08/2014

Technical Manual

MDT Shutter Actuator

JAL-0206.01
JAL-0410.01
JAL-0810.01
JAL-0410D.01
JAL-0810D.01
JAL-0410A.01
JAL-01UP.01

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1 Content

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2 Overview

2.1 Overview devices

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

- **JAL-0410.01** Shutter Actuator 4-fold, 4TE MRDC, 230V AC, 10A
  - 4-fold, for shutter motors up to 600W, manual actuation
- **JAL-0810.01** Shutter Actuator 8-fold, 8TE MRDC, 230V AC, 10A
  - 8-fold, for shutter motors up to 600W, manual actuation
- **JAL-0410D.01** Shutter Actuator 4-fold, 4TE, 24V DC, 8A
  - 4-fold, for shutter motors up to 180W, manual actuation
- **JAL-0810D.01** Shutter Actuator 8-fold, 8TE, 24V DC, 8A
  - 8-fold, for shutter motors up to 180W, manual actuation
- **JAL-0206.01** Shutter Actuator 2-fold, 2TE, 230V AC, 6A
  - 2-fold, for shutter motors up to 180W, manual actuation
- **JAL-0410A.01** Shutter Actuator 4-fold, 4TE, 230V AC, 10A, surface installation
  - 4-fold, for shutter motors up to 600W
- **JAL-01UP.01** Shutter Actuator 1-fold, 230VAC, 6A, flush-mounted fitting
  - 1-fold, for shutter motors up to 300W

2.2 Usage & possible applications

The Shutter Actuator actuates shutters as well as blinds. According to the hardware design you can actuate up to eight shutters or jalousie.
Every Channel can be adjusted to the corresponding shutter/jalousie by his parameter settings. For every channel you can adjust the travel time and actuate the channel manual as well as by absolute position devices. Furthermore you can restrict the travel area and blinds can be adjusted for jalousie. Every channel can be addicted to block functions and scenes. The automatic function enables the user to approach fixed adjusted positions by using 1-bit objects. This function appertains excellent to adjust positions for sun protection, which are activated by a light sensor. Additional you can activate weather alerts for every channel, which can cause parameterized functions.
Furthermore the MRDC devices dispose over a manual control, which enables the user to actuate the shutters/jalousie by hand. The manual control can be deactivated for each channel.
Of course, the shutter actuator can be used for moving ventilation damper or garage doors.

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2.3 Exemplary Circuit diagrams

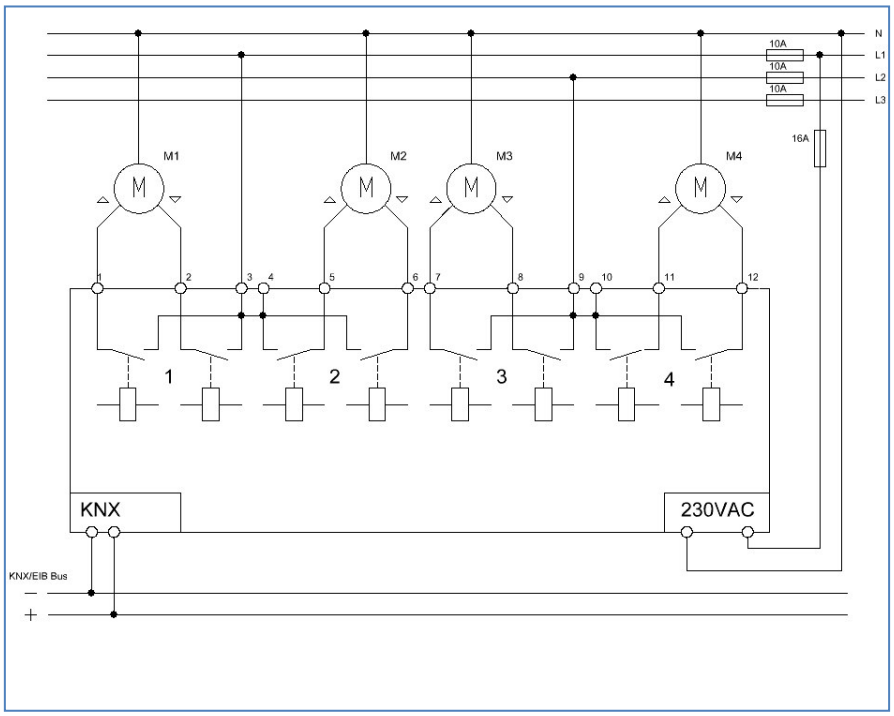

Figure 1: Exemplary circuit diagram shutter actuator 4-fold

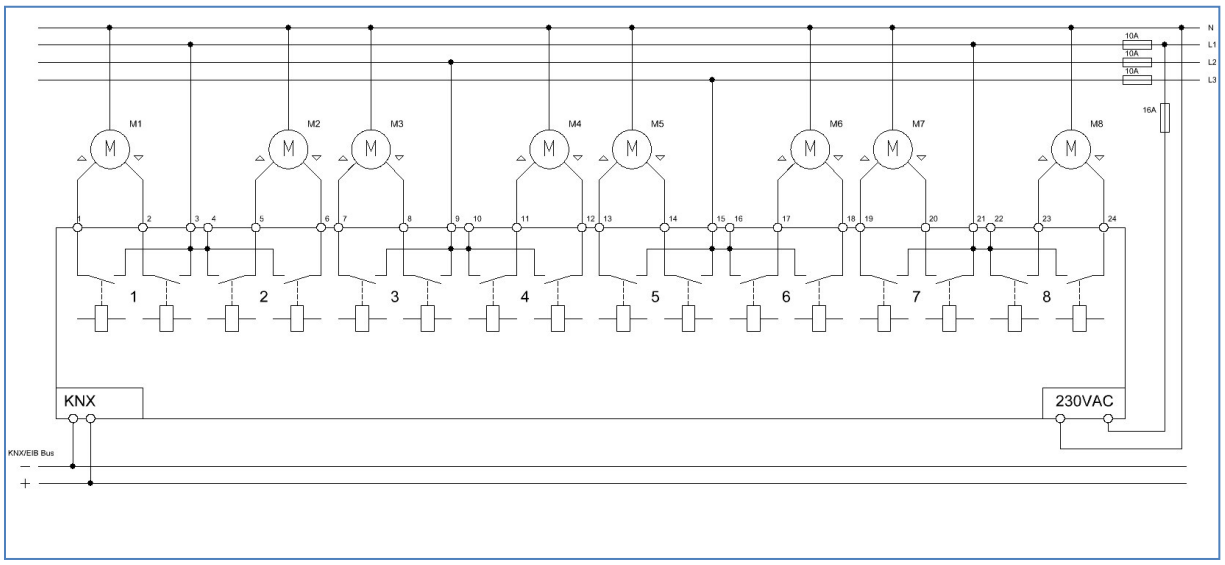

Figure 2: Exemplary circuit diagram shutter actuator 8-fold

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2.4 Structure & Handling

The shutter actuator (MDRC) contains of a programming button as well as a programming-LED, which shows an activated programming button. The shutter actuator works with 230V AC, only the actuators JAl-0410D.01 and JAL-0810D.01 work with 24V DC. Every channel of the MRDC device contains of two status-LEDs, the first one for an activated run up command and the second one for an activated move down command. A flashing LED shoes an active up-/down movement and a LED, which lights permanent, shows that the upper/lower end stop is reached. By using the four buttons you can activate the hand control. 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 shutter actuator for the surface installations consists only of the standard elements like bus connection, power connection, programming button and LED.
The following illustration shows an 8-fold shutter actuator for MDRC:

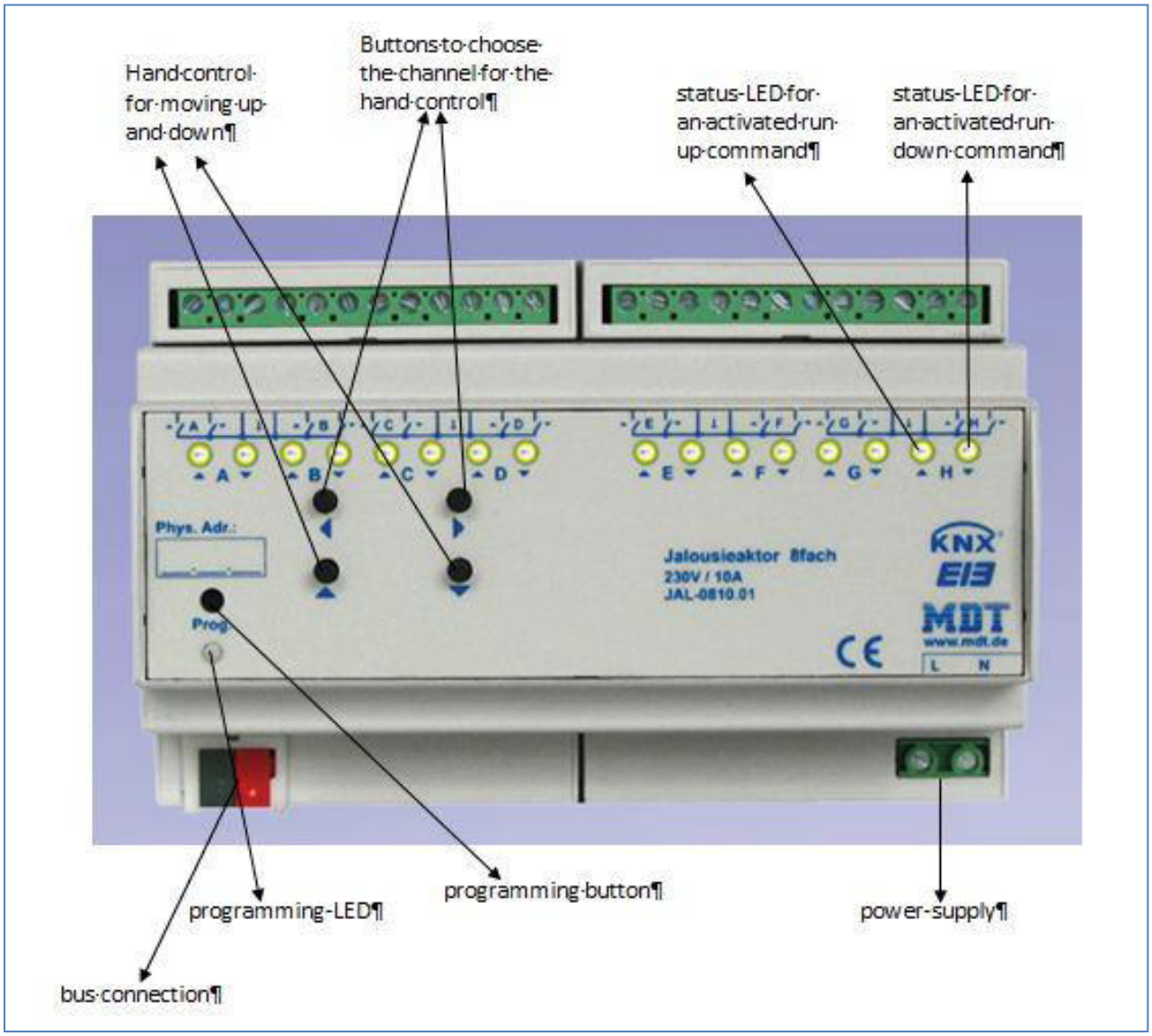

Figure 3: Overview hardware module (JAL-0810.01)

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2.5 Functions

The functionality is the same for all channels. Depending on the hardware module the device contains of up to eight channels.
The labeling of the channels is conducted standardly in continuous alphabetic order.
There are three possible functionalities:

- **not active**
  The channel becomes no more functions allocated. There are no more opportunities to parameterize the channel.

