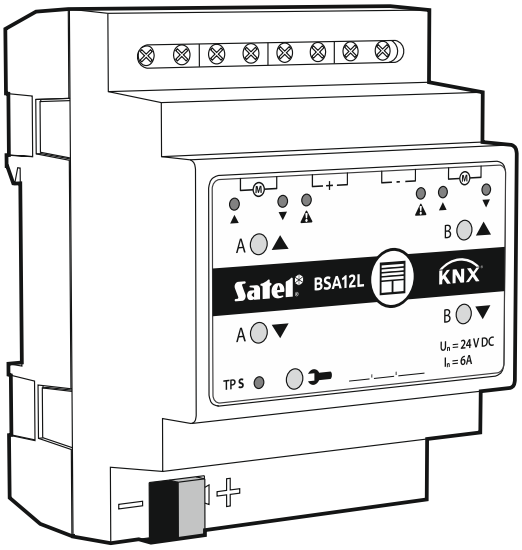
KNX-BSA12L (24 VDC)
KNX-BSA12H (230 VAC)

Blind/shutter Actuator



Firmware version 1.02

knx-bsa_en 11/19

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IMPORTANT

The device should be installed by qualified personnel.

Prior to installation, please read carefully this manual in order to avoid mistakes that can lead to malfunction or even damage to the equipment.

Changes, modifications or repairs not authorized by the manufacturer shall void your rights under the warranty.

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The declaration of conformity may be consulted at www.satel.eu/ce

The following symbols may be used in this manual:

- note;
- caution.

CONTENTS

The KNX-BSA12L and KNX-BSA12H are KNX blind/shutter actuators that allow you to control the movement of sun protection products such as horizontal (Venetian) blinds, vertical blinds, roller shutters and awnings. They also enable control of the movement of electrically-operated windows. The KNX-BSA12L module is designed to control devices having the 24 VDC motor. The KNX-BSA12H module instead can control devices equipped with the 230 VAC motor.

The KNX-BSA12L and KNX-BSA12H modules have two physical outputs with two corresponding logic channels. Each channel allows control of one selected type of blind/shutter or window. Operating parameters of the channels are configured in the ETS program in the same way for both modules, except for defining operation of the vertical blinds, as only the KNX-BSA12L module supports this blinds.

1. Features

- Communication with the KNX bus via integrated bus connector.
- Feedback information about the state of module and individual channels.
- Selectable type of blind/shutter for each channel.
- Automatic detection of blind/shutter travel time and slat adjustment time.
- Weather alarms (rain, wind, frost).
- Position forcing function.
- Ability to call scenes for each channel by using 1- and 8-bit commands.
- Detection of blind/shutter errors (no power, incorrect position, mechanical jam, motor overheating).
- Manual control of blind/shutter travel by using buttons on the enclosure.
- LEDs to indicate status of each channel / blind/shutter.
- Ability to be mounted on DIN rail (35 mm).
- Module configuration by using ETS program.

2. Description

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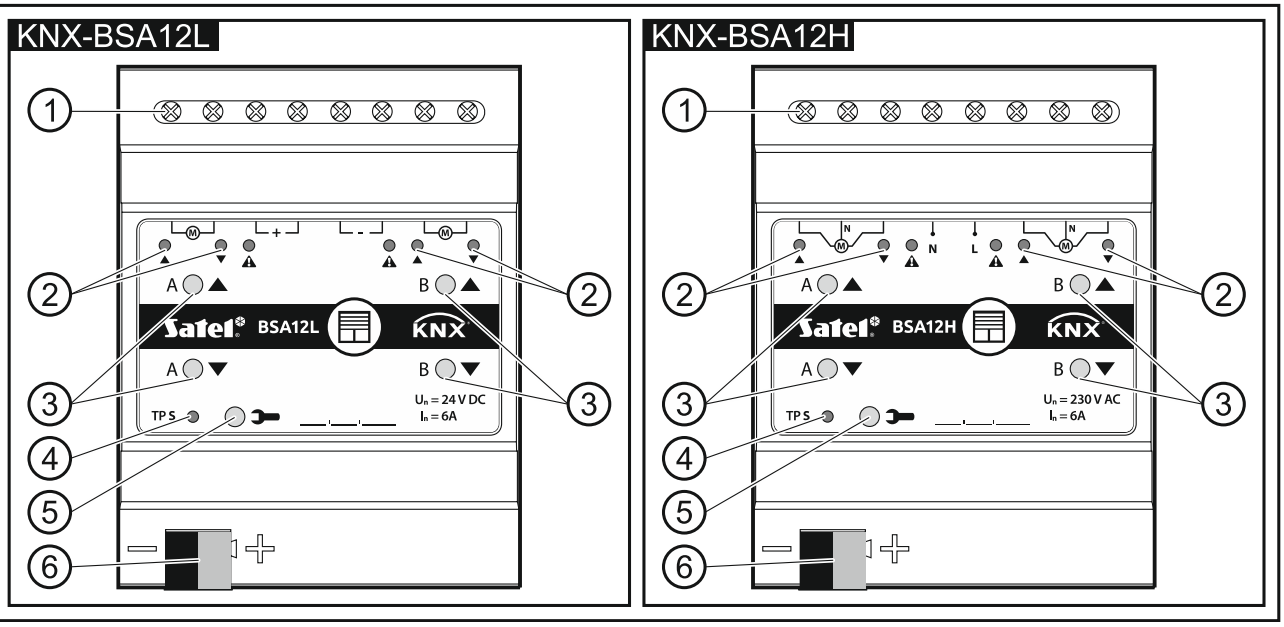


(1) connecting terminals for blind/shutter motors and power supply.

(2) LEDs indicating state of blinds/shutters / channels and errors (▲ and ▼ – green, ⚠ - orange) – see Table 1.

LED			State of channel / blind/shutter
▲	▼	⚠	
○	○	○	no blind/shutter / channel not used
☼	☼	☼	blind/shutter not synchronized with module
○ / ●	● / ○	○	blind/shutter travel time detection (synchronization of blind/shutter with module)
●	○	○	blind/shutter fully open
○	●	○	position other than fully open
☼	○	○	blind/shutter move up
○	☼	○	blind/shutter move down
●	●	○	restoring module factory settings
			Error type
☼	●	☼	blind/shutter error* when move up
●	☼	☼	blind/shutter error* when move down

○ – OFF, ● – ON, ☼ – flashing, ○ / ● and ● / ○ – LEDs are OFF and ON alternately.

* incorrect position, mechanical jam, no power / supply circuit fault, motor overheating or obstacle detection by smart motor.

Table 1.

Blind/shutter error does not block the channel. The blind/shutter travel can be controlled for the entire duration of the error. The error is automatically cleared when the blind/shutter reaches the end position in the opposite direction to that in which it was moving when the channel reported an error.

Continuous operation for too long a time or repeated activation of the blind/shutter in very short intervals can cause motor overheating. Re-starting of the motor is only possible after it has cooled down. The maximum continuous operation time of the motor and the time required for cooling down after overheating are specified in the motor manual.

(3) buttons for manual control of blinds/shutters / channels – see Table 2.

Button	How to use	Reaction
▲	short press	blind/shutter move one step up* / stop
	long press	blind/shutter fully open
▼	short press	blind/shutter move one step down* / stop
	long press	blind/shutter fully closed
▲ + ▼	long press	starts process of blind/shutter travel time detection (synchronization of blind/shutter with module)
* function available in normal operating mode (not available in service mode). Pressing the button is interpreted by the module as a long press, when you press and hold down the button for longer than 1 second.		

Table 2.

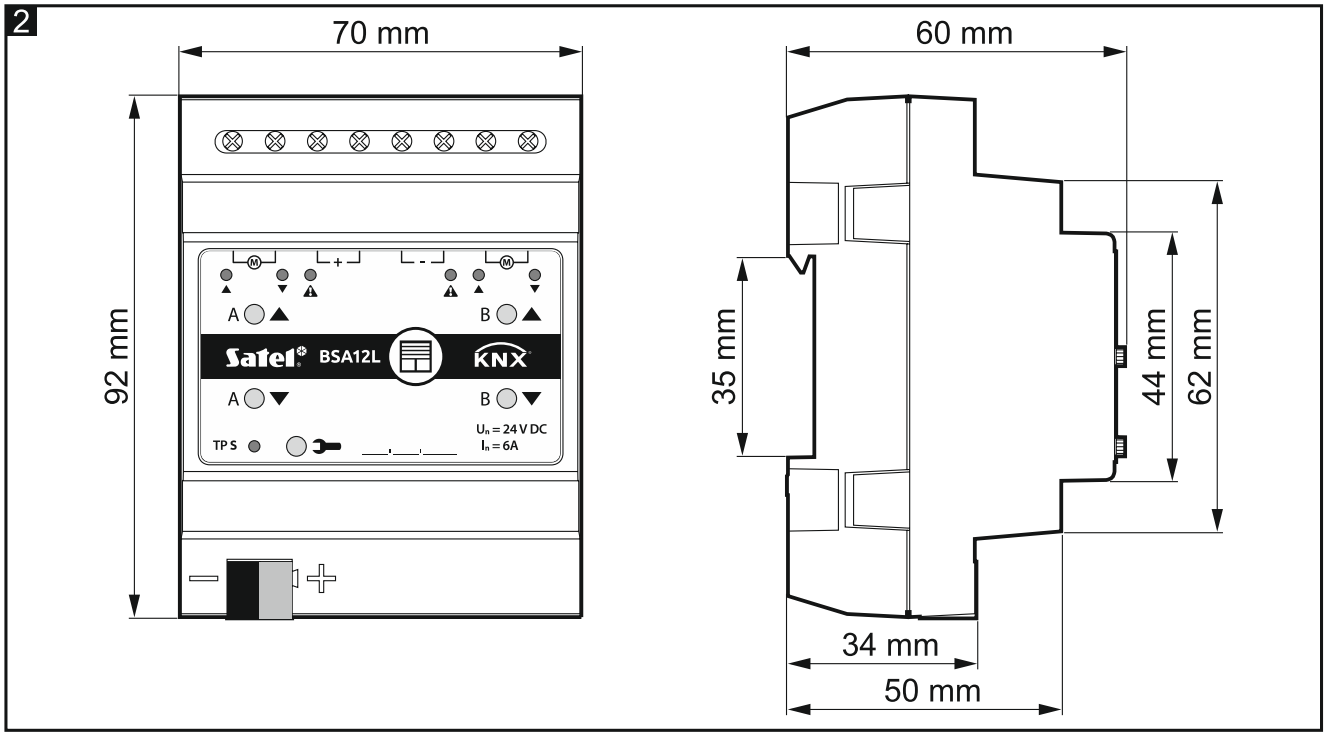
The buttons are also used for restoring the module to its factory default settings (see "Restoring module factory default settings").

(4) red LED – ON during physical address assignment via the ETS program and flashes when the service mode is active. Address assignment can be activated manually by using the button on the enclosure or remotely from the ETS program.

(5) programming button (used for physical address assignment). The button can also be used to start the service mode in the module (see "Service mode").

(6) terminal to connect KNX bus.

2.1 Enclosure



Electronics of the KNX-BSA12L and KNX-BSA12H modules is installed in enclosures of identical shape and dimensions. The enclosures only differ in their panels for manual control of channel state. The figure shows enclosure dimensions based on the KNX-BSA12L module. The module takes up 4 units on the DIN rail (35 mm).

2.2 Operating the module manually

Manual operation allows you to control the movement of blinds/shutters using the buttons located on the module enclosure (see p. 4). The blind/shutter control is possible after configuring the module settings in the ETS program.

The weather alarm (see "Weather alarms" p. 25) and position forcing function (see "Position forcing" p. 26) block the manual operation of the module. The manual control is then interrupted and the blind/shutter is set to the position defined as the reaction to the weather alarm / position forcing function.

2.3 Service mode

The service mode allows checking whether connections between the module and the blind / shutter motors are made properly, and whether the module correctly detects the blind/shutter movement. You can use the service mode before configuring the module settings in the ETS program (e.g. to set limit switches when installing the blind/shutter).

To enter the service mode, press and hold the button on the module enclosure for about 5 seconds. The LED next to the button will start flashing. When the service mode is started, the blind/shutter can only be moved by using the buttons located on the enclosure (see p. 4). Scenes and other functions will be blocked.

