

Technical Manual



MDT Shutter Actuator

JAL-01UP.02

JAL-0210.02

JAL-0410.02

JAL-0810.02

JAL-0410D.02

JAL-0810D.02

Further Documents:

Datasheet:

https://www.mdt.de/EN_Downloads_Datasheets.html

Assembly and Operation Instructions:

https://www.mdt.de/EN_Downloads_Instructions.html

Solution Proposals for MDT products:

https://www.mdt.de/EN_Downloads_Solutions.html

1 Content

1 Content.....	2
2 Overview	4
2.1 Overview devices	4
2.1.1 Special functions of the Shutter actuator	4
2.2 Usage & possible applications.....	6
2.3 Exemplary Circuit diagrams.....	7
2.4 Structure & Handling	8
2.5 Functions	9
2.6. Settings at the ETS-Software.....	10
2.7. Commissioning.....	10
3 Communication Objects	11
3.1 Overview and Usage	11
3.2 Default settings of the communication objects.....	23
4 Reference ETS-Parameter	25
4.1 General Settings	25
4.2 Channel selection	27
4.2.1 Blinds.....	28
4.2.2 Shutter	28
4.3 Time for movement	29
4.3.1 Measuring of movement times	32
4.3.2 Movement time.....	32
4.3.3 Step time for slats	32
4.3.4 Slat adjustment time	33
4.3.5 Pause on reverse	33
4.3.6 Switch-on/Switch-off delay motor	33
4.3.7 Position of slats at end of driving	33
4.3.8 Short term operation.....	34
4.4 Absolute position/ Reference drive /1Bit object for “Move to position”	35
4.4.1 Driving to reference.....	36
4.4.2 Commands for absolute positions	36
4.4.3 1Bit object for “Move to position”	37
4.5 Status objects	38
4.5.1 Status objects current position.....	39
4.5.2 Report objects lower/upper position.....	39
4.5.3 Movement Status/Current direction.....	39
4.5.4 Status Lock/Alarms	39

4.5.5 Diagnosis as character	40
4.6 Central Objects	41
4.7 Behaviour after bus power down/bus power up	43
4.8 Scenes	44
4.8.1 Submenu Scene	45
4.9 Automatic function	48
4.9.1 Submenu automatic function	48
4.9.2 Automatic blocks	50
4.10 Alarm and block functions	51
4.10.1 Alarm Order (Priority)	52
4.10.2 Alarm types	53
4.10.3 Periodical observation	54
4.10.4 Normal blocking	54
4.10.5 Move to high position	55
4.11 Advanced block function	56
4.12 Air function	60
4.13 Automatic Clouding	63
4.13.1 Clouding basic setting	63
4.13.2 Settings for each channel	67
4.13.3 Basics to “Sun position calculation”	73
4.13.4 Principle of “Clouding”	75
5 Index	78
5.1 Register of illustrations	78
5.2 List of tables	79
6 Attachment	80
6.1 Statutory requirements	80
6.2 Routine disposal	80
6.3 Assemblage	80
6.4 Examples	81
6.4.1 Parameter takeover of different channels	81
6.5 Revision history	82

2 Overview

2.1 Overview devices

The manual refers to the following shutter actuators: (Order code printed in bold type):

- **JAL-01UP.02** Shutter Actuator 1-fold, 230VAC, 6A, flush-mounted fitting
 - 1-fold, for shutter motors up to 300W
- **JAL-0210.02** Shutter Actuator 2-fold, 2TE MDRC, 230V AC, 8A
 - 2-fold, for shutter motors up to 300W, manual actuation
- **JAL-0410.02** Shutter Actuator 4-fold, 4TE MRDC, 230V AC, 8A
 - 4-fold, for shutter motors up to 300W, manual actuation
- **JAL-0810.02** Shutter Actuator 8-fold, 8TE MRDC, 230V AC, 8A
 - 8-fold, for shutter motors up to 300W, manual actuation
- **JAL-0410D.02** Shutter Actuator 4-fold, 4TE MDRC, 24V DC, 8A
 - 4-fold, for shutter motors up to 180W, manual actuation
- **JAL-0810D.02** Shutter Actuator 8-fold, 8TE MDRC, 24V DC, 8A
 - 8-fold, for shutter motors up to 180W, manual actuation

2.1.1 Special functions of the Shutter actuator

The shutter actuator has a very extensive application with the following specific functions:

Integrated logic for window contacts with practical air function:

The actuator moves automatically to adjustable positions at "window tilted" and "window open". For example, it is possible at "window tilted" and closed shutter to move to an air position of 90%. Central telegrams can be blocked. When the window is closed, these telegrams can be made up later or the previous position can be approached automatically.

Sun position calculation with automatic clouding/Slat adjustment**

The actuator calculates the current position of the sun, i.e. Azimuth (solar angle) and elevation (solar altitude).

Additionally to time/date it requires information about the amount of solar radiation. This can be one or two threshold values of a brightness sensor or global radiation sensor or one to three brightness values from a weather station (for example, East, South and West)

With this information, depending on sun position and sun strength, shutters can drive automatically to two different clouding positions (only for Shutters).

With blinds, a clouding position can be approached and the slats can be adjusted automatically.

With manual control, the tracking is automatically deactivated. At any time, by sending an enable signal (block absolute position) or by approaching the upper position it can be activated again.

**** (not JAL-01UP.02)**

Advanced Block function

Additionally to the normal alarm-/blocking functions, an alarm position can be approached.

The behavior after an alarm can be set independently for each alarm/block.

The actuator has, additionally to the normal blocking function significantly enhanced blocking functions. Here you can extensively block absolute positions, clouding or air functions as well as scenes or central functions.

For example, a function "Children Sleep" can be easily realized: Manual operation disables the absolute position and central functions.

Durch Anfahren der oberen Position wird die Beschattung und Zentralfunktion wieder freigegeben. Alternativ kann auch die Sperrfunktion mit einer 0 zurückgesetzt werden.

By moving to the upper position, the clouding and the central function can be enabled again.

Alternatively, the blocking function can be reset with a "0".

Advanced Scene function

The advanced scene function can not only approach positions, but also activate and remove any blocking.

At blinds it is possible just to change the slat position.

Advanced Automatic function

There are two automatic blocks, each with 4 positions which are activated with 1 bit telegrams. Each channel can be assigned to one block and 1-4 positions.

In every channel, the positions 1-4 to be approached can be parameterised at will, as well as the action at withdrawal of each automatic position.

Extensive status information for visualization

The actuator can output comprehensive status information, such as e.g. "upper position," "lower position"move up", "move down", as well as the "current/last direction".

Plaintext diagnosis with 14-byte object

For automatic clouding there is a 14-byte diagnostic object which reports the current state of the clouding like "enabled/disabled", the active brightness threshold as well as the calculated position of the sun, i.e. azimuth and elevation

Each channel also has a diagnostic object, which reports the last state of the channel. Here you can see if the channel is in a state of alarm, an air position, or is locked.

The diagnosis objects save time when reviewing and troubleshooting and simplify commissioning

Long Frame Support

Support to send longer messages and thus, the accommodation of more user data per telegram. Thereby the programming time is significantly shortened (from the ETS5).

Requires use of a programming interface which supports the transmission of long frames, for example MDT SCN-USBR.01 or SCN-IP000.02/SCN-IP100.02

2.2 Usage & possible applications

The Shutter Actuator can actuate shutters as well as blinds. According to the hardware design you can control up to eight shutters or blinds.

Each channel can be adjusted to the respective shutter/blind via the parameter settings. The channels can be adjusted the time for movement 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.

Through automatic clouding (**except JAL 01UP.02**) a slat adjustment and automatic shading of the individual points of the compass can be implemented.

By the integrated air function, window contacts can be evaluated on the bus and be approached as a function of ventilation positions.

Meanwhile, receiving central telegrams can be blocked and then made up again after closing the window. This means, for example, that it would not be possible to "lock oneself out" on the terrace!

2.3 Exemplary Circuit diagrams

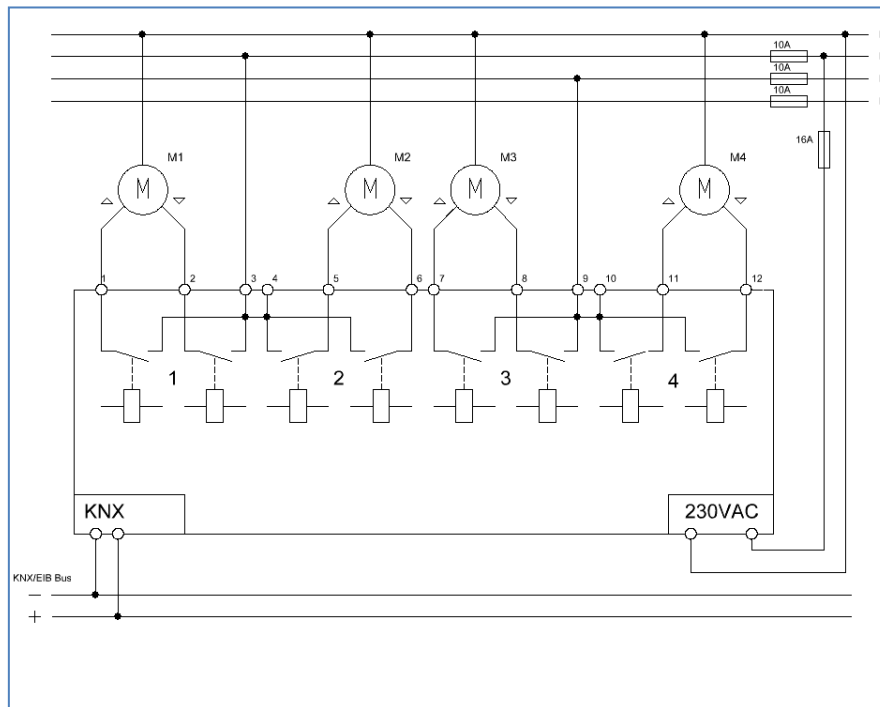


Figure 1: Exemplary circuit diagram shutter actuator 4-fold

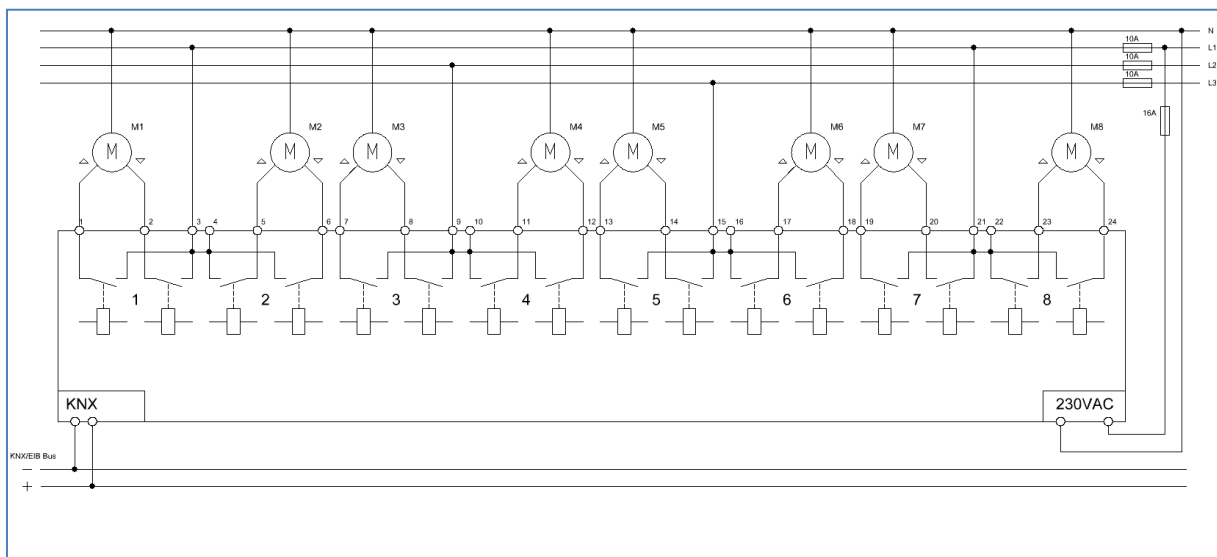


Figure 2: Exemplary circuit diagram shutter actuator 8-fold

2.4 Structure & Handling

The shutter actuator (MDRC) contains of a programming button as well as a programming-LED which indicates an activated programming button. In addition to the bus voltage, the shutter actuator must also be connected to 230 V AC. Each of the inputs has two status LEDs, one for an active upward movement and one for an active downward movement. A flashing LED indicates that the up/down movement is currently active and a permanently lit LED indicates that the upper/lower end position is reached. A manual operation is also possible via 4 buttons. Use the upper two buttons (right/left) to select the channel for manual operation. Use the lower two buttons (up/down) to start an up or downward movement.

The following illustration shows an 8-fold shutter actuator (MDRC):

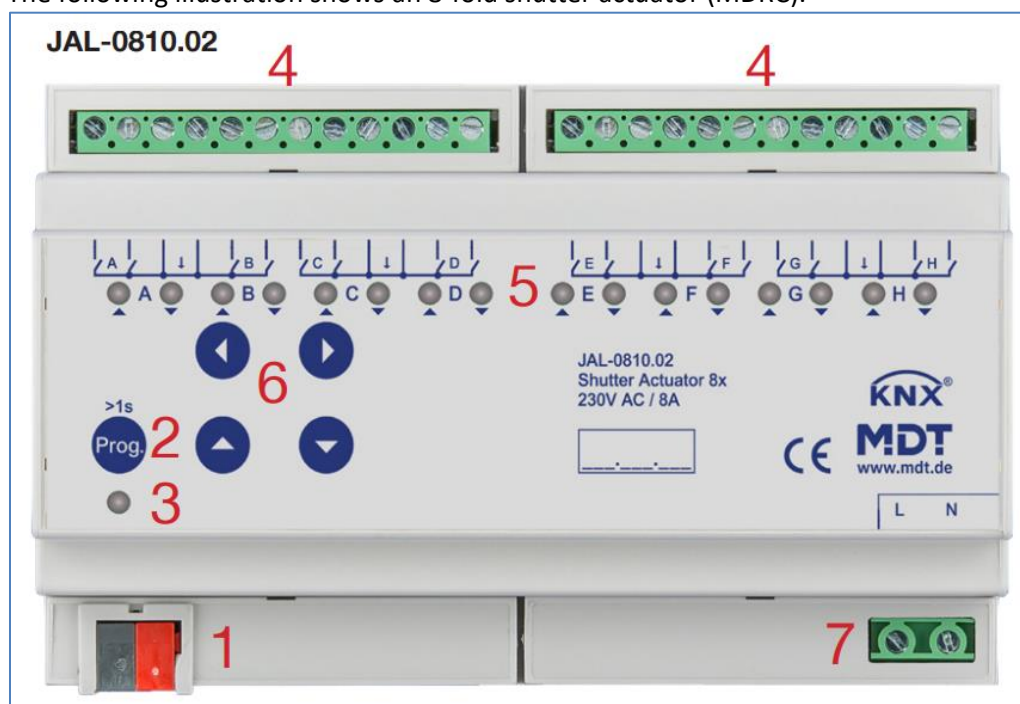


Figure 3: Overview hardware module (JAL-0810.02)

- | | | |
|-----------------------------|----------------------------------|---------------------------------|
| 1 – Bus connection terminal | 4 – Output power terminal | 7 – Mains power supply terminal |
| 2 – Programming button | 5 – Green ON/OFF LED | |
| 3 – Red programming LED | 6 – Buttons for manual operation | |

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 four possible functionalities:

- **not active**
The channel becomes no more functions allocated. There are no more opportunities to parameterize the channel.
- **Shutter**
If a channel is selected as a shutter, the user has various options to parameterize the control of a shutter. By using different settings for movement time, you can adapt the channel for every shutter. This can be used to set the travel times for the shutter, the slats, a reverse pause, the motor's delays and the position of the slats after the end of movement. Furthermore, there are setting options for absolute positions, travel restrictions, scene function, automatic functions and weather alarms.
- **Blinds**
If a channel is selected as a blind, the user has various options to parameterize the control of a blind. By using different settings for movement time, you can adapt the channel for every blind. This can be used to set the travel times for the blinds, a reverse pause and the motor's delays. Furthermore, there are setting options for absolute positions, travel restrictions, scene function, automatic functions and weather alarms.
- **Use settings from channel A**
Channel takes over the same parameters as channel A. No further settings are displayed for this channel and the same communication objects as for channel A are displayed.

