p>Note: When Behavior of scene = ON, the function is to trigger the Staircase light to start. When the Behavior of scene = OFF, you need to set "Manual switching off" to Active to close the Staircase light process.</p>
-----		
Scene H	<ul style="list-style-type: none"> <li>• not active</li> <li>• active</li> </ul>	Whether to enable the setting of scene H. Supports up to 8 scene settings at every channel.
	<ul style="list-style-type: none"> <li>• Scene number : 1-64</li> <li>• Behavior of scene : <b>off / on / lock / unlock</b></li> </ul>	

### 5.8 Switch impulse

The following illustration shows the setting options at the ETS-Software:

Output mode  normally open  normally closed

Impulse time

Repeat impulse signal once  not active  active

Behavior at locking  Off  no change

Behavior at unlocking  Off  switch impulse

There are some functions to adjust the Switch impulse function. These functions are described at the following segments.

ETS-text	Dynamic range [default value]	Comment
Output mode	<ul style="list-style-type: none"> <li>• <b>normally open</b></li> <li>• normally closed</li> </ul>	<p><b>Normally open</b> : relay contact is normally open. Impulse is relay contact closure</p> <p><b>Normally closed</b> : relay contact is normally closed. Impulse is relay contact open</p>
Impulse time	<ul style="list-style-type: none"> <li>• 300ms • 400ms • <b>500ms</b></li> <li>• 750ms • 1s • 1.5s • 2s • 3s</li> <li>• 5s • 7.5s • 10s • 15s • 20s</li> <li>• 25s • 30s</li> </ul>	<p>Impulse pulse width, it means the time of the relay contacts are closed (or separated)</p> <p>If the output mode set as normally open, this time is the relay contact closure time.</p> <p>If the output mode set as normally closed, this time is the relay contact separation time.</p>
Repeat impulse signal once	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Set whether to activate the function of repeat impulse signal output once.
	<p>Time to the next impulse:</p> <ul style="list-style-type: none"> <li>• <b>0.5s</b> • 0.75s • 1s • 1.5s</li> <li>• 2s • 3s • 5s • 7.5s • 10s</li> <li>• 15s • 20s • 25s • 30s</li> </ul>	After the current Impulse output ends, the interval of the next Impulse which is repeated
Behavior at locking	<ul style="list-style-type: none"> <li>• off</li> <li>• <b>no change</b></li> </ul>	<p>Set the action of the output channel to enter the "locking" state</p> <p><b>Off</b>: The output channel turns OFF. If impulse is being output, it will be interrupted;</p> <p><b>no change</b>: the output channel is locked in the current output state</p>
Behavior at unlocking	<ul style="list-style-type: none"> <li>• <b>off</b></li> <li>• switch impulse</li> </ul>	<p>Set the action when the output channel returns to the "unlocking" state.</p> <p>Off: the output channel becomes OFF;</p> <p>switch impulse : output channel executes an impulse output process</p>

### 5.9 Heating Control with PWM

The following illustration shows the setting options at the ETS-Software:

Valve type  not energized closed  
 not energized opened

PWM cycle 10 min

Emergency mode monitoring time not active

There are several functions to adjust the Heating Control with PWM function. These functions are described at the following segments.

ETS-text	Dynamic range [default value]	Comment
Valve type	<ul style="list-style-type: none"> <li>• <b>not energized closed</b></li> <li>• not energized opened</li> </ul>	<p>not energized closed : corresponding to Output On for relay contact</p> <p>not energized opened : corresponds to Output On for relay contact separation</p>
PWM cycle	0-255min <b>[10min]</b>	<p>Set the cycle of the PWM. The value of the Object "Control Value" is as the PWM duty cycle and it the time of output On.</p> <p>For example: When set cycle=10min and Object "Control Value"=75%,The Output On time is 7.5min, Switch Off is 2.5min</p>
Emergency mode monitoring time	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• 10min · 20min · 30min</li> <li>• 1h · 2h · 3h · 4h</li> </ul>	<p>Monitoring time setting for emergency mode. In normal conditions, the Object "Control Value" needs to send to the actuator periodically. When the system fails to receive the Object "Control Value" periodically, the "Emergency mode" can play a protective function.</p> <p>When "Emergency mode" is active, the setting value here is the monitoring time. If the Object "Control Value" is not received beyond the monitoring time, it will automatically enter "Emergency mode". At this time, the duty cycle value of the PWM output is determined by the following one.</p> <p>Note: If the setting value of "Emergency mode monitoring time" is larger than the setting value of "PWM cycle", the actuator will not send "State Emergency Mode" Object.</p> <p>For example: PWM cycle=9min, Emergency mode monitoring time=10min.</p>
	control value for emergency mode:0%-100% <b>[0%]</b>	<p>The duty cycle value of the PWM output after entering "Emergency mode".</p> <p>For example: PWM cycle=10min, where is set 20%, after entering "Emergency mode", the duty ratio of PWM output is 10*20%=2min.</p>

## 6.Blinds, Shutter

### 6.1 Blinds

If a channel is selected as blinds the user has a wide range of opportunities to parameterize the channel. These ones are expounded at the following segments.

As soon as the channel is selected as Blinds standardly three communications objects appear.

The following chart shows these objects:

Number	Name	Length	Usage
161	Blinds up/down	1 Bit	Movement of the blinds
162	Slats adjustment/stop	1 Bit	Adjustment of the slats/ Stopping of the slat movement

The communication object "Blinds up/down" is used to move the blinds. Thereby is to consider that a logical "0" starts the up-movement and a logical "1" starts the down-movement. This configuration is standardly defined by KNX and controls an identical communication between KNX devices. The communication object "

Slats adjustment/stop" is used to adjust the slats. By calling this object the current movement of the blinds is simultaneous stopped.

## 6.2 Shutter

There are also a wide range of opportunities to parameterize the channel at shutter function. The shutter function and the blind function are almost identical, but there are no options to parameterize or move the slats at the blind function. As soon as the channel is selected as shutter appears standardly three communications objects.