Table 3 contains information on operating the module in service mode.

Control	Blind/shutter state	LED ▲	LED ▼	LED ⚠	State of connection between module and blind/shutter motor
long press ▲	move up	●	○	●	motor connected correctly, the module detects blind/shutter movement
long press ▼	move down	○	●	●	
long press ▲	move down	●	○	●	motor connected incorrectly *
long press ▼	move up	○	●	●	
long press ▲	move up	●	○	○	motor connected correctly, but the module detects no blind/shutter movement **
long press ▼	move down	○	●	○	
long press ▲	no move	●	○	○	motor is defective / connected incorrectly / receives no power from the module
long press ▼	no move	○	●	○	
short press ▲ / ▼	stop	○	○	○	

○ – OFF, ● – ON

* KNX-BSA 12L – reverse the wires connecting the module with the blind/shutter motor,
KNX-BSA 12H – reverse the wires controlling the direction of motor rotation.

** Check the current consumption by the blind/shutter motor:
- if it is lower than the minimum current detected by the module, the blind/shutter travel time must be detected manually,
- if it is higher than the minimum current detected by the module, it means failure of the motor detection circuit in the module.

Table 3.

If you want to end the service mode, press and hold the button on the module enclosure for about 5 seconds. The module will restart and the blind/shutter will be set to the position defined by the “Reaction to KNX bus recovery” parametr. If automatic travel time detection is programmed for the blind/shutter, the detection process will start before setting the position (see “Travel time detection” p. 14). When manual detection is programmed for the blind/shutter, the module assumes that the blind/shutter and slats (in the case of slat blinds) are fully open (see “Blind/shutter operating parameters” p. 10).

3. Installation

Disconnect power before making any electrical connections.

The module is designed for indoor installation, in spaces with normal air humidity, e.g. in distribution boxes on 35 mm DIN rail.

1. Mount the module on the mounting rail.
2. Connect the blind/shutter motors and power cables to the connection terminals as indicated on the enclosure.

All connections should be made as recommended in section “Wiring diagram”.

3. Use the connection terminal to connect the KNX bus cable to the module.
4. Connect a computer running ETS program to the KNX bus and configure the module.

To configure the module, you will require a computer running the ETS program version 5.5 or newer, provided with USB or Ethernet (TCP/IP) connector. The SATEL ETS application file, which can be downloaded from www.satel.eu/ets, must be imported into the program.

For detailed information on how to configure the module, refer to section “Configuring the module”.

3.1 Wiring diagram

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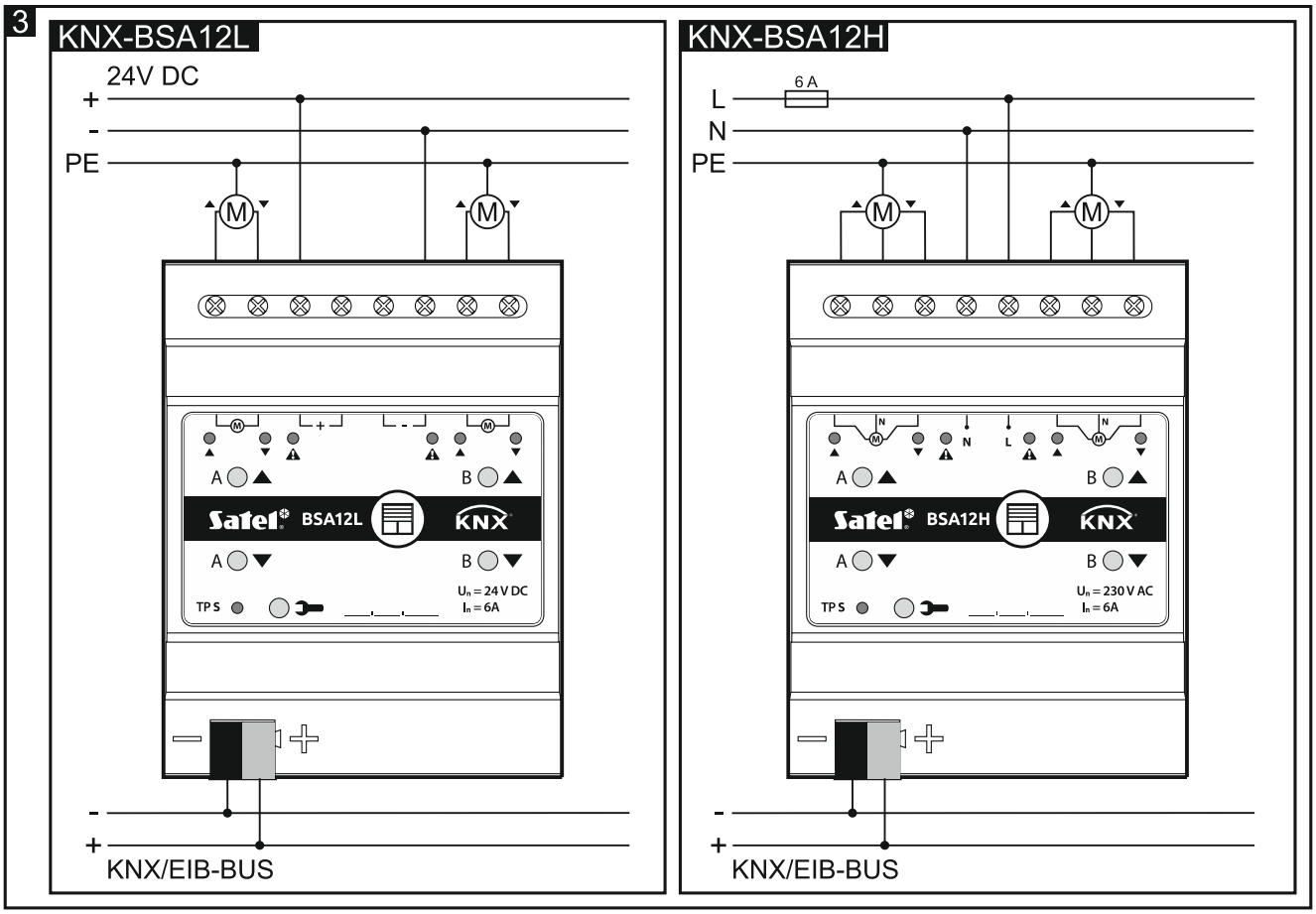


4. Configuring the module

Working parameters of the module are defined in the ETS program (version 5.5 or higher). The tabs for defining individual parameters are built dynamically when working with the program. Further parameters may be displayed in the tabs or further tabs may be displayed. Moving the cursor over the parameter will display a tooltip with default value or value range for that parameter.

The module has two groups of configuration parameters. The first of them includes global parameters, which define general functionality of the module and have no direct impact on individual channels (see “Configuring global parameters”). The other group includes channel parameters, which directly affect operation of the connected blind/shutter. These parameters enable precision control of the selected blind/shutter type and make it possible to define blind/shutter reaction to the functions activated in the module (see “Configuring channels”).

4.1 Function priorities

The position forcing function is the one having the highest priority. Priorities of the other functions have been set as follows:

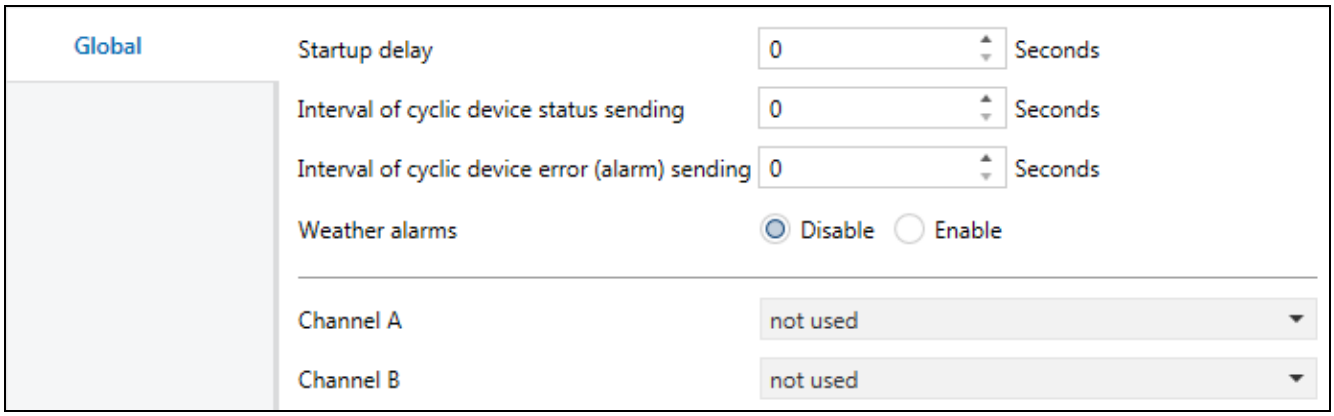
- weather alarms, where priorities for individual alarms i.e. “Wind”, “Rain” and “Frost” can be defined in the program (see “Weather alarms”),
- blind/shutter position control functions.

No lower priority functions can control position of the blind/shutter until a higher priority function is active in the channel.

Example. If the “Wind” weather alarm is triggered when the blind/shutter position control function is active, the function will be stopped and the blind/shutter will be set to the position defined as the reaction to weather alarm. However, if the blind/shutter position has been set in response to the “Wind” alarm, the position control function will not be able to change the blind/shutter position, until the alarm is called off.

4.2 Configuring global parameters

The main working parameters of the module are defined in the “Global” tab, which is presented below.



Startup delay – time period by which the module startup will be delayed after power-on (0 – 65535 [seconds]). Value “0” will disable the delay.

During the delay period the telegram handling is stopped and the channels do not change their state – the blind/shutter travel is locked. The module sends no telegrams to the KNX bus. After the delay expires, the telegrams are sent and the state of channels is set according to the parameters defined. If any telegrams are received from communication objects during the delay period, they will be saved. Replies to these telegrams are sent after the delay time expires.

The startup delay may be used to reduce load on the KNX bus and supply circuit after power-on.

Interval of cyclic device status sending – frequency with which a telegram is sent to the bus by the “Device operation status” communication object with the module status information (0 - 65535 [seconds]). Information contained in the telegram enables the module operation to be monitored by other devices on the KNX bus. Value “0” disables the sending.

Sending telegrams may be enabled either permanently, for continuous monitoring of the module operation, or during testing only. If you do not want to load the bus with an excessive number of telegrams, you can set the sending cycle time at the highest possible value.

Interval of cyclic device error (alarm) sending – frequency of sending a telegram with information that one of the module channels is signaling a blind/shutter error. The telegram is sent by the "Device error alarm" communication object for each type of blind/shutter error: incorrect position, mechanical jam, no power / supply circuit fault, motor overheating or obstacle detection by smart motor. Value 00:00:00 disables the cyclic telegram sending.

Weather alarms – enables / disables weather alarm functions in the module (Disable / Enable). If you select "Enable", the "Wind alarm", "Rain alarm" and "Frost alarm" communication objects will be activated and the "Weather alarms" tab will be available.

Channel A – the type of blind/shutter whose movement can be controlled by using the channel A (not used / shutter / venetian blind / vertical blind / awning / window). Selecting the type of blind/shutter will enable the communication objects to control its movement and display the "Channel A" tab.

Channel B – the type of blind/shutter whose movement can be controlled by using the channel B (not used / shutter / venetian blind / vertical blind / awning / window). Selecting the type of blind/shutter will enable the communication objects to control its movement and display the "Channel B" tab.

The "Vertical blind" type of blind is only available for the KNX-BSA12L module. The KNX-BSA12H module does not support this type of blinds.