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

2.6. Settings at the ETS-Software

Selection at the product database:

Manufacturer: MDT Technologies

Product family: Switch Actuators

Product type: Shutter Actuator

Medium Type: Twisted Pair (TP)

Product name: addicted to the used type, e.g.: JAL-0810.02 shutter actuator 8-fold, 8TE, 10A

Order number: addicted to the used type, e.g.: JAL-0810.02

2.7. Commissioning

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

- (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 off as soon as this process was completed successfully)
- (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)

3 Communication Objects

3.1 Overview and Usage

The following table shows the available objects and their use:

No.	Name	Object function	Data Point	Direction	Info	Usage	Note
Central objects:							
0	Central function	Shutter up/down	DPT 1.007	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	Communication object is always shown and enables controlling the standard functions up/down for all channels with activated central function , which are usually linked to all desired operating buttons
1	Central function	Slat adjustment/Stop	DPT 1.007	receive	Actuator reacts to incoming-telegram	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 are usually linked to all desired operating buttons
2	Central function	Stop	DPT 1.001	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	Communication object is always shown and enables controlling the standard functions stop for all channels with activated central function , which are usually linked to all desired operating buttons

3	Central function	absolute position	DPT 5.001	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	Communication object is always shown and enables positioning shutters/blinds to a certain percentage value for all channels with activated central function. A %-value may e.g. be stored in operating buttons (value transmitter) and thus called up.
4	Central function	Absolute position of slats	DPT 5.001	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	Communication object is always shown and enables positioning the slats to a certain percentage value for all channels with activated central function. A %-value may e.g. be stored in operating buttons (value transmitter) and thus called up.
5	Central function	Operation	DPT 1.001	send	Actuator sends status cyclical		Communication object can be displayed via the parameters and sends a cyclic status.
6	Central function	Block manual control	DPT 1.003	receive	Actuator reacts to incoming-telegram		Communication object can be displayed via the parameters and enables the manual operation to be blocked.
Objects for Clouding control:							
7	Central function	Date/Time	DPT 19.001	receive	Actuator reacts to incoming-telegram	Timeswitch, Timeserver	Communication object can be activated in the menu Clouding basic settings and is used to calculate the sun position.

7	Central function	Time	DPT 10.001	receive	Actuator reacts to incoming-telegram	Timeswitch, Timeserver	Communication object can be activated in the menu Clouding basic settings and is used to calculate the sun position.
8	Central function	Date	DPT 11.001	receive	Actuator reacts to incoming-telegram	Timeswitch, Timeserver	Communication object can be activated in the menu Clouding basic settings and is used to calculate the sun position.
9	Central function	Brightness 1	DPT 9.004/ DPT 1.001	receive	Actuator reacts to incoming-telegram	Weatherstation, Brightness sensor	Communication object can be activated in the menu Clouding basic settings and is used to activate the clouding function when the sun is shining.
10	Central function	Brightness 2	DPT 9.004/ DPT 1.001	receive	Actuator reacts to incoming-telegram	Weatherstation, Brightness sensor	Communication object can be activated in the menu Clouding basic settings and is used to activate the clouding function when the sun is shining.
11	Central function	Brightness 3	DPT 9.004	receive	Actuator reacts to incoming-telegram	Weatherstation, Brightness sensor	Communication object can be activated in the menu Clouding basic settings and is used to activate the clouding function when the sun is shining.
12	Central function	Outside temperature/ Outside temperature threshold	DPT 9.001/ DPT 1.001	receive	Actuator reacts to incoming-telegram	Weatherstation, Brightness sensor	Communication object can be activated in the menu Clouding basic settings and is used to activate the clouding function from a certain outside temperature.

13	Central function	Block Clouding/ Enable Clouding	DPT 1.003/ DPT 1.001	receive	Actuator reacts to incoming-telegram	Visu, Timeswitch, Push button	Communication object can be activated in the menu Clouding basic settings and is used to activate or block the clouding function.
14	Central function	Clouding diagnosis	DPT 16.000	send	Actuator sends status	Visu, Diagnosis, Commissioning	Communication object can be activated in the menu Clouding basic settings and is used for diagnostis function.
Objects for Automatic function:							
15- 18	Automatic A	Automatic position 1-4	DPT 1.017	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	Actuator calls the saved values in the individual channels for this automatic position. Enables the adjustment of absolute values via 1 Bit
19- 22	Automatic B	Automatic position 1-4	DPT 1.017	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	Actuator calls the saved values in the individual channels for this automatic position. Enables the adjustment of absolute values via 1 Bit
Objects per channel:							
23	Channel A	Blinds up/down	DPT 1.007	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears in the operating mode "Blinds" and allows the control of the basic functions up/down which are usually linked to all desired operating keys. (= Basic function for blinds)

23	Channel A	Shutter up/down	DPT 1.007	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears in the operating mode "Shutter" and allows the control of the basic functions up/down which are usually linked to all desired operating keys. (= Basic function for shutter)
24	Channel A	Slats adjustment / Stop	DPT 1.007	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears in the operating mode "Blinds" and allows the control of the basic functions Slats adjustment/stop which are usually linked to all desired operating keys. (= Basic function for shutter)
24	Channel A	Short term operation / Stop	DPT 1.007	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears in the operating mode "Shutter" and allows the control of the shutters in the step mode for the fine adjustment, which are usually linked to all desired operating buttons. (= Additional function for shutter)
25	Channel A	Stop	DPT 1.017	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears in the operating mode "Shutter" and allows a "stop only" function (without step function - is only displayed if short-term operation is not active!). (= Basic function for shutter)

26	Channel A	Scene	DPT 18.001	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for Scene call	This communication object appears only after activation and allows the recall of scenes which are stored in the actuator. (= Additional function, if desired)
27	Channel A	Status current direction	DPT 1.008	send	Actuator sends status	To display on Visu, Tableau and Display...	This communication object appears only after activation and appropriate selection. It serves as a status indication. (= Additional function, if desired)
28	Channel A	Status of movement	DPT 1.008	send	Actuator sends status	To display on Visu, Tableau and Display...	This communication object appears only after activation and appropriate selection. It serves as a status indication. (= Additional function, if desired)
28	Channel A	Status of movement up	DPT 1.008	send	Actuator sends status	To display on Visu, Tableau and Display...	This communication object appears only after activation and appropriate selection. It serves as a status indication. (= Additional function, if desired)
29	Channel A	Status of movement down	DPT 1.008	send	Actuator sends status	To display on Visu, Tableau and Display...	This communication object appears only after activation and appropriate selection. It serves as a status indication. (= Additional function, if desired)

30	Channel A	Absolute position	DPT 5.001	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears only after activation and allows positioning to a certain % value. (= Additional function, if desired)
31	Channel A	Absolute position of slats	DPT 5.001	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears only after activation and allows positioning to a certain % value. (= Additional function, if desired)
32	Channel A	Status current position	DPT 5.001	send	Actuator sends status	To display on Visu, Tableau and Display...	This communication object appears only after activation and serves as a status indication. (= Additional function, if desired)
33	Channel A	Status current position of slats	DPT 5.001	send	Actuator sends status	To display on Visu, Tableau and Display...	This communication object appears only after activation and serves as a status indication. (= Additional function, if desired)
34	Channel A	Status Lock/Alarms	DPT 1.011	send	Actuator sends status	To display on Visu, Tableau and Display, or diagnosis...	This communication object appears only after activation and serves as a status indication if a lock-/alarmfunction is active. (= Additional function, if desired)

35	Channel A	Start driving to reference	DPT 1.008	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears only after activation and enables a reference drive for the exact determination of the position in%. (= Additional function, if desired)
36	Channel A	Drive to position	DPT1.008	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears only after activation and allows the start-up to fixed % positions for shutter or blinds & slats via a 1bit telegram (= Additional function, if desired)
37	Channel A	Status upper Position	DPT 1.001	send	Actuator reacts with outgoing-telegram	To display on Visu, Tableau and Display...	This communication object appears only after activation of status objects and serves as a status indication when upper Position (0%) is reached. (= Additional function, if desired)
38	Channel A	Status lower Position	DPT 1.001	send	Actuator reacts with outgoing-telegram	To display on Visu, Tableau and Display...	This communication object appears only after activation of status objects and serves as a status indication when lower Position (100%) is reached. (= Additional function, if desired)

39	Channel A	Block central Objekt	DPT 1.003	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears only after activation in the menu Alarm and block functions and is used to lock the central objects. (= Additional function, if desired)
40	Channel A	Block absolute position	DPT 1.003	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears only after activation in the menu Alarm and block functions and is used to lock absolute positions. (= Additional function, if desired)
41	Channel A	Block functions	DPT 1.003	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears only after activation in the menu Alarm and block functions and allows to lock individual functions. (= Additional function, if desired)
42	Channel A	Wind alarm	DPT 1.005	receive	Actuator reacts to incoming-telegram	From Weatherstation - useful for safety functions	This communication object appears only after activation of the wind alarm in the menu Alarm and block functions and serves as a safety object. (= Additional function, if desired)

43	Channel A	Rain alarm	DPT 1.005	receive	Actuator reacts to incoming-telegram	From Weatherstation - useful for safety functions	This communication object appears only after activation of the rain alarm in the menu Alarm and block functions and serves as a safety object. (= Additional function, if desired)
44	Channel A	Frost alarm	DPT 1.005	receive	Actuator reacts to incoming-telegram	From Weatherstation - useful for safety functions	This communication object appears only after activation of the frost alarm in the menu Alarm and block functions and serves as a safety object. (= Additional function, if desired)
45	Channel A	Block	DPT 1.003	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears only after activation of the alarm and block functions and serves as a blocking object for the channel, e.g. for an open terrace door (= Additional function, if desired)
46	Channel A	Window contact/ Window contact 1	DPT 1.002	receive	Actuator reacts to incoming-telegram	Binary input for request of window contacts	This communication object appears only after activation of the air function and is used to execute the function depending on the state of the window. (= Additional function, if desired)

47	Channel A	Window contact 2	DPT 1.002	receive	Actuator reacts to incoming-telegram	Binary input for request of window contacts	This communication object appears only after activation of the air function and is used to execute the function depending on the state of the window. (= Additional function, if desired)
48	Channel A	Room temperature/ Room temperature threshold/ Set value for heating	DPT 9.001/ DPT 1.001/ DPT 5.001	receive	Actuator reacts to incoming-telegram	Room temperature controller, Heating actuator	This communication object appears only after activation of the automatic clouding and serves to carry out the function only from a defined room temperature, a switching threshold or below a defined set value for heating (= Additional function, if desired)
49	Channel A	Block Clouding/ Enable Clouding/ Block slat adjustment/ Enable slat adjustment	DPT 1.003/ DPT 1.001	receive	Actuator reacts to incoming-telegram	Push buttons, Visu... for manual control	This communication object appears only after activation of the automatic clouding and is used to manually disable / activate the clouding function. (= Additional function, if desired)
50	Channel A	Status Clouding state / Status Clouding ready	DPT 1.011	send	Actuator sends status	Visualisation, Diagnosis	This communication object appears only after activation of the automatic clouding and is used for the status indication for automatic clouding. (= Additional function, if desired)

51	Channel A	Diagnose	DPT 16.000	send	Actuator sends status	Visualisation, Diagnosis	This communication object appears only after activation of diagnose as character and is used to evaluate the current state of the channel (= Additional function, if desired)
----	-----------	----------	------------	------	-----------------------	--------------------------	--

Table 1: Summary communication objects

3.2 Default settings of the communication objects

Default settings									
No.	Name	Function	Lenght	Priority	C	R	W	T	U
0	Central Function	Shutter up/down	1 Bit	Low	X		X		
1	Central Function	Slats adjustment/Stop	1 Bit	Low	X		X		
2	Central Function	Stop	1 Bit	Low	X		X		
3	Central Function	Absolute position	1 Byte	Low	X		X		
4	Central Function	Absolute position of slats	1 Byte	Low	X		X		
5	Central Function	Operation	1 Bit	Low	X	X		X	
6	Central Function	Block manual control	1 Bit	Low	X		X		
7	Central Function	Date/Time	8 Byte	Low	X		X		
7	Central Function	Time	3 Byte	Low	X		X		
8	Central Function	Date	3 Byte	Low	X		X		
9	Central Function	Brightness 1	2 Byte	Low	X		X		
9	Central Function	Brightness 1	1 Bit	Low	X		X		
10	Central Function	Brightness 2	2 Byte	Low	X		X		
10	Central Function	Brightness 2	1 Bit	Low	X		X		
11	Central Function	Brightness 3	2 Byte	Low	X		X		
12	Central Function	Outside temperature	2 Byte	Low	X		X		
12	Central Function	Outside temperature treshold	1 Bit	Low	X		X		
13	Central Function	Block clouding	1 Bit	Low	X		X		
13	Central Function	Enable clouding	1 Bit	Low	X		X		
14	Central Function	Clouding diagnosis	16 Byte	Low	X	X		X	
15	Automatic A	Automatic position 1	1 Bit	Low	X		X		
16	Automatic A	Automatic position 2	1 Bit	Low	X		X		
17	Automatic A	Automatic position 3	1 Bit	Low	X		X		
18	Automatic A	Automatic position 4	1 Bit	Low	X		X		
19	Automatic B	Automatic position 1	1 Bit	Low	X		X		
20	Automatic B	Automatic position 2	1 Bit	Low	X		X		
21	Automatic B	Automatic position 3	1 Bit	Low	X		X		
22	Automatic B	Automatic position 4	1 Bit	Low	X		X		
23	Channel A	Blinds up/down	1 Bit	Low	X		X		
23	Channel A	Shutter up/down	1 Bit	Low	X		X		
24	Channel A	Slats adjustment/Stop	1 Bit	Low	X		X		
24	Channel A	Short term operation/Stop	1 Bit	Low	X		X		
25	Channel A	Stop	1 Bit	Low	X		X		
26	Channel A	Scene	1 Byte	Low	X		X		
27	Channel A	Status current direction	1 Bit	Low	X	X		X	

28	Channel A	Status of movement	1 Bit	Low	X	X		X	
28	Channel A	Status of movement up	1 Bit	Low	X	X		X	
29	Channel A	Status of movement down	1 Bit	Low	x	X		X	
30	Channel A	Absolute position	1 Byte	Low	X		X		
31	Channel A	Absolute position of slats	1 Byte	Low	X		X		
32	Channel A	Status current position	1 Byte	Low	X	X		X	
33	Channel A	Status cur. position of slats	1 Byte	Low	X	X		X	
34	Channel A	Status Lock/Alarms	1 Bit	Low	X	X		X	
35	Channel A	Start driving to reference	1 Bit	Low	X		X		
36	Channel A	Drive to position	1 Bit	Low	X		X		
37	Channel A	Status upper position	1 Bit	Low	X	X		X	
38	Channel A	Status lower position	1 Bit	Low	X	X		X	
39	Channel A	Block central object	1 Bit	Low	X		X		
40	Channel A	Block absolute position	1 Bit	Low	X		X		
41	Channel A	Block functions	1 Bit	Low	X		X		
42	Channel A	Wind alarm	1 Bit	Low	X		X		
43	Channel A	Rain alarm	1 Bit	Low	X		X		
44	Channel A	Frost alarm	1 Bit	Low	X		X		
45	Channel A	Block	1 Bit	Low	X		X		
46	Channel A	Window contact	1 Bit	Low	X		X		
46	Channel A	Window contact 1	1 Bit	Low	X		X		
47	Channel A	Window contact 2	1 Bit	Low	X		X		
48	Channel A	Temperature	2 Byte	Low	X		X		
48	Channel A	Temperature treshold	1 Bit	Low	X		X		
48	Channel A	Set value for heating	1 Byte	Low	X		X		
49	Channel A	Block clouding	1 Bit	Low	X		X		
49	Channel A	Enable clouding	1 Bit	Low	X		X		
49	Channel A	Block slat adjustment	1 Bit	Low	X		X		
49	Channel A	Enable slat adjustment	1 Bit	Low	X		X		
50	Channel A	Status clouding state	1 Bit	Low	X	X		X	
50	Channel A	Status clouding ready	1 Bit	Low	X	X		X	
51	Channel A	Diagnosis text	1 Bit	Low	X	X		X	
+29	next Channel								

Table 2: Default settings of the 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.