The following chart shows these objects:

Number	Name	Length	Usage
161	Shutter up/down	1 Bit	Movement of the shutter
162	Short term operation/Stop	1 Bit	starts the short time operation
163	Stop	1 Bit	Stopping the shutter movement

The communication object "shutter up/down" is used to move the shutter. Thereby is to consider that a logical "0" starts the up-movement and a logical "1" starts the down-movement. The communication object "Stop" is used to stop the current movement of the shutters. The object stop can be called by a logical "0" or "1".

## 6.3 Time for movement

By setting different times for movement the user is able to parameterize the Actuator individually for almost every shutter/blind. To be sure that the movement function works properly, you have to parameterize these times carefully. If the channel is selected as blinds there are additional settings for the moving time.

You can see the screen for setting these times in the following illustration.

### Blinds:

Time for Up/Down movement	<input checked="" type="radio"/> same <input type="radio"/> different
Movement time	45 s
Extension of movement time	5%
Step time for slats adjustment	200 ms
Slat adjustment time	1200 ms
Pause on reverse	500 ms
Switch-On delay motor	200 ms
Switch-Off delay motor	200 ms
Inverchange connections for motor Up/Down	<input checked="" type="radio"/> normal <input type="radio"/> Up/Down inverted
Position of slats at end of driving (Move Down)	100%

### Shutter:

Time for Up/Down movement	<input checked="" type="radio"/> same <input type="radio"/> different
Movement time	45 s
Extension of movement time	5%
Short term operation	<input checked="" type="radio"/> not active <input type="radio"/> active
Up/Down movement can stop(Single object control)	<input checked="" type="radio"/> not active <input type="radio"/> active
Pause on reverse	500 ms
Switch-On delay motor	200 ms
Switch-Off delay motor	200 ms
Inverchange connections for motor Up/Down	<input checked="" type="radio"/> normal <input type="radio"/> Up/Down inverted

In the following chart, you can see the setting range for the movement times:

ETS-text	Dynamic range [default value]	comment
Time for movement Up/Down	<ul style="list-style-type: none"> <li>• same</li> <li>• different</li> </ul>	Adjustment, whether up and down movement should be different or not
Movement time	5-1000sec [45sec]	Sets the duration for an up/down movement
Time for up movement	5-1000S [45sec]	Sets the duration for an up movement
Time for down movement	5-1000S [45sec]	Sets the duration for an down movement
Extension of time for movement	no extension, 2%, 5%, 10%, 15%, 20%	The extension of movement is for the definitely driving to the end stop and has no effects to the calculation of the absolute positions.
Step time for slats adjustment	50-5000ms [200ms]	Only at Blinds. Duration for a step at the adjustment of blinds
Slat adjustment time	100-10000ms [1200ms]	Only at Blinds. Duration for the whole adjustment of blinds (0-100%)
Pause on reverse	100-2000ms [500ms]	Sets the pause time between an up and down movement
Switch-On delay motor	0-500ms [200ms]	Switch-on delay for motors, which have not the whole power at the beginning
Switch-Off delay motor	0-500ms [200ms]	Switch-off delay for motors, which have time lag after set off
Interchange connections for motor Up/Down	<ul style="list-style-type: none"> <li>• normal</li> <li>• up/down inverted</li> </ul>	Set the relay channel corresponding to forward and reverse of the motor
Position of slats at end of Driving (Move Down)	0-100% [100%]	Only at Blinds. Sets the position of slats after driving the shutter
Short term operation	<ul style="list-style-type: none"> <li>• not active</li> <li>• active</li> </ul>	Only at Shutter. Sets the short time operation on/off
Movement time for short term operation	50-5000ms [200ms]	Only at Shutter. Adjusts the time for one short time operation
Up/Down movement can stop (Single Object Control)	<ul style="list-style-type: none"> <li>• not active</li> <li>• active</li> </ul>	Only at Shutter. Sets whether the object "Shutter Up/Down" can be stopped

The functions are described in detail at the following segments

### 6.3.1 Measure of the times for Movement

The individual times for the movement of shutter/blinds can be normally determined very precise by using a stop watch. If there are very short times for the movement, the measuring by using a watch will maybe cause problems. In this case it is suggested to adjust initially an approximated value, which should be a little bit shorter than the real time for movement. Afterwards you can test the adjusted time by triggering the shutters or blinds and control whether the final positions are achieved. If they are not achieved, you should set the time for movement gradually higher by using small steps until the final positions are achieved.

### 6.3.2 Movement time

The movement time describes the time which the shutter actuator needs to drive the shutter/blinds from one final position to the other. When the adjusted time is over the channel is set off even when the final position was not achieved. So the shutter actuator triggers the down-movement/ up-movement for the adjusted time. Because shutters and blinds have often different times for the up down movement, different times can be adjusted for the up and down movement. The extension of time for movement guarantees the definitely driving to the end stops. This function has no effects to the calculation of the absolute positions. So you should always adjust the precise time for the movement time and activate the extension for the guaranteed driving to the end stops. Check if the manufactory gives any data for the movement times.

### 6.3.3 Step time for slats adjustment

#### →only at blinds

You can adjust in which steps the slats shall be shifted with the setting “step time for slats”. The opening angle can adjust thereby in small steps to prevent e.g. a glare of the sun after a changing of the solar altitude or tighten sunblind. Additionally, it is possible to adjust the step range in a way so that the slats drive from one final position to the other in a specific number of steps. For this way of slat-movement, you have to set the step time for blinds to a multiple of the “Slat adjustment time”. Thereby the multiple of the duration time specifies the number of steps, which are required to drive the slats from one final position to the other.

For Example: Slat adjustment time: 3000ms

Step time for slats = 300ms

→Number of steps=10 → therefore the values 0%, 10%, ..., 100% can be appointed

### 6.3.4 Slat adjustment time

#### →only at blinds

The Slat adjustment time sets the interval, which is required to drive the slats from 0% to 100% or backwards. Therefore the shutter actuator triggers the slat adjustment.