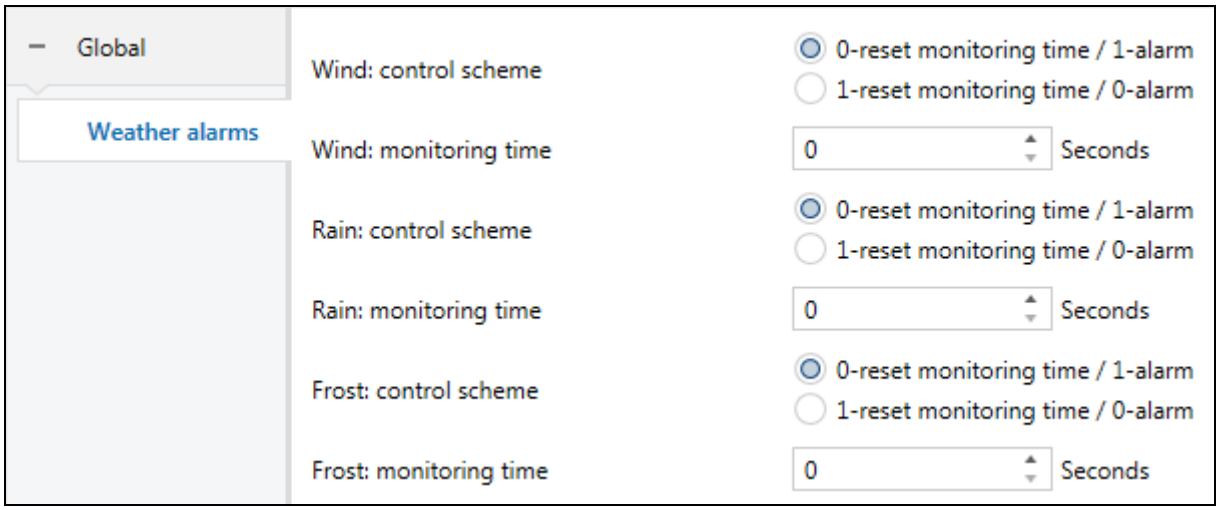
4.2.1 Weather alarms

Weather alarms protect the blind/shutter from damage. You can define 3 communication objects in the module: "Wind alarm", "Rain alarm" and "Frost alarm". These objects can receive telegrams sent cyclically by the (wind, rain, temperature) sensors or by the weather station. In response to the change of state of these objects, alarms can be triggered in the channels, as a result of which the blind/shutter travel can be stopped or the blind/shutter can be set to a defined position. For each channel, you can define a different type of reaction to the change of state of the communication objects linked to the weather alarms.

Position to which the blind/shutter will be set in response to a weather alarm can be changed only as a result of a higher priority alarm (see "Weather alarms") or by using the position forcing function (see "Function priorities").

For the "Wind alarm", "Rain alarm" and "Frost alarm" objects, monitoring time can be defined. The countdown begins when the start delay time after module power-on has elapsed. Receiving a telegram with the value opposite to that triggering the alarm during the monitoring time will restart the countdown (reset). If no telegram is received during the monitoring time, the communication object will be activated.

Description of parameters



Wind: control scheme – value of the “Wind alarm” object activating telegram:

0 = reset monitoring time, 1 = alarm.

1 = reset monitoring time, 0 = alarm.

Wind: monitoring time – monitoring time of the “Wind alarm” object (0 - 65535 [seconds]). With the monitoring disabled (field value “0”), the alarm will only be triggered by receiving the “Alarm” telegram.

Rain: control scheme – value of the “Rain alarm” object activating telegram:

0 = reset monitoring time, 1 = alarm.

1 = reset monitoring time, 0 = alarm.

Rain: monitoring time – monitoring time of the “Rain alarm” object (0 - 65535 [seconds]). With the monitoring disabled (field value “0”), the alarm will only be triggered by receiving the “Alarm” telegram.

Frost: control scheme – value of the “Frost alarm” object activating telegram:

0 = reset monitoring time, 1 = alarm.

1 = reset monitoring time, 0 = alarm.

Frost: monitoring time – monitoring time of the “Frost alarm” object (0 - 65535 [seconds]). With the monitoring disabled (field value “0”), the alarm will only be triggered by receiving the “Alarm” telegram.

As good practice indicates, monitoring time of the “Wind alarm”, “Rain alarm” and “Frost alarm” objects should be at least three times longer than the time of cyclic telegram sending by sensors. This prevents alarm from being triggered when the telegram resetting the monitoring time fails to be received in time because of the excessive bus load.

Channel reaction to weather alarms can be defined in the “Weather alarms” tab.

4.3 Configuring channels

Operating parameters of blinds/shutters and their drives must be defined for each channel. For the blinds/shutters, you should define the travel time and the slat adjustment time (for slat blinds), and for the drives, the times that allow correction of delays occurring during operation of the motor. For each channel, you can also define the type of blind/shutter reaction to the functions activated in the module (weather alarms, position forcing function as well as 1- and 8-bit scenes).

It is recommended that the blind/shutter travel time and slat adjustment time (for all blind types where it is applicable) be measured as a result of automatic detection done by the module. It will make possible very accurate determination of these parameters as well as precise control of the blind/shutter travel.

Each channel of the module has the same group of parameters. How to define the parameters has been discussed based on the channel A.

4.3.1 Blind/shutter operating parameters

Blind/shutter travel time

Depending on whether or not the given type of blind/shutter has upper/lower limit switches, the blind/shutter travel time may be detected by the module automatically (recommended) or can be determined based on a measurement taken. The travel time is the time during which the blind/shutter can be moved from one to the other end position (i.e. the position from which the blind/shutter can only be moved to one direction). Position for all types of blinds/shutters is defined in percentage values, where: the upper end position = 0% (no

protection - blind/shutter fully open) and the lower end position = 100% (full protection - blind/shutter fully closed).

The figure below shows how to define the position and travel time for roller shutter and Venetian blind.

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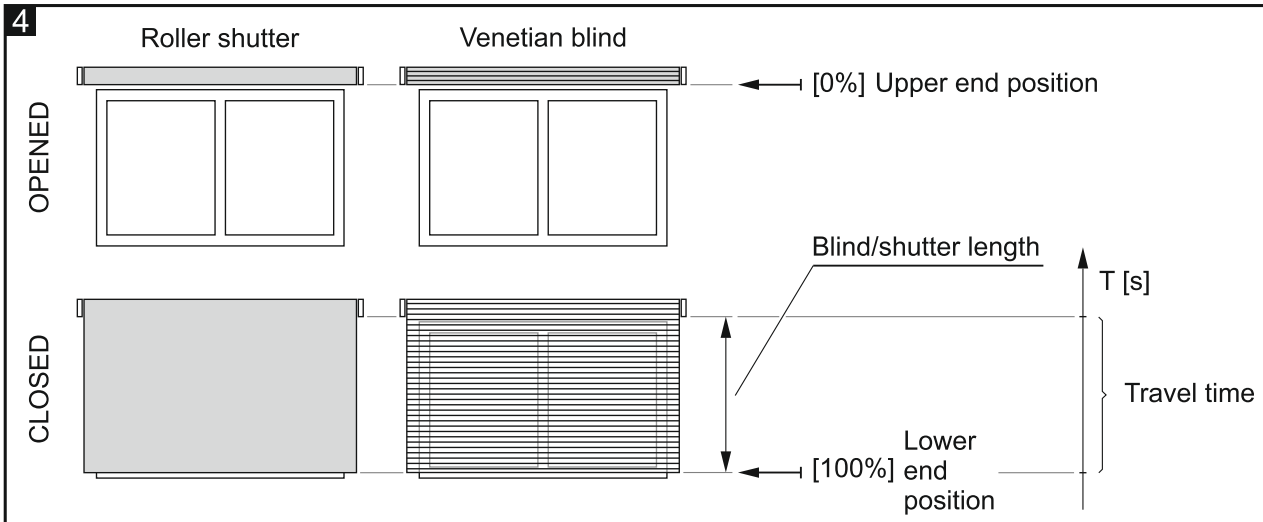

The next figures show how to define the position and travel time for the vertical blind (Fig. 5), awning (Fig. 6) and motorized window (Fig. 7).

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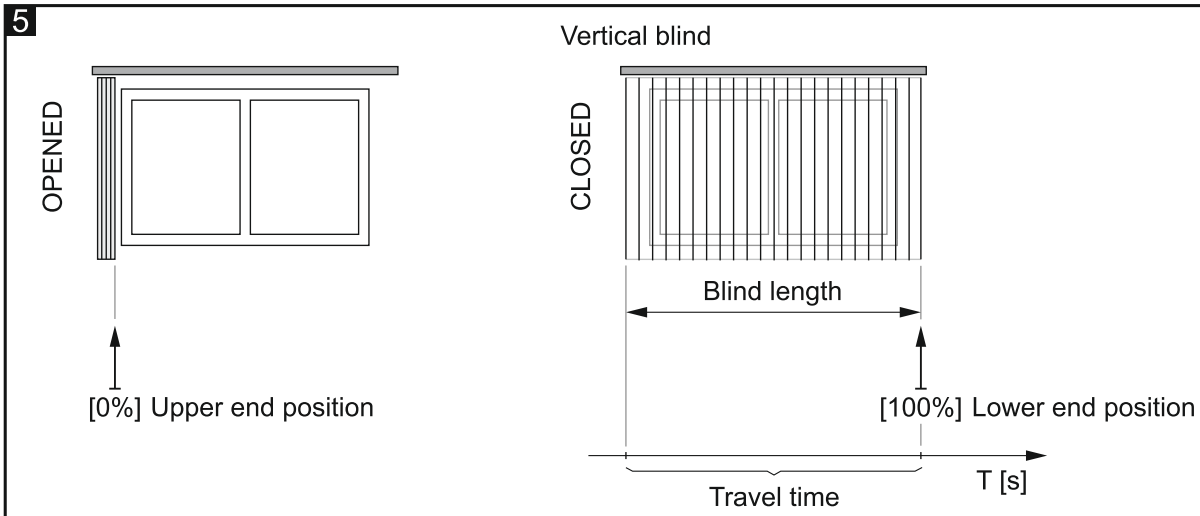

The "Vertical blind" is only supported by the KNX-BSA12L module.

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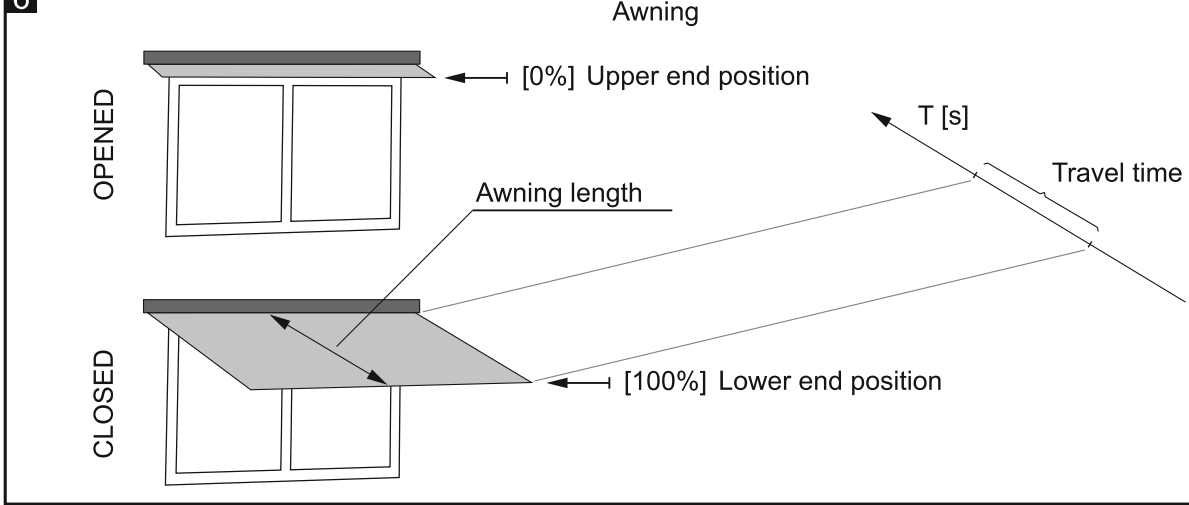

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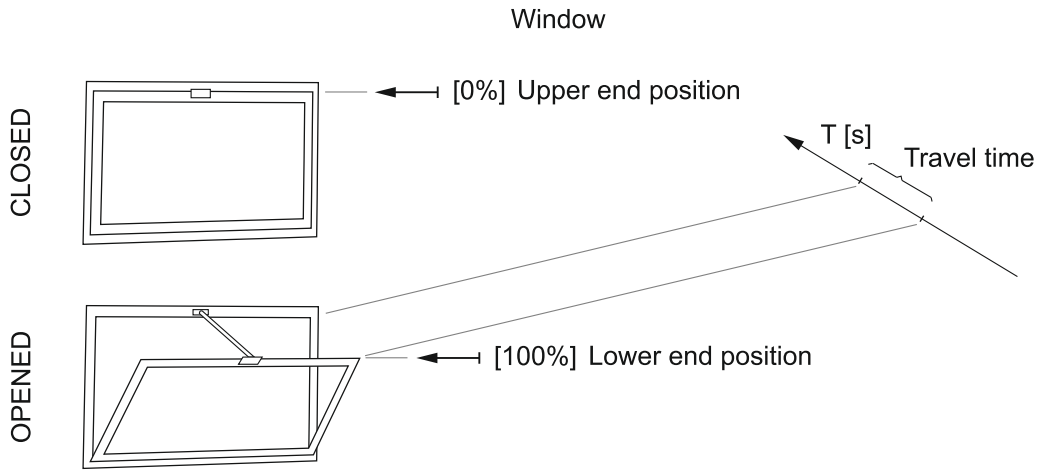

The blind/shutter travel time must be measured very carefully.