4 Reference ETS-Parameter

Attention:

After each transmission of a new parameterization you have to move the Shutter/Blinds once completely down and up so that the Shutter actuator knows his actual reference values (see also 4.4.1)

4.1 General Settings

The following figure shows the general settings:

Startup timeout	2 s
Manual operation	active
Eco mode, switch LED's off after	not active
Send "Operation" cyclic (0 = not active)	0 min
Overwrite learned scenes	<input type="radio"/> retain learned scenes <input checked="" type="radio"/> load parameter
Automatic clouding	<input type="radio"/> not active <input checked="" type="radio"/> active
Automatic Block A	<input checked="" type="radio"/> not active <input type="radio"/> active
Automatic Block B	<input type="radio"/> not active <input checked="" type="radio"/> active

Figure 4: General Settings

The following table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Startup time	2-60s [2s]	Sets the time between restart and functional start-up of the device
Manual operation	<ul style="list-style-type: none"> ▪ active ▪ blocked ▪ lockable over objekt 	Release of manual operation. active: manual operation possible blocked: no manual operation possible lockable over objekt: Manual operation can be disabled / enabled via object
Eco mode, switch LED's off after:	<ul style="list-style-type: none"> ▪ not active ▪ 30s-60min 	Setting whether the LEDs should be switched off after the set time
Send "Operation" cyclic	0-30.000min [0 = not active]	Setting whether a cyclic in-operation telegram is to be sent
Overwrite learned scenes	<ul style="list-style-type: none"> ▪ Retain learned scenes ▪ Load parameter 	Setting whether the teached-in scenes should be retained after programming or the parameter values should be reloaded after each programming.
Automatic clouding	<ul style="list-style-type: none"> ▪ not active ▪ active 	Displays the menu for automatic clouding.
Automatic Block A	<ul style="list-style-type: none"> ▪ not active ▪ active 	Displays the objects for automatic block A. See also: 4.9
Automatic Block B	<ul style="list-style-type: none"> ▪ not active ▪ active 	Displays the objects for automatic block B. See also: 4.9

Table 3: Parameter - General Settings

The following table shows the related communication objects:

Number	Name	Length	Usage
5	Operation	1 Bit	Cyclic sending of operation telegram
6	Block manual control	1 Bit	Blocking the manual control when blocking via object active

Table 4: Communication objects - General Settings

4.2 Channel selection

The following figure shows the Channel Selection tab:

Channel A	Shutter
Channel B	Blinds
Channel C	use settings from Channel A
Channel D	Shutter
Channel E	Shutter
Channel F	Shutter
Channel G	Shutter
Channel H	Shutter

Figure 5: Channel selection

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

ETS-Text	Dynamic range [Default value]	Comment
Channel A-x	<ul style="list-style-type: none"> ▪ not active ▪ Blinds ▪ Shutter ▪ Use settings from Channel A 	Operating mode of the respective channels

Table 5: Setting options - Channel selection

For each of the 1 to 8 available channels, one of the 4 available states can be assigned under the sub-item "Channel selection".

- **Not active**
Channel is disabled. No further parameterization options for this channel are displayed.
- **Blinds**
Channel is selected as blinds. For the channel, the specific parameters for the parameterization of the blinds function are shown.
- **Shutter**
Channel is selected as shutter. For the channel, the specific parameters for the parameterization of the shutter function are shown.
- **Use settings from Channel A**
Channel takes over the same parameters as channel A. No further setting options are displayed for this channel and the same communication objects as for channel A are displayed.
If parameter transfers are to be carried out in several groups, the procedure as described in 6.4.1 Parameter takeover of different channels is recommended.

4.2.1 Blinds

If a channel is selected as a blind, the user has a number of options for parameterization. These are explained in more detail in the following sections.

As soon as the channel is selected as a blind, three communication objects are shown for this channel as standard.

The following table shows these communication objects:

Number	Name	Length	Usage
23	Blinds up/down	1 Bit	Movement function of the blinds
24	Slats up/down/stop	1 Bit	Adjustment of the slats/ Stopping of the blinds movement

Table 6: Communication objects Blinds

The communication object "Blinds Up / Down" is used for the moving function of the blind. Note that a logical "0" starts the upward movement and a logical "1" starts the downward movement. This configuration is set by KNX as standard and regulates a uniform communication between KNX devices

The communication object "slats adjustment / stop" is used for adjusting the slats. Simultaneously, when this communication object is activated, an active movement function is stopped.

4.2.2 Shutter

The user also has a number of parameterization options available for the shutter function. The blind function and the shutter function are almost identical, but the parameters for the slats are missing in the shutter function.

When the channel is selected as blinds, three communication objects are shown for this channel as standard.

The following table shows these communication objects:

Number	Name	Length	Usage
23	Shutter up/down	1 Bit	Movement function of the shutter
24	Short term operation/Stop	1 Bit	Starts the short term operation / Is only displayed when activated / Stops active up-/down movement
25	Stop	1 Bit	Stopping the shutter movement

Table 7: Communication objects Shutter

The communication object "Shutter up/down" is used for the movement function of the shutters. Note that a logical "0" starts the upward movement and a logical "1" starts the downward movement. With the object for short term operation, the shutter can be moved in small steps in order to approach exact positions.

The communication object "Stop" is used to stop an active movement. When this communication object is activated, whether with "0" or "1", the active movement is stopped.

4.3 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 shutter there are additional settings for the moving time of the blinds.

The following figures show the possible settings for these moving times:

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
Interchange 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%

Figure 6: Time for movement - Blinds

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 (Key operation for exact position)	<input type="radio"/> not active <input checked="" type="radio"/> active
Movement time for short term operation	200 ms
Up/Down movement can stop (Single Object Control)	<input type="radio"/> not active <input checked="" type="radio"/> active
Pause on reverse	500 ms
Switch-on delay motor	200 ms
Switch-off delay motor	200 ms
Interchange connections for motor Up/Down	<input checked="" type="radio"/> normal <input type="radio"/> Up/Down inverted

Figure 7: Time for movement - Shutter

Die nachfolgende Tabelle zeigt die Einstellbereiche für die Verfahrzeiten:

ETS-Text	Dynamic range [default value]	Comment
Time for movement up/down	<ul style="list-style-type: none"> ▪ same ▪ different 	Adjustment, whether up-and down-movement should be different or not
Time for movement Time for up movement Time for down movement	1-10000sec [45sec]	Specifies the duration for an up/down movement. Depending on the setting above, one or two separate times will be displayed.
Extension of movement time	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	50-1000ms [200ms]	only at blinds Duration for a step at the adjustment of blinds
Slat adjustment time	10-10000ms [1200ms]	only at blinds Duration for the whole adjustment of blinds (0-100%)
Pause on reverse	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 (move down)	0-100% [50%]	only at blinds sets the position of slats after driving the shutter
Short term operation	<ul style="list-style-type: none"> ▪ active ▪ not active 	only at shutter sets the short time operation on/off
Time for movement for short term operation	50-1000ms [200ms]	only at shutter only visible when short term operation is activated/ adjusts the time for one short time operation
Up/Down movement can stop (Single Object Control)	<ul style="list-style-type: none"> ▪ not active ▪ active 	only at shutter By activating the single object control, the shutters can be operated with one object. Repeated sending of the up/down command stops an active up/down movement.
Interchange connections for motor up/down	<ul style="list-style-type: none"> ▪ normal ▪ Up/Down reversed 	Reversing the direction of travel for up/down. To change the direction of travel in the event of an incorrect connection

Table 8: Setting options - Time for movement

The following sections describe the functions of the individual travel times.

4.3.1 Measuring of movement times

The individual times for the movement of shutter/blinds can normally be determined very precisely 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.

4.3.2 Movement time

By setting the time for movement, the shutter actuator can be set to the respective time required to move the blinds/shutters from one end position (fully open or fully closed) to the other end position. The shutter actuator therefore controls the upward or downward movement for the specified time value. After the set time has elapsed, the shutter actuator automatically switches off the relay of the respective channel, even if the end position has not yet been reached.

As blinds/shutters can often be moved up and down for different periods, different times can be set for the up and down movement.

The travel time extension ensures that the end stops are definitely reached. It does not affect the calculation of absolute positions. Therefore the exact value should always be specified for the travel time and the override should be activated by the travel time extension.

If necessary, check whether the vendor has provided information about movement times.

4.3.3 Step time for slats

→ only at blinds

The step width for the slat adjustment can be used to set the steps in which the slats are to rotate. The opening angle of the slat can thereby be changed in small steps, for example to prevent dazzling when the sun position is changing, to tighten sunblinds or to realize a slit position.

In addition, by this setting it is possible to adjust the step width so that the slats move in a certain number of steps from "fully open" to "fully closed" or vice versa. For this purpose, the step width of the lamella adjustment has to be set to a multiple of the lamella adjustment time. In this case, the multiple specifies the number of steps which are required for reaching the one end position from the other end position.

Example: Duration of slat adjustment: 3000ms

Step time for slats = 300ms

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

4.3.4 Slat adjustment time

→only at blinds

The slat adjustment time specifies the time period during which the slats are adjusted from 0% to 100% or vice versa. The shutter actuator thus controls the slat adjustment for the duration of the set value.

Tip for the measurement of very small slat movement times:

- Move 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 "slat adjustment time"

For a large slat adjustment time the procedure is recommended as described in 4.3.1.

4.3.5 Pause on reverse

The pause on reverse is used to protect the shutter motor, if the shutter actuator simultaneously receives commands for the up and down movement. A direct changeover from one direction to the other can significantly reduce the life time of the motor and lead to complete destruction in some cases.

If a shutter actuator receives a movement command to the other direction during an active movement command, the actuator first switches off both commands. The shutter actuator then waits for the reversed pause before setting the relay for the next direction

The reverse pause is valid for the reversion of the direction at the up/down movement as well as for the slat adjustment.



Too short selected reverse pauses can damage the motor!
Urgently observe the manufacturer specifications in the data sheet of the drive.

4.3.6 Switch-on/Switch-off delay motor

Some motors do not deliver full power immediately, but only after a few milliseconds. This time, which the motor needs until it reaches the full power, can be compensated with the setting of the "switch-on delay motor".

On the other hand there are motors, which run after a few milliseconds after switching off. This behavior can be compensated by setting the "Motor off-delay" setting.

4.3.7 Position of slats at end of driving

→only at blinds

Via the setting "position of the slats after end of ", it is possible to set the position in which the slats are to be driven after a descent movement, which is controlled via the object 13 "roller shutter up / down". This position is automatically activated by the blind actuator after a shutter travel. The slat position after the end of travel can be set as a percentage of 0-100% in 1% steps, 0% being fully open and 100% fully closed.

When a stop command is sent during the movement this position is not approached, since the sequence is stopped or interrupted.

4.3.8 Short term operation

→ **only at shutter**

With short term operation the shutters can be moved in small steps. An additional communication object is available for short term operation with which it can be activated. The short term operation is used for the precise approach of specific positions, e.g. for sun protection. In addition, the activation of the short term operation stops an upward/downward movement.

4.4 Absolute position/ Reference drive /1Bit object for “Move to position”

The following figure shows the available parameter settings:

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
Objects 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	always ▼
Position of blinds	50% ▼
Position of slats	100% ▼
Action at value = 0 (only if position valid)	no function ▼

Figure 8: Absolute Position/Reference drive/1Bit object Position

The following table shows the available communication objects:

Number	Name	Length	Usage
30	Absolute position	1 Byte	Start to a specific position
31	Absolute position of slats	1 Byte	Start to a specific slat position (only at blinds)
35	Start driving to reference	1 Bit	Start of a reference movement
36	Drive to position	1 Bit	Start to a preset position via a 1bit command

Table 9: Communication objects - Absolute Position/Reference drive/1Bit object Position

4.4.1 Driving to reference

The shutter actuator calculates its current positions from the set times for movement. Due to external influences, over the time, slight displacements of the actual times for movement can occur. A reference run recalculates the set times and thus provides the shutter actuator with new values for the times for movement. Based on these new values, the actual position of the shutters/blinds can then be calculated more precisely.

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". The "no reaction" setting keeps the blind actuator in the position which was reached after completing the reference travel.

A reference run must be carried out after each transmission of a new parameterization. This can be done either manually, i.e. the upper and lower end position is approached once or via the "Start driving to reference" object. Only after a reference run has been carried out (via object up/down or by the manual operation) the blind actuator knows its current status along the travel path.

4.4.2 Commands for absolute positions

By the objects for absolute positions you can specify a fixed 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 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. Additionally there is an object for the opening angle of the slats (only at blinds), the object "absolute position of slats".

In the percent representation, 0% is always fully open and 100% completely closed.

4.4.3 1Bit object for “Move to position”

The following table shows the possible settings for this parameter:

ETS-Text	Dynamic range [default value]	Comment
1 bit object for „Move to position“	<ul style="list-style-type: none"> ▪ not active ▪ active 	Activation of the function „Move to position“ via 1 bit
Action at value = 1	<ul style="list-style-type: none"> ▪ always ▪ only if shutter is up ▪ only if shutter is down 	Action for the „1“ command
Position of blinds/ position of slats/ position of shutter	0-100% [50%]	Absolute position to be approached by activation via a „1“ command
Action at value = 0 (only if position valid)	<ul style="list-style-type: none"> ▪ no function ▪ move up ▪ move down 	Action for the „0“ command

Table 10: Setting options - Move to position via 1Bit object

With the function „1bit object for move to position“ it is possible to approach fixed positions via a simple 1bit object. Additional conditions can be programmed when this action should be executed. In contrast to the automatic function, the action only applies to one channel and can thus be adapted individually for each channel.

The "Action at value = 1" parameter can be used to determine whether the absolute position should be called at any position, or only in one of the two end positions.

With the "Action at value = 0" it is possible to set whether the channel should return to an end position or remain in the approached position after the procedure.

The "action at value = 0" is only executed if the current shutter position is still the same as the set position. If, in the meantime, the shutters are moved to a different value, the action is not executed.

The "1 bit object 'Move to position' " function can still be executed even when the window is open or tilted.