#### **Tip for the measurement from very small durations of slat adjustment**

- Drive the slats in a final position (either 100% closed or 100% opened)
- Now send step commands until the other final position is achieved
- Multiply the number of steps with the adjusted time for the step time of slats
- Enter the result to the “duration of slat adjustment”

### 6.3.5 Pause on reverse

The Pause on reverse is for the protection of the shutter motor, if the shutter actuator receives simultaneously commands for the up- and down-movement. A direct shift from the one to the other direction can contract the duration of the motor significantly and even by some motors a total damage is caused. If the shutter actuator receives during a running movement a command for a movement to the other direction, the shutter actuator will switch off the movement. Before the shutter actuator switches the movement to the other direction on, the actuator stops for the adjusted time for the pause at change of direction. The pause at change of direction counts as well for the change of direction of the up-/down movement as for the blind adjustment.

NOTE: Too short adjusted pause at change of direction can cause damages of the motor!

Notice the manufacturer's data at the datasheet of the drive absolutely.

### 6.3.6 Switch-on/Switch-off delay motor

Some motors cannot bring the full power at the moment of switching it on, but first after some milliseconds. The time, which the motor needs to get the full power, can be balanced with the adjustment of the switch-on delay of the motor. On the other hand there are motors, which run after it was switched off. This characteristic can be balanced by using the setting switch-off delay motor.

### 6.3.7 Position of slats at end of Driving (Move Down)

#### →only at blinds

By using the adjustment “position of slats at end of Driving (Move Down)” be adjusted in which position the slats shall be set after a down -movement. The shutter actuator drives automatically to this position after the end of a blind-movement, by using the object “Blinds up/down”. The position of slats at end of driving can be set percentage in 1% steps, from 0% to 100%, whereby 0% full opened and 100% full closed correspond.

If the movement is stopped by sending a stop-command, this position will not be driven to, because the process is stopped.

### 6.3.8 Short term operation

#### →only at shutter

The short time operation helps you to drive the shutter to a certain position, e.g. for sun protection.

With small steps, the shutter can be driven to every possible position. It is often useful to set the short time operation as a multiple of the movement time. So the shutter can be driven from the bottom to the top, or the other way around, in a certain number of steps.



## 6.4 Position Objects

The following illustration shows the setting options at the ETS-Software:

Object for reference drive	<input type="radio"/> not active <input checked="" type="radio"/> active
Action after movement to reference	<input checked="" type="radio"/> no action <input type="radio"/> move to former position
Object for absolute position	<input type="radio"/> not active <input checked="" type="radio"/> active
1Bit object for "Move to position"	<input type="radio"/> not active <input checked="" type="radio"/> active
Action at value 1	if position is Up ▼
Position of blinds	51% ▼
Position of slats	100% ▼
Action at value 0	not active ▼

The following table shows the possible settings for the position objects:

ETS-text	Dynamic range [default value]	comment
Object for reference drive	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	<ol style="list-style-type: none"> <li>1、 When it's active, object "Start driving to Reference" appears.</li> <li>2、 It's used to move the blinds/shutter to the reference position, which means the highest or lowest point.</li> <li>3、 Their subsequent actions are set by parameter "Action After Movement to Reference"</li> </ol>
Action after movement to reference	<ul style="list-style-type: none"> <li>• <b>no action</b></li> <li>• move to former position</li> </ul>	<ul style="list-style-type: none"> <li>No action</li> <li>move to former position</li> </ul>
Objects for absolute position	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	<ol style="list-style-type: none"> <li>1、 When it's active, object "Absolute position" appears, but object "Absolute position of slats" also appears only at Blinds.</li> <li>2、 It's used to set absolute position. (0~100%)</li> <li>3、 If you want to execute the command about object "Absolute position", please perform the position initialization of blinds first. You can move the blinds to the highest or lowest position, then move them to the specified position.</li> <li>4、 At Blinds, before executing the command about object "Absolute position", please confirm that the position of slats remains unchanged.</li> <li>5、 At Blinds, if the position of blinds isn't initialized, the command about object "Absolute position of Slats" will not be executed.</li> </ol>
1Bit object for "Move to position"	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	<ol style="list-style-type: none"> <li>1、 When it's active, object "Drive to position " appears.</li> <li>2、 The actions can be set by its subitems.</li> </ol>
Action at value =1	<ul style="list-style-type: none"> <li>• <b>Always</b></li> <li>• If position is top</li> <li>• If position is bottom</li> </ul>	<ol style="list-style-type: none"> <li>1、 Always: The action will be executed when the values of object "Status current position" and object "Shutter position" are different.</li> <li>2、 If position is Up: It can only be moved down when object "Status current Position" is in the highest position (0%).</li> <li>3、 If position is Down: It can only be moved up when object "Status current Position" is in the lowest position (100%).</li> </ol>
Position of blinds	0%-100% <b>Default : 50%</b>	<ul style="list-style-type: none"> <li>Only at Blinds.</li> <li>It's used to set the target position of blinds.</li> </ul>

Position of slats	0%-100% <b>Default : 100%</b>	Only at Blinds. It's used to set the target position of slats.
Shutter position	0%-100% <b>Default : 50%</b>	Only at Shutter. It's used to set the target position of Shutter.
Action at value = 0	<ul style="list-style-type: none"> <li>• <b>no active</b></li> <li>• move up</li> <li>• move down</li> </ul>	<p>If other commands aren't executed after "Action at Value=1" is executed, it will perform the action set by "Action at value = 0".</p> <p>Note: If other commands are executed after the "Action at Value=1" is executed, it will not perform any action.</p>

Number	Name	Length	Usage
172	Start driving to reference	1 Bit	<p>1、 It is activated when "Object for reference drive" is set to active.</p> <p>2、 "Action after movement to reference": Whether to return to the current position after moving the reference point. Object value =00 Up: Move up to the highest position (0%) Object value =01 Down: Move down to the lowest position (100%)</p> <p>Note: The command will not be answered until the last action has finished.</p>
174	Drive to position	1 Bit	<p>1、 It is activated when "1Bit object for "Move to position"" is set to active.</p> <p>2、 The specific action is performed according to the setting of "1Bit object for "Move to position"".</p>
175	Absolute position	1 byte	<p>1、 It is activated when "Objects for absolute position" is set to active.</p> <p>2、 It's used to set the absolute position of blinds/shutter. Note: After startup, the first step is to confirmed the reference position and then blinds/shutter will be moved to the target position.</p>
176	Absolute position of slats	1 byte	<p>1、 It is activated when "Objects for absolute position" is set to active.</p> <p>2、 It's used to set the absolute position of slats. Note: If the reference position of slats isn't confirmed after startup, no action is performed.</p>