- **shutter**
  If you choose a channel as shutter, you have different possibilities to parameterize the moving of the shutters. By using different settings for movement, you can adapt the channel for every shutter. 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.

- **blinds**
  If you choose a channel as blinds, you have different possibilities to parameterize the moving of the blinds. By using different settings for movement you can adapt the channel for every type of 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.

The functions for shutter and blinds are basically the same. However, there is no parameter for moving the slats at the blinds.

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2.5.1 Overview functions

general settings	Channel selection	• not active • shutter • blinds
shutter functions	moving times	• time for movement • different times for up and down* • step time for blinds • duration of blinds adjustment • pause at change direction • switch on and switch off delay motor • positions of blinds at end of driving
blinds functions	moving times	• time for movement • different times for up and down* • short time operation* • pause at change direction • switch on and switch off delay motor
shutter & blind functions	objects for absolute position	• active/not active • driving to reference • reaction after driving to reference
	limitation of driving area	• active/not active • lower limit (0-100%) • upper limit (0-100%)
	Position start up via 1 Bit object**	• move to 0-100% via 1 bit-object • conditions for driving adjustable • action for abolishment adjustable
	central objects	reaction of the central objects for every channel activatable/deactivatable
	scenes	for every channel activatable/deactivatable
	automatic functions	for every channel activatable/deactivatable
	alarm functions	for every channel activatable/deactivatable
scene functions		• every channel can react on up to eight scenes with absolute driving command • adjustable scene numbers
automatic functions		• 2 automatic blocks • correlation to automatic block for every channel adjustable • up to eight automatic positions for every channel adjustable
alarm functions	order of alarms	adjustment of the alarm priority
	action of reset of alarms	• no action • drive to former position • drive to bottom/top
	wind alert/ rain alert/ frost alert	• active/not active • cycle time • reaction on alert
	Reaction of bus power down/up	• no action • drive to bottom • drive to top

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block functions	blocking	• separate activatable • action for activating & deactivating separate parameterize able
	blocking absolute position	• separate activatable
	Block universal mode	• separate activatable • free parameterize able • different block functions adjustable

Table 1: Overview functions

***from Hardware version 2.2**
****from Hardware version 3.2**

2.6. Settings at the ETS-Software

Selection at the product database:

Manufacturer: MDT Technologies
Product family: Actuators
Product type: Shutter actuator
Medium Type: Twisted Pair (TP)
Product name: addicted to the used type, e.g.: JAL-0810.01 shutter actuator 8-fold, 8TE, 10A
Order number: addicted to the used type, e.g.: JAL-0810.01

2.7. 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. MDT USB interface
(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)

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3 Communication Objects

3.1 Summary and Usage

The following chart shows the available objects and their usage:

Nr.	Name	Object function	Data type	Direction	Info	Usage	Tip
Central objects:							
0	All channels	Shutter up/down	DPT 1.007	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object is **always shown** and enables controlling the **standard function up/down**, for **all channels with activated central function**, which is normally connected to all control keys.
1	All channels	Slats up/down/stop	DPT 1.007	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object is **always shown** and enables controlling the **standard function slats open/close**, for **all channels with activated central function**, which is normally connected to all control keys.

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2	All channels	Stop	DPT 1.001	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object is **always shown** and enables controlling the **standard function stop**, for **all channels with activated central function**, which is normally connected to all control keys.
3	All channels	absolute positions	DPT 5.001	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object is **always shown** and **enables controlling to a percentage value**, for **all channels with activated central function**, which is normally connected to all control keys.
4	All channels	absolute position of slats	DPT 5.001	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object is **always shown** and **enables controlling the slats to a percentage value**, for **all channels with activated central function**, which is normally connected to all control keys.

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Objects for automatic function:							
5 - 8	Automatic A	Automatic position 1-4	DPT 1.017	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Actuator calls the saved values for this automatic position. **Enables the adjustment of absolute values via 1 Bit**
9 -12	Automatic B	Automatic position 1-4	DPT 1.017	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Actuator calls the saved values for this automatic position. **Enables the adjustment of absolute values via 1 Bit**
Objects per Channel:							
13	Channel A	Shutter up/down	DPT 1.007	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object is shown at the **operating mode „Shutter“** and enables controlling the **standard function up/down**, which is normally connected to all control keys. **(= Main function for shutter)**
13	Channel A	Blinds up/down	DPT 1.007	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object is shown at the **operating mode „Blinds“** and enables controlling the **standard function up/down**, which is normally connected to all control keys. **(= Main function for blinds)**

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14	Channel A	Slats up/down/stop	DPT 1.007	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object is shown at the **operating mode „Shutter“** and enables the controlling of the standard function slat adjustment (step) and stop , which is normally connected to all control keys. **(= Main function for shutter)**
14	Channel A	Short time operation	DPT 1.007	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object is shown at the **operating mode „Blinds“** and enables the controlling of the fine-tuning adjustment of the blinds in step, which is normally connected to all control keys. **(= Additional function at shutter)**
15	Channel A	Stop	DPT 1.017	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object is shown at the **operating mode „Blinds“** and stops an active up/down movement (without step function) **(= Main function for blinds)**
16	Channel A	Scene	DPT 18.001	receive	Actuator reacts to Incoming-telegramm	Bedientasten, Visu... zum Szenenaufruf	Communication object is shown after activation and allows calling scenes, which are saved in the actuator. **(= Additional function)**

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17	Channel A	Status act. direction	DPT 1.008	sending	Actuator sends current state	For diplay on Visu, Tableau, and Display	Communication object for displaying the currrent direction of movement. **(= Additional function)**
17	Channel A	Status of movement	DPT 1.008	sending	Actuator sends current state	For diplay on Visu, Tableau, and Display	Communication object for displaying, if the channel is moving at the moment. **(= Additional function)**
18	Channel A	absolute positions	DPT 5.001	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object for driving to an absolute position, which can be sent from control keys. **(= Additional function)**
19	Channel A	absolute position of slats	DPT 5.001	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object for driving the slats to an absolute position, which can be sent from control keys. **(= Additional function)**
20	Channel A	Status actual position	DPT 5.001	sending	Actuator sends current state	For diplay on Visu, Tableau, and Display	Communication object is shown after activation and shows the current position (0..100%). **(= Additional function)**
21	Channel A	Status act. position of slats	DPT 5.001	sending	Actuator sends current state	For diplay on Visu, Tableau, and Display	Communication object is shown after activation and shows the current position of slats (0..100%). **(= Additional function)**

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22	Channel A	Act. position valid	DPT 1.002	sending	for requesting current state	For diplay on Visu, Tableau, and Display or only for requesting once	Communication object indicates, if a refernce drive was already done, which is necessary at absolute position commands. **(= Additional function)**
23	Channel A	Start driving to reference	DPT 1.008	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object for starting a reference drive, which is necessary for absolute position commands. **(= Additional function)**
24	Channel A	Drive to position	DPT1.008	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object enables the driving to absolute commands, which are saved in the shutter actuator, via 1 Bit commands. **(= Additional function)** Enables the adjustment of absolute positions for shutter and blinds, which can be called via 1 Bit object.
24	Channel A	Drive to limitation	DPT 1.008	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication is shown if object number 24 is selected as “Limitation of driving area”. **(= Additional function)** Enables the usage of new virtual end points. The object is used for driving between these new end points.

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25	Channel A/B	State upper position	DPT 1.001	sending	Actuator reacts with sending a telegramm	For diplay on Visu, Tableau, and Display	Communication sends a logical 1, if the upper position = 0% is reached. **(= Additional function)**
26	Channel A/B	State lower position	DPT 1.001	sending	Actuator reacts with sending a telegramm	For diplay on Visu, Tableau, and Display	Communication sends a logical 1, if the lower position = 100% is reached. **(= Additional function)**
27	Channel A/B	Block absolute position mode	DPT 1.003	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object is shown, if the Alarm and Block-function is active and “blocking absolute position mode” is activated at the extended blocking functions. Blocks absolute positions commands. **(= Additional function)**
28	Channel A/B	Block universal mode	DPT 1.003	receive	Actuator reacts to Incoming-telegramm	Push buttons, Visu... for manual control	Communication object is shown, if the Alarm and Block-function is active and “blocking universal mode” is activated at the extended blocking functions. Blocks functions like parameterized **(= Additional function)**
29	Channel A/B	Wind alarm	DPT 1.005	receive	Actuator reacts to Incoming-telegramm	Can be used from the weather station for safety functions	Communication object is shown, if the Alarm and Block-function is active. Can be used as safety functions, whioch get their signal from weather stations. **(= Additional function)**

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30	Channel A/B	Rain alarm	DPT 1.005	receive	Actuator reacts to Incoming-telegramm	Can be used from the weather station for safety functions	Communication object is shown, if the Alarm and Block-function is active. Can be used as safety functions, whioch get their signal from weather stations. **(= Additional function)**
31	Channel A/B	Frost alarm	DPT 1.005	receive	Actuator reacts to Incoming-telegramm	Can be used from the weather station for safety functions	Communication object is shown, if the Alarm and Block-function is active. Can be used as safety functions, whioch get their signal from weather stations. **(= Additional function)**
32	Channel A/B	Block	DPT 1.003	receive	Actuator reacts to Incoming-telegramm	Can be used from the weather station for safety functions	Communication object is shown, if the Alarm and Block-function is active. Can be used as safety functions, whioch get their signal from weather stations. **(= Additional function)**

Table 2: Summary communication objects

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3.2 Default settings of the communication objects

Default settings									
Nr.	**Name**	**Object Function**	**Length**	**Priority**	**C**	**R**	**W**	**T**	**U**
0	every channel	Shutter up/down	1 Bit	Low	X		X		
1	every channel	Slats up/down	1 Bit	Low	X		X		
2	every channel	Stop	1 Bit	Low	X		X		
3	every channel	absolute Position	1 Byte	Low	X		X		
4	every channel	absolute position of slats	1 Byte	Low	X		X		
5	Automatic A	Automatic position 1	1 Bit	Low	X		X		
6	Automatic A	Automatic position 2	1 Bit	Low	X		X		
7	Automatic A	Automatic position 3	1 Bit	Low	X		X		
8	Automatic A	Automatic position 4	1 Bit	Low	X		X		
9	Automatic B	Automatic position 1	1 Bit	Low	X		X		
10	Automatic B	Automatic position 2	1 Bit	Low	X		X		
11	Automatic B	Automatic position 3	1 Bit	Low	X		X		
12	Automatic B	Automatic position 4	1 Bit	Low	X		X		
13	Channel A	Shutter up/down	1 Bit	Low	X		X		
13	Channel A	Blinds up/down	1 Bit	Low	X		X		
14	Channel A	Slats up/down/stop	1 Bit	Low	X		X		
14	Channel A	Short time operation	1 Bit	Low	X		X		
15	Channel A	Stop	1 Bit	Low	X		X		
16	Channel A	Scene	1 Byte	Low	X		X		
17	Channel A	Status actual direction	1 Bit	Low	X	X		X	
17	Channel A	Status of movement	1 Bit	Low	X	X		X	
18	Channel A	absolute position	1 Byte	Low	X		X		
19	Channel A	absolute position of slats	1 Byte	Low	X		X		
20	Channel A	Status actual position	1 Byte	Low	X	X		X	
21	Channel A	Status act. position of slats	1 Byte	Low	X	X		X	
22	Channel A	Act. position valid	1 Bit	Low	X	X		X	
23	Channel A	Start driving to reference	1 Bit	Low	X		X		
24	Channel A	Drive to limitation	1 Bit	Low	X		X		
24	Channel A	Drive to position	1 Bit	Low	X		X		
25	Channel A	State upper position	1 Bit	Low	X	X		X	
26	Channel A	State lower position	1 Bit	Low	X	X		X	
27	Channel A	Block absolute position mode	1 Bit	Low	X		X		
28	Channel A	Block universal mode	1 Bit	Low	X		X		
29	Channel A	Wind alarm	1 Bit	Low	X		X		

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30	Channel A	Rain alarm	1 Bit	Low	X		X		
31	Channel A	Frost alarm	1 Bit	Low	X		X		
32	Channel A	Block	1 Bit	Low	X		X		
+20	**next channel**								

Table 3: Standard settings communication objects

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 allocates 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.