4.5 Status objects

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

Status informations:

Status current position not active active

Object for movement status not active ▼

Status current direction / position up/down not active active

Status for current blocking/object not active active

Diagnosis as character send at change ▼

Figure 9: Status objects

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"> ▪ not active ▪ active 	activates/deactivates the objects for absolute position/ absolute position of slats
Objects for movement status	<ul style="list-style-type: none"> ▪ not active ▪ move (1 object) ▪ moving up + moving down 	activates the status objects for movement status
Status current direction/ position up/down	<ul style="list-style-type: none"> ▪ not active ▪ active 	activates the status objects for current direction and reaching the upper / lower end stop
Status for current blocking/alarms	<ul style="list-style-type: none"> ▪ not active ▪ active 	activates the status object for current blocking/alarms
Diagnosis as character	<ul style="list-style-type: none"> ▪ not active ▪ send at request ▪ send at change 	when activated, the transmission condition for the diagnostic text is defined

Table 11: Setting options - Status objects

The following table shows the available communication objects:

Number	Name	Length	Usage
27	Status current direction	1 Bit	indicates the actual direction of the movement
28	Status of movement	1 Bit	indicates an active movement
28	Status of movement up	1 Bit	Indicates whether the blinds/shutters are moved straight up
29	Status of movement down	1 Bit	Indicates whether the blinds/shutters are moved straight down
32	Status current position	1 Byte	indicates the actual shutter/blinds position
33	Status cur. Position of slats	1 Byte	indicates the actual position of the slats (only at blinds)
34	Status Lock/Alarms	1 Bit	Indicates an active alarm or an active lock function
37	Status upper position	1 Bit	Indicates reaching the upper limit position
38	Status lower position	1 Bit	Indicates reaching the lower limit position
51	Diagnosis text	14 Byte	Output of the diagnostic text in "Characters"

Table 12: Communication objects - Status objects

4.5.1 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.

4.5.2 Report objects lower/upper position

The 1-bit objects "Status lower position" and "Status 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.

4.5.3 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.

4.5.4 Status Lock/Alarms

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

4.5.5 Diagnosis as character

Die Diagnose in Klartext gibt die jeweils als letzte ausgeführte Aktion als 14 Byte String aus und kann für Diagnosezwecke genutzt werden.

Folgende Diagnosetexte können angezeigt werden:

Diagnosetext	Last executed command
Up	Upward movement
Down	Down movement
absolut Pos	Absolute position
Scene	Scene call
Auto Position	Automatic position
Manual Oper	Manual operation on the device
Central Up	Upward movement via central object
Central down	Down movement via central object
Central abs	absolute position via central object
Window open	Window open - Action for air function executed
Auto Sun Pos	Automatic clouding – Action for automatic clouding executed
Locked	Channel is locked
Wind Alarm	Wind alarm activated
Rain Alarm	Rain alarm activated
Frost Alarm	Frost alarm activated
Alarm End	Alarm finished
Bus Reset	Bus power recovery
Stop	Stop-Befehl
Reference	Reference drive
Abs lock	Absolute positionens are locked
Function lock	Object “Block functions” has been activated
Up abs lock	Automatic lock of absolute positions via up / down was triggered by an “up” command
Dn abs lock	Automatic lock of absolute positions via up / down was triggered by a “down” command
Scene lock	Scene call is locked
Auto Pos lock	Automatic positionen ist locked
Man Oper lock	Manual operation is locked
Window close	Window closed
Blind/Stop	Slats adjustment/Stop
Cen.Blind/Stop	Slats adjustment /Stop via central object
Sun Pos End	Automatic clouding has been finished

Table 13: Diagnosis text per channel

4.6 Central Objects

The "central objects" parameter can be used to define individually for each channel whether and which objects this channel should react to.

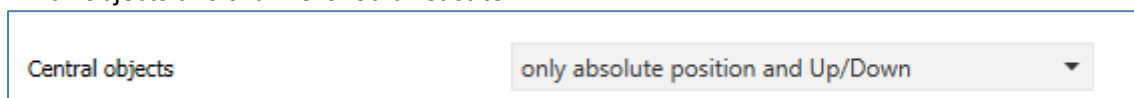


Figure 10: Central objects

The following table shows the possible settings for this parameter:

ETS-Text	Dynamic range [default value]	Comment
Central objects	<ul style="list-style-type: none"> ▪ not active ▪ only Up ▪ only Down ▪ only Up/Down ▪ only absolute position ▪ only absolute position and Up ▪ only absolute position and Down ▪ absolute position and Up/Down 	Determine which central objects this channel should react to

Table 14: Setting options - Central objects

The central communication objects are permanently displayed even if the parameter "central objects" has not been activated in any channel. The central objects are indicated with "Central function" and are at the top of the list of communication objects.

Number	Name	Length	Usage
0	Rollladen Auf/Ab	1 Bit	Driving function for all channels
1	Slats adjustment/Stop	1 Bit	Slats adjustment/Stop function for all blind channels
2	Stop	1 Bit	Stop function for all channels
3	absolute position	1 Byte	Absolute high position command for all channels
4	absolute position of slats	1 Byte	Absolute position command for the slats for all blind channels
5	operation	1 Bit	Sends an "in operation" telegram

Table 15: Central communication objects

By activating the central objects in selected channels, it is possible to control several channels simultaneously, via a single command.

The object 0, "Shutter Up / Down", is the central travel command and applies to both, blinds channels as well as to shutter channels, in which the central objects have been activated.

Object 1, "slats adjustment / stop", is only relevant for blind channels in which the central objects have been activated. It is used for manual slat adjustment and stops a running travel function of the blind.

Object 2, "Stop", is the central stop command for all channels. Object 3, "absolute position", also applies to shutters as well as blinds with central function enabled. By this command, absolute elevation positions can be sent to the channels.

Object 4, "absolute slat position", is only relevant for blind channels in which the central objects have been activated. With this command, absolute slat positions can be sent to the blind channels.

With the parameter settings you can specify which objects the channel should react to:

- **only Up**
Channel reacts only to Up commands of object 0 and object 1 (for blinds).
- **only Down**
Channel reacts only to Down commands of object 0 and object 1 (for blinds).
- **only Up/Down**
Channel reacts to all commands of Object 0 and Object 1.
- **only absolute position**
Channel reacts only to absolute commands via object 3 and object 4 (blind).
- **only absolute position and Up**
Channel reacts only to absolute commands via object 3 and object 4 (blinds) and Up commands of object 0 and object 1 (for blinds).
- **only absolute position and Down**
Channel reacts only to absolute commands via object 3 and object 4 (blinds) and Down commands of object 0 and object 1 (for blinds).
- **absolute position and Up/Down**
channel reacts to all central commands.

4.7 Behaviour after bus power down/bus power up

Attention:

The parameter "Behavior after bus power down" is only be available for devices with auxiliary voltage (4-fold and 8-fold)!

The parameters for the behavior after bus power down/bus power up can be seen below:

Figure 11: Behaviour after bus power down/bus power up

The following table shows the possible settings for these parameters:

ETS-Text	Dynamic range [default value]	Comment
Behavior after bus power down	<ul style="list-style-type: none"> ▪ no action ▪ move up ▪ move down ▪ stop moving ▪ „move to position“ 	<p>no action: No specific action is performed after a bus power down.</p> <p>move up: Channel moves up.</p> <p>move down: Channel moves down.</p> <p>stop moving: An active movement is stopped.</p>
Behavior after bus power up	<ul style="list-style-type: none"> ▪ no action ▪ move up ▪ move down ▪ „move to position“ 	<p>„move to position“: Only displayed when the "1Bit Object for move to position" has been activated. The position defined there is approached.</p>

Table 16: Setting options - Behaviour after bus power down/bus power up

Attention: If a blocking or an alarm occurs in the event of a bus power down/ bus power up, the blocking/alarm has the higher priority than the behavior for bus power down/ bus power up.

4.8 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 are activated by receiving their scene number on the scene object. If the storage function is activated in the scene, the current channel values are saved with the object value of the scene. The communication objects of scenes are generally 1 byte in size.

The following figure shows the possible settings in the ETS software to activate the scene function:

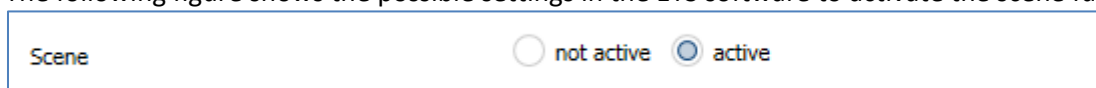


Figure 12: Parameter - Scene

Number	Name	Length	Usage
26	Scene	1 Byte	Call up the respective scene

Table 17: 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/push button, you have to set the same scene numbers at your binary input/push button and at the actuator. The binary input/push button sends automatically the correct value to call up the scene.

4.8.1 Submenu Scene

For each channel there are 8 storage possibilities for the scenes. The 8 storage spaces have the names A-H. Each of the 8 scenes can be assigned to one of the 64 possible scene numbers.

The following figure shows the possible settings in the Scene submenu (Channel X: Scene) for the scenes for a shutter output:

The screenshot shows a configuration interface for shutter scenes. At the top, there is a 'Save scenes' section with two radio buttons: 'not active' (unselected) and 'active' (selected). Below this, there are two main sections for 'Scene Number A' and 'Scene Number B'. Each section contains four dropdown menus for configuration: 'Height position', 'Position of slats', and 'block functions'. For Scene A, the settings are: Height position: 40%, Position of slats: 80%, and block functions: disable block for abs. position/clouding. For Scene B, the settings are: Height position: 0%, Position of slats: 0%, and block functions: enable "Block functions".

Parameter	Value
Save scenes	active
Scene Number A	1
Scene A - Height position	40%
Scene A - Position of slats	80%
Scene A - block functions	disable block for abs. position/clouding
Scene Number B	2
Scene B - Height position	0%
Scene B - Position of slats	0%
Scene B - block functions	enable "Block functions"

Figure 13: Submenu Scene

The sub-function for shutter scenes is almost identical to that of the blind scenes. However, in the shutter scenes, the slat positions fall away.

The following table shows the setting range for the scenes:

ETS-Text	Dynamic range [default value]	Comment
Save scenes	<ul style="list-style-type: none"> ▪ not active ▪ active 	Activates/deactivates the memory function for the scenes
Scene number A	<ul style="list-style-type: none"> ▪ not active ▪ 1-64 	Scene number; Response value = Scene number reduced by 1
Scene A – Height position	<ul style="list-style-type: none"> ▪ not active ▪ 0-100% 	Setting for absolute position when the scene is called
Scene A – Position of slats	<ul style="list-style-type: none"> ▪ not active ▪ 0-100% 	Setting for absolute slat position when calling the scene (only for blinds)
Scene A – Block functions	<ul style="list-style-type: none"> ▪ not active ▪ enable block for abs. position/clouding ▪ disable block for abs. position/clouding ▪ enable „Block functions“ ▪ disable „Block functions“ ▪ enable „Block functions“ and abs. position/clouding ▪ disable „Block functions“ and abs. position/clouding 	Scene number; Response value = Scene number reduced by 1 (Default values increase with alphabetical increase, B = 2, C = 3, etc.)

Table 18: Setting options - Scene

If the scene function is activated in a channel, a sub-point "scene" appears for this channel. Here, a reaction can be assigned to the channel when calling this scene. This response includes an absolute height command (0-100%) for this channel and additionally an absolute slat position for blind channels.

In addition, a lock can be set or canceled by the scene call. On the one hand, the absolute positions and the clouding can be blocked or released, on the other hand the function lock (see 4.11 Advanced block function) can be set or enabled.

Attention: If the scene function is also disabled in the function lock, no further scene call is possible after this. The scene call is activated again only when the function lock is deactivated via the corresponding object!

For every channel you can activate up to 8 scenes. By sending the scene value for the desired scene, the channel moves to the configured value. The individual parameterisation of the respective channel is also taken into account. If, for example, the channel is to be driven to 0% when the scene A is called and it is in the downward travel at 70%, a programmed reverse pause would be maintained before the channel starts to go up to 0%.

When programming, it should be noted that if two or more channels are to react to the same scene number, the communication objects for the scenes must be placed in the same group addresses. By sending the value for the scene, all the involved channels have to be addressed. When programming the scene function, a division according to the scenes makes sense to make the programming more clear. If a channel has to react to 8 scenes, the corresponding communication object is also integrated into 8 group addresses.

To recall a scene or store a new value for the scene, the relevant code is sent to the corresponding communication object for the scene:

Scene	Call-up		Store	
	Hex.	Decimal	Hex.	Decimal
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 19: Coding for Scene call-up and store

4.9 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 (A and B). 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.

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



Figure 14: Automatic function

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.

4.9.1 Submenu automatic function

The following figure shows the possible settings for the automatic function in sub-menu Channel X: Automatic:

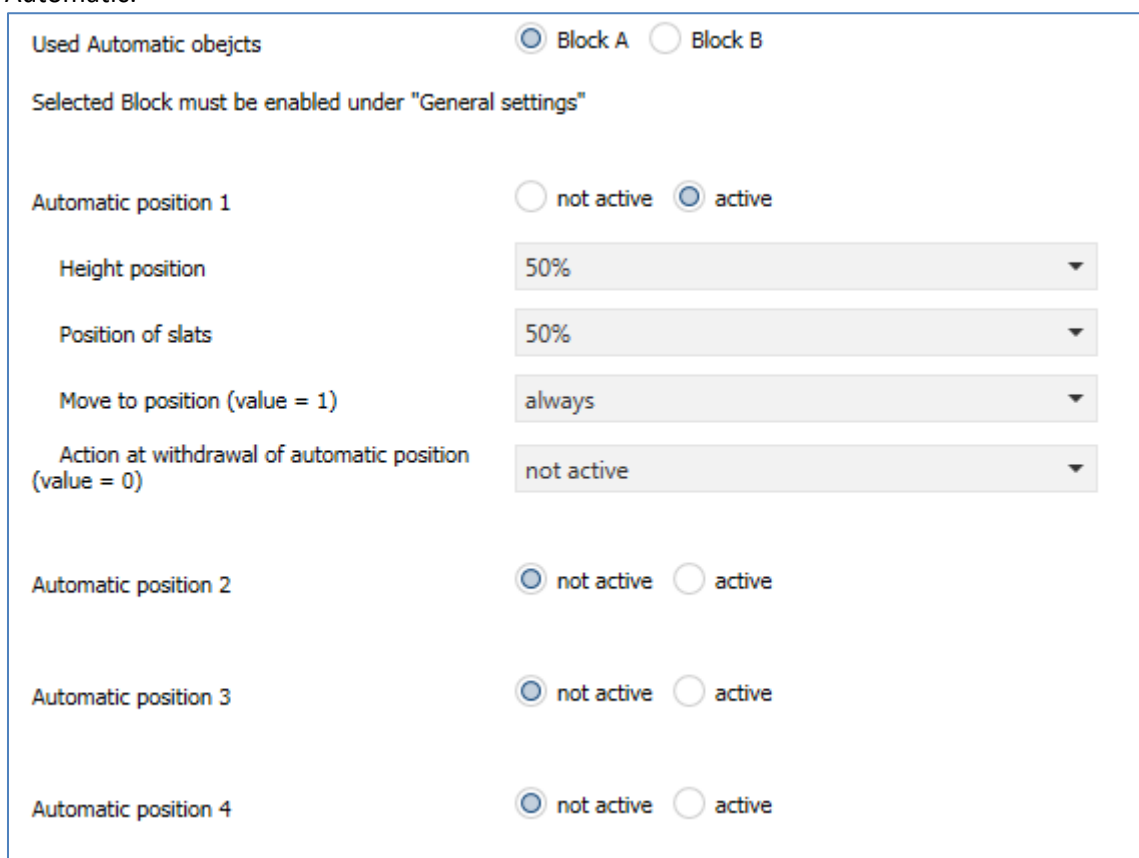


Figure 15: Submenu automatic function

The following table shows the setting ranges for the first two automatic functions. There are 4 different automatic functions per channel. The setting ranges for the automatic functions 2, 3 and 4 are analogous to the first:

ETS-Text	Dynamic range [default value]	Comment
Used Automatic objects	<ul style="list-style-type: none"> ▪ Block A ▪ Block B 	Setting to which automatic block this channel should react
Automatic function 1(-4) – Height position	<ul style="list-style-type: none"> ▪ not active ▪ 0-100% 	Height position to be approached by the automatic function
Automatic function 1(-4) – Position of slats	<ul style="list-style-type: none"> ▪ not active ▪ 0-100% 	Slat position to be approached by the automatic function (only for blinds)
Move to position	<ul style="list-style-type: none"> ▪ always ▪ if position is Up ▪ if position Down 	Restriction when the automatic position is to be approached
Action at withdrawal of automatic position (value = 0)	<ul style="list-style-type: none"> ▪ not active ▪ move up ▪ move down 	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

Table 20: Setting options - Automatic function

In the sub-function for the automatic function, values for 4 different automatics can be configured. The values are absolute values which are approached when the respective automatic function is called. Additionally, it is possible for each channel to define an automatic block (A or B) which it should react to.