## 6.5 Status objects

The following figure shows the possible settings for the status objects:

Status current position	<input checked="" type="radio"/> not active <input type="radio"/> active
Object for movement status	not active ▼
Status current direction /position up/down	<input checked="" type="radio"/> not active <input type="radio"/> active
Status for current blocking/alarm	<input checked="" type="radio"/> not active <input type="radio"/> active
Diagnosis as character	send at request ▼

The following table shows the possible settings for the status objects:

ETS-text	Dynamic range [default value]	comment
Status current position	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Activates/deactivates the objects for absolute position/ absolute position of slats
Object for movement status	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• move(1 object)</li> <li>• moving up + moving down</li> </ul>	Activates the status objects for movement status
Status current direction / position up/down	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Activates the status objects for current direction and reaching the upper / lower end stop
Status for current blocking/alarm	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Activates the status object for current blocking/alarms
Diagnosis as character	<ul style="list-style-type: none"> <li>• not active</li> <li>• <b>send at request</b></li> <li>• send at change</li> </ul>	When activated, the transmission condition for the diagnostic text is defined

Number	Name	Length	Usage
164	Status current position	1 byte	Indicates the actual shutter/blinds position
165	Status current position of slats	1 byte	Only at Blinds Indicates the actual position of the slats
166	Status current direction	1 Bit	Indicates the actual direction of the movement
167	Status upper position	1 Bit	Indicates reaching the upper limit position
168	Status lower position	1 Bit	Indicates reaching the lower limit position
169	Status lock/alarm	1 Bit	Indicates an active alarm or an active lock function
170	Status of movement	1 Bit	Indicates an active movement
180	Diagnosis text	14 bytes	Output of the diagnostic text in "Characters"

### 6.5.1 Status objects current position

The status objects "Status current position" and "Status current slat position" are used to display the absolute position. The two objects indicate the current state of the height and the opening angle of the slats, each after the end of the movement. The objects can be used e.g. for visualization.

### 6.5.2 Report objects lower/upper position

The 1-bit objects "Status lower position" and "Status 1 upper position" each output a 1 signal when the lower or upper end position has been reached. As soon as the end position has been left, the signal changes from 1 to 0. The two objects can be used for monitoring the blinds/shutters.

### 6.5.3 Movement Status/Current direction

The object "status of movement" can be selected as one or two objects. As one object, it reports a momentary movement with a "1". In the case of two objects it reports an active up- and an active down movement via two separate objects. The 1-bit object "Status of the current direction" indicates an upward travel via a logical "0" and a downward travel via a logical "1". The status is sent as soon as a movement is started and remains internally until a new up / down command is sent.

### 6.5.4 Status Lock/Alarms

The Object "status lock/alarms" indicates an active lock function or an active alarm with a "1"

### 6.5.5 Diagnosis as character

Data sent from this function utilizes American Standard Code for Information Interchange or ASCII character encoding. It combines characters by using hexadecimal numbers.

Diagnosetext	Last executed command
Up	Upward movement
Down	Down movement
Bit position	Object "Drive to position" generates Bit position
Reference	Reference drive
Blind/Stop	Slats adjustment/Stop
Absolute pos	Absolute position
Wind alarm	Wind alarm activated
Rain alarm	Rain alarm activated
Frost alarm	Frost alarm activated
Alarm End	Alarm finished
Auto position	Automatic position
Scene	Scene call
Locked	Channel is locked
Window open	Window open - Action for air function executed
Window close	Window closed
Abs lock	Absolute positions are locked
Function lock	Object "Block functions" has been activated
Bus Reset	Bus power recovery
Stop	Object "Stop" stops
Manual Oper	Manual operation on the device
Up dn lock	Object: Block function is active and
Man Oper lock	Manual operation is locked
Auto Pos lock	Automatic position is locked
Scene lock	Scene call is locked
Central up	Upward movement via central object
Central down	Down movement via central object
Blind/Stop	Slats adjustment/Stop
Central abs	Absolute position via central object
Cen Blind/Stop	Slats adjustment /Stop via central object

## 6.6 Scene function

The same as switch functions, blinds and shutter also has scene function for use. By calling a scene, you can set the blinds or shutter at positions you desired.

The following chart shows the relevant communication object:

Number	Name	Length	Usage
173	Scene	1 Byte	Call of the scene

For calling a certain scene, you have to send the value for the scene to the communication object. The value of the scene number is always one number less than the adjusted scene number. There are up to 8 storage options for scenes at every channel.

### Blinds:

Learn scene	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Scene number A	not active ▼
Scene A-Height position	0% ▼
Scene A-Position of slats	0% ▼
Scene A-Block function	not active ▼
<hr/>	
Scene number B	not active ▼
Scene B-Height position	0% ▼
Scene B-Position of slats	0% ▼
Scene B-Block function	not active ▼
<hr/>	
Scene number C	not active ▼
Scene C-Height position	0% ▼
Scene C-Position of slats	0% ▼
Scene C-Block function	not active ▼
<hr/>	
Scene number D	not active ▼
Scene D-Height position	0% ▼
Scene D-Position of slats	0% ▼
Scene D-Block function	not active ▼
<hr/>	
Scene number E	not active ▼
Scene E-Height position	0% ▼
Scene E-Position of slats	0% ▼
Scene E-Block function	not active ▼

Scene number F	not active
Scene F-Height position	0%
Scene F-Position of slats	0%
Scene F-Block function	not active
<hr/>	
Scene number G	not active
Scene G-Height position	0%
Scene G-Position of slats	0%
Scene G-Block function	not active
<hr/>	
Scene number H	not active
Scene H-Height position	0%
Scene H-Position of slats	0%
Scene H-Block function	not active

**Shutter:**

Learn scene	<input checked="" type="radio"/> not active <input type="radio"/> active
<hr/>	
Scene number A	not active
Scene A-Height position	0%
Scene A-Block function	not active
<hr/>	
Scene number B	not active
Scene B-Height position	0%
Scene B-Block function	not active
<hr/>	
Scene number C	not active
Scene C-Height position	0%
Scene C-Block function	not active
<hr/>	
Scene number D	not active
Scene D-Height position	0%
Scene D-Block function	not active
<hr/>	
Scene number E	not active
Scene E-Height position	0%
Scene E-Block function	not active
<hr/>	
Scene number F	not active
Scene F-Height position	0%
Scene F-Block function	not active

Scene number G	not active	▼
Scene G-Height position	0%	▼
Scene G-Block function	not active	▼
<hr/>		
Scene number H	not active	▼
Scene H-Height position	0%	▼
Scene H-Block function	not active	▼

The chart shows the possible settings for scenes and the settings are available at the sub menu for blinds or shutter.