Because of their weight, the roller shutters, vertical blinds or awnings, as well as the motorized windows, move with a different speed when traveling up or down. For precise control of this type of blind/shutter and windows, it is recommended that you take a measurement of the time of travel in both directions, from the upper to the lower end position, and from the lower to the upper end position.

It is advisable to automatically detect the time of movement by the module for all blinds/shutters that make it possible.

Slat adjustment time

This parameter applies to the slat blinds. It is the time during which the blind slats can be adjusted from the upper to the lower end position. The position of slats is defined as a percentage, where: 0% = the upper end position in which the slat edge located closer to the sun can only be adjusted downwards; 100% = the lower end position in which the slat edge located closer to the sun can only be adjusted upwards.

Fig. 8 shows how to define the slat position and adjustment time for the Venetian blind.

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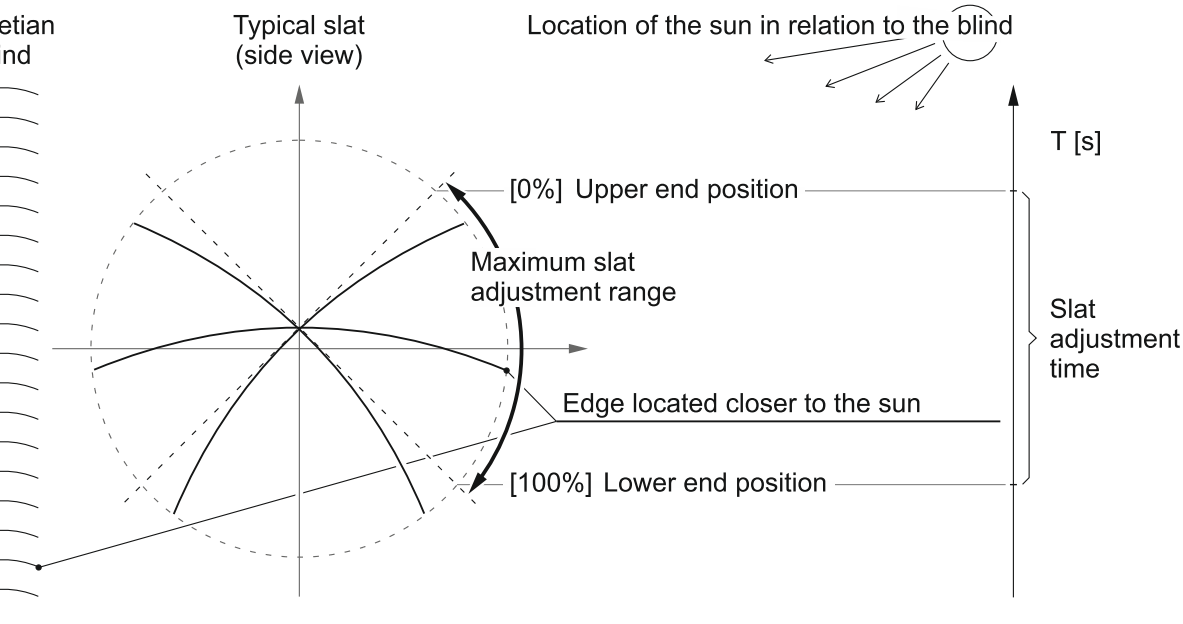

Because of their weight, the slats in Venetian blinds move with a different speed, depending whether they are being adjusted up or down. For precise control of slat

adjustment, it is recommended that you take a measurement of the time of slat adjustment in both directions, from the upper to the lower end position, and from the lower to the upper end position.

Fig. 9 shows how to define the slat position and adjustment time for a vertical blind (only for the KNX-BSA12L module).

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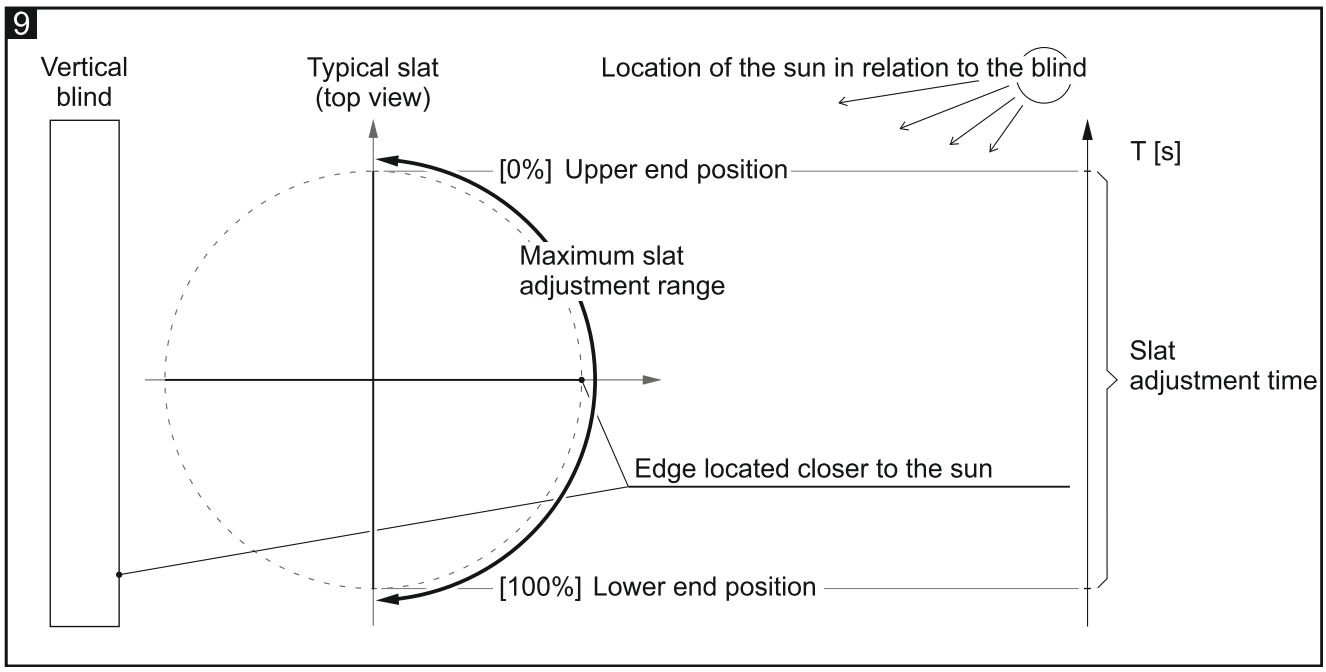
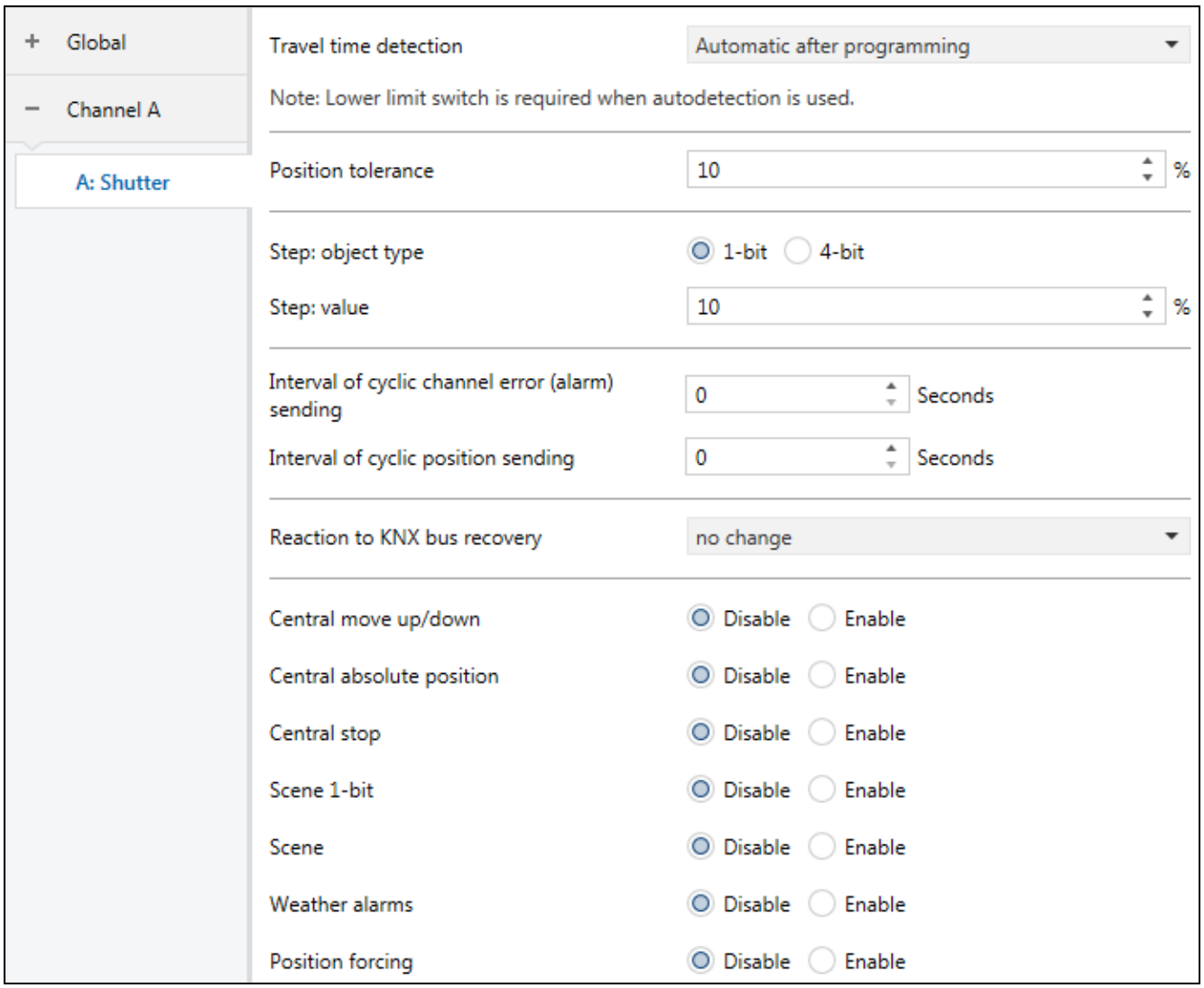


Description of parameters

Depending on the type of blind/shutter selected for the channel “A”, different parameters are displayed in the “A: [Blind/shutter type]” tab (where: [Blind/shutter type] = Shutter / Venetian blind / Vertical blind / Awning / Window), visible after opening the “Channel A” tab.

During normal operation, the vertical blind motor carries out the positioning process when turned on. The blind slats are set to one of the end positions (Fig. 9), and then to the 50% opened position (tilting of the slats is skipped, when they are gathered i.e. when the blind/shutter is fully opened – see Fig. 5). Then, the blind is moved to one of the end positions where the slats are closed (moved to the lower end position). The process of positioning can be interrupted at any moment by turning the motor off.



Travel time detection – you can select:

Manually on basis of measurement – blind/shutter travel time and slat adjustment time (for slat blinds) as well as correction for delays in blind/shutter motor operation are defined based on the taken measurements and/or data from the blind/shutter installation guide (e.g. delays in motor operation). If you select the manual detection, fields that allow you to enter the measured values will be displayed in the tab (see “Shutter / awning / window” and “Venetian blind”).