Furthermore, restrictions can be made for the validity range of the automatic function. Thus, the channel should, for example, only react to a specific automatic function or only execute the call of the automatic function when it is in upper or lower end position.

A travel command can also be executed when the automatic function is withdrawn. However, this travel command is only executed if the channel is still in the called automatic position. To do so, an internal match is performed before the command is executed. This prevents the shutters from executing the return command if they have already been manually moved to another value.

4.9.2 Automatic blocks

In order to use the automatic function, the corresponding blocks (A and / or B) have to be activated in the "General settings" menu.

The following figure shows the possible settings for the automatic blocks:

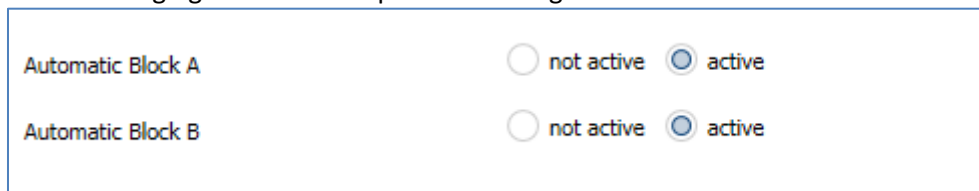


Figure 16: Automatic blocks

If an automatic block is activated, the communication objects belonging to the activated block are displayed. Each block contains 4 communication objects, one for the corresponding automatic position.

The communication objects are shown in the following table:

Number	Name	Function	Length	Usage
15	Automatic A	Automatic position 1	1 Bit	Call of automatic position 1 in Block A
16	Automatic A	Automatic position 2	1 Bit	Call of automatic position 2 in Block A
17	Automatic A	Automatic position 3	1 Bit	Call of automatic position 3 in Block A
18	Automatic A	Automatic position 4	1 Bit	Call of automatic position 4 in Block A
19	Automatic B	Automatic position 1	1 Bit	Call of automatic position 1 in Block B
20	Automatic B	Automatic position 2	1 Bit	Call of automatic position 2 in Block B
21	Automatic B	Automatic position 3	1 Bit	Call of automatic position 3 in Block B
22	Automatic B	Automatic position 4	1 Bit	Call of automatic position 4 in Block B

Table 21: Communication objects - Automatic function

The communication objects with the size 1 bit can then be assigned to the group addresses as desired.

By calling one of the 8 communication objects, the stored values for this automatic function are then executed. When a communication object is called, it is possible to simultaneously move all the channels of the actuator to the parameterized value or only a single channel. This depends on the parameterization which was made for the individual channels in the sub menu for the automatic function. In order to move several channels simultaneously to certain values, the same automatic blocks have to be selected for these channels and the desired values for the same automatic position have to be stored.

4.10 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:

Alarm order	Wind alarm, Rain alarm, Frost alarm, Block func... ▼
Normal blocking function	<input type="radio"/> not active <input checked="" type="radio"/> active
Action at Blocking (value=1)	move up ▼
Action at reset of blocking	move to former position ▼
Advanced function	<input type="radio"/> not active <input checked="" 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	no action ▼
Action at reset of alarms	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
Height position for alarms/blocking	0% ▼

Figure 17: Parameter - Alarm and block functions

4.10.1 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"> ▪ Wind alarm, Rain alarm, Frost alarm, Block function ▪ Wind alarm, Rain alarm, Block function, Frost alarm ▪ Wind alarm, Block function, Rain alarm, Frost alarm ▪ Block function, Wind alarm, Rain alarm, Frost alarm 	Indicates the priority of the alarm function

Table 22: Setting option - Alarm order

If two or more alarms are active at the same time, the shutter actuator evaluates the alarms according to the set sequence. The shutter 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.

4.10.2 Alarm types

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

The following table shows the setting ranges for the three types of alarms:

ETS-Text	Dynamic range [default value]	Comment
Wind alarm	<ul style="list-style-type: none"> ▪ not active ▪ active 	Activation of the Wind alarm
<i>Monitoring time</i> <i>(Only at active wind alarm)</i>	0 - 120 min <i>[0 = not active]</i>	<i>Cyclic monitoring of the wind alarm</i> <i>Setting 0 deactivates the cyclic monitoring</i>
<i>Action</i> <i>(Only at active wind alarm)</i>	<ul style="list-style-type: none"> ▪ no action ▪ move up ▪ move down ▪ move to height position 	<i>Action after activation of the wind alarm.</i> <i>Setting "move to height position":</i> <i>The absolute position described in 4.10.5 is approached.</i>
Rain alarm	<ul style="list-style-type: none"> ▪ not active ▪ active 	Activation of the Rain alarm
<i>Monitoring time</i> <i>(Only at active rain alarm)</i>	0 - 120 min <i>[0 = not active]</i>	<i>Cyclic monitoring of the rain alarm</i> <i>Setting 0 deactivates the cyclic monitoring</i>
<i>Action</i> <i>(Only at active rain alarm)</i>	<ul style="list-style-type: none"> ▪ no action ▪ move up ▪ move down ▪ move to height position 	<i>Action after activation of the rain alarm.</i> <i>Setting "move to height position":</i> <i>The absolute position described in 4.10.5 is approached.</i>
Frost alarm	<ul style="list-style-type: none"> ▪ not active ▪ active 	Activation of the Frost alarm
<i>Monitoring time</i> <i>(Only at active frost alarm)</i>	0 - 120 min <i>[0 = not active]</i>	<i>Cyclic monitoring of the frost alarm</i> <i>Setting 0 deactivates the cyclic monitoring</i>
<i>Action</i> <i>Only at active frost alarm</i>	<ul style="list-style-type: none"> ▪ no action ▪ move up ▪ move down ▪ move to height position 	<i>Action after activation of the frost alarm.</i> <i>Setting "move to height position":</i> <i>The absolute position described in 4.10.5 is approached.</i>

Table 23: Setting options - Alarm types

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
42	Wind alarm	1 Bit	Activation / deactivation of wind alarm
43	Rain alarm	1 Bit	Activation / deactivation of rain alarm
44	Frost alarm	1 Bit	Activation / deactivation of frost alarm

Table 24: Communication objects - Alarms

The functionality of the alarms is identical for all three types of alarms. A cyclic monitoring can be set for each of the 3 alarms. Furthermore, an action can be defined for triggering the alarm. Here, the user has 4 options: On the one hand, the blind actuator can move the channel up or down. On the other hand, the blind actuator can react with the setting "no action". With this setting, the channel remains in the pre-alarm position. Alternatively, a defined height position can be approached. This is described in chapter 4.10.5 "Approaching the height position". A control is then not possible as long as the alarm is active. Even after the alarms have been released, the blind actuator can perform certain actions. You can select between "Move up", "Move down", "Move to former position". If selecting "no action", the channel remains in the current position.

When programming, it must be noted that the communication objects of activated alarms should always be included in group addresses, since they can not be acknowledged otherwise. If an alarm whose communication object is not integrated is active because of the cyclic monitoring, this can only be acknowledged via the ETS software!

4.10.3 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.

4.10.4 Normal blocking

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

ETS-Text	Dynamic range [default value]	Comment
Action at blocking (value=1)	<ul style="list-style-type: none"> ▪ no action ▪ move up ▪ move down ▪ move to height position 	Setting the action which is to be triggered when activating a block with a 1
Action at reset of blocking	<ul style="list-style-type: none"> ▪ no action ▪ move up ▪ move down ▪ move to former position 	Setting the action which is to be triggered when deactivating a block with a 0

Table 25: Setting options - Normal blocking

The shutter actuator can move to a defined position, move up/down or remain in its current position when the block object is activated. When the block function is active, the channel can not be operated.

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

When the block is released, the channel can move up/down, 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 corresponding communication object:

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

Table 26: Communication object - Block

4.10.5 Move to high position

For each channel, 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. Can be adjusted when set to "shutter"
Blind position for alarms/blocking	0-100% [0%]	Setting the absolute height position for alarms/blocking. Can be adjusted when set to "blinds"
Slat position for alarms/blocking	0-100% [0%]	Setting the absolute slat position for alarms/blocking. Can be adjusted when set to "blinds"

Table 27: Setting options - Move to high position

An absolute height position can be defined per channel, which can be approached with an active alarm or an active block. This position is valid for all alarms of this channel

4.11 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 sub-menu Channel X: Advanced block functions appears in the selection menu under the respective channel.

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

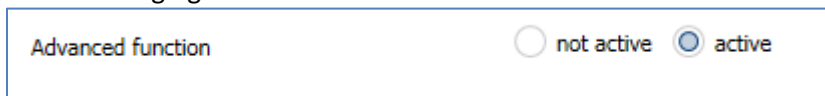


Figure 18: Activation - Advanced block function

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

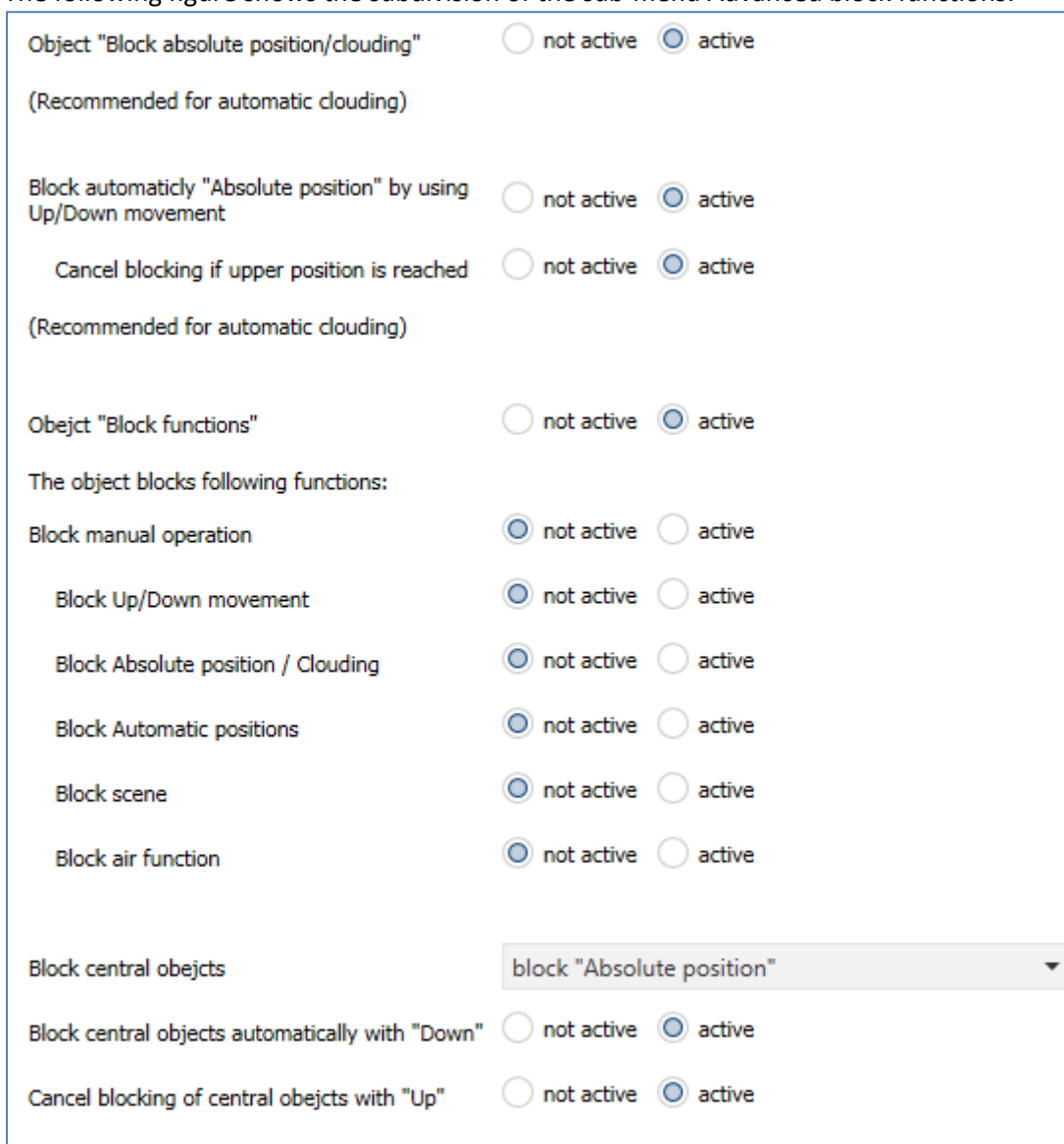


Figure 19: Parameter - Advanced block function

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

ETS-Text	Dynamic range [default value]	Comment
Object „Block absolute position/clouding“	<ul style="list-style-type: none"> ▪ not active ▪ active 	Activates the communication object for the blocking of an absolute position command (also valid for clouding)
Block automatically “Absolute position” by using Up/Down movement	<ul style="list-style-type: none"> ▪ not active ▪ active 	Activates the block for starting absolute position by manual movement Up/Down
Cancel blocking if upper position is reached	<ul style="list-style-type: none"> ▪ not active ▪ active 	Deactivates the block for starting absolute position by reaching the upper position
Objekt „Block functions“	<ul style="list-style-type: none"> ▪ not active ▪ active 	Activates the communication object and the settings for the universal blocking function
<p>The following objects are displayed when the object "Block functions" is activated. This object blocks the following functions:</p>		
Block manual operation	<ul style="list-style-type: none"> ▪ not active ▪ active 	When activated, the “manual operation” is blocked
Block Up/Down movement	<ul style="list-style-type: none"> ▪ not active ▪ active 	When activated, the “Up/Down movement” is blocked
Block absolute position/clouding	<ul style="list-style-type: none"> ▪ not active ▪ active 	When activated, “absolute position/clouding” is blocked
Block automatic positions	<ul style="list-style-type: none"> ▪ not active ▪ active 	When activated, “automatic positions” is blocked
Block scene	<ul style="list-style-type: none"> ▪ not active ▪ active 	When activated, “scene” is blocked
Block air function	<ul style="list-style-type: none"> ▪ not active ▪ active 	When activated, the “air function” is blocked

Block central objects	<ul style="list-style-type: none"> ▪ not active ▪ Block only “Up“ ▪ Block only “Down“ ▪ Block only “Up/Down“ ▪ Block „Absolute position“ ▪ Block „Absolute position“ and “Up“ ▪ Block „Absolute position“ and “Down“ ▪ Block „Absolute position“ and “Up/Down“ 	Setting which central functions the object "Block central object" should block
Block central objects automatically with “Down“	<ul style="list-style-type: none"> ▪ not active ▪ active 	
Cancel blocking of central objects with “Up“	<ul style="list-style-type: none"> ▪ not active ▪ active 	

Table 28: Setting options - Advanced block function

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

The table shows the related block objects:

Nummer	Funktion	Größe	Verwendung
39	Block central object	1 Bit	Blocks the central objects according to the set parameters
40	Block absolute positions	1 Bit	Blocks the movement via absolute positions
41	Block functions	1 Bit	Blocks the functions according to the settings for this object

Table 29: Communication objects - Advanced block function

The parameter "Block absolute position/clouding" 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 and also the automatic clouding is deactivated.