ETS-text	Dynamic range [default value]	comment
Learn scene	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	<p>not active: The learn scene function is not enabled.</p> <p>Object value corresponds to DPT17.001 scene number.</p> <p>active: Enable the learn scene feature. Object corresponds to DPT 18.001 scene control.</p>
Scene number A	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• 1-64</li> </ul>	Whether to enable the setting of scene A
Scene A-Height position	0% – 100% [0%]	Setting for absolute position when the scene is called
Scene A-Position of slats	0% – 100% [0%]	Only at Blinds. Setting for absolute slat position when calling the scene
Scene A-Block function	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• enable block for abs,position</li> <li>• disable block for abs,position</li> <li>• enable "Block functions"</li> <li>• disable "Block functions"</li> <li>• enable "Block functions"and abs, position</li> <li>• disable "Block functions"and abs, position</li> </ul>	Response to the function you set when calling the scene

### 6.7 Automatic function

An automatic function can be activated for each channel. Via the automatic function, up to 4 different states can be called up for each channel. The automatic function is divided into 2 blocks ( I and II ). The automatic function also makes it possible to carry out several actions simultaneously, e.g. via one command to move to a shutter position as well as to a blind position and, in addition, to adjust the slats of the blind Blinds:

The following figure shows the activation of the automatic function for a channel:

Automatic functions	<input checked="" type="radio"/> not active	<input type="radio"/> active
---------------------	---	------------------------------

If the automatic function for a channel is activated, a new sub-point (channel X: automatic) appears in the left selection menu for the automatic function, in which the further settings can be made. The automatic function can still be executed even when the window is open or tilted.

**Blinds:**

Used automatic objects	<input checked="" type="radio"/> Block I <input type="radio"/> Block II
<div style="border: 1px solid #ccc; padding: 2px; background-color: #e6f2ff;"><b>i</b> Selected block must be enabled under "General Setting"</div>	
Automatic position 1	<input type="radio"/> not active <input checked="" type="radio"/> active
Height position	0% ▼
Position of slats	0% ▼
Move to position (value=1)	always ▼
Action at withdrawal of automatic position (value=0)	not active ▼
Automatic position 2	<input checked="" type="radio"/> not active <input type="radio"/> active
Automatic position 3	<input checked="" type="radio"/> not active <input type="radio"/> active
Automatic position 4	<input checked="" type="radio"/> not active <input type="radio"/> active

**Shutter:**

Used automatic objects	<input checked="" type="radio"/> Block I <input type="radio"/> Block II
<div style="border: 1px solid #ccc; padding: 2px; background-color: #e6f2ff;"><b>i</b> Selected block must be enabled under "General Setting"</div>	
Automatic position 1	<input type="radio"/> not active <input checked="" type="radio"/> active
Height position	0% ▼
Move to position (value=1)	always ▼
Action at withdrawal of automatic position (value=0)	not active ▼
Automatic position 2	<input checked="" type="radio"/> not active <input type="radio"/> active
Automatic position 3	<input checked="" type="radio"/> not active <input type="radio"/> active
Automatic position 4	<input checked="" type="radio"/> not active <input type="radio"/> active



In the following chart, you can see the setting range for the positions

ETS-text	Dynamic range [default value]	comment
Used automatic objects	<ul style="list-style-type: none"> <li>• <b>Block I</b></li> <li>• Block II</li> </ul>	Select which automatic block this channel should react
Automatic position 1	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Active or not active the position
Height position	0% – 100% [0%]	Height position to be approached by the automatic function
Position of slats	0% – 100% [0%]	Only at Blinds. Slat position to be approached by the automatic function
Move to position(value=1)	<ul style="list-style-type: none"> <li>• <b>always</b></li> <li>• if position is top</li> <li>• if position is bottom</li> </ul>	Restriction when the automatic position is to be approached
Action at withdrawal of automatic position(value=0)	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• move up</li> <li>• move down</li> </ul>	The action at withdrawal defines an action after the automatic position has been reset (sending value 0). The withdrawal action is executed only if the position is equal to the set automatic position, i.e. it has not been moved

### 6.8 Air function

The air function includes the logic for querying window contact. To use the air function, this has to be activated in the parameters of the channel.

#### Blinds:

Window contacts	<input checked="" type="radio"/> 1 contact for "open" window <input type="radio"/> 2 contacts for "open"/"titled" window
Set condition for "open"	<input checked="" type="radio"/> Value 0 <input type="radio"/> Value 1
Behavior if window open	<input checked="" type="radio"/> execute air function <input type="radio"/> set normal block function
Action if window is "open"	<input type="text" value="move to position if bottom"/>
Blinds position for "open"	<input type="text" value="0%"/>
Slat position for "open"	<input type="text" value="0%"/>
Action if window is closed	<input type="text" value="move to former position"/>

## Shutter:

Window contacts	<input checked="" type="radio"/> 1 contact for "open" window <input type="radio"/> 2 contacts for "open"/"titled" window
Set condition for "open"	<input checked="" type="radio"/> Value 0 <input type="radio"/> Value 1
Behavior if window open	<input checked="" type="radio"/> execute air function <input type="radio"/> set normal block function
Action if window is "open"	<input type="text" value="move to position if bottom"/>
Height position for "open"	<input type="text" value="0%"/>
Action if window is closed	<input type="text" value="move to former position"/>