If you select manual detection for a blind/shutter having limit switches, they will be disregarded by the module and the movement will only be controlled based on the defined time. If the blind/shutter travel is stopped by the limit switch before the time elapses, voltage will be supplied to the motor until the defined time has elapsed.

For vertical blinds, manual detection is not available. You can only select automatic detection for this type of blind/shutter.

Automatic after programming – the blind/shutter travel time and slat adjustment time (for slat blinds) will be recognized and saved by the module automatically just once after being programmed. Default value.

Automatic after programming and restart – the blind/shutter travel time and slat adjustment time (for slat blinds) will be recognized and saved by the module automatically after being programmed and after each restart.

Automatic detection is enabled only by receiving the “Move up/down” telegram or pressing the channel control button on the module enclosure.

You can only select the automatic detection for the blind/shutter whose motor is equipped with the upper/lower limit switch. If the blind/shutter has an electronic motor drive, the motor quiescent current must not be higher than 25 mA for KNX-BSA L and 60 mA for KNX-BSA H.

For the horizontal blinds, the slat adjustment time cannot be recognized automatically by the module. Therefore, the "Time of slat adjustment" parameter is also displayed after selecting automatic detection.

If, during the automatic detection, the module detects that the blind/shutter motor is deenergized for longer than 30 seconds, the detection process will be stopped and the module will report lack of synchronization between the blind/shutter and the module. If, after restarting the process (e.g. using the buttons on the module panel), the module reports lack of synchronization, check the blind/shutter motor supply circuit for a possible fault.

Automatic detection will not start, if the channel is locked by the position forcing function activated in it, or the weather alarm.

Automatic detection will only be carried out properly if the module correctly detects the movement of blind/shutter in both directions (see "Service mode").

Position tolerance – maximum distance from the target position at which the blind/shutter can stop – see Fig. 10 (0 – 100 [%]; default= 10). If, after stopping, the distance between the blind/shutter and the target position is greater, the channel will report an error - incorrect position of the blind/shutter ("Channel error alarm" and "Device error alarm" communicationn object). The blind/shutter error does not block the channel, and blind/shutter movement control is possible for the entire duration of the error. The error will be automatically cleared when the blind/shutter reaches the end position in the opposite direction to the one in which it was moving when the problem occurred. After the error is removed, a telegram is sent to the KNX bus with information that the channel is working properly. Entering the value "0" in the field disables checking the blind/shutter position (an incorrect blind/shutter position will not cause any error).

The "Position tolerance" parameter is only available for automatic travel time detection.

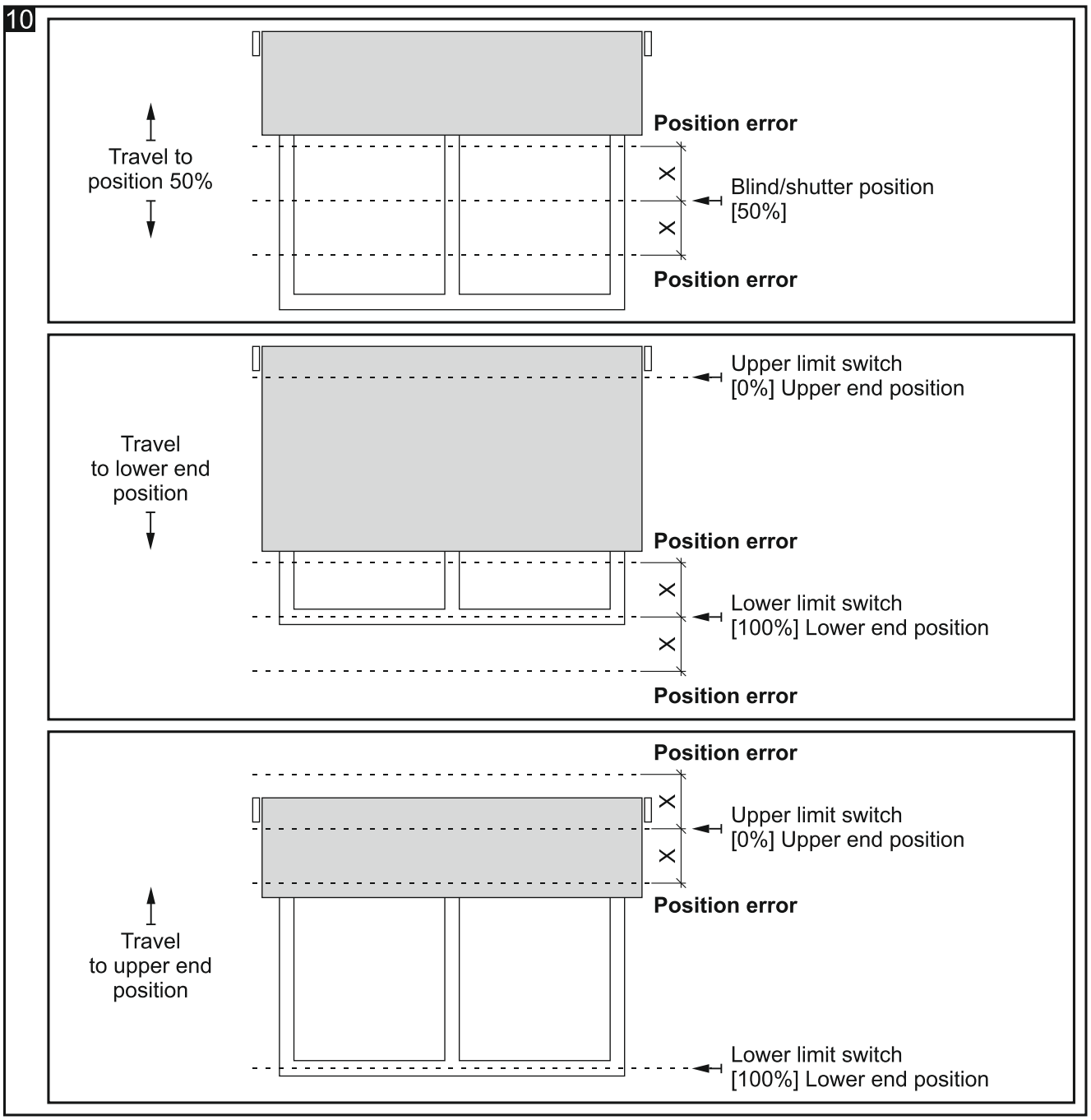
Step: object type – selects the type of data for the "Stop/step up/down" communication object. Sets the range within which the object values can be defined:

1-bit – the object can assume value 0 or 1 (0 = step up by the value defined in the "Step: value" field; 1 = step down by the value defined in the "Step: value" field; if the blinds/shutters / slats are moving 0 and 1 = Stop).

4-bit – the object can assume values from 0 to 100% and value "Stop" (0% = the upper end position (fully open); 100% = the lower end position (fully closed); Stop = movement stopped).

Step: value – percentage value by which the blind/shutter will be moved or blind slats adjusted in response to 1-bit telegram from the "Stop/step up/down" communication object (0 - 100 [%], default value = 10). The field is displayed in the tab, if the "1-bit" data type is selected for the object.

The time necessary to execute a step (blind/shutter movement / slat adjustment) must be longer than the sum of the start delay time and the blind/shutter motor stop time. If the step execution time is shorter than this sum, the module will be unable to correctly control the motor operation and the step will not be executed.



Legend to Fig. 10:

X – position tolerance.

Interval of cyclic channel error (alarm) sending – frequency of sending a telegram with information about channel error (0 – 255 [seconds]). The telegram is sent by the “Channel error alarm” communication object for each type of blind/shutter error: incorrect position, mechanical jam, no power / supply circuit fault, motor overheating and obstacle detection by smart motor. Value “0” disables the cyclic telegram sending.

Interval of cyclic position sending – frequency of sending a telegram with information about current blind/shutter position (0 – 255 [seconds]). The telegram is sent by the “Current absolute position percentage” communication object. Information contained in the telegram enables the blind/shutter position to be controlled by other devices on the KNX bus. Value “0” disables the cyclic telegram sending.

Interval of cyclic slats position sending – frequency of sending a telegram with information about current slat position (0 – 255 [seconds]). The telegram is sent by the “Current absolute position percentage” communication object. Information contained in

the telegram enables the blind/shutter slats to be controlled by other devices on the KNX bus. Value “0” disables the cyclic telegram sending. The field is only displayed for the slat-type shutters/blinds.

Reaction to KNX bus recovery – allows you to select the position to which the blind/shutter will be set in response to the bus recovery (no reaction / fully opened / fully closed). It defines the value which the “Move up/down” communication object will assume after starting the module (0 = move up, 1 = move down).

Central move up/down – enables / disables the central function in the channel to control the blind/shutter travel (Disable / Enable). Select “Enable” to activate the “Move up/down” central communication object. Changing the object value will trigger a channel response, as a result of which the blind/shutter will be moved up or down, according to the value saved in the object.

The “Move up/down” central object allows you to move both blinds/shutters connected to the module up or down by using one telegram.

Central absolute position – enables / disables the central function for setting the absolute position of blind/shutter and slats in the channel (Disable / Enable). Select “Enable” to activate the “Set absolute position percentage” / “Set absolute position slats percentage” central communication object. Changing the object values will trigger a channel response, as a result of which the blind/shutter / slats will be set to absolute positions corresponding to the values saved in these objects.

The “Set absolute position percentage” central object sets both blinds/shutters connected to the module to the same absolute position by using one telegram. On the other hand, the “Set absolute position slats percentage” central object sets the slats of both blinds to the same absolute position by using one telegram.

Central stop – enables / disables the central function for stopping the movement of blind/shutter and slats in the channel (Disable / Enable). Select “Enable” to activate the “Dedicated stop” central communication object. Changing the object value will trigger a channel response, as a result of which the movement of blind/shutter or slats will be stopped.

The “Dedicated stop” central object stops the travel of both blinds/shutters or movement of slats in both blinds connected to the module by using one telegram.

Scene 1-bit – enables / disables the possibility of defining 1-bit scenes for the channel (Disable / Enable). Selecting “Enable” activates the “Call scene 1-bit (1/2)” communication object and displays the “Scene 1-bit” tab.

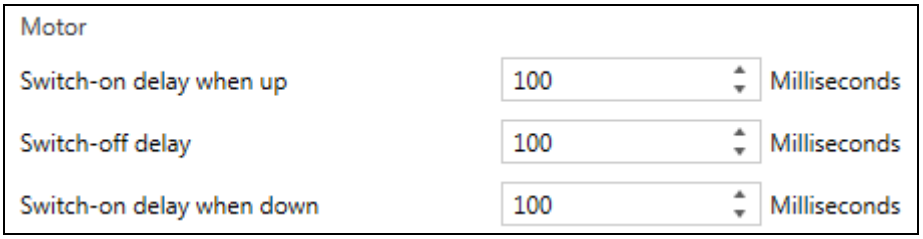
Scene – enables / disables the possibility of defining scenes for the channel (Disable / Enable). Selecting “Enable” enables the “Scene” communication object and displays the “Scene” tab.

Weather alarms – enables / disables weather alarm functions in the channel (Disable / Enable). If you select “Enable”, the “Weather alarms” tab will be displayed. The parameter is available, when the weather alarm functions are enabled in the module (“Weather alarms” parameter, “Global” tab).

Position forcing – enables / disables the position forcing function in the channel (Disable / Enable). If you select “Enable”, the “Forced position” communication object will be activated and the “Position forcing” tab displayed.

Motor

The parameters described below are only available for manual detection of travel time.



The blind/shutter motor is characterized by some inertia, i.e. after receiving the “START” control signal it needs time so that its rotor can reach the speed that enables the blind/shutter travel. Also, the motor needs time so that its rotor can stop after receiving the “STOP” signal. You must correct the delays in motor operation by entering correctly measured values in the fields “Switch-on delay when up”, “Switch-on delay when down” (“Switch-on delay” for the vertical blind) and “Switch-off delay”.

Correct determination of delays in the motor operation is necessary to be able to precisely control the blind/shutter movement. You should take into account the technical data specified by the manufacturer of blinds/shutters in the manual.

Switch-on delay when up – time that must elapse from the moment of receiving the “START” control signal by the motor to the moment when its rotor reaches the speed enabling the blind/shutter to travel up (50 - 16384 [milliseconds]; default = 100).