Example: The function "Blocking automatically '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".

From application V3.2 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/clouding
 - Blocks the object „absolute position“ and the automatic clouding for this channel
- Block automatic position
 - Blocks automatic positions for this channel
- Szene sperren
 - 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

From application V3.2, 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.

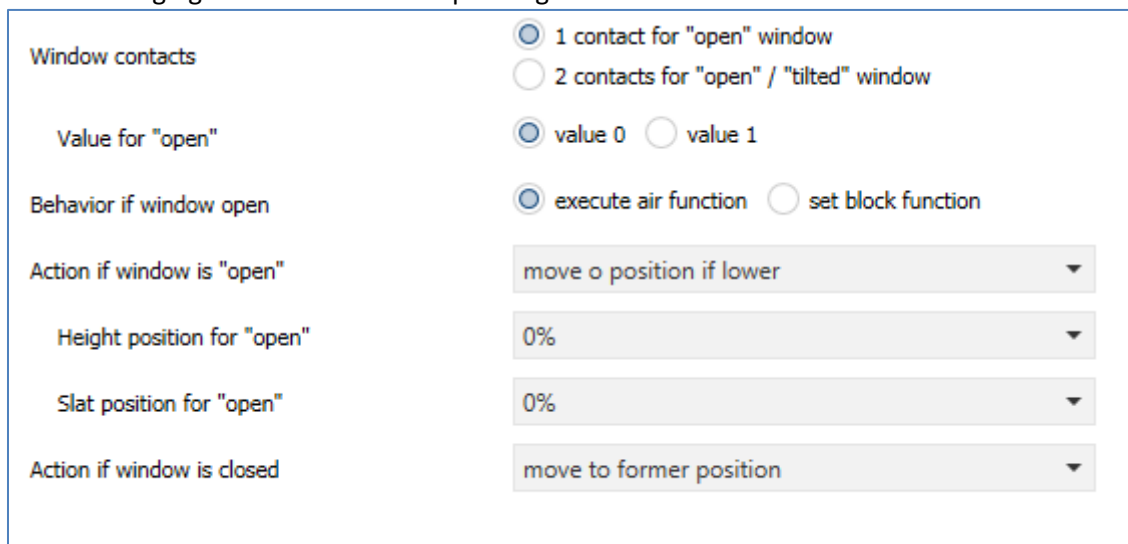
From hardware revision R5.0 and application V3.2 the object "Block absolute position/clouding" can send the status after parameter activation at internal switching.

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

4.12 Air function

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

The following figure shows the corresponding submenu:



Window contacts 1 contact for "open" window
 2 contacts for "open" / "tilted" window

Value for "open" value 0 value 1

Behavior if window open execute air function set block function

Action if window is "open"

Height position for "open"

Slat position for "open"

Action if window is closed

Figure 20: Parameter - Air function

The table below shows the available settings:

ETS-Text	Dynamic range [default value]	Comment
Window contacts	<ul style="list-style-type: none"> ▪ 1 contact for „open“window ▪ 2 contacts for „open“/“tilted“window 	Setting whether one or two window contacts are installed
1 contact:		
Value for „open“	<ul style="list-style-type: none"> ▪ Value 0 ▪ Value 1 	Sets the value for open windows
2 contacts:		
Value for „open“	<ul style="list-style-type: none"> ▪ contact 1 = 0, contact 2 = 0 ▪ contact 1 = 1, contact 2 = 0 ▪ contact 1 = 0, contact 2 = 1 ▪ contact 1 = 1, contact 2 = 1 	Sets the value for open windows
Value for „tilted“	<ul style="list-style-type: none"> ▪ contact 1 = 0, contact 2 = 0 ▪ contact 1 = 1, contact 2 = 0 ▪ contact 1 = 0, contact 2 = 1 ▪ contact 1 = 1, contact 2 = 1 	Sets the value for tilted windows

Behaviour if window "open"	<ul style="list-style-type: none"> ▪ execute air function ▪ set block function ▪ execute air function and block central objects * ▪ execute air function and block abs position/clouding* ▪ execute air function and block abs position/clouding and central objects * 	Setting which behavior should be performed when the window is open * Available from V3.2. Hint appears in ETS; the corresponding action has to be activated in "Advanced block function". These functions are only possible from HW R5.0
Action if window "open"	<ul style="list-style-type: none"> ▪ not active ▪ move to position if down ▪ move to position if lower 	Action to be executed when opening the window; Parameter is only available if "Behavior if window open" -> "Execute air function" is activated
Hight position for „open“	0-100% [0%]	Setting of the absolute position for the air function
Slat position for „open“	0-100% [0%]	Setting of the absolute slat position for the air function
Action if window is closed	<ul style="list-style-type: none"> ▪ not active ▪ move to position if down ▪ move to position if lower ▪ move to former position 	Action to be executed after closing the window. From HW R5.0 central telegrams are made up for (not slat!).
Only for 2 window contacts:		
Action if window "tilted"	<ul style="list-style-type: none"> ▪ not active ▪ move to position if down ▪ move to position if lower 	Action to be executed when the window is tilted
Hight position for „tilted“	0-100% [0%]	Setting of the absolute position for the air function
Slat position for „tilted“	0-100% [0%]	Setting of the absolute slat position for the air function

Table 30: Setting options - Air function

The air function allows to carry out various actions without external logic, as soon as the value of a window contact changes on the bus.

Two different behaviours can be parameterized for the open window:

- **Execute air function**
The adjusted absolute positions are approached. However, the channel is not blocked and can still be moved from this position.
- **Set block function**
The block function is set and a further movement is not possible as long as the window is open. Closing the window deactivates the blocking. **This function is particularly useful for terrace doors to avoid lockout.**
- **Execute air function and block central objects**
The air-positions set in the corresponding channel will be approached. Central commands for up/down and absolute positions are locked and not executed. However, these are stored and made up after unblocking (but not the slat position). The last incoming telegram will be executed. However, the blind/shutter can still be controlled with the up/down control on the channel. This function avoids the lockout via automated central objects.
- **Execute air function and block abs position/clouding**
The air-positions set in the corresponding channel will be approached. Commands for channel-related absolute positions are locked and not executed. However, the blind/shutter can still be controlled with the up/down control on the channel. This function avoids locking out via automated absolute position objects
- **Execute air function and block abs position/clouding and central objects**
The air-positions set in the corresponding channel will be approached. Central commands for up/down and absolute positions, as well as channel-related absolute positions are blocked and not executed. Central commands are stored and made up after unlocking (but not the slat position). The last incoming telegram will be executed.
Commands for absolute channel-related positions are not made up for. However, the blind/shutter can still be controlled with the up/down control on the channel. This function avoids the lockout via automated central and channel related absolute position objects.

The air function can block central telegrams when the window is open (not tilted), save the last telegram and repeat it when the window is closed (or tilted). Alternatively, you can also use the object "Lock central objects" to manually enable it with the value = 0.

The outdoor temperature lock has no effect on the air function!

The following table shows the related communication objects:

Number	Function	Length	Usage
46	Window contact	1 Bit	Value window contact – if 1 window contact
46	Window contact 1	1 Bit	Value window contact 1 – if 2 window contact
47	Window contact 2	1 Bit	Value window contact 2 – if 2 window contact

Table 31: Communication object - Window contact

4.13 Automatic Clouding

Attention: This function is not integrated in JAL-01UP.02!

The automatic clouding function makes it possible to implement a sun position tracking in the shutter actuator. In this case, the actuator performs the calculation of the sun position completely independently and can be triggered as a function of brightness values, outside temperature, internal temperature, control value of the heating or via a simple 1-bit telegram.

For automatic clouding, basic settings (position of the object, brightness control, etc.) and settings for each channel (orientation of the channel - east/south/west, delay, shading position, etc.) must be made..

4.13.1 Clouding basic setting

To get the sub-menu "Clouding basic setting" you have to set the parameter "Automatic clouding" to "active" in the menu "General setting".

The following figure shows the menu "Clouding basic setting":

Brightness values over	<input checked="" type="radio"/> brightness value 2Byte <input type="radio"/> brightness threshold 1Bit
Number of objects	3
Brightness threshold 1	15 x 1000 Lux
Brightness threshold 2	25 x 1000 Lux
Hysteresis	5 x 1000 Lux
Delay of brightness threshold 1 to 2 (from HW R5.0)	2 min
Delay of brightness threshold 2 to 1 (from HW R5.0)	15 min
Outside temperature block	temperature value
Block clouding at temperature less than	12 °C
Function of central object "Clouding"	<input checked="" type="radio"/> block clouding at value 1 <input type="radio"/> enable clouding at value 1
Automatic switching of summertime	<input type="radio"/> not active <input checked="" type="radio"/> active
Location determination over	<input type="radio"/> coordinates <input checked="" type="radio"/> place
Country	Germany
Town	Engelskirchen
Objects for Date/Time	<input checked="" type="radio"/> separate objects <input type="radio"/> one common object
Diagnostic object for clouding	send at change

Figure 21: Parameter - Basic setting clouding

The table below shows the available settings:

ETS-Text	Dynamic range [default value]	Comment
Brightness values over	<ul style="list-style-type: none"> ▪ Brightness value 2Byte ▪ Brightness threshold 1Bit 	Settings of the data point types for the brightness values
Number of objects	1-3 [1]	For brightness values over 2 byte Set the number of brightness objects
Brightness threshold 1	5.000-50.000 Lux [15.000 Lux]	For brightness values over 2 byte Adjustment of the brightness threshold 1
Brightness threshold 2	5.000-50.000 Lux [25.000 Lux]	For brightness values over 2 byte Adjustment of the brightness threshold 2
Hysteresis	1.000-10.000 Lux [5.000 Lux]	For brightness values over 2 byte Adjustment of the brightness threshold
Delay of brightness threshold 1 to 2 (from HW R5.0)	0 – 30 min [2]	Setting the delay when switching between the brightness thresholds Function possible from HW R5.0
Delay of brightness threshold 2 to 1 (from HW R5.0)	0 – 60 min [15]	Setting the delay when switching between the brightness thresholds Function possible from HW R5.0
Outside temperature block	<ul style="list-style-type: none"> ▪ not active ▪ temperature value ▪ temperature threshold 	Setting whether the outside temperature block is to be activated only from a minimum outside temperature
Block clouding at temperature less than	5°C-20°C [12°C]	At setting “temperature value” Setting the minimum outside temperature
Block clouding at	<ul style="list-style-type: none"> ▪ value 0 ▪ value 1 	At setting “temperatur threshold” Setting of the value with which the clouding should be blocked
Function of central object “Clouding”	<ul style="list-style-type: none"> ▪ block clouding at value 1 ▪ activate clouding at value 1 	Activation of an enable/disable object for the clouding
Automatic switching of summertime	<ul style="list-style-type: none"> ▪ not active ▪ active 	Setting whether summertime changeover should be carried out automatically
Location determination over	<ul style="list-style-type: none"> ▪ Coordinates ▪ Place 	Setting how the location is to be calculated
Setting by location:		
Country	Setting for country	
Town	Setting for town	

Setting by coordinates		
Latitude	<ul style="list-style-type: none"> ▪ nördlich ▪ südlich 	Setting whether to count north or south latitude
Latitude in degrees	<ul style="list-style-type: none"> ▪ 0-90° 	Setting of the latitude
Latitude in minutes	<ul style="list-style-type: none"> ▪ 0'-59' 	Setting of the minutes
Longitude	<ul style="list-style-type: none"> ▪ östlich ▪ westlich 	Setting whether to count east or west longitude
Longitude in degrees	<ul style="list-style-type: none"> ▪ 0-180° 	Setting of the longitude
Longitude in minutes	<ul style="list-style-type: none"> ▪ 0'-59' 	Setting of the minutes
Time different to world time (UTC+...)	The respective time zone is to be entered here	Setting of the time zone to calculate the sun position
Objects for Date/Time	<ul style="list-style-type: none"> ▪ separate objects ▪ one common object 	Setting which objects have to be used for time/date
Diagnostic object for clouding	<ul style="list-style-type: none"> ▪ not active ▪ send at request ▪ send at change 	Aktivation of the diagnosis object

Table 32: Setting options - Clouding

Brightness values / brightness threshold

For the clouding per channel, two threshold values can be set for the brightness. In the clouding settings / channel, you can then set the brightness threshold to activate the clouding.

Up to 3 brightness values (over 2 bytes) are available for calculating the brightness thresholds. The brightness thresholds are then calculated from the highest applied brightness value. The threshold value and the hysteresis can be set for the brightness thresholds. The switch-on value is always equal to the specified value for brightness threshold 1/2. The switch-off value is calculated from the brightness threshold 1/2 - hysteresis.

Alternatively, the threshold values can be specified over 1 bit. If the 1-bit object receives a 1, the brightness threshold is exceeded.

Attention: The brightness threshold 1 must be less than the brightness threshold 2!

Delay of brightness threshold

The delay between the brightness thresholds prevents too frequent movement. If thresholds 1 and 2 are exceeded or undercut, a movement is only triggered with the specified delay. Different switching times can be configured.

Attention: This function requires the hardware revision from R5.0.

Outside temperature block

With the outside temperature block, the clouding can only be switched on from a certain outside temperature. For this purpose, the outside temperature can be sent to the shutter actuator via a temperature value. If the outside temperature is higher than the set temperature value, the automatic clouding function is activated. The hysteresis for calculating the switch-off point is fixed at 2°C. Thus the switch-off point to the temperature value is - 2°C.

Alternatively, the outside temperature block can also be preset via a 1-bit value. If the object receives a 1, the threshold for external temperature blocking is exceeded.

The outdoor temperature lock has no effect on the air function!

Block/Aktiviere Clouding

Via the parameter "function of central object clouding", the clouding can be disabled or enabled via an object, e.g. by using a button / time switch etc.

Automatic switching of summertime

An automatic change-over of the summer time can be set here (from V3.2). The setting was always active before. In countries without summer time it makes sense to deactivate this function.

Location determination

The location determination is required to calculate the sun position for the object.

Diagnostic objekt

The diagnostic object can be used as a status for visualizations or for commissioning/diagnostics. It includes information about the readiness of clouding, threshold, azimuth and elevation (see also 4.13.3). The diagnostic object is constructed as follows:

M1 S1 A150 E30

- **Mx**
Display of clouding mode; bit coded:
 - Bit 1:** 0 = Clouding not ready, 1 = Clouding ready
 - Bit 2:** 0 = Clouding not blocked, 1 = Clouding blocked
 - Bit 3:** 0 = no outside temperature block, 1 = outside temperature block active
- **Sx**
Indication whether threshold 1/2 is exceeded
 - S0:** No threshold is exceeded
 - S1:** Brightness threshold 1 is exceeded
 - S2:** Brightness threshold 2 is exceeded
- **Axxx**
Output of the azimuth (sun angle) of the sun in degrees
- **Exx**
Output of the elevation (sun height) of the sun in degrees

Appears the message **ERR: Date**, no value for date / time was received.

The following table shows the general communication objects for clouding:

Number	Function	Length	Usage
7	Time	3 Byte	Presetting the time
7	Date/Time	8 Byte	Presetting Date and Time
8	Date	3 Byte	Presetting the Date
9	Brightness 1	2 Byte	Presetting the brightness value 1
9	Brightness 1	1 Bit	Preset that the brightness threshold 1 has been exceeded
10	Brightness 2	2 Byte	Presetting the brightness value 2
10	Brightness 2	1 Bit	Preset that the brightness threshold 2 has been exceeded
11	Brightness 3	2 Byte	Presetting the brightness value 3
12	Outside temperature	2 Byte	Presetting the outside temperature
12	Outside temperature threshold	1 Bit	Preset that the outside temperature threshold has been exceeded
13	Block clouding	1 Bit	Blocking of clouding
13	Enable clouding	1 Bit	Activation of clouding
14	Clouding diagnosis	14 Byte	Diagnosis object of clouding

Table 33: General communication objects - Clouding

4.13.2 Settings for each channel

A submenu for automatic clouding can be displayed for each channel. This has to be activated in the channel settings via the parameter "Automatic clouding".