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4 Reference ETS-Parameter

Attention:
After every transmission of a new parameterization you have to move the Shutter/Blinds once completely down and up, thereby the Shutter actuator knows his actual Reference values (see also 4.3.1 driving to Reference).

4.1 Channel selection

The following Illustration shows the tab page Channel selection:

Figure 4: Channel selection

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

ETS-text	Dynamic range **[default value]**	comment
Channel A-D/H	▪ **not active** ▪ Shutter ▪ Blinds	Operating mode of the channel

Table 4: Channel selection

Every of the 1 to 8 available channels can be assigned one of the three available conditions at the tab page “channel selection”. The following parameterization options depend on the selected conditions for the channel. If a channel is set to “not active”, there will be no further parameterization options. If a channel is selected to “shutter” or “blinds”, a new tab page will appear at the left drop-down menu with the format Channel A: Shutter/Blinds.
Trough selection the respective channel you can parameterize the channel according to the individual requirements. The available options for the parameterization depend on the function of the selected channel.

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4.1.1 Blinds

If a channel is selected as sblinds the user has a wide range of opportunities to parameterize the channel. These one are expounded at the following segments.
As soon as the channel is selected as shutters standardly three communications objects appear.
The following chart shows these objects:

Number	Name	Length	Usage
13	Blinds up/down	1 Bit	Movement of the shutter
14	Slats up/down/stop	1 Bit	Adjustment of the blinds/ Stopping of the shutter movement

Table 5: Communication objects blinds

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 up/down/stop” is used to adjust the slats. By calling this object the current movement of the blinds is simultaneous stopped.

4.1.2 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
13	Shutter up/down	1 Bit	Movement of the shutter
14	Short time operation	1 Bit	starts the short time operation
15	Stop	1 Bit	Stopping the shutter movement

Table 6: Communication objects shutter

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”.

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4.2 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 shutter there are additional settings for the moving time of the blinds.
You can see the screen for setting these times in the following illustration.

Blinds:

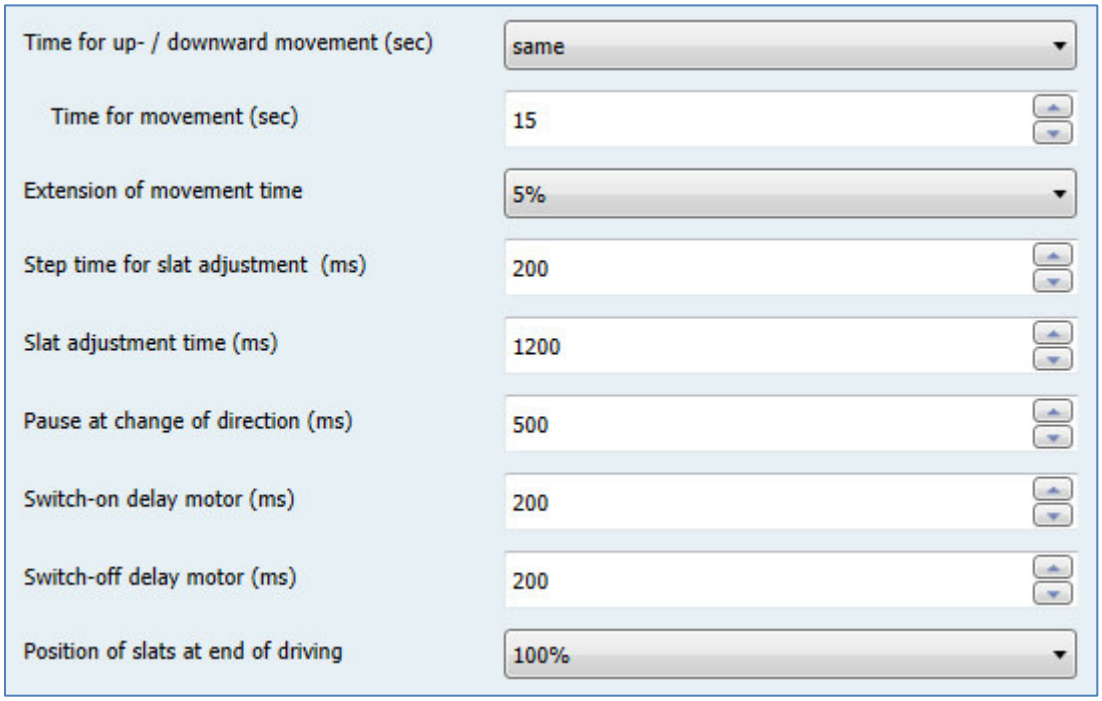

Figure 5: Time for movement - blinds

Shutter:

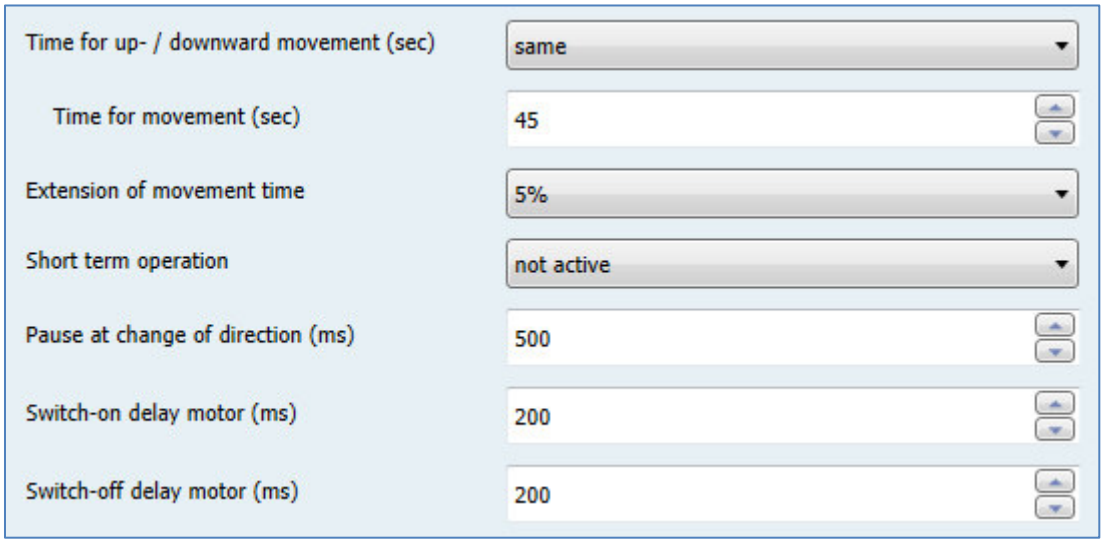

Figure 6: Time for movement - shutter

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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	▪ **same** ▪ different	Adjustment, whether up-and down-movement should be different or not
Time for movement Time for movement up/down **different times, form hardware version 2.2**	1-10000sec **[45sec]**	sets the duration for an up-/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	50-1000ms [200ms]	**only at blinds** Duration for a step at the adjustment of blinds
Duration of slat adjustment	10-10000ms [1200ms]	**only at blinds** Duration for the whole adjustment of blinds (0-100%)
Pause at change of direction	1-1000ms [500ms]	sets the pause time between an up- and down movement
Switch-on delay motor	0-255ms [0ms]	switch-on delay for motors, which have not the whole power at the beginning
Switch-off delay motor	0-255ms [0ms]	switch-off delay for motors, which have time lag after set off
Position of slats at end of driving	0-100% [50%]	**only at blinds** sets the position of slats after driving the shutter
Short time operation	▪ **not active** ▪ active	**only at shutter** sets the short time operation on/off
Time for movement for short time operation **from hardware version 2.2**	50-1000ms [200ms]	**only at shutter** adjusts the time for one short time operation

Table 7: Dynamic range time for movement

The functions are described in detail at the following segments.

4.2.1 Measure of the times for Movement

The individual times for the movement of shutter/blinds can 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 advisable 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.

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4.2.2 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 (from hardware version 2.2).
The extension of time for movement (from hardware version 2.2) 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 guaranted driving to the end stops.
Check if the manufactory gives any data for the movement times.

4.2.3 Step time for slats

→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 sunblinds.
Additional, 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 “duration of slat adjustment”. 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: Duration of slat adjustment: 3000ms
Step time for slats = 300ms
→Number of steps=10 → therefore the values 0%, 10%, …, 100% can be appointed

4.2.4 Duration of slat adjustment

→only at blinds

The duration of slat adjustment 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”

It is advisable to use the procedure, like under 4.2.1 described, by long slat adjustment times.

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4.2.5 Pause at change of direction

The pause at change of direction 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.

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.

4.2.6 Switch-on/Switch-off delay motor

Some motors can not 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.

4.2.7 Position of slats at end of driving

→only at blinds

By using the adjustment “position of slats at end of driving“ can 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 13 “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.

4.2.8 Short time operation

→only at shutter

→ from hardware version 2.2

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.

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4.3 Objects for absolute position/ Status objects

Through activating the objects for absolute position it is possible to drive to absolute positions for movement and blind positions.
The following illustration shows the possible settings:

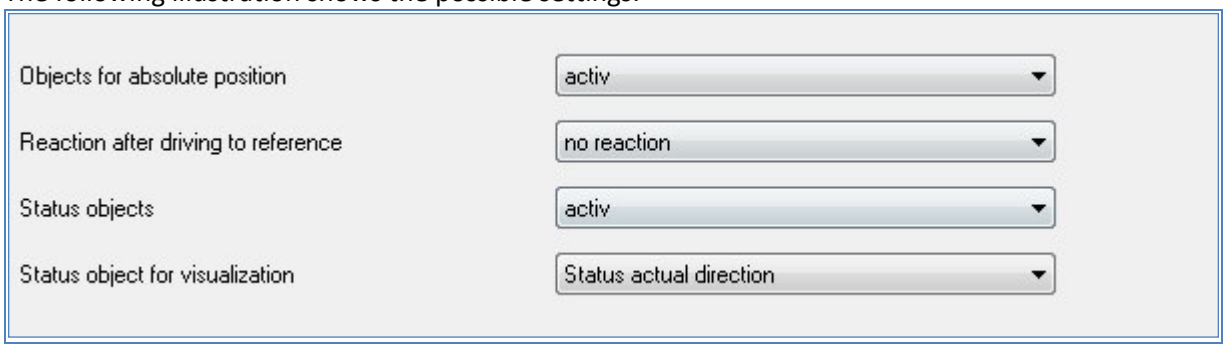

Figure 7: Objects absolute position

The following chart shows the setting range for this parameter:

ETS-text	Dynamic range **[default value]**	comment
Objects for absolute position	▪ **not active** ▪ active	activate/deactivate the objects for absolute position
Reaction after driving to reference	▪ no reaction ▪ **drive to former position**	gets only displayed if the objects are activated; sets the reaction after a driving to reference
Status objects	▪ **not active** ▪ active	enables the status objects
Status object for visualization	▪ **Status actual direction** ▪ Status of movement	adjusts the status object for the visualization

Table 8: Setting range absolute position

When the objects for the absolute position are activated, the following objects are displayed:

Number	**Name**	**Length**	**Usage**
17	Status actual direction	1 Bit	indicates the actual direction of the way of driving
17	Status of movement	1 Bit	indicates an active driving process
18	absolute position	1 Byte	utilized for driving the shutter/blinds to a specific value
19	absolute position of slats	1 Byte	for adjustment of the slats to a specific value (only at blinds)
20	Status actual position	1 Byte	indicates the actual shutter-/blinds position
21	Status act. position of slats	1 Byte	indicates the actual position of the slats (only at blinds)
22	act. position valid	1 Bit	indicates whether a driving to reference was already conducted

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23	start driving to reference	1 Bit	starts the driving to reference
25	state upper position	1 Bit	notify achievement of the upper end position
26	state lower position	1 Bit	notify achievement of the lower end position

Table 9: Communication objects absolute position

The usage/function of this communication objects are explained at the following segments.