Switch-off delay – time that must elapse from the moment of receiving the “STOP” control signal by the motor to the moment when its rotor stops (50 - 16384 [milliseconds]; default = 100).

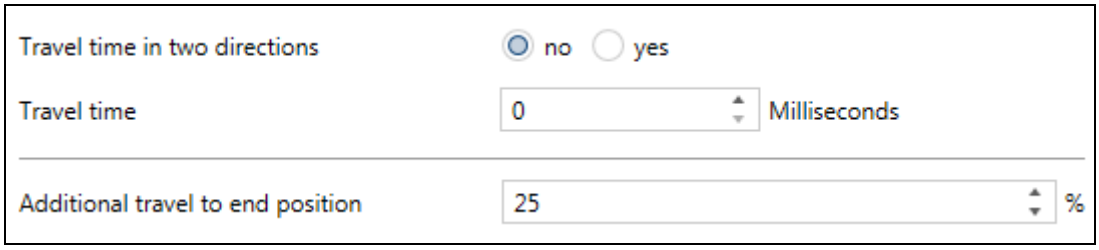
Switch-on delay when down – time that must elapse from the moment of receiving the “START” control signal by the motor to the moment when its rotor reaches the speed enabling the blind/shutter to travel down (50 – 16384 [milliseconds]; default = 100).

For the vertical blinds, the “Switch-on delay” parameter is displayed instead of the parameters “Switch-on delay when up” and “Switch-on delay when down”.

Switch-on delay – time that must elapse from the moment of receiving the “START” control signal by the motor to the moment when its rotor reaches the speed enabling the blind/shutter travel (50 - 16384 [milliseconds]; default = 100).

Shutter / awning / window

The parameters described below are only available for the manual detection of travel time.



Travel time in two directions – defines how the shutter travel time will be determined:

no – based on the measurement of time of travel in one direction, e.g. from the upper to the lower end position. Default value.

yes – based on the measurement of time of travel in two directions, from the upper to the lower end position and from the lower to the upper end position.

Travel time – shutter travel time from one to the other end position, see Fig. 4, 6 and 7 (0 - 480000 [milliseconds]). The field is available when the “no” option is selected for the “Travel time in two directions” parameter.

For precise determination of the shutter operating parameters, it is recommended that measurements of travel time in two directions be taken.

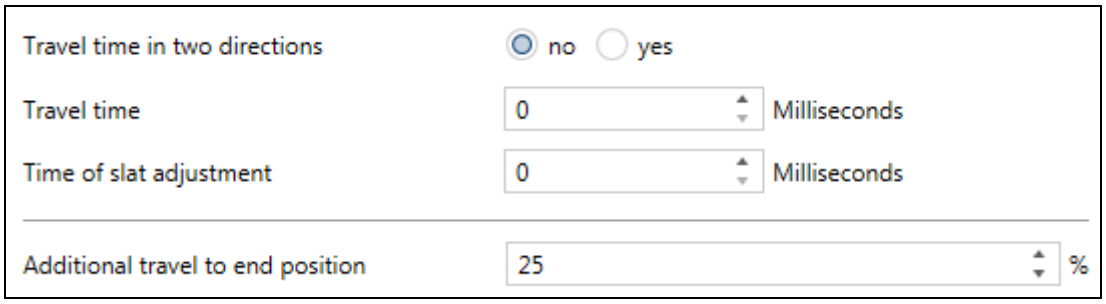
Travel time up – shutter travel time from the lower to the upper end position, see Fig. 4, 6 and 7 (0 - 480000 [milliseconds]). The field is available if the “yes” option is selected for the “Travel time in two directions” parameter.

Travel time down – shutter travel time from the upper to the lower end position, see Fig. 4, 6 and 7 (0 - 480000 [milliseconds]). The field is available if the “yes” option is selected for the “Travel time in two directions” parameter.

Additional travel to end position – allows you to adjust the position of the blind/shutter when moving to the end position (0 – 125 [%]; default = 25). In the case of manual detection, the blind/shutter end positions are defined in the module, based on the taken measurements of the travel time. If the blind/shutter reaches the position stored in the module as its end position, the module output is turned off. Entering a value greater than “0” in the field means that after the blind/shutter reaches the end position, the module output will remain on for the time needed to move the blind/shutter by this value. Entering the value “0” in the field means that after the blind/shutter reaches its end position, the module output will be turned off.

Venetian blind

The parameters described below are only available in the case of manual detection of travel time.



Travel time in two directions – defines how the blind travel time will be determined:

no – based on the measurement of travel time and slat adjustment in one direction, e.g. from the upper to the lower end position. Default value.

yes – based on the measurement of travel time and slat adjustment in two directions, from the upper to the lower end position and from the lower to the upper end position.

The parameter is also available for automatic detection and makes it possible to select the way of measurement of the slat adjustment time.

For precise determination of the Venetian blind operating parameters, it is recommended that measurements of travel time and slat adjustment in two directions be taken.

Travel time – time of travel of the Venetian blind from one end position to the other, see Fig. 4 (0 - 480000 [milliseconds]). The field is available when the “no” option is selected for the “Travel time in two directions” parameter.

Time of slat adjustment – time needed to adjust the Venetian blind slats from one end position to the other, see Fig. 8 (0 - 10000 [milliseconds]). The field is available when the “no” option is selected for the “Travel time in two directions” parameter.

Travel time up – time of travel of Venetian blind from the lower to the upper end position, see Fig. 4 (0 - 480000 [milliseconds]). The field is available when the “yes” option is selected for the “Travel time in two directions” parameter.

Travel time down – time of travel of Venetian blind from the upper to the lower end position, see Fig. 4 (0 - 480000 [milliseconds]). The field is available when the “yes” option is selected for the “Travel time in two directions” parameter.

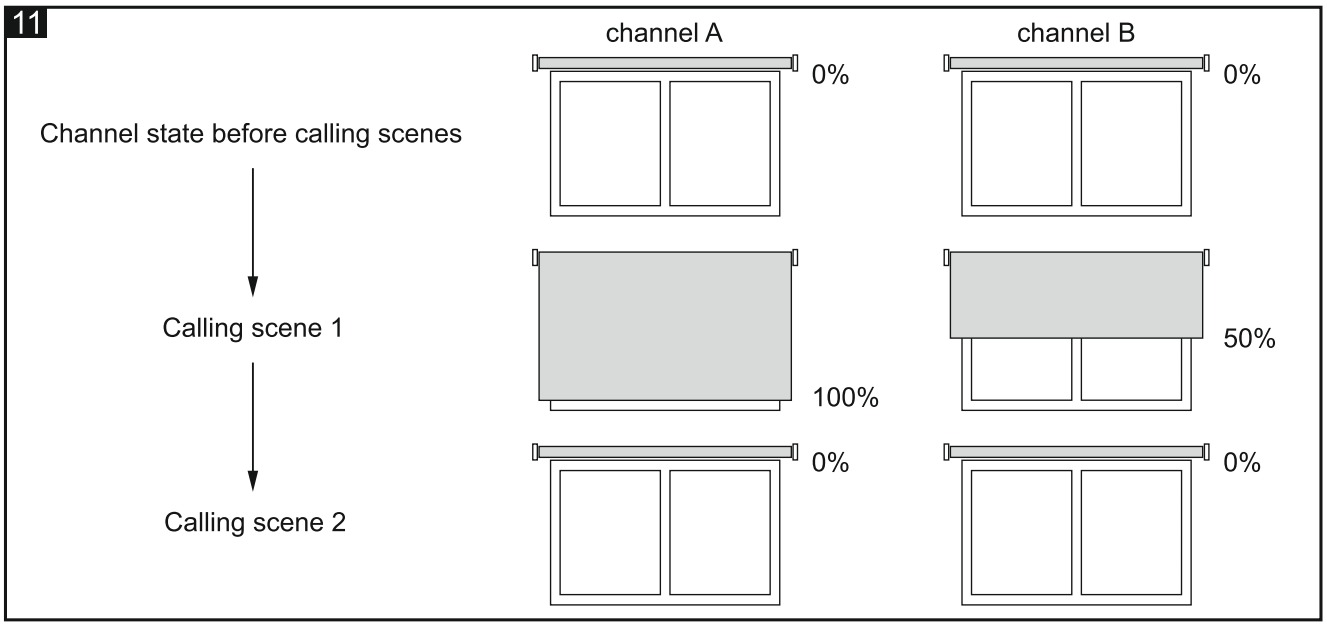
Time of slat adjustment when up – time needed to adjust the slats of the Venetian blind from the lower to the upper end position, see Fig. 8 (0 - 10000 [milliseconds]). The field is available when the “yes” option is selected for the “Travel time in two directions” parameter.

Time of slat adjustment when down – time needed to adjust the slats of the Venetian blind from the upper to the lower end position, see Fig. 8 (0 - 10000 [milliseconds]). The field is available when the “yes” option is selected for the “Travel time in two directions” parameter.

Additional travel to end position – allows you to adjust the position of the blind/shutter when moving to the end position (0 – 125 [%]; default = 25). In the case of manual detection, the blind/shutter end positions are defined in the module, based on the taken measurements of the travel time. If the blind/shutter reaches the position stored in the module as its end position, the module output is turned off. Entering a value greater than “0” in the field means that after the blind/shutter reaches the end position, the module output will remain on for the time needed to move the blind/shutter by this value. Entering the value “0” in the field means that after the blind/shutter reaches its end position, the module output will be turned off.

4.3.2 Functions

Scene 1-bit



For each channel, eight 1-bit scenes (activated by 1-bit telegram) can be defined in the module. The scenes are divided into four pairs 1/2, 3/4, 5/6, 7/8. Each pair of scenes activated in the program enables the “Call scene 1-bit (X/Y)” communication object (where: X/Y = 1/2, 3/4, 5/6, 7/8). The telegram received from such an object with value “0” activates the first scene (with odd number) and the telegram with value “1” activates the other scene (with even number) from the given pair. In response to each scene the blind/shutter can be set to a different position, in accordance with the percentage value of opening defined for the channel in the ETS program (see “Blind/shutter operating parameters”). Figure 11 shows an example of how you can use the 1-bit scenes to control the position of blinds, by defining the correct percentage values of opening for the first and second scenes from the pair:

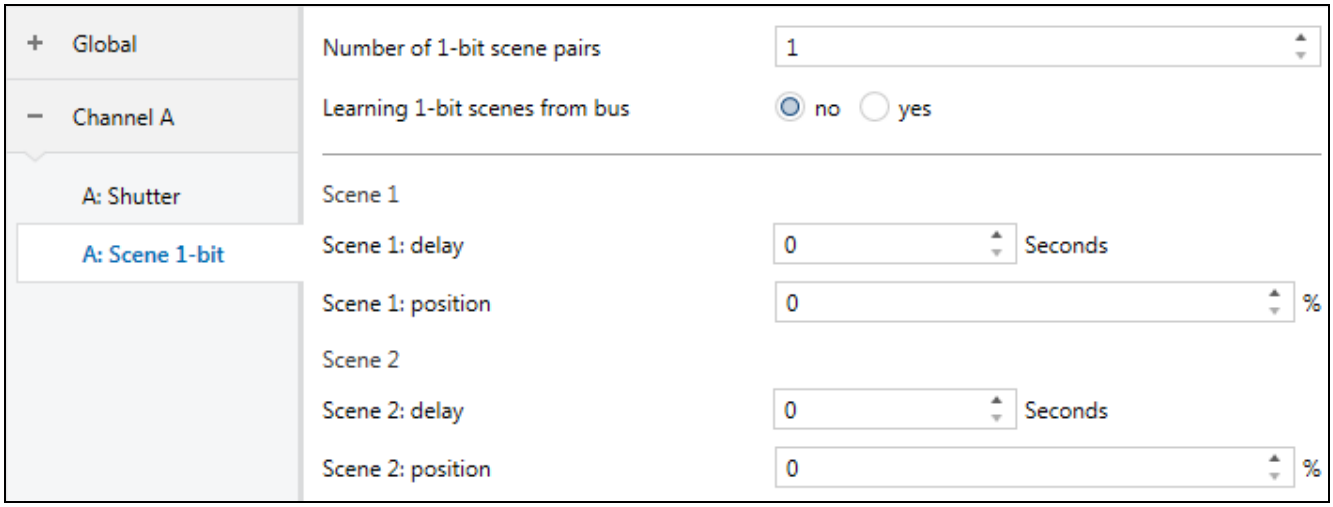
- percentage value of opening before calling scenes: channel A = 0%, channel B = 0%,

- percentage value of opening in response to scene 1: channel A = 100%, channel B = 50%,
- percentage value of opening in response to scene 2: channel A = 0%, channel B = 0%.