The following figure shows the submenu:

Note: Use only if "Automatic clouding" is enabled in "General setting"

Compass direction	south
Clouding active if azimuth	
from	120°
to	240°
Clouding active if elevation	
from	2
to	90
Delay clouding On	2 min
Delay clouding Off	15 min
Release via (temperature/set value)	temperature threshold
Release if	<input type="radio"/> value 0 <input checked="" type="radio"/> value 1
Object Clouding	not active
Activate clouding again with positon 0%, after deactivation with movement command	<input type="radio"/> not active <input checked="" type="radio"/> active
Status automatic clouding	in Clouding status
Cloud with brightness threshold from	not active
Slat is horizontal at	<input type="radio"/> 0% <input checked="" type="radio"/> 50%
Start slat adjustment if elevation is less than (0 = not active)	45
Minimum change of slat adjustment	10%
Offset slat adjustment	0 %
Behavior after clouding	move up

Figure 22: Parameter - Clouding settings per each channel

The table below shows the available settings:

ETS-Text	Dynamic range [default value]	Comment
Compass direction	<ul style="list-style-type: none"> ▪ clouding off ▪ east ▪ southeast ▪ south ▪ southwest ▪ west ▪ roof area ▪ no azimuth evaluation 	Adjustment of compass direction: Clouding off: Clouding is deactivated Roof area: Azimuth evaluation possible from East – West no azimuth evaluation: Clouding always active
Clouding active if azimuth		
From	60°-300°	Azimuth angle from which the shading is active
To	60°-300°	Azimuth angle until the shading is active
Clouding active if elevation		
From	2°-45	Angle of elevation from which the shading is active
To	30°-90°	Angle of elevation until the shading is active
Delay clouding On	1-30min [2 min]	Delay until clouding is started after overstepping the brightness threshold
Delay clouding Off	5-60min [15 min]	Delay to end clouding after the brightness threshold has been undercut
Release via (temperature/set value)	<ul style="list-style-type: none"> ▪ not active ▪ temperature value ▪ temperature threshold ▪ set value for heating 	Setting whether automatic clouding should only be released from a certain temperature/control value of the heating
Release if temperature greater than	15°C-35°C [21°C]	Setting of a minimum temperature; at "Release via – temperature value"
Release if	<ul style="list-style-type: none"> ▪ value 0 ▪ value 1 	Setting of a threshold value; at "Release via – threshold value"
Release if set value for heating less than	0-50% [5%]	Setting of a maximum control value; at "Release via – control value for heating"
Object clouding	<ul style="list-style-type: none"> ▪ not active ▪ block at value 1 ▪ activate at value 1 ▪ block slat adjustment at value 1 ▪ activate slat adjustment at value 1 	Activation of an object for blocking/activation of clouding/slat adjustment

Activate clouding again with position 0% after deactivation with movement command	<ul style="list-style-type: none"> ▪ not active ▪ active 	Setting whether clouding should be reactivated after the complete up-movement
Status automatic clouding	<ul style="list-style-type: none"> ▪ not active ▪ in Clouding status ▪ in Standby status 	Setting whether a status for clouding is to be displayed
The following settings are only available for channel selection as "Blinds":		
Clouding from brightness threshold	<ul style="list-style-type: none"> ▪ not active ▪ brightness threshold 1 ▪ brightness threshold 2 	Setting from which brightness threshold the clouding should be started
Hight position	0-100% [100%]	Height position to be approached with active clouding
Slat position	0-100% [50%]	Slat position to be approached with active clouding
Slat is horizontal at	<ul style="list-style-type: none"> ▪ 0% ▪ 50% 	Adjustment at which position the slats are horizontal
Start slat adjustment if elevation is less than (0 = not active)	0-90° [45°]	Setting from which sun angle slat adjustment should start
Minimum change of slat adjustment	5%-30% [20%]	Setting of the steps for the slat adjustment
Offset slat adjustment	-25...25 [0]	Setting of an offset of the slat adjustment
Behavior after clouding	<ul style="list-style-type: none"> ▪ No change ▪ Move up ▪ Slats horizontal 	Setting what should be done after active clouding
The following settings are only available for channel selection as "Shutter":		
Action at brightness threshold 1	<ul style="list-style-type: none"> ▪ not active ▪ move to Position 	Setting of the action to be taken when the brightness threshold 1 is exceeded
Position 1 hight	0-100% [30%]	Height position to be approached at activated clouding
Action at brightness threshold 2	<ul style="list-style-type: none"> ▪ not active ▪ move to Position 	Setting of the action to be taken when the brightness threshold 2 is exceeded
Position 2 hight	0-100% [60%]	Height position to be approached at activated clouding
Behavior after clouding	<ul style="list-style-type: none"> ▪ No change ▪ Move up ▪ Move to position 1 	Setting what should be done after active clouding

Table 34: Setting options for Clouding per each channel

Compass direction

Here, a pre-selection for the orientation can be made for each channel. Depending on the choice, a typical angle (from/to) is offered for the azimuth. The setting "Clouding off" can be used to switch off the clouding for testing purposes. It causes a deactivation of the function but without deleting the previous settings and group addresses.

Clouding active if azimuth from/to

This parameter is used to set the detection range of the azimuth angle. Depending on the chosen compass direction there is a presetting which can be adapted individually. For more information, see "4.13.4 Principle of clouding".

Clouding active if elevation from/to

This parameter can be used to set the detection range of the elevation angle. This is recommended when, e.g. an obstacle (hedge, forest, building, etc.) is in the clouding direction and the clouding does not have to be active. See also "4.13.4 Principle of clouding".

Delay clouding On/Off

The parameter activates a delay, for the duration of which the set brightness threshold must be overstepped or undercut. The setting of the delay is useful in order to avoid activation of clouding in short solar phases and to deactivate it at short cloudy phases.

A short set delay time allows a quick response time to brightness, a long set delay time prevents frequent up- and down movement.

Release via (temperature/control value)

The sun can be used as a "natural heating source" with the block over temperature or the control value for heating. If the internal temperature is too low or the heating is still active, the clouding can be deactivated and the room can be heated up. Only when a certain indoor temperature has been reached or the heating has been switched off, the clouding is activated.

Object Clouding

The object for clouding can be used to activate/deactivate the clouding or the slat adjustment manually (via a button).

Activate clouding again with position 0% after deactivation with movement command

If the blind/shutter is moved during an active clouding function by the Up/Down object, automatic clouding is internally deactivated, this means it does not react to clouding changes. The parameter "Reactivate shading with position 0% after deactivation by traversing command" can ensure that reaching the upper limit stop activates the automatic clouding directly. If this parameter is not active, the clouding can only be activated again by the object "Clouding" (enable with a logical 0) or if the sun falls below the set threshold for the set switch-off delay and exceeds the set threshold for the set switch-on delay.

By release of the object "block clouding" (e.g. object 49) also internally resets/deletes the "block absolute position".

Status automatic clouding

Two different objects can be displayed for the status of automatic clouding.

- in Clouding status
Object reports a 1 when automatic clouding is activated.
- in Standby status
Object reports a 1 when automatic clouding is ready. This occurs when the calculation of azimuth and elevation was started by receiving time/date.
An up/down movement command at the channel deactivates the standby state of the clouding. This is activated again with the position 0% or with a release on the object "Block clouding".

The following settings are only available when the channel is configured as "blinds":**Clouding from brightness threshold**

Setting from which brightness threshold the clouding should be activated. These thresholds refer to the settings in the menu "Clouding basic setting"

Start slat adjustment if elevation is less than

Setting of the elevation angle from which the slat adjustment is to be activated. Typically, all blinds are designed in such a way that no sun enters the room at an elevation angle of 45 ° and a horizontal slat.

Minimum change of slat adjustment

The minimum change of slat adjustment indicates the percentage in which the slats are tracked. At a percentage of 5%, the slats are thus tracked in significantly smaller steps than with a percentage of 30%

Offset slat adjustment

The setting "Offset slat adjustment" causes the elevation angle to be increased or decreased manually. This causes more or less shading.

- **positive offset**
It is more shaded by the slat tracking
- **negative offset**
It is less shaded by the slat tracking

Behavior after clouding

This behavior defines the action to be performed after clouding.

The following settings are only available when the channel is configured as "shutter":**Action at Brightness threshold 1/Position 1 Height**

When this parameter is activated, the shutter approaches the height position which is set when the brightness threshold 1 is exceeded.

These thresholds refer to the settings in the "Clouding basic setting"

Action at Brightness threshold 2/Position 2 Height

Action as previous item, now for threshold 2/height 2

Behavior after clouding

This behavior defines the action to be performed after clouding

The following table shows the general communication objects for clouding:

Number	Function	Length	Usage
48	Roomtemperature	2 Byte	Receipt of room temperature
48	Roomtemperature threshold	1 Bit	Exceed/Undercut of the Roomtemperature threshold
48	Control value heating	1 Byte	Receipt of control value heating
49	Block/Enable clouding	1 Bit	Activation/blocking of clouding
49	Block/Enable slat adjustment	1 Bit	Activation/blocking of slat adjustment
50	Status clouding state	1 Bit	Clouding position is active
50	Status clouding ready	1 Bit	Clouding is in Standby

Table 35: Communication objects for Clouding per each channel

4.13.3 Basics to “Sun position calculation”

This chapter explains some basic terms that are important for the setting of automatic clouding.

The following figure shows the horizontal angle, or the "azimuth" of the sun:

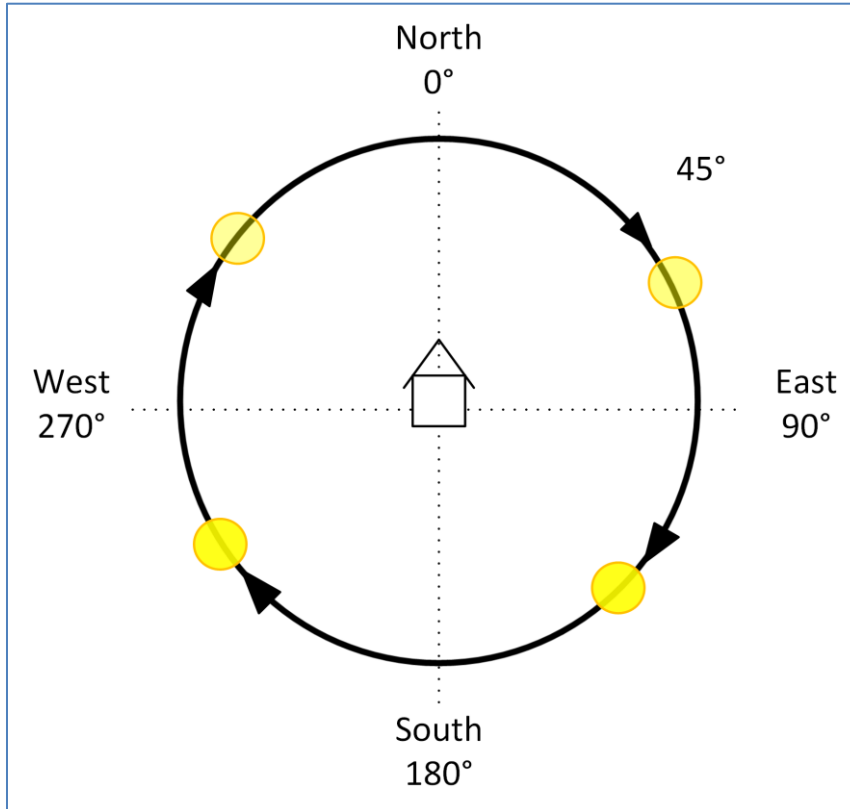


Figure 23: Azimuth/Horizontal angle

The azimuth or horizontal angle measures the course of the sun during a day. North corresponds to an azimuth of 0°, east of 90°, south of 180° and west of 270°.

The following figure shows the elevation angle, or "elevation" of the sun:

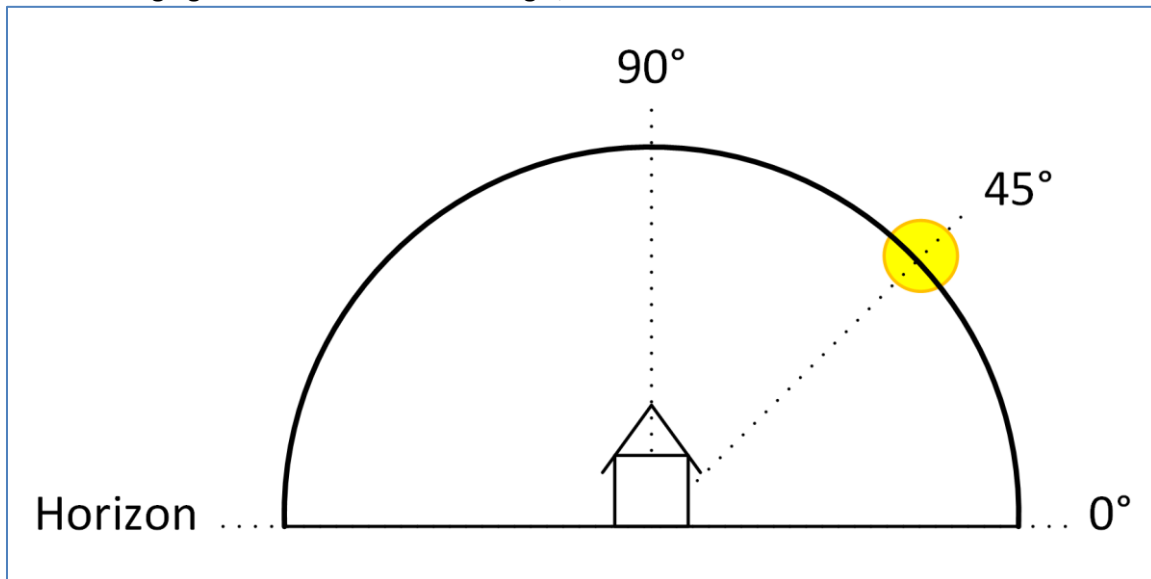


Figure 24: Elevation angle

The angle of the sun between the horizon and the position of the sun is designated as the elevation angle or elevation.

A few important facts regarding elevation angle/elevation:

- An object of height 1m throws a shadow of length 1m at an angle of elevation of 45°.
- The smaller the elevation angle, the longer the shadow of an object.
- The greater the elevation angle, the shorter the shadow of an object.