4.3.1 Driving to reference

The shutter actuator calculates its actual positions from the appointed times for movement. The real times for movement can be corrupted trough outside influences after some time.
A driving to reference calculates the appointed time for movements anew and specifies in this way the shutter actuator new times for movement. Based on these new times for movement the shutter actuator can calculate the real position of the shutter/blinds more detailed.
The driving to reference is especially useful if someone works very often with commands for absolute positions. Therefore the shutter actuator can calculate the entered position more detailed and drive to this position more precise. Every drive to the lowest or highest position replaces a driving to reference. So the driving to reference should be done, when the shutter/blinds is only driven with absolute commands lower than 100% and more than 0%. In this case, a reference drive should be done regularly, e.g. one's a week.
The reference run is started through an 1-signal on its 1 bit communication object "start driving to reference". It is possible to adjust the reaction after the driving to reference by the parameter "reaction after driving to reference". The shutter actuator can drive to the position, which it had before the reference run, by the setting "drive to former position". Through the setting "no reaction" the shutter actuator lets the shutter/blinds at the position, which was reached after the end of the reference run.
After every transfer of a new parameterization you have to conduct a reference run. This can either manual occurred, that means the upper and lower position are approached ones, or by the object "start driving to reference". Now the reference run was conducted and the shutter actuator knows its actual state along the driving range.

4.3.2 Commands for absolute positions

By the objects for absolute positions you can specify a constant value to the shutter actuator, on which the shutter shall be driven. This value is indicated in percent and has a range from 0-100% with every 1% step between it. From the indicated percent value the shutter actuator calculates at the next step the real time for the movement of the shutter/blinds based on the appointed times for movement and the actual position.
The commands for the absolute position are transmitted to the 1 byte communication objects. There is an object for the absolute height positions of the driving way at shutter and blinds. Additional there is an object for the opening angle of the blinds at shutters, the object "absolute position of blinds".
At the percentage description corresponds 0% always fully opened and 100% full closed.

4.3.3 Status objects (actual position/direction)

The status objects "Status actual position" and "Status act. position of slats" conduce the visualization of the absolute position. Both objects indicate the actual state of the height and the opening angle of the blinds, respectively after end of driving. The objects can be used e.g. for Visualization.

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4.3.4 Report objects

The 1 bit objects „state lower position“ and „state upper position“ will conduct respectively an 1-signal, if the lower end position or the upper end position is achieved. The signal of the object changes from 1 to 0, when the end position is left. Both objects are useful for the observation of the shutter/blinds.

4.3.5 Status objects for Visualization

The 1 bit status object “Status of movement” shows, that a movement of these shutters/blinds is active right now. A running movement is indicated by a logical “1”.
The 1 bit object “Status act. direction” conducts with a logical 0 a running up driving and with a logical 1 a running down driving. The state is respectively displayed, when a movement starts. The state exists intern as long as a new command for driving is sent. The 1 bit object “act. Position valid” will conduct, if a reference run was started after a new programming. This object can be used through a visualization to indicate that there is still a reference run necessary.

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4.4 Function object number 24/44/64…

The parameter "Function object number 24/44/64…" can be parameterized as limitation of the driving area or as 1-Bit position start up for absolute positions (from hardware version 3.2). The object number depends to the selected channel. Channel A has the number 24, for every further channel, the number is counted up by 20.
The following illustration shows the available settings:

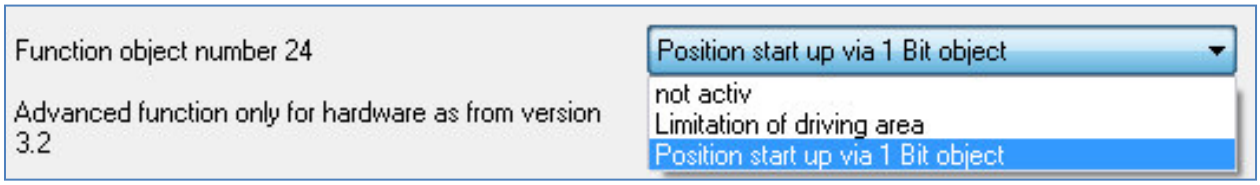

Figure 8: Function object number 24/44/64/…

The following chart shows the dynamic range of this parameter:

ETS-text	Dynamic range **[default value]**	comment
Function object number 24	▪ **not active** ▪ Limitation of driving area ▪ Position start up via 1 Bit object	activates/deactivates the sub function for the object 24 (Channel A)

Table 10: Function object number 24/44/64…

The following chart shows the relevant communication objects:

Number	Name	Length	Usage
24	Drive to limitation	1 Bit	drives to the lower/upper limitation; is shown as soon as the function "Limitation of driving area" is selected
24	Drive to position	1 Bit	drives to the adjusted position; is shown as soon as the function "Position start up via 1 Bit object" is selected

Table 11: Object number 24(Channel A)

4.4.1 Limitation of driving area

The parameter limitation of driving area can limit the up- and down-movement.
The following illustration shows the possible settings:

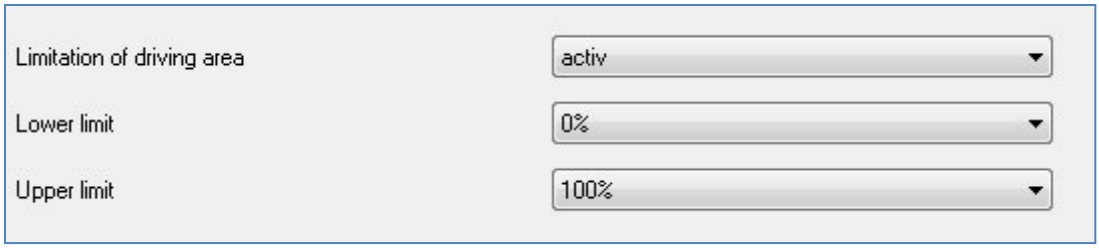

Figure 9: Limitation of driving area

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The following chart shows the dynamic range for this parameter:

ETS-text	Dynamic range **[default value]**	comment
Limitation of driving area	▪ **not active** ▪ active	activates/deactivates the limitation of the driving area
Lower limit	0-100% **[0%]**	gets displayed as well the limitation gets activated; sets the lower limitation
Upper limit	0-100% **[100%]**	gets displayed as well the limitation gets activated; sets the upper limitation

Table 12: Dynamic range limitation

As soon as the limitation of the driving area is activated, the following communication object is displayed for the associated channel:

Number	**Name**	**Length**	**Usage**
24	Drive to limitation	1 Bit	drives to the lower/upper limit

Table 13: Communication object limitation

You set new limits for the height adjustment to the shutter actuator By the parameter limitation of the driving area. The shutter actuator accepts the new limits thereby as new virtual end positions. If you set for example a new limitation of 40% to the lower limitation, the shutter actor will display the achievement of the lower position through the object “state lower position” as soon as the 40% is reached. The object “actual position” also displays for this height 0% now.
By the 1 bit object “drive to limitation”, you can control the up- and down-movement between the appointed limits. Analog to the standard driving commands, also at this object, an 1-signal starts the up-movement and an 0-signal starts the down movement.
The normal driving objects „shutter up/down“ still drive to the real end positions. But now the actor notifies already at the achievement of the adjusted limitation 0% respectively 100% for the actual position.

4.4.2 Position start up via 1 Bit object

Function only available form hardware version 3.2!
If the object 24 (Channel A) is selected as “Position start up via 1Bit object”, the following setting options will appear:

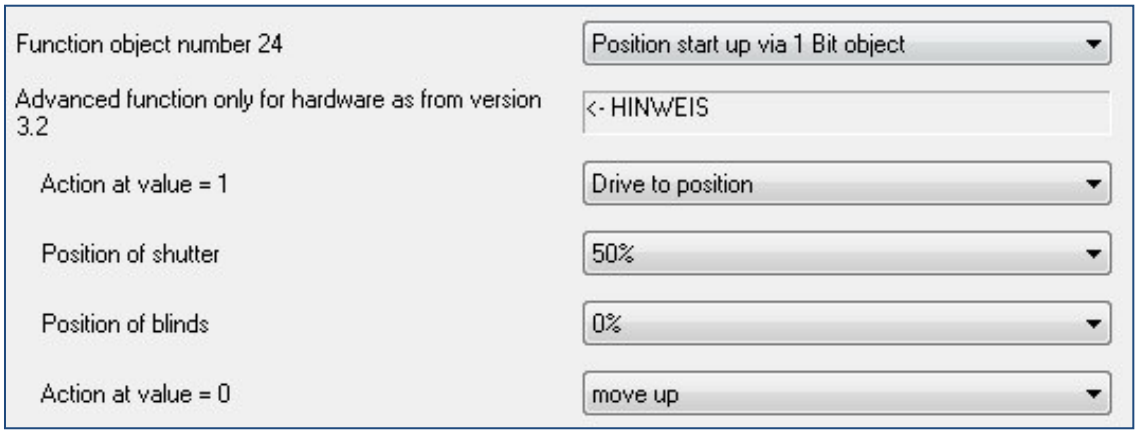

Table 14: Position start up via 1Bit object

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The following chart shows the dynamic range for this parameter:

ETS-text	Dynamic range **[default value]**	comment
Function object number 24	**Position start up via 1Bit object**	selected function for object number 24
Action at value = 1	▪ **Drive to position** ▪ Drive to position if blind/shutter is up ▪ Drive to position if blind/shutter is down	Function for sending a logical 1
Position of blinds/shutter/slats	0-100% **[50%]**	Position, which shall be activated at sending a logical 1
Action at value = 0	▪ **no function** ▪ move up ▪ move down	Action at the deactivation of the position start up, via logical 0

Table 15: Position start up via 1Bit object

The function position start up via 1 Bit object enables driving to absolute positions via 1 Bit object. On this, additional conditions can be parameterized when the channel shall drive to the adjusted functions. Compared to the automatic function, this function is only valid for one single channel. So this function can be parameterized individually for every channel.
The parameter “Action at value = 1” defines whether the position start up shall occur in every position or only at the end positions.
Furthermore, it can be selected via the “Action at value 0” what shall be happen at the deactivation of the position start up. The channel can drive to one of the both end positions or stay in its last position.
The “Action at value =0” will only be done, if the current position is still the same as the adjusted one. If the shutter/blinds are driven to another position before sending a logical 0, the channel will not drive.