The channel can learn 1-bit scenes from the bus. Enabling the function of scene learning by the channel during configuration will enable, for each pair of scenes activated in the channel, the "Set scene 1-bit (X/Y)" communication object that makes it possible to store the 1-bit scenes. After the channel receives a telegram with value "0" from that object, the current channel state will be assigned to the first scene of the X/Y pair. The telegram with value "1" will assign the current channel state to the second scene of that pair.

Depending on the blind/shutter type selected for the channel, other parameters are displayed in the "Scene 1-bit" tab.

Description of parameters



Number of 1-bit scene pairs – the number of 1-bit scene pairs assigned to the channel (up to 4). For each activated pair, the "Call scene 1-bit (X/Y)" communication object (where: X/Y = 1/2, 3/4, 5/6, 7/8) is enabled and parameters are displayed which allow you to define blind/shutter reaction to the scene.

Learning 1-bit scenes from bus – selecting "yes" will start the function of learning 1-bit scenes by the channel. For each activated scene pair, the "Set scene 1-bit (X/Y)" communication object will be enabled and two selection parameters "Scene X: initial value" and "Scene Y: initial value" (where: X/Y = 1/2, 3/4, 5/6, 7/8) will be displayed. If you select "no", the channel will be unable to learn the 1-bit scenes from the bus.

Shutter / awning / window

Scene 1: delay – time that must elapse from receiving the telegram to calling the scene (0 - 255 [seconds]).

Scene 1: position – position to which the shutter will be set in response to the telegram with value "0" from the "Call scene 1-bit (1/2)" communication object (0 - 100% [0% = upper end shutter position, 100% = lower end shutter position, see Fig. 4, 6 and 7]).

Scene 2: delay – time that must elapse from receiving the telegram to calling the scene (0 - 255 [seconds]).

Scene 2: position – position to which the shutter will be set in response to the telegram with value "1" from the "Call scene 1-bit (1/2)" communication object (0 - 100% [0% = upper end shutter position, 100% = lower end shutter position, see Fig. 4, 6 and 7]).

Positions for the other scenes are defined in the same way as for the pair 1/2.

Scene 1: initial value – you can select how the initial value is to be set for the scene 1 after starting and restarting the module. The parameter is available, if the "yes" option is selected for the "Learning 1-bit scenes from bus" parameter.

default – the value defined in the program. After receiving a telegram with value "0", the shutter is set to the position corresponding to the value defined for the scene 1 in the "Scene 1: position" field.

last set from bus – the value learned via the last telegram from the bus. If the object value has not been changed by the learning function, the default value will be set.

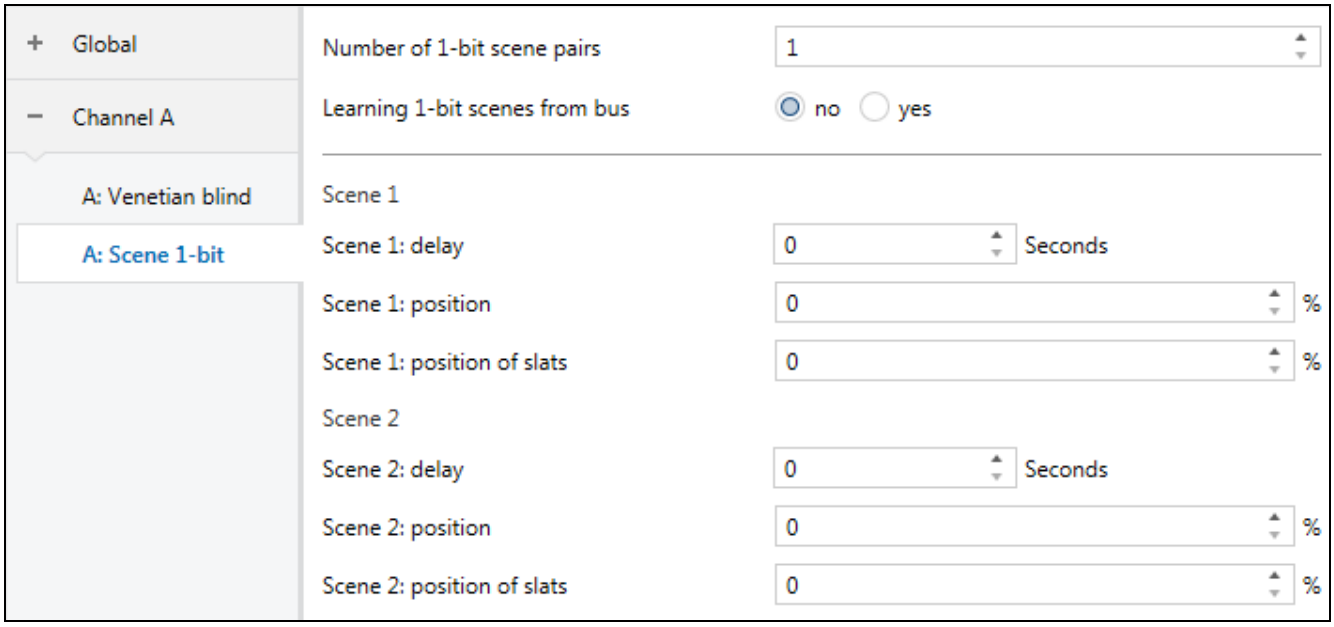
Scene 2: initial value – you can select how the initial value is to be set for the scene 2 after starting and restarting the module. The parameter is available, if the "yes" option is selected for the "Learning 1-bit scenes from bus" parameter.

default – the value defined in the program. After receiving a telegram with value "1", the shutter is set to the position corresponding to the value defined for the scene 2 in the "Scene 2: position" field.

last set from bus – the value learned via the last telegram from the bus. If the object value has not been changed by the learning function, the default value will be set.

Initial values for the other scenes are defined in the same way as for the 1/2 pair.

Venetian blind / vertical blind



Scene 1: delay – time that must elapse from receiving the telegram to calling the scene (0 - 255 [seconds]).

Scene 1: position – position to which the blind will be set in response to the telegram with value "0" from the "Call scene 1-bit (1/2)" communication object (0 - 100% [0% = upper end blind position, 100% = lower end blind position, see Fig. 4 and 5]).

Scene 1: position of slats – position to which the slats will be set in response to the telegram with value "0" from the "Call scene 1-bit (1/2)" communication object (0 - 100% [0% = upper end position of slats, 100% = lower end position of slats, see Fig. 8 and 9]).

Scene 2: delay – time that must elapse from receiving the telegram to calling the scene (0 - 255 [seconds]).

Scene 2: position – position to which the blind will be set in response to the telegram with value "1" from the "Call scene 1-bit (1/2)" communication object (0 - 100% [0% = upper end blind position, 100% = lower end blind position, see Fig. 4 and 5]).

Scene 2: position of slats – position to which the slats will be set in response to the telegram with value “1” from the “Call scene 1-bit (1/2)” communication object (0 - 100% [0% = upper end position of slats, 100% = lower end position of slats, see Fig. 8 and 9]).

Positions of blinds and slats for the other scenes are defined in the same way as for the pair 1/2.

If, because of the way the blinds operate, it is impossible to simultaneously set the position of blinds and slats (e.g. position of the blind = 100% and position of the slats = 0%), then, after the scene is called, only the position of the blind will be set.

Scene 1: initial value – you can select how the initial value is to be set for the scene 1 after starting and restarting the module. The parameter is available, if the “yes” option is selected for the “Learning 1-bit scenes from bus” parameter.

default – the value defined in the program. After receiving a telegram with value “0”, the blind and slats (for slat-type blind) are set to the positions corresponding to the values defined for the scene 1 in the fields “Scene 1: position” and “Scene 1: position of slats”.

last set from bus – the value learned via the last telegram from the bus. If the object value has not been changed by the learning function, the default value will be set.

Scene 2: initial value – you can select how the initial value is to be set for the scene 2 after starting and restarting the module. The parameter is available, if the “yes” option is selected for the “Learning 1-bit scenes from bus” parameter.

default – the value defined in the program. After receiving telegram with value “1”, the blind and slats (for slat-type blind) are set to the position corresponding to the values defined for the scene 2 in the fields “Scene 2: position” and “Scene 2: position of slats”.

last set from bus – the value learned via the last telegram from the bus. If the object value has not been changed by the learning function, the default value will be set.

Initial values for the other scenes are defined in the same way as for the 1/2 pair.

Scene

For each channel in the module, 8 scenes can be defined. It enables management of up to 16 different scenes by using one group address. Communication with all participants linked in scenes takes place through this group address. Just one telegram is needed to call up or save a scene. Such a telegram contains the scene number and information on whether the scene is to be called up and whether learning is to be enabled, during which the value currently set in the channel will be saved for the scene with this number.

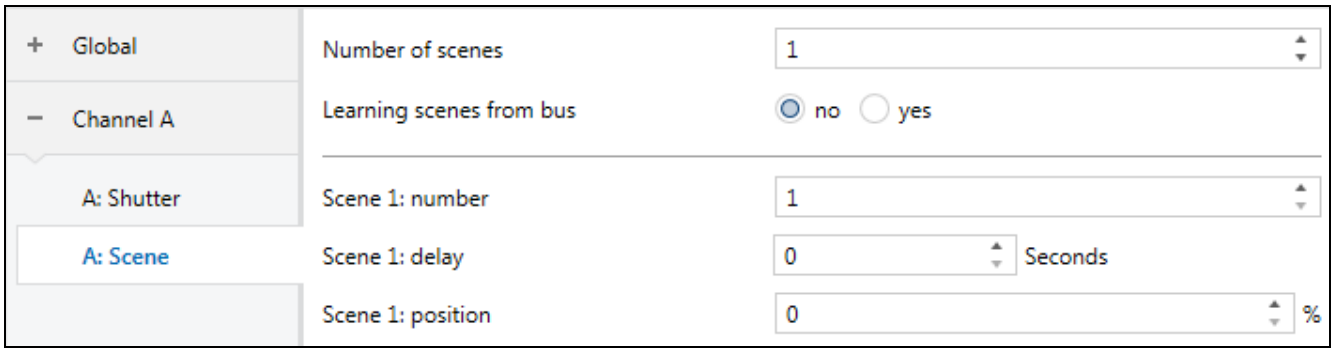
For each scene, you can set the following parameters:

- scene number,
- delay (time that must elapse from receiving the telegram to calling the scene),
- percentage value of opening of for slat-type blind and slats (if the blind has slats) that will be set in response to the scene.

Using the scenes eases the telegram traffic and relieves the bus. They enable all information about what is to be done by the participants of scenes to be saved to the module memory. This information is not sent when the scene is called up or saved. What is sent is only the telegram triggering or saving the scene.

Depending on the type of for slat-type blind selected for the channel, different parameters are displayed in the “Scene” tab.

Description of parameters



Number of scenes – number of scenes assigned to the channel (up to 8). For each activated scene, parameters are displayed which allow you to define for slat-type blind reaction to the scene.

Learning scenes from bus – if you select “yes”, the learning function will be enabled for the scenes. The “Scene” communication object will be able not only call up but also save the scene, if it receives a telegram activating the function of learning. If you select “no”, the channel will not be able to learn scenes from the bus.

Shutter / awning / window

Scene 1...8: number – scene number assigned to the channel.

Scene 1...8: delay – time that must elapse from receiving the telegram to calling up the scene (0 - 255 [seconds]).