4.13.4 Principle of “Clouding”

Basic principle:

The following figure shows the basic principle of clouding with slat tracking. In this example, the parameter "Start slat adjustment if elevation is less than" is set to 45 °:

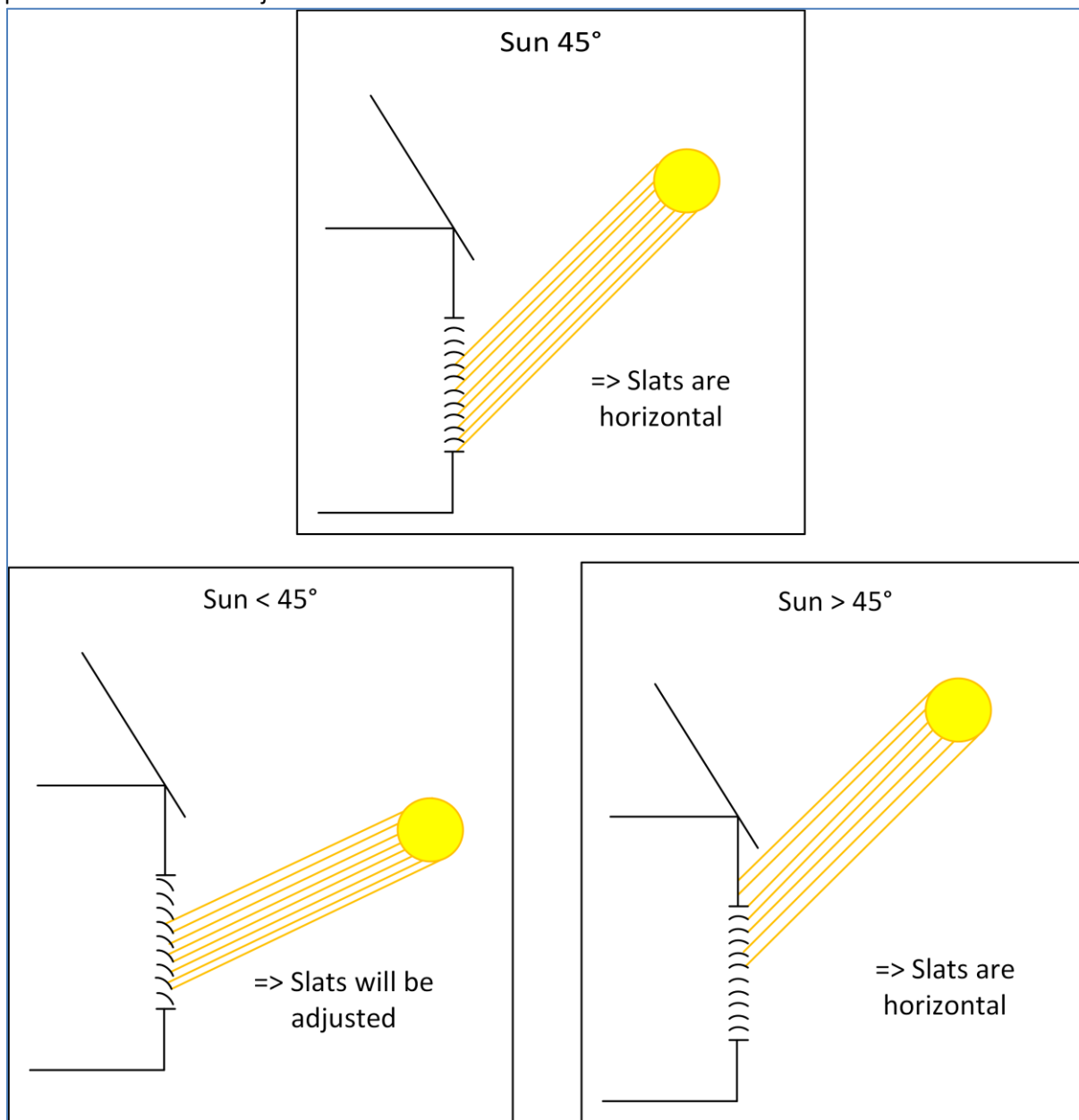


Figure 25: Basic principle - Slat adjustment

At undercutting of the set elevation angle, the slat adjustment starts.

The following figure shows the basic principle of clouding for the active "azimuth window". The clouding window is set via the parameters "Compass direction" and "Clouding active when azimuth". In the following figure, the "Compass direction" is set to "South" and the "Clouding active if azimuth" is set to 120°-240°:

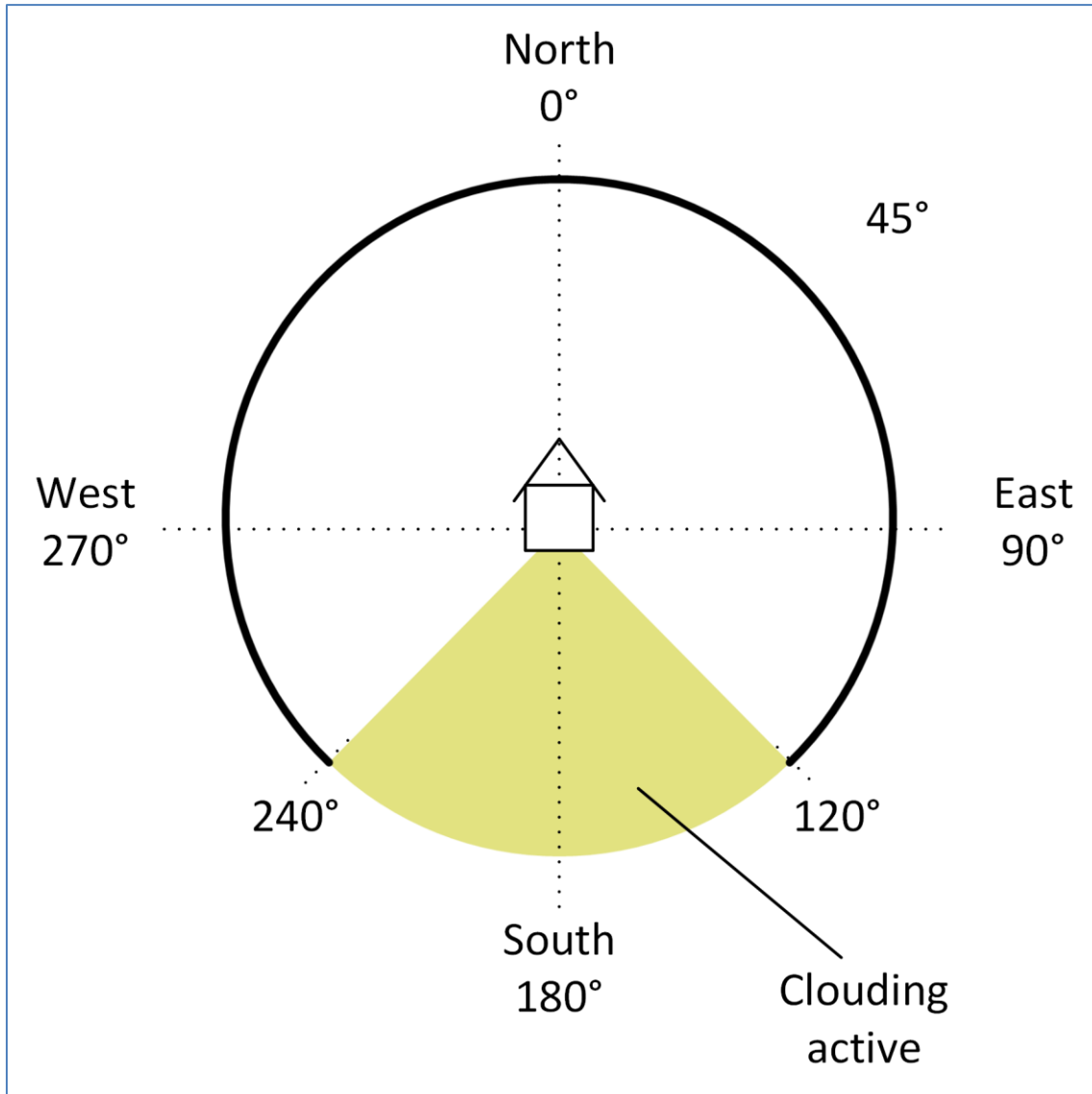


Figure 26: Basic principle "Clouding window - Azimuth"

Adjustment of clouding in case of obstacles:

The clouding can be limited to a certain angle range by means of the parameter "Clouding active if elevation". If, for example, a tree or a house is located in front of the window to be shaded, the clouding can only begin at a certain elevation angle. For example, if a house has a very wide roof overhang, the clouding can only be active up to an angle of $<90^\circ$. The following figure shows the principle of clouding with obstacles. In this example, the parameter "Clouding active if elevation" is set to $30^\circ-90^\circ$:

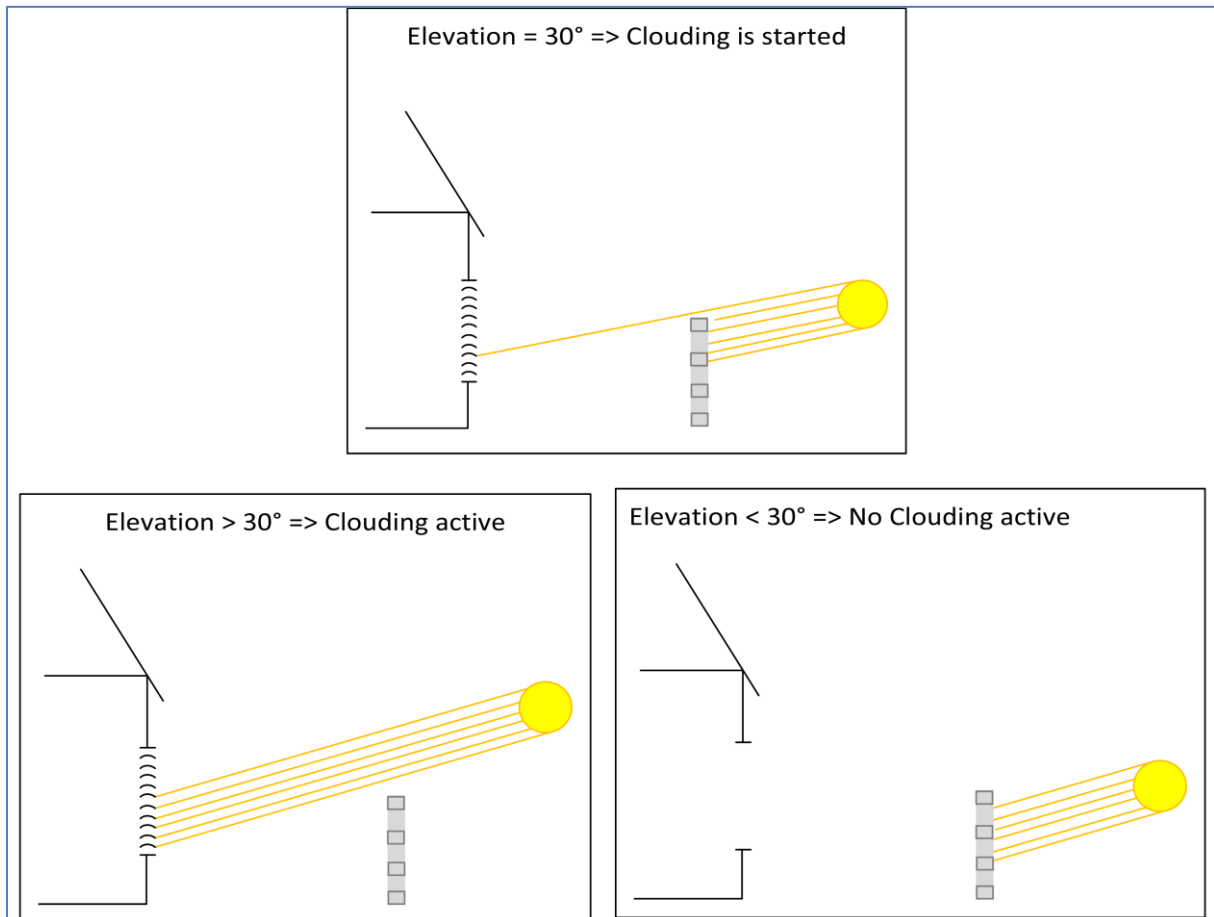


Figure 27: Adjustment of Clouding with obstacles

5 Index

5.1 Register of illustrations

Figure 1: Exemplary circuit diagram shutter actuator 4-fold	7
Figure 2: Exemplary circuit diagram shutter actuator 8-fold	7
Figure 3: Overview hardware module (JAL-0810.02)	8
Figure 4: General Settings	25
Figure 5: Channel selection	27
Figure 6: Time for movement - Blinds	29
Figure 7: Time for movement - Shutter	30
Figure 8: Absolute Position/Reference drive/1Bit object Position	35
Figure 9: Status objects	38
Figure 10: Central objects	41
Figure 11: Behaviour after bus power down/bus power up	43
Figure 12: Parameter - Scene	44
Figure 13: Submenu Scene	45
Figure 14: Automatic function	48
Figure 15: Submenu automatic function	48
Figure 16: Automatic blocks	50
Figure 17: Parameter - Alarm and block functions	51
Figure 18: Activation - Advanced block function	56
Figure 19: Parameter - Advanced block function	56
Figure 20: Parameter - Air function	60
Figure 21: Parameter - Basic setting clouding	63
Figure 22: Parameter - Clouding settings per each channel	67
Figure 23: Azimuth/Horizontal angle	73
Figure 24: Elevation angle	74
Figure 25: Basic principle - Slat adjustment	75
Figure 26: Basic principle "Clouding window - Azimuth"	76
Figure 27: Adjustment of Clouding with obstacles	77

5.2 List of tables

Table 1: Summary communication objects	22
Table 2: Default settings of the communication objects	24
Table 3: Parameter - General Settings.....	26
Table 4: Communication objects - General Settings.....	26
Table 5: Setting options - Channel selection.....	27
Table 6: Communication objects Blinds	28
Table 7: Communication objects Shutter	28
Table 8: Setting options - Time for movement	31
Table 9: Communication objects - Absolute Position/Reference drive/1Bit object Position.....	35
Table 10: Setting options - Move to position via 1Bit object.....	37
Table 11: Setting options - Status objects	38
Table 12: Communication objects - Status objects	39
Table 13: Diagnosis text per channel	40
Table 14: Setting options - Central objects	41
Table 15: Central communication objects.....	41
Table 16: Setting options - Behaviour after bus power down/bus power up.....	43
Table 17: Communication object - Scene	44
Table 18: Setting options - Scene.....	46
Table 19: Coding for Scene call-up and store	47
Table 20: Setting options - Automatic function	49
Table 21: Communication objects - Automatic function	50
Table 22: Setting option - Alarm order	52
Table 23: Setting options - Alarm types.....	53
Table 24: Communication objects - Alarms.....	53
Table 25: Setting options - Normal blocking	54
Table 26: Communication object - Block	55
Table 27: Setting options - Move to hight position.....	55
Table 28: Setting options - Advanced block function	58
Table 29: Communication objects - Advanced block function	58
Table 30: Setting options - Air function.....	61
Table 31: Communication object - Window contact.....	62
Table 32: Setting options - Clouding.....	65
Table 33: General communication objects - Clouding.....	66
Table 34: Setting options for Clouding per each channel	69
Table 35: Communication objects for Clouding per each channel.....	72

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 Examples

6.4.1 Parameter takeover of different channels

If several channels should be set as groups, for example Channel B = Channel E, then the following procedure is recommended:

1. Activate respective channels in menu "Channel Selection"
2. Select channel B, press and hold button „Strg“ and now click on channel E. Both channels are marked:

Kanal B: Jalousie
Kanal B: Alarm- und Sperrfu...
Kanal C: Jalousie
Kanal C: Alarm- und Sperrfu...
Kanal C: Erweiterte Sperrfun...
Kanal D: Jalousie
Kanal D: Alarm- und Sperrfu...
Kanal E: Jalousie

3. Make settings in the displayed parameters => settings are applied to both channels.
4. Shall also submenus, such as alarms and locking functions get same parameters, then first open the channel B submenu alarms and locking functions, press and hold the “Strg” key and now click to channel E: alarms and locking functions. Now, the same settings can be made here.
5. Consequently, the same communication objects are displayed for both channels.

Note: Only these parameters or settings are "copied" which have been made during the simultaneous activation of the channels. Further adjustments can be made in each channel individually.

6.5 Revision history

V 1.0	-	1 st Version of the „2 nd Generation“ of shutter actuators	-	10/2017
V 1.1	-	2 nd Version	-	05/2018
		Text changes 10A/600W to 8A/300W and new figure (page 8)	-	06/2022