The field of application for this function are widespread. Two examples are given at the following segments:

- Moving up the blinds for air ventilation at opened/tilted window:
  As soon as the window contact detects an opened window, the blinds shall be moved up to the value 0f 90%. Of course this function shall only be administrated if the blinds are in the bottom end stop. So you choose at the parameter “Action at value = 0” the setting “Drive to position if position is down”. When the window is closed again, the blinds shall drive again to the bottom end position. So you choose at “Action at value = 0” the setting “move down”.
- The shading shall only drive if the blinds are up:
  If the blinds are stilled closed in a room, e.g. the bedroom, or already manually driven to certain shading position and shall not drive to the adjusted shading position, the position start up via 1 Bit object can fix this problem. The parameter “Action at value = 1” must be selected as “Drive to position if blinds are up”. The deactivation can be selected as “move up”. To note is, that this function will only be done if the blinds are not moved to another position before.

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4.5 Central objects

The parameter “central objects“ defines for every channel if he shall react to the central objects or not.

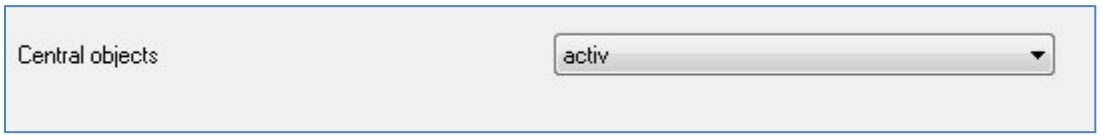

Figure 10: Central objects

The following chart shows the dynamic range for this parameter:

ETS-text	Dynamic range **[default value]**	comment
central objects	▪ **not active** ▪ active	activates/deactivates the reaction to central objects for this channel

Table 16: Dynamic range central objects

The central communication objects are displayed durable also the function “central objects” is deactivated in every channel. Central objects are accounted as “all channels” and at the top of the list for the communication objects.

Number	Name	Length	Usage
0	Shutter up/down	1 Bit	Driving function for all channels
1	Blinds up/down/stop	1 Bit	Adjustment of blinds/stopping blind adjustment for every channel, which is defined as shutter
2	Stop	1 Bit	stop function for every channel
3	absolute Position	1 Byte	absolute command for height at every channel
4	absolute position of slats	1 Byte	absolute command for opening angle of blinds at every channel, which is defined as shutter

Table 17: Central communication objects

Activating the central objects in selected channels enables the triggering of several channels to the same time with only one command.
The object 0 “shutter up/down” is the central driving object and controls as well channels selected as shutter as channels selected as blinds in which the parameter was activated.
The object 1 “slats up/down/stop” controls only channels selected as blinds in which the central function was activated. It drives the slats and stops a running up- or down- movement.
Object number 2, called “stop”, is the central stop function for every channel. Also object 3 “absolute position” is for shutter- and blind-channels with activated central function. By this object, you can give the actuator absolute commands for the height of the shutter/blinds.
The object 4 “absolute position of slats” controls only channels selected as blinds. It controls the opening angle of the slats by an absolute position command.

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4.6 Scenes

If functions of different crafts (e.g. light, shutter, heater) shall be controlled with only one keystroke or command, it will be useful to use the scene-function. By calling this scene, you are able to set the lights in a room to specific value or dim them, drive the shutter to a specific value and rotate the blinds, the control of the heater can be set to day operation and switch on the power supply of the sockets. The telegrams of this function can have different formats as well as different values with various meaning (e.g. “0” for lights off and open shutters). Without the scene function you have to send every actor a separate signal to get the same setting.
By using the scene function of the shutter actor you can integrate the channels to a scene control. In order to do this you have to allocate the respective memory (scene (A-H) a value. There are up to 8 scenes for every channel possible. If the scene function is activated for this channel the according scene menu is shown. At this menu the single scenes can be activated and values, scene numbers and the memory function on/off can be set.
Scenes get activated by reception of their scene number at the according scene object. If the memory function is activated at the scene, the saving will follow with the actual values of the channels. The communication objects have always the size of 1 Byte.

The following illustration shows the possible settings at the ETS-Software to activate the scenes:

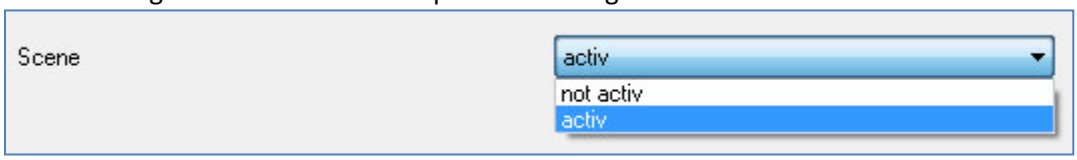

Figure 11: Scene function

Number	Name	Length	Usage
16	Scene	1 Byte	Call of the respectively scene

Table 18: Communication object scene

To call a specific scene, you have to send the value of the respectively scene to the communication object for the scene function. The value, to call the scene, is thereby always one number less than the adjusted scene number. If you for example want to call scene number 1, you have to send a 0. Consequently the scene number can have the values from 1 to 64, but the values to call a scene only from 0 to 63.
If you activate the call of a scene at a binary input, you have to set the same scene numbers at your binary input and at your shutter actor. The binary input sends automatically the right value to call the scene.

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4.6.1 Subitem scene

Every channel has 8 opportunities to save scenes. This 8 memory cells have the names A-H. Every of the 8 scenes can get one of the possible 64 scene numbers. The following illustration shows the setting options at the sub item scene (channel X: scene) for the scenes A-D and a channel, which was selected as shutter (scenes E-H are the same as the first four):

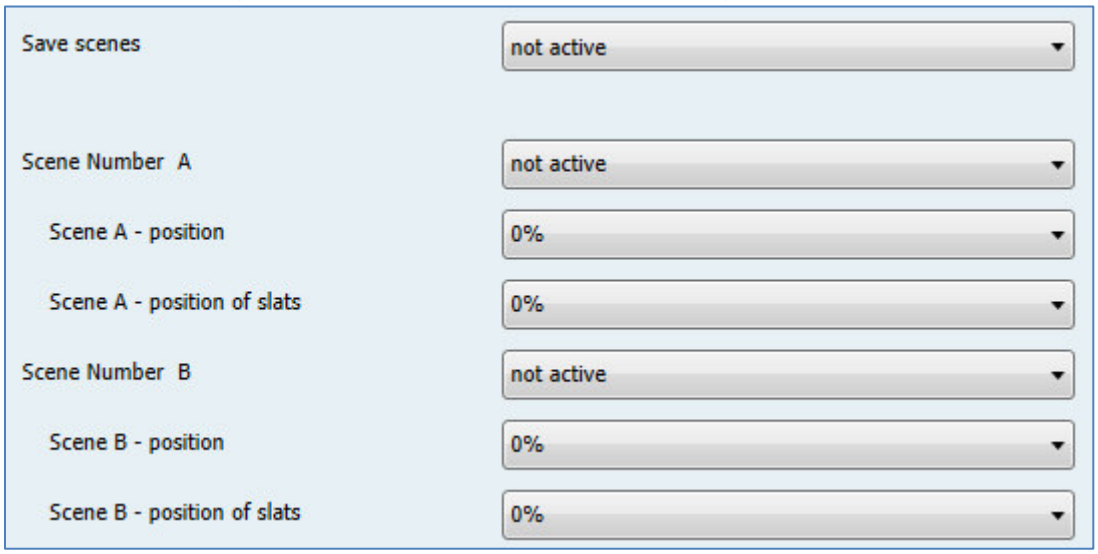

Figure 12: Subitem scene

The subitem for blinds is almost the same like the one for a shutter channel, but the setting options for position of slats are dropped out.

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The following chart shows the dynamic range for the scenes:

ETS-text	Dynamic range **[default value]**	comment
Save scenes	▪ **not active** ▪ active	activates/deactivates the memory function for scenes
Scene A - position	0-100% [0%]	Adjustment for absolute positions when calling the scenes
Scene A – position of slats	0-100% [0%]	Adjustment for absolute blind positions when calling the scene (only at channels, which are chosen as blinds)
Scene number A	1-64 [1]	Scene number; pick-up value = one number less than the scene number (default values increase by every alphabetic increment, B=2; C=3,…)

Table 19: Dynamic range scenes

If a scene is activated in a channel, a subitem scene for this channel will appear. At this subitem the channel can be allocated a reaction for the call of this scene. This reaction contains a command for an absolute height (0-100%) for this channel or additional an absolute position of blinds at a shutter channel (see also Chart 17). Every channel can react to eight different scenes. By sending the according pick-up value for the scene, the scene is called and assumes its parameterized conditions. During this process the channel regards also its individual parameterization. If the channel shall for example drive to 0% by calling the scene and still drives down at 70%, the pause at change of direction will be observed before the channel starts driving up to 0%.
You have to observe at the programming, that if two or more channels shall refer to the same scene numbers, the communication objects are hosted in the same group address. By sending the pick-up value for the scene, all channels with the according scene number respond. It is useful to divide your group addresses after scenes to make the programming more clearly. That means if a channel shall react to eight different scenes, the communication object is also integrated in eight different group addresses.

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For calling a scene or saving a new value for the scene, you have to send the accordingly code to the relevant communication object for the scene:

Scene	Retrieve		Save	
	Hex.	Dez.	Hex.	Dez.
1	0x00	0	0x80	128
2	0x01	1	0x81	129
3	0x02	2	0x82	130
4	0x03	3	0x83	131
5	0x04	4	0x84	132
6	0x05	5	0x85	133
7	0x06	6	0x86	134
8	0x07	7	0x87	135
9	0x08	8	0x88	136
10	0x09	9	0x89	137
11	0x0A	10	0x8A	138
12	0x0B	11	0x8B	139
13	0x0C	12	0x8C	140
14	0x0D	13	0x8D	141
15	0x0E	14	0x8E	142
16	0x0F	15	0x8F	143
17	0x10	16	0x90	144
18	0x11	17	0x91	145
19	0x12	18	0x92	146
20	0x13	19	0x93	147
21	0x14	20	0x94	148
22	0x15	21	0x95	149
23	0x16	22	0x96	150
24	0x17	23	0x97	151
25	0x18	24	0x98	152
26	0x19	25	0x99	153
27	0x1A	26	0x9A	154
28	0x1B	27	0x9B	155
29	0x1C	28	0x9C	156
30	0x1D	29	0x9D	157
31	0x1E	30	0x9E	158
32	0x1F	31	0x9F	159

Table 20: Calling and saving scenes

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4.7 Automatic function

You can activate an automatic function for every channel. Through the automatic function, you can call up to 4 different conditions. The automatic function is divided into two different blocks (A and B). It is also possible to call several moves to the same time through the automatic function, for example drive the blinds as well as the shutter and change the opening angle of the blinds.
The following Illustration shows the activation of the automatic function for a channel:

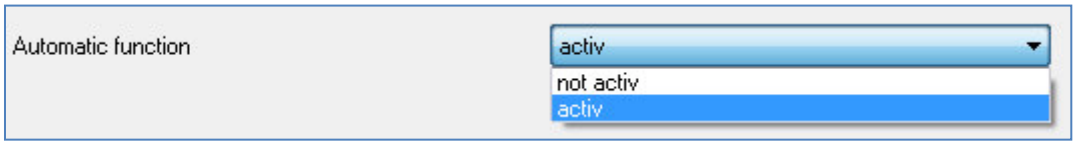

Figure 13: Automatic function

If the automatic function is activated for a channel, at the left drop down menu a new subitem (channel X: Automatic) will appear to parameterize the automatic function for this channel.