ETS-text	Dynamic range [default value]	comment
Window contacts	<ul style="list-style-type: none"> <li>• <b>1 contact for "open" window</b></li> <li>• 2 contacts for "open/titled" window</li> </ul>	Select whether one or two window contacts are installed
1 contact for "open" window is selected		
Set condition for "open"	<ul style="list-style-type: none"> <li>• <b>Value 0</b></li> <li>• Value 1</li> </ul>	Select which signal "0" or "1" to activate the function
Behavior if window open	<ul style="list-style-type: none"> <li>• <b>execute air function</b></li> <li>• set normal block function</li> </ul>	Execute air function: functions of Action if window is "open", Height position for "open" ... etc. will appear when this option is selected set normal block function: action as normal blocking function is activated
Action if window if "open"	<ul style="list-style-type: none"> <li>• not active</li> <li>• move to position if bottom</li> <li>• <b>move to position if lower</b></li> </ul>	Action to be executed when opening the window; move to position if bottom: execute action of Height/Slat position if Object: Status current position = 100%. move to position if lower: execute action of Height/Slat position if parameters of Object: Status current position is larger than that of Height/Slat position
Blinds position for "open"	0% – 100% <b>[0%]</b>	Only at Blinds. Sets position of the blinds for the position
Slat position for "open"	0% – 100% <b>[0%]</b>	Only at Blinds. Sets position of slats for the position
Height position for "open"	0% – 100% <b>[0%]</b>	Only at shutter. Sets position of the shutter for the position
Action if window is closed	<ul style="list-style-type: none"> <li>• no action</li> <li>• move to top</li> <li>• move to bottom</li> <li>• <b>move to former position</b></li> </ul>	Action to be executed after closing the window

ETS-text	Dynamic range [default value]	comment
2 contacts for "open/tilted" window is selected		
Set condition for "open"	<ul style="list-style-type: none"> <li>• Contact1="0"/contact2="0"</li> <li>• Contact1="1" /contact2="0"</li> <li>• Contact1="0"/contact2="1"</li> <li>• <b>Contact1="1"/contact2="1"</b></li> </ul>	Select which signal to activate the function
Set condition for "tilted"	<ul style="list-style-type: none"> <li>• <b>Contact1="0"/contact2="0"</b></li> <li>• Contact1="1" /contact2="0"</li> <li>• Contact1="0"/contact2="1"</li> <li>• Contact1="1"/contact2="1"</li> </ul>	Select which signal to activate the function
Behavior if window open	<ul style="list-style-type: none"> <li>• <b>execute air function</b></li> <li>• set normal block function</li> </ul>	Execute air function: functions of Action if window is "open", Height position for "open" will appear when this option is selected set normal block function: action as normal blocking function is activated
Action if window if "open"	<ul style="list-style-type: none"> <li>• not active</li> <li>• move to position if bottom</li> <li>• <b>move to position if lower</b></li> </ul>	Action to be executed when opening the window;move to position if bottom: execute action of Height/Slat position if Object: Status current position = 100%. move to position if lower: execute action of Height/Slat position if parameters of Object: Status current position is larger than that of Height/Slat position
Blinds position for "open"	0% – 100% <b>[0%]</b>	Only at Blinds. Sets position of the blinds for the position
Slat position for "open"	0% – 100% <b>[0%]</b>	Only at Blinds. Sets position of slats for the position
Height position for "open"	0% – 100% <b>[0%]</b>	Only at shutter. Sets position of the shutter for the position
Action if window is "tilted"	<ul style="list-style-type: none"> <li>• not active</li> <li>• <b>move to position if bottom</b></li> <li>• move to position if lower</li> </ul>	Action to be executed when the window is tilted;move to position if bottom: execute action of Height/Slat position if Object: Status current position = 100%. move to position if lower: execute action of Height/Slat position if parameters of Object: Status current position is larger than that of Height/Slat position
Blinds position for "tilted"	0% – 100% <b>[100%]</b>	Only at Blinds. Sets position of the blinds for the position
Slat position for "tilted"	0% – 100% <b>[70%]</b>	Only at Blinds. Sets position of slats for the position
Height position for "tilted"	0% – 100% <b>[100%]</b>	Only at shutter. Sets position of the shutter for the position
Action if window is closed	<ul style="list-style-type: none"> <li>• <b>no action</b></li> <li>• move to top</li> <li>• move to down</li> <li>• move to former position</li> </ul>	Action to be executed after closing the window

## 6.9 Alarm and block functions

The menu for the alarm and block functions is permanently displayed and contains the settings for the alarms and the normal blocking function:

### Blinds:

Alarm order	Wind alarm,Rain alarm,Frost alarm, Block function
Normal blocking function	<input type="radio"/> not active <input checked="" type="radio"/> active
Action at block (value=1)	move to height position
Height position for alarms/blocking	0%
Slat position for alarm/blocking	0%
Action at reset of block	no action
Advanced block	<input checked="" type="radio"/> not active <input type="radio"/> active
Wind alarm	<input type="radio"/> not active <input checked="" type="radio"/> active
Monitoring time (0=not active)	0 min
Action at wind alarm	move to height position
Height position for alarms/blocking	0%
Slat position for alarm/blocking	0%
Action at reset of alarm	no action
Rain alarm	<input checked="" type="radio"/> not active <input type="radio"/> active
Frost alarm	<input checked="" type="radio"/> not active <input type="radio"/> active

### Shutter:

Alarm order	Wind alarm,Rain alarm,Frost alarm, Block function
Normal blocking function	<input type="radio"/> not active <input checked="" type="radio"/> active
Action at block (value=1)	move to height position
Height position for alarms/blocking	0%
Action at reset of block	no action
Advanced block	<input checked="" type="radio"/> not active <input type="radio"/> active
Wind alarm	<input type="radio"/> not active <input checked="" type="radio"/> active
Monitoring time (0=not active)	0 min
Action at wind alarm	move to height position
Height position for alarms/blocking	0%
Action at reset of alarm	no action
Rain alarm	<input checked="" type="radio"/> not active <input type="radio"/> active
Frost alarm	<input checked="" type="radio"/> not active <input type="radio"/> active

#### 6.9.1 Alarm Order (Priority)

The parameter "Alarm order" describes the priority of the individual alarms. The following table shows the possible settings for this parameter:

ETS-text	Dynamic range [default value]	comment
Alarm order	<ul style="list-style-type: none"> <li>• <b>Wind alarm, Rain alarm, Frost alarm, Block function</b></li> <li>• Wind alarm, Rain alarm, Block function, Frost alarm</li> <li>• Wind alarm, Block function, Rain alarm, Frost alarm</li> <li>• Block function, Wind alarm, Rain alarm, Frost alarm</li> </ul>	Indicates the priority order of the alarm function. For example: when choosing "Wind alarm, Rain alarm, Frost alarm, Block function", the priority order is "Wind alarm > Rain alarm > Frost alarm > Block function".