4.7.1 Subitem automatic function

The following illustration shows the setting options for an automatic function at the subitem channel X: automatic:

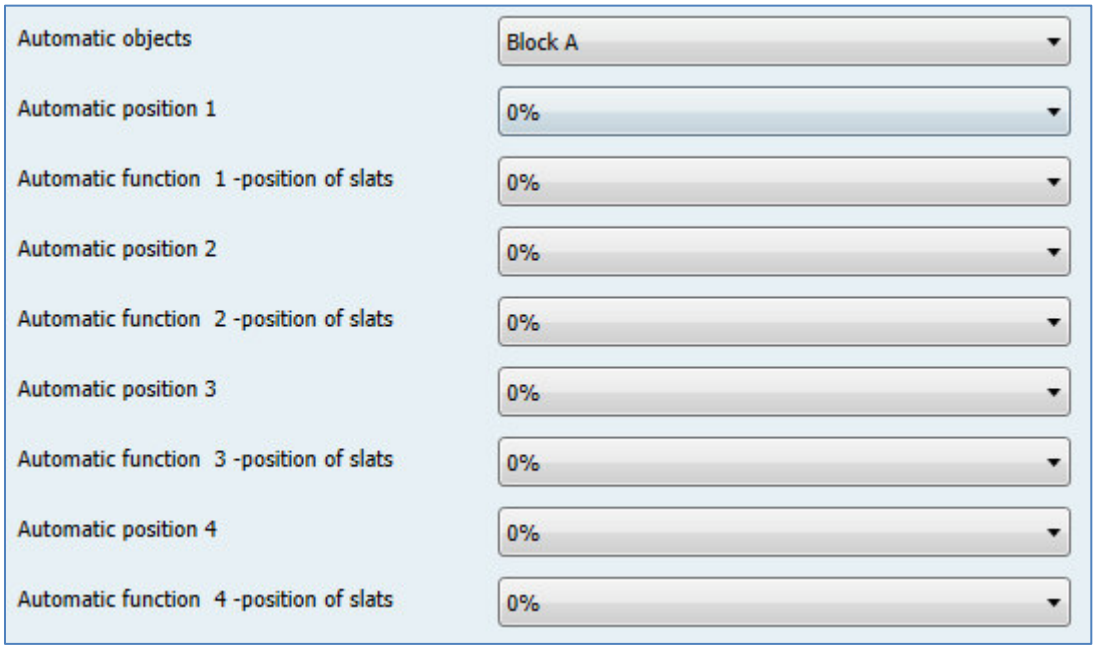

Figure 14: Subitem automatic function

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The following chart shows the dynamic range for the first automatic function. There are 4 different automatic functions for every channel. The dynamic range of the automatic functions 2,3 and 4 are the same as the first.

ETS-text	Dynamic range **[default value]**	comment
Automatic objects	▪ **Block A** ▪ Block B	setting to which automatic block this channel shall refer
Automatic function 1(-4) - Position	0-100% [0%]	height position for the first automatic function
Automatic function 1(-4) – position of slats	0-100% [0%]	position of blinds for the first automatic function(only at blinds)

Table 21: Dynamic range automatic function

At the subitem for the automatic function, you can depose values for 4 different automatic calls. The values are absolute values, which the channel accepts at the call of the according automatic function. Additional you can determine for every channel to which automatic block the channel shall refer. Here are the blocks A and B disposal. The activation of the blocks is descripted below.

Additional an option for the automatic function can be parameterized **(only from hardware version 3.2):**

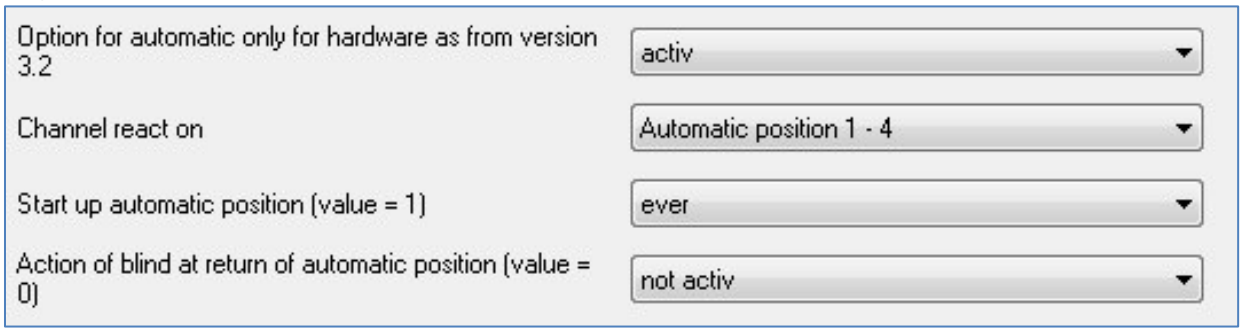

Figure 15: Option for automatic

At the “option for automatic” the area of validity of the automatic function for one channel can be restricted. So e.g. the channel B can react only to one certain position or perform the call of an automatic function only if the shutter/blinds are in an end position.
Furthermore a moving command can be parameterized for the deactivation of the automatic function. But this moving command is only performed if the channel is still in the called position. For proofing this, an internal alignment between the current position and the called position is done before moving the channel. So it is ensured that the action at return of the automatic function is only performed if the shutter/blinds are not driven manually to any certain value.

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The following settings are available for the automatic position:

ETS-text	Dynamic range **[default value]**	comment
Option for automatic	▪ **not active** ▪ active	Activation of the automatic option
Channel react on	▪ **Automatic position 1-4** ▪ Automatic position 1 ▪ Automatic position 2 ▪ Automatic position 3 ▪ Automatic position 4	Adjustment which automatic positions shall be performed of the channel
Startup automatic position (value = 1)	▪ **ever** ▪ if position = UP ▪ if position = DOWN	Adjustment if the automatic position shall only be performed in an end position
Action at reset of automatic position (value=1)	▪ **not active** ▪ move up ▪ move down	Adjustment, which action the channel shall perform at the reset of the automatic function

Table 22: Option for automatic

Individual shading and air ventilation projects can be realized by the option for the automatic function. Examples are described at chapter 4.4.2.

4.7.2 Automatic blocks

To call appointed values by the automatic function, you have to activate the appointed automatic blocks at the subitem for the automatic function. The blocks A and B can be activated or deactivated separately.
The following illustration shows the setting options for the automatic blocks:

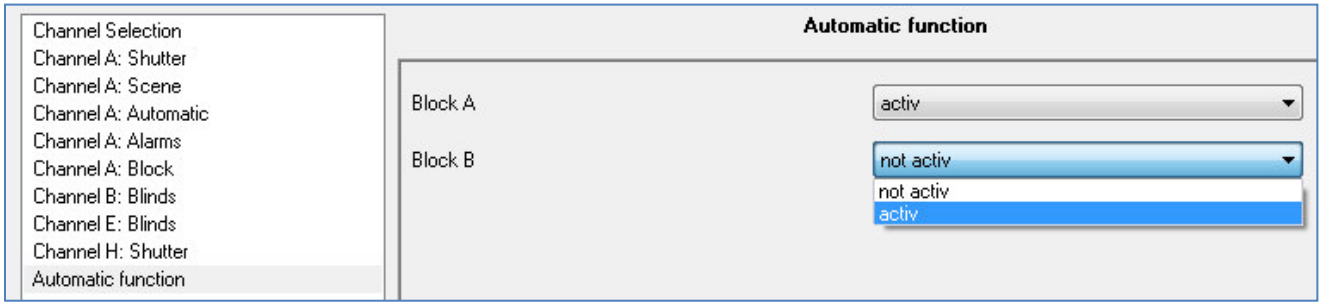

Figure 16: Automatic blocks

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.

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The communication objects are shown at the following chart:

Number	Name	Length	Usage	Number
5	automatic A	automatic position 1	1 Bit	Call of the first automatic position at block A
6	automatic A	automatic position 2	1 Bit	Call of the second automatic position at block A
7	automatic A	automatic position 3	1 Bit	Call of the third automatic position at block A
8	automatic A	automatic position 4	1 Bit	Call of the fourth automatic position at block A
9	automatic B	automatic position 1	1 Bit	Call of the first automatic position at block B
10	automatic B	automatic position 2	1 Bit	Call of the second automatic position at block B
11	automatic B	automatic position 3	1 Bit	Call of the third automatic position at block B
12	automatic B	automatic position 4	1 Bit	Call of the fourth automatic position at block B

Table 23: Communication objects automatic function

The communication objects, with the size of 1 Bit, can be allocated arbitrary to the group addresses. By calling one of the communication objects, the deposited values for the automatic function are called. It is possible to move all channels of one shutter actuator to their parameterized values with only one command, but also to move only one channel. This happens in according to the parameterization, which was made for the individual channel at the subitem automatic function (have a look at 4.7.1). To move more channels to the same time to a specific value, you have to choose the same blocks for these channels and set the same values for this automatic positions.

4.8 Alarm functions/ superior functions

The shutter actuator can react to specific weather situations and introduce several reactions for this channel to protect the shutters/blinds by using the alarm function. Additional reactions on a bus power breakdown or a bus power return can be defined. The alarm functions can be activated or deactivated for every several channel.
The signals for the alarms can be recovered of a KNX weather station. Now the shutter actuator is able to evaluate these signals and assemble them according to the parameterization.
The following Illustration shows the activation of the alert functions for a channel:

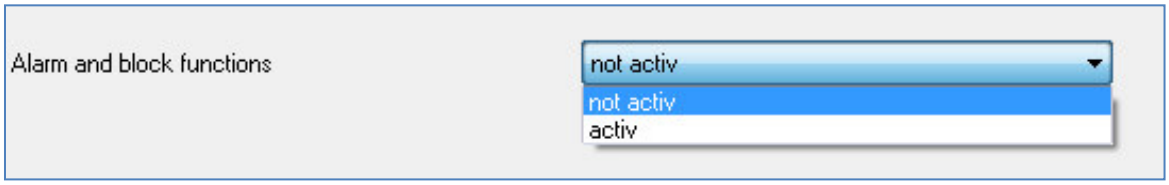

Figure 17: Alarm functions

If the alert function is activated for a channel, at the left drop-down menu appears a subitem (channel X: Alarms), in which the following parameterization can ensue.

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If the alert function is activated, you can make the following parameterization at the appeared subitem.
The following illustration shows the drop-down menu for the alert function:

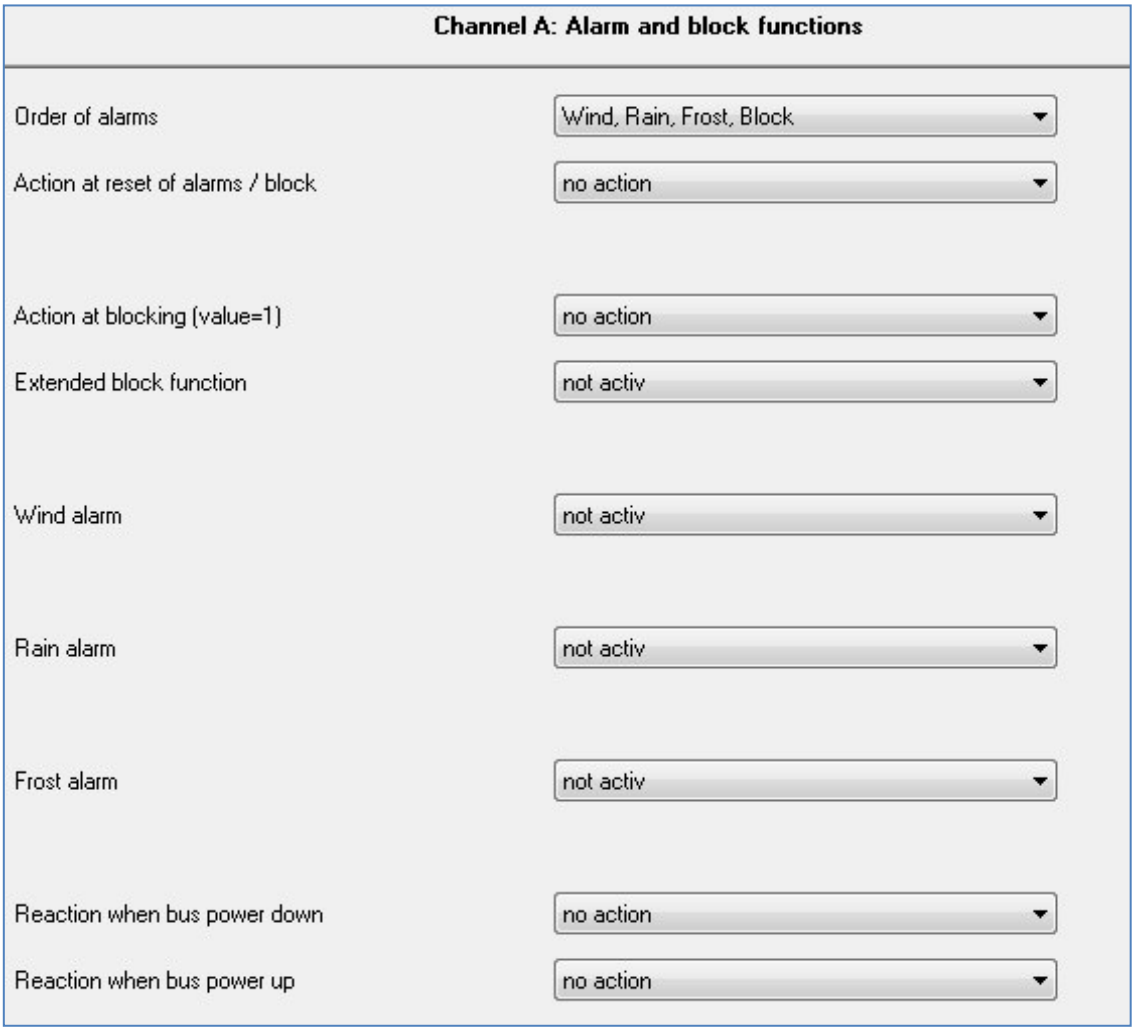

Figure 18: Subitem alarm function

The several parameters of the alert function, as well as the setting options, are descripted in detail at the following segments.

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4.8.1 Order of alarms

The parameter “order of alarms” describes the priority of the several alarms.
The following chart shows the setting options for this parameter:

ETS-text	Dynamic range **[default value]**	comment
Order of alarms	▪ **Wind, Rain, Frost, Block** ▪ Wind, Rain, Block, Frost ▪ Wind, Block, Rain, Frost ▪ Block, Rain, Wind, Frost	sets the priority of the alarms

Table 24: Order of alarms

If there are two or more alarms activate to the same time, the shutter actuator will evaluate the alarms according to the appointed order of alarms. The shutter actuator implements only the function of the alarm with the highest priority. The function for the alarm with the lower priority does not implement, as far the alarm with the higher priority is active. When the alarm with the higher priority is deactivated and the alarm with the lower priority is still active, the function for the alarm with the lower priority is activated afterwards.

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4.8.2 Alarm types

Three different types of alarms can be activated (wind alarm, rain alarm, frost alarm), which can be set individually afterwards.
The following chart shows the dynamic range of the three types of alarms:

ETS-text	Dynamic range **[default value]**	comment
Wind alarm	▪ **not active** ▪ active	Activation of the wind alarm
Cycle time (only when wind alarm is activated)	*0-120 min [30min]*	*periodic observation of the wind alarm setting 0 deactivates the periodic observation*
Action (only when wind alarm is activated)	▪ **no action** ▪ drive to top ▪ drive to bottom	*Action when wind alarm gets active*
Rain alarm	▪ **not active** ▪ active	Activation of the wind alarm
Cycle time (only when rain alarm is activated)	*0-120 min [30min]*	*periodic observation of the rain alarm setting 0 deactivates the periodic observation*
Action (only when rain alarm is activated)	▪ **no action** ▪ drive to top ▪ drive to bottom	*Action when rain alarm gets active*
Frost alarm	▪ **not active** ▪ active	Activation of the wind alarm
Cycle time (only when frost alarm is activated)	*0-120 min [30min]*	*periodic observation of the frost alarm setting 0 deactivates the periodic observation*
Action (only when frost alarm is activated)	▪ **no action** ▪ drive to top ▪ drive to bottom	*Action when frost alarm gets active*

Table 25: Alarm types

If an alarm is activated the according communication object appears. If the according communication object receives an “1-signal”, the alarm function will be activated. By sending a “0-signal”, the alarm gets deactivated.
The following chart shows the according communication objects:

Number	Name	Length	Usage
29	Wind alarm	1 Bit	Activation/deactivation of the wind alarm
30	Rain alarm	1 Bit	Activation/deactivation of the rain alarm
31	Frost alarm	1 Bit	Activation/deactivation of the frost alarm

Table 26: Communication objects alarms

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The function of the alarms is identical for every of the three alarm types. For every of the three alarms a periodic observation can be activated (have a look at 4.8.3). Furthermore an action for the release of each alarm can be set. Here, the user has 3 opportunities: On the one hand the shutter actuator can drive the channel to the top or to the bottom, when the alarm is activated. On the other hand the shutter actuator can react with the setting “no action”. At this setting, the channel stays in its actual position. A movement of this channel is not possible as long as the alarm is activated. Also after the reset of the alarms, the shutter actuator can perform predetermined functions. These are descripted at 4.8.5.
Please note, that the communication objects of the alarms shall always be connected to group addresses; otherwise there is no opportunity to receipt the alarms. If an alarm is activated because of its periodic observation, which is not connected to a group address, you will only be able to receipt it by using the ETS-Software!

4.8.3 Periodic observation

The periodic observation of the alarm function can be activated for every of the three alarms separately. The dynamic range extends from 0 to 120min, whereby the setting 0 min sets the periodic observation off.
The communication object for the respectively alarm must get a signal during the parameterized time, otherwise the alarm causes automatically. There are settings at KNX weather stations, in which clearances the periodic sending shall follow. The time for the periodic sending shall be always set less than the observation time to avoid an unwittingly cause of the alarm.
You can get sure that a weather sensor works properly, by using the periodic observation. If a signal is absent, because of a failure of the weather station or a wire break, the shutter actuator will trigger the alarm after the expiration of the observation time.
The following illustration shows the setting options for the periodic observation:

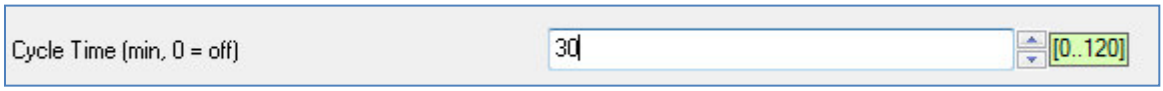

Figure 19: Periodic observation

4.8.4 Normal blocking

The following chart shows the dynamic range for the activation of the blocking object:

ETS-text	Dynamic range **[default value]**	comment
Action at blocking (Value=1)	▪ **no action** ▪ Drive to top ▪ Drive to bottom	Adjustment for the activation of the blocking object of the channel

Table 27: Action at blocking

The shutter actuator can drive to predefined positions, top or bottom, at the activation of the blocking object or stay in its current position. At an activated block function, no driving of the channel is possible.
The following chart shows the relevant communication object:

Number	Name	Length	Usage
32	Block	1 Bit	Activation/Deactivation of the normal blocking function

Table 28: Communication object Block

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4.8.5 Action at reset of alarms and blocks

For every channel an action at the reset of the alarm and all blocking functions can be parameterized. This parameter operates to all alarms and blocking functions of the selected channel. The dynamic range of this parameter is shown at the following chart:

ETS-text	Dynamic range **[default value]**	comment
Action at reset of alarms/block	▪ **no action** ▪ drive to former position ▪ drive to top ▪ drive to bottom	Adjustment for the repeal of the alarm and blocking functions

Table 29: Action at reset of alarms

The user has 4 different setting options for the parameter “Action at reset of the alarms/block”, which the shutter actuator can conduct for this channel.
By using the setting “no action” the channel stays in its position, which he had during the active alarm/block.
The setting “drive to former position” let the shutter actuator drive the channel to the position, which it had before the alarm/block was activated. If you chose “no action” for the action of an activated channel, this setting will have no effect to the position of this channel.
Furthermore the shutter actuator can drive the channel to the top or the bottom at the reset of an alarm/block.
The setting “Action at reset of alarms/block” is always valid for the complete channel, even if you have chosen three different settings for the three possible alarms and blocks.

4.8.6 Reaction when bus power down/up

The setting “Reaction when bus power down/up” can assign the shutter actuator an action how he shall react to faults of the bus power.
The following chart shows the dynamic range for this parameter:

ETS-text	Dynamic range **[default value]**	comment
Reaction when bus power down	▪ **no action** ▪ drive to top ▪ drive to bottom	Reaction to a bus power breakdown
Reaction when bus power up	▪ **no action** ▪ drive to top ▪ drive to bottom	Reaction to a bus power return

Table 30: Reaction to bus power faults

For the “reaction when bus power down” as well as for the “reaction when bus power up” three setting options are available. The channel can drive to a defined value as well for the bus power breakdown as for the bus power return and drive to the top or to the bottom. The setting “no action” let the channel maintain in its actual position.
It is important to note, that the shutter actuator cannot be addressed via the bus during a bus power breakdown and so cannot be driven in its „normal way“.

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4.9 Block functions

The extended block function can be activated for every channel by a separately subitem. When the extended block function was activated for a channel, a new subitem appears, under the according channel, called channel X: Extended block function at the drop down menu.
The following illustration shows the activation of the block function:

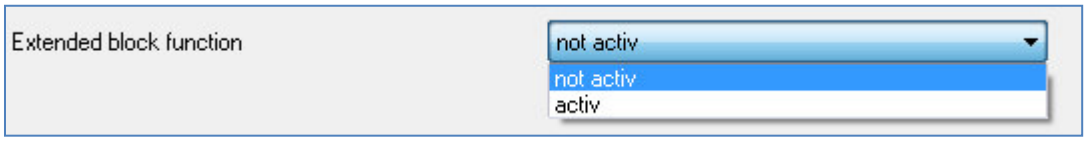

Figure 20: Activation block function

The following illustration shows the distribution at the submenu of the block function:

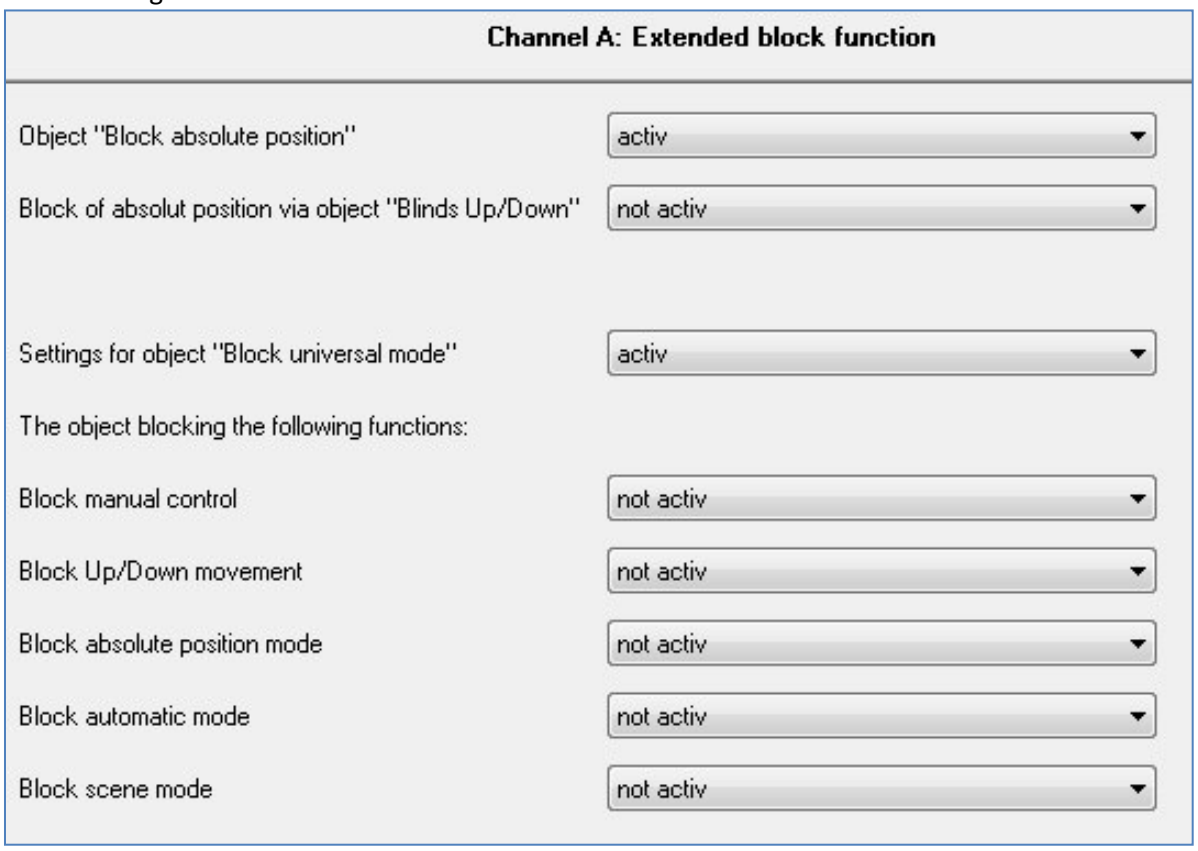

Figure 21: Block function

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The following chart shows the dynamic range, which can be set at the submenu of the block function:

ETS-text	Dynamic range **[default value]**	comment
Action at blocking (Value=1)	▪ **no action** ▪ drive to top ▪ drive to bottom	Reaction to the activation of a blocking instance
Block of absolute position via Objects “Blinds Up/Down”	▪ **not active** ▪ active	activates the driving to absolute positions by manual driving
Settings for object “Block universal mode”	▪ **not active** ▪ active	activates the communication object and the setting options for the universal blocking mode
The object blocks the following functions:		
Block manual control	▪ **not active** ▪ active	with activation of the object “block universal mode” the manual control gets blocked
Block up/down movement	▪ **not active** ▪ active	with activation of the object “block universal mode” the up/down movement gets blocked
Block absolute position mode	▪ **not active** ▪ active	with activation of the object “block universal mode” the absolute position mode gets blocked
Block automatic mode	▪ **not active** ▪ active	with activation of the object “block universal mode” the automatic objects for this channel gets blocked
Block scene mode	▪ **not active** ▪ active	with activation of the object “block universal mode” the scen calling for this channel gets blocked

Table 31: Block functions

When the particular block functions are activated the according communication objects appears. The chart shows the according communication objects:

Number	**Name**	**Length**	**Usage**
27	block absolute position	1 Bit	blocks the object absolute position
28	block universal mode	1 Bit	blocks the channel according to the appointed parameterization

Table 32: Communication objects block function

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It is possible to block the absolute position commands with the parameter “block absolute position”. By activation the according object the channel can no longer receive commands for an absolute height until the object is deactivated by a”0”. The sub function “Block of absolute position via Objects Blinds Up/Down” allows blocking the driving to absolute position as soon as manual driving is activated. This function has its areas of application when a weather station activates a sun protection, but the user wants to drive the shutter/blinds manual to any other value. By driving manual, the shutter actuator is blocked for receiving absolute positions for sun protection and can be driven normal.
It is possible to configure the blocking process on your own by using the parameter “Blocking universal mode”. Therefore 5 different options are available:

- Block manual control
  - blocks the manual control at the device for this channel
- Block up/down movement
  - blocks the driving commands of the channel (also the blind adjustment at shutters)
- Block absolute position mode
  - blocks the receiving of absolute position commands via the object “absolute position”
- Block automatic mode
  - blocks the automatic function for this channel, that means the call of the channel via the automatic function is blocked for this channel
- Block scene mode
  - blocks the scene mode for this channel, that means at a scene calling, in which the blocked channel is integrated, the channel is not called with and stays instead in its actual position

All blocking function can be activated by a logical “1” and deactivated by a logical “0”.

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5 Index

5.1 Register of illustrations

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5.2 List of tables

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6 Attachment

6.1 Statutory requirements

The above-described devices must not be used with devices, which serve directly or indirectly the purpose of human, health- or lifesaving. Further the devices must not be used if their usage can occur danger for humans, animals or material assets.
Do not let the packaging lying around careless, plastic foil/ -bags etc. can be a dangerous toy for kids.

6.2 Routine disposal

Do not throw the waste equipment in the household rubbish. The device contains electrical devices, which must be disposed as electronic scrap. The casing contains of recyclable synthetic material.

6.3 Assemblage

Risk for life of electrical power!
All activities on the device should only be done by an electrical specialist. The county specific regulations and the applicable EIB-directives have to be observed.

6.4 Datasheet

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MDT Shutter Actuator

MDT Shutter Actuator 2/4/8-fold, MDRC
MDT Shutter Actuator 1-fold, flush mounted

Version		
JAL-0206.01	Shutter Actuator 2-fold	2SU MDRC, 6A, shutter motors 230VAC up to 300W
JAL-0410.01	Shutter Actuator 4-fold	4SU MDRC, 10A, shutter motors 230VAC up to 600W
JAL-0810.01	Shutter Actuator 8-fold	8SU MDRC, 10A, shutter motors 230VAC up to 600W
JAL-0410D.01	Shutter Actuator 4-fold	4SU MDRC, 8A, shutter motors 24VDC up to 180W
JAL-0810D.01	Shutter Actuator 8-fold	8SU MDRC, 8A, shutter motors 24VDC up to 180W
JAL-01UP.01	Shutter Actuator 1-fold	Flush mounted, 6A, shutter motors 230VAC up to 300W

The MDT Shutter Actuator receives KNX/EIB telegrams and controls up to 8 independent shutter or sunblind drives. Each output uses two monostable relays. The MDRC shutter Actuators can be operated manually via a push button.

The outputs are parameterized individually via ETS3/4. The device provides extensive functions like status response, block functions, central function and positioning shutters, blinds and other hangings. Additionally the device provides up to 8 scenes per channel. If the mains voltage fails, all outputs are switched off. After bus voltage failure or recovery the position of the shutter is selected in dependence on the parameterization.

For 24VDC motors it is neccessary to use the JAL-0x10D.01 with commutator circuit.

The MRDC Shutter Actuators use a common power supply terminal for two channels. The flush mounted MDT Shutter Actuator has a common power supply terminal. This feature simplifies the wiring and increases clarity of the circuit.

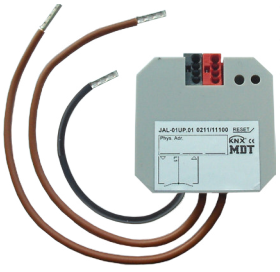
The MDT Shutter Actuator is available as modular installation device and flush mounted device for fixed installation in dry rooms.

For project design and commissioning of the MDT Shutter Actuator it is recommended to use the ETS3f/ETS4 or later. Please download the application software at www.mdt.de/Downloads.html

JAL-0410.01

JAL-0206.01

JAL-01UP.01



- Push Button and LED indicator for each channel (Only MDRC device)
- Operation mode blind/shutter programmable
- Travel-, pause-at-change-of-direction and step time adjustable
- 1-bit automatic function and sun protection
- 8-bit positioning for shutter and blinds
- 8 scenes per channel
- Alarm, central- and block functions
- Separate travel time for up and down adjustable
- Tip operation for accurate positioning
- Programmable behavior in case of bus voltage failure or return
- Two contacts share one supply phase (MDRC device)
- Common supply phase (UP device)
- Integrated bus coupling unit
- 3 years warranty

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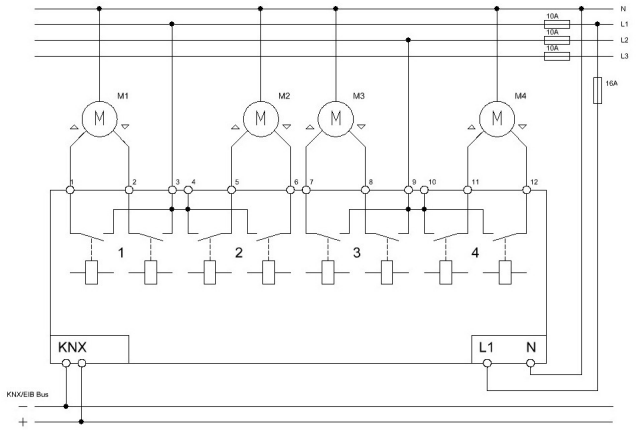
Stand: 0514

MDT Shutter Actuator

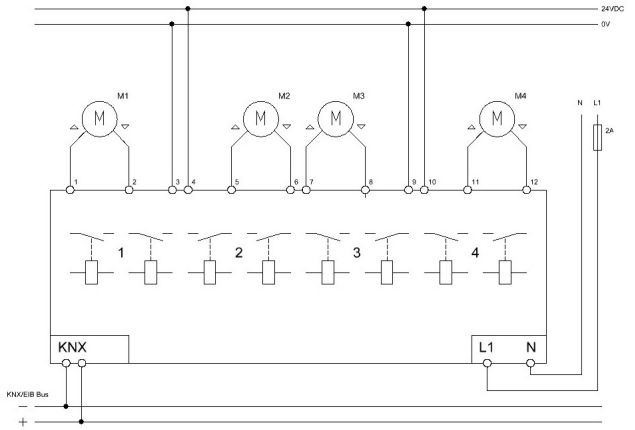
Technical Data	JAL-0410.01 JAL-0810.01	JAL-0410D.01 JAL-0810D.01	JAL-0206.01 JAL-01UP.01
Number of channels	4/8	4/8	1/2
Output switching ratings			
Ohmic load	10A	8A	6A
Voltage	230VAC	24VDC	230VAC
Maximum load			
Shutter motor*	600W	180W	300W
Output life expectancy (mechanical)	1.000.000	1.000.000	1.000.000
Max. fuse per channel	16A	10A	10A
Permitted wire gauge			
Screw terminal	0,5 - 4,0mm² solid core 0,5 - 2,5mm² finely stranded	0,5 - 4,0mm² solid core 0,5 - 2,5mm² finely stranded	0,5 - 4,0mm² solid core 0,5 - 2,5mm² finely stranded
KNX busconnection terminal	0,8mm Ø, solid core	0,8mm Ø, solid core	0,8mm Ø, solid core
Power Supply	230VAC/50Hz	230VAC/50Hz	KNX bus
Power consumption KNX bus typ.	< 0,15W	< 0,15W	< 0,3W
Power consumption mains 230VAC typ.	< 0,3W	< 0,3W	--
Operation temperature range	0 to + 45°C	0 to + 45°C	0 to + 45°C
Enclosure	IP 20	IP 20	IP 20
Dimensions MDRC (Space Units)	4/8SU	4/8SU	2SU
Dimensions UP (W x H x D)	--	--	41mm x 41mm x 24mm

* no three-phase asynchronous motor

Examplary circuit diagram JAL-0410.01



Examplary circuit diagram JAL-0410D.01



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