If two or more alarms are active at the same time, the actuator evaluates the alarms according to the set sequence. The actuator only performs the action of the higher priority alarm. The action for the lower priority alarm is not executed as long as the higher priority alarm is active. However, if the alarm with the higher priority is inactive and the lower priority alarm is still active, then the action of the lower priority alarm is executed.

### 6.9.2 Alarm types

Three different alarm types (wind alarm, rain alarm, frost alarm) can be activated, for which further settings can then be made.

ETS-text	Dynamic range [default value]	comment
<b>Wind alarm</b>	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Activation of the wind alarm
Monitoring time (0= not active) (Only at active wind alarm)	0 - 120 min <b>[0 min]</b>	Cyclic monitoring of the wind alarm. Setting 0 deactivates the cyclic monitoring
Action at wind alarm (Only at active wind alarm)	<ul style="list-style-type: none"> <li>• <b>no action</b></li> <li>• move to top</li> <li>• move to bottom</li> <li>• move to height position</li> </ul>	Action after activation of the wind alarm
Action at reset of alarm (Only at active wind alarm)	<ul style="list-style-type: none"> <li>• <b>no action</b></li> <li>• move to top</li> <li>• move to bottom</li> <li>• move to former position</li> </ul>	Action after removal of the wind alarm
<b>Rain alarm</b>	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Activation of the rain alarm
Monitoring time (0= not active) (Only at active rain alarm)	0 - 120 min <b>[0 min]</b>	Cyclic monitoring of the rain alarm. Setting 0 deactivates the cyclic monitoring
Action at rain alarm (Only at active rain alarm)	<ul style="list-style-type: none"> <li>• <b>no action</b></li> <li>• move to top</li> <li>• move to bottom</li> <li>• move to height position</li> </ul>	Action after activation of the rain alarm
Action at reset of alarm (Only at active rain alarm)	<ul style="list-style-type: none"> <li>• <b>no action</b></li> <li>• move to top</li> <li>• move to bottom</li> <li>• move to former position</li> </ul>	Action after removal of the rain alarm
<b>Frost alarm</b>	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Activation of the frost alarm
Monitoring time (0= not active) (Only at active frost alarm)	0 - 120 min <b>[0 min]</b>	Cyclic monitoring of the frost alarm. Setting 0 deactivates the cyclic monitoring
Action at frost alarm (Only at active frost alarm)	<ul style="list-style-type: none"> <li>• <b>no action</b></li> <li>• move to top</li> <li>• move to bottom</li> <li>• move to height position</li> </ul>	Action after activation of the frost alarm
Action at reset of alarm (Only at active frost alarm)	<ul style="list-style-type: none"> <li>• <b>no action</b></li> <li>• move to top</li> <li>• move to bottom</li> <li>• move to former position</li> </ul>	Action after removal of the frost alarm

If an alarm is activated, the relevant communication object is displayed for this alarm. If the corresponding communication object receives a "1" signal, the alarm function is activated. A "0" signal deactivates the alarm.

The following table shows the related communication objects:

Number	Function	Length	Usage
177	Wind alarm	1 Bit	Activation / deactivation of wind alarm
178	Rain alarm	1 Bit	Activation / deactivation of rain alarm
179	Frost alarm	1 Bit	Activation / deactivation of frost alarm

### 6.9.3 Periodical observation

The cyclic monitoring of the alarm function can be set separately for each of the three alarms. The setting range moves from 0-120 min, the setting 0 min switches off the cyclic monitoring. The communication object for the respective alarm must receive a signal within the set monitoring time. Otherwise the alarm is triggered automatically. In KNX weather stations there are settings, in which intervals a cyclic transmission is to take place. The time for the cyclic transmission should always be below the monitoring time set in the shutter actuator in order to prevent accidental triggering of an alarm. The cyclic monitoring ensures that a weather sensor is functioning properly. If a signal fails due to a failure of a weather station or a wire break, the shutter actuator triggers an alarm after the monitoring time has elapsed.

### 6.9.4 Normal blocking

The following table shows the possible settings for the locking object:

ETS-text	Dynamic range [default value]	comment
Normal blocking function	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Activation of the normal blocking function
Action at block (value=1)	<ul style="list-style-type: none"> <li>• <b>no action</b></li> <li>• move to top</li> <li>• move to bottom</li> <li>• move to height position</li> </ul>	Setting the action which is to be triggered when activating a block with a 1
Action at rest of block	<ul style="list-style-type: none"> <li>• <b>no action</b></li> <li>• move to top</li> <li>• move to bottom</li> <li>• move to former position</li> </ul>	Setting the action which is to be triggered when deactivating a block with a 0

The shutter actuator can move to a defined position, move to top/button or remain in its former position when Action at rest of block is activated. When the block function is active, the channel cannot be operated.

#### Scenes, automatic positions and 1Bit move to position are also blocked!

When the block is released, the channel can move to top/button, move to the position it held before the block function or remain in the current position.

An example of using the block function is to block the blinds/shutters when opening a terrace door. Thus, e.g. when opening the terrace door, the blinds/shutters are moved upwards and are blocked.

The following table shows the related communication objects:

Number	Function	Length	Usage
180	Block	1 Bit	Activation/deactivation of the simple blocking function

### 6.9.5 Height position

For each alarm/block, an absolute height position can be set, which is approached by the setting "move to height position":

ETS-text	Dynamic range [default value]	comment
Height position for alarms/blocking	0% – 100% [0%]	Setting the absolute height position for alarms/blocking
Slat position for alarm/blocking	0% – 100% [0%]	Only at Blinds Setting the absolute slat position for alarms/blocking

An absolute height position can be defined per alarm/block, which can be approached with an active alarm or an active block.

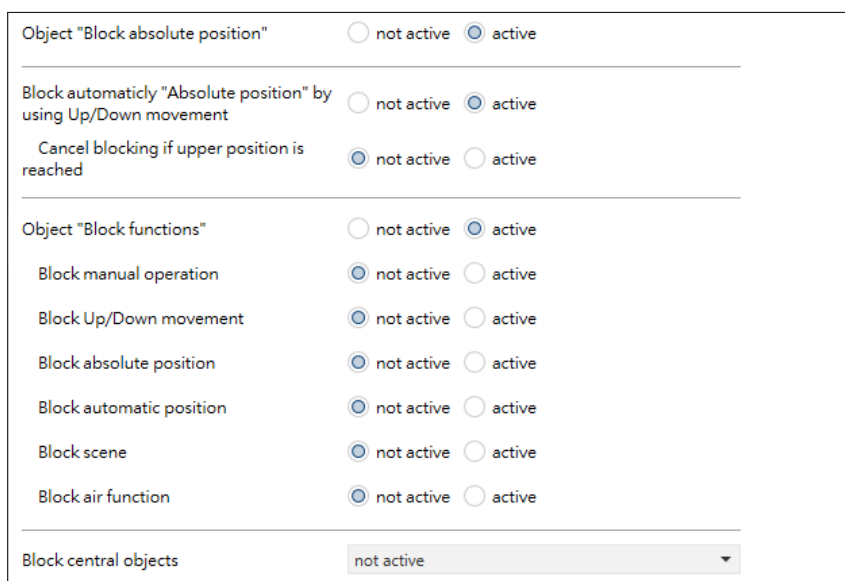
### 6.9.6 Advanced block function

The advanced block functions can be activated for each channel via a separate sub-item in the submenu Alarm and block functions. If the advanced block functions have been activated, a new submenu of Extended block function appears in the selection menu under the respective channel.

The following figure shows the activation of the advanced block functions:



The following figure shows the subdivision of the sub-menu Advanced block functions:



The following table shows the settings for the Advanced block function:

ETS-text	Dynamic range [default value]	comment
Object "Block absolute position"	• <b>not active</b> • active	Activates the communication object for the blocking of an absolute position command
Block automatically "Absolute position" by using Up/Down movement	• <b>not active</b> • active	Activates the block for starting absolute position by manual movement Up/Down
Cancel blocking if upper position is reached	• <b>not active</b> • active	Deactivates the block for starting absolute position by reaching the upper position

ETS-text	Dynamic range [default value]	comment
Object "Block functions"	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	Activates the communication object and the settings for the universal blocking function
Block manual operation	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	When activated, the manual operation is blocked
Block Up/Down movement	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	When activated, the Up/Down movement is blocked
Block Absolute position	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	When activated, "absolute position" is blocked
Block Automatic position	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	When activated, "automatic position" is blocked
Block scene	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	When activated, "scene" is blocked
Block air function	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	When activated, the "air function" is blocked
Block central object	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• only block "Up"</li> <li>• only block Down</li> <li>• only block Up/Down</li> <li>• only block "Absolute position"</li> <li>• only block "Absolute position" and "Up"</li> <li>• only block "Absolute position" and "Down"</li> <li>• only block "Absolute position" and "Up/Down"</li> </ul>	Setting which central functions the object "Block central object" should block
Block Central objects automatically with "Down" (Only active when Block central object is not at "not active")	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	When activated, Central objects automatically with "Down" is blocked
Cancel blocking of central objects with "Up" (Only active when Block central object is not at "not active")	<ul style="list-style-type: none"> <li>• <b>not active</b></li> <li>• active</li> </ul>	When activated, Central objects automatically with "Down" is blocked

If the individual blocking functions are activated, the corresponding communication objects are displayed.

The table shows the related block objects:

Number	Function	Length	Usage
184	Block absolute position mode	1 Bit	Blocks the movement via absolute positions
185	Block function	1 Bit	Blocks the functions according to the settings for this object
186	Block central object	1 Bit	Blocks the central objects according to the set parameters



The parameter "Block absolute position " allows to block the absolute position commands at each channel as well as central. If the corresponding communication object "Block absolute position" is activated by sending a "1", the channel no longer reacts to absolute position commands.

**Example:** The function " Block automatic "Absolute position" by using Up/Down movement" allows to block the movement of the absolute position by a manual movement via Up/Down. This function finds its application when e.g. a weather station activates a sun protection function, but the user wants to move the blinds/shutter manually to any value. By the manual movement, the shutter actuator is now blocked from receiving the absolute position command for the sun protection but can be moved normally by Up/Down. The block can be automatically cancelled by activation of the parameter "Cancel blocking when upper position is reached" as soon as the upper limit stop is reached or by sending a 0 to the communication object 40 "Block absolute positions". The ventilation function, automatic positions (1 bit) and "1bit move to position" can still be used and are not blocked! These can be locked via "Block functions".

The " Block absolute position/clouding " object can send the status after parameter activation for internal switching.

The parameter "Block functions" makes it possible to configure the locking process itself and to configure it to its needs.

5 different sub-items are available for this purpose:

- Block manual operation
- Blocks the manual operation for this channel
- Block Up/Down movement
- Blocks the movement commands for the channel (at blinds also the slat adjustment)
- Block absolute position
- Blocks the object absolute position and the automatic clouding for this channel
- Block automatic position
- Blocks automatic positions for this channel
- Block scene
- Blocks the scene function for this channel, e.g. is a scene called where this channel is involved, the channel remains in current position
- Block air function
- Blocks the automatic air function for this channel

The object "Block functions" can send the status after parameter activation for internal switching. For example: with internal activation via a scene.

The function "Block central objects" blocks the call of the channel via the central objects. For each channel, you can specify which central functions are to be blocked. Additionally it is possible to lock the central objects automatically with a Down command and to unlock them again with an Up command. This setting makes sense especially when all blinds are moved centrally via a time switch.

If, however, a channel is no longer to be processed after a manual movement command, it can be automatically blocked.

The object "Block absolute position/clouding" can send the status after parameter activation at internal switching.

All blocking functions are activated with a logical "1" and deactivated by a logical "0".

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