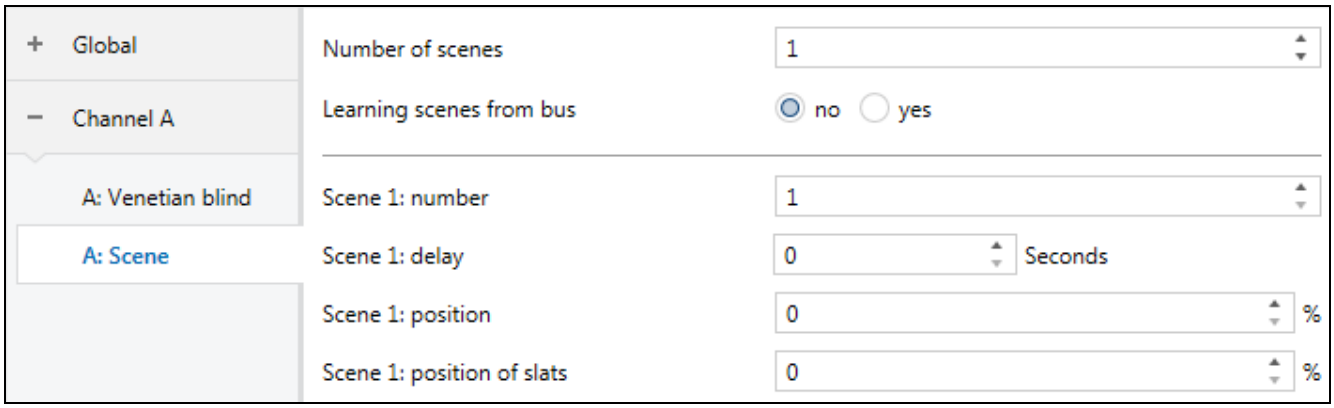
Scene 1...8: position – position to which the shutter will be set after receiving a telegram with scene number selected in the “Scene 1...8: number” field (0 - 100% [0% = upper end shutter position , 100% = lower end shutter position, see Fig. 4, 6 and 7]).

Scene 1…8: initial value – you can select how the initial value will be set for scenes after starting/restarting the module. The parameter is available, if the “yes” option is selected for the “Learning scenes from bus” parameter.

default – value defined in the program. If the object receives a telegram with the scene number (“Scene 1...8: number” field), the shutter is set to position corresponding to the value defined for the scene with this number in field “Scene 1...8: position”.

last set from bus – the value learned via the last telegram from the bus. If the value of the “Scene” object has not been changed by the learning function, the default value will be set.

Venetian blind / vertical blind



Scene 1...8: number – scene number assigned to the channel.

Scene 1...8: delay – time that must elapse from receiving the telegram to calling up the scene (0 - 255 [seconds]).

Scene 1...8: position – position to which the blind will be set after receiving a telegram with the scene number selected in the “Scene 1...8: number” field (0 - 100% [0% = upper end blind position, 100% = lower end blind position, see Fig. 4 and 5]).

Scene 1...8: position of slats – position to which slats will be set after receiving a telegram with the scene number selected in the “Scene 1...8: number” field (0 - 100% [0% = upper end slat position, 100% = lower end slat position, see Fig. 8 and 9]).

If, because of the way the blinds operate, it is impossible to simultaneously set the position of blinds and slats (e.g. position of the blind = 100% and position of the slats = 0%), then, after the scene is called, only the position of the blind will be set.

Scene 1…8: initial value – you can select how the initial value will be set for scenes after starting/restarting the module. The parameter is available, if the “yes” option is selected for the “Learning scenes from bus” parameter.

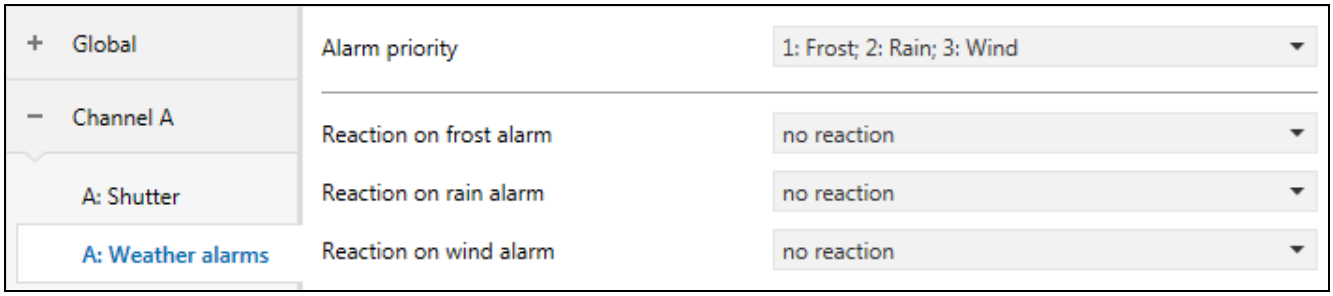
default – value defined in the program. If the object receives a telegram with the scene number (“Scene 1...8: number” field), the blind and slats (if the blind has slats) are set to the positions corresponding to the values defined for the scene with this number in fields “Scene 1...8: position” and “Scene 1...8: position of slats”.

last set from bus – the value learned via the last telegram from the bus. If the value of the “Scene” object has not been changed by the learning function, the default value will be set.

Weather alarms

You can define reaction of the blind/shutter to a change of state of the safety-related communication objects “Wind alarm”, “Rain alarm” and “Frost alarm”. For each the object, you can define a different reaction (no reaction / fully opened / fully closed / stop). Regardless of the selected blind/shutter type, reaction to weather alarms is defined in the same way.

Description of parameters



Alarm priority – you can define priorities of each alarm, i.e. their hierarchy (where: 1 – highest priority, 3 – lowest priority):

1: Frost; 2: Rain; 3: Wind

1: Frost; 2: Wind; 3: Rain

1: Rain; 2: Frost; 3: Wind

1: Rain; 2: Wind; 3: Frost

1: Wind; 2: Frost; 3: Rain

1: Wind; 2: Rain; 3: Frost

A weather alarm with higher priority can change the blind/shutter position set previously in response to a lower priority alarm. On the other hand, weather alarms with lower priority trigger no reaction in the channel as long as the channel is locked by a higher priority alarm.

Example for the “1: Frost; 2: Rain; 3: Wind” variant. If the blind/shutter is set in response to the “Wind” alarm, and then the “Frost” alarm is triggered, the blind/shutter position will be changed to a position defined as response to the “Frost” alarm. However, if the

blind/shutter position is set in response to the “Frost” alarm, the “Wind” and “Rain” alarms will not change the blind/shutter position until the “Frost” alarm is called off.

If you select this variant, the fields for defining the channel reaction to each weather alarm will arrange in the order corresponding to their priorities.

The blind/shutter position set in response to the weather alarm can be overridden by the position forcing function, which has the highest priority.

Reaction on frost alarm – position to which the blind/shutter will be set in response to a change of state of the “Frost alarm" communication object (no reaction / fully opened / fully closed / stop).

Reaction on rain alarm – position to which the blind/shutter will be set in response to a change of state of the “Rain alarm” communication object (no reaction / fully opened / fully closed / stop).

Reaction on wind alarm – position to which the blind/shutter will be set in response to a change of state of the “Wind alarm” communication object (no reaction / fully opened / fully closed / stop).

After the weather alarm is called off, the blind/shutter will remain in the position set, until the position is changed by the next telegram from the bus.

Position forcing

You can define the position to which the blind/shutter will be set in response to a change of state of the “Forced position” communication object. When the object assumes the value “1”, the blind/shutter will be set to the position defined, and the channel will be locked. Unlocking of the channel is only possible when the object assumes the value “0”. When unlocked, the blind/shutter does not return to the position in which it was before locking. This function can set the blind/shutter to the upper or lower end position, or stop it in the current position. For each type of blind/shutter, reaction to the position forcing function is defined in the same way.

The position forcing function has the highest priority. Position that will be set by this function cannot be changed by other functions activated in the module.

Description of parameters

Channel reaction to forced position – position to which the blind/shutter will be set in response to a change of state of the “Forced position” communication object (fully opened / fully closed / stop).

4.4 Communication objects

4.4.1 Global objects

Number	Name	Object Function	Length	C	R	W	T	U
1	General	Device operation status	1 bit	C	R	-	T	-
2	Safety	Wind alarm	1 bit	C	-	W	-	-
3	Safety	Rain alarm	1 bit	C	-	W	-	-
4	Safety	Frost alarm	1 bit	C	-	W	-	-
5	Central	Move up/down	1 bit	C	-	W	-	-
6	Central	Set absolute position percentage	1 byte	C	-	W	-	-
7	Central	Set absolute position slats percentage	1 byte	C	-	W	-	-
8	Central	Dedicated stop	1 bit	C	-	W	-	-
9	General	Device error alarm	1 bit	C	R	-	T	-

Global communication objects				
No.	**Object name**	**Object function**	**Data type**	**Flags**
1	**General**	**Device operation status**	**1 bit, DPT 1.001**	**C, R, T**
The object sends a telegram cyclically to the KNX bus with information about the module status. To disable the sending, you can enter the value “0” into the “Interval of cyclic device status sending” field, in the “Global” tab. Telegram: 1 = the module is running.				
2	**Safety**	**Wind alarm**	**1 bit, DPT 1.005**	**C, W**
The object will be enabled if you select “Enable” for the “Weather alarms” parameter in the “Global” tab. It can receive from the KNX bus 1-bit telegrams sent cyclically by the wind sensor or weather station. If, within the defined monitoring time, the object receives no resetting telegram or receives the activating telegram, an alarm will be triggered and the blind/shutter will set to the position defined as response to the “Wind” alarm (see “Weather alarms”). The channel is locked and does not process any incoming telegrams. The channel can only be unlocked when the object has received the unlocking telegram (see “Weather alarms”). If, during the monitoring time, a telegram with the value opposite to that triggering the alarm is received, the countdown will be started again (reset). *The blind/shutter position set by using this object can only be changed as a result of a higher priority alarm (see “Weather alarms”) or by the position forcing function.*				
3	**Safety**	**Rain alarm**	**1 bit, DPT 1.005**	**C, W**
The object will be enabled if you select “Enable” for the “Weather alarms” parameters in the “Global” tab. The object can receive from the KNX bus 1-bit telegrams sent cyclically by the rain sensor or weather station. For other information, see the “Wind alarm” object.				

Global communication objects				
No.	**Object name**	**Object function**	**Data type**	**Flags**
4	**Safety**	**Frost alarm**	**1 bit, DPT 1.005**	**C, W**
The object will be enabled if you select “Enable” for the “Weather alarms” parameters in the “Global” tab. The object can receive from the KNX bus 1-bit telegrams sent cyclically by the rain sensor or weather station. For further information, see the “Wind alarm” object.				
5	**Central**	**Move up/down**	**1 bit, DPT 1.008**	**C, W**
The object will be enabled if you select “Enable” for the “Central move up/down” parameter in the tab for configuring the channel settings (e.g. “A: Shutter”). It allows you to start the travel of both blinds/shutters connected to the module by using one telegram. The blind/shutter travel started by the object can be stopped by the “STOP” telegram or when the blinds/shutters reach the end position. Only the channels for which “Enable” is selected for the “Central move up/down” parameter will respond to a change of the object value. Telegram: 0 = up, 1 = down				
6	**Central**	**Set absolute position percentage**	**1 byte DPT 5.001**	**C, W**
The object will be enabled if you select “Enable” for the “Central absolute position” parameter in the tab for configuring the channel settings (e.g. “A: Shutter”). It allows you to move both blinds/shutters connected to the module to the same absolute position by using one telegram. Only the channels for which “Enable” is selected for the “Central absolute position” parameter will respond to a change of the object value. Telegram: 0% = blind/shutter fully open (upper end blind/shutter position), … = intermediate position, 100% = blind/shutter fully closed (lower end blind/shutter position).				
7	**Central**	**Set absolute position slats percentage**	**1 byte DPT 5.001**	**C, W**
The object will be enabled if you select “Enable” for the “Central absolute position” parameter in the tab for configuring the settings of the channel controlling the blinds (e.g. “A: Vertical blind”). It allows you to adjust the slats of both blinds connected to the module to the same absolute position by using one telegram. Only the channels for which “Enable” is selected for the “Central absolute position” partameter will respond to a change of the object value. Telegram: 0% = upper end position of slats, … = intermediate position, 100% = lower end position of slats.				

Global communication objects				
No.	**Object name**	**Object function**	**Data type**	**Flags**
8	**Central**	**Dedicated stop**	**1 bit, DPT 1.017**	**C, W**
The object will be enabled if you select “Enable” for the “Central stop” parameter in the tab for configuring the channel settings (e.g. “A: Shutter”). It allows you to stop the travel of both blinds/shutters or movement of slats in both blinds connected to the module by using one telegram. Telegram: 0 = STOP, 1 = STOP				
9	**General**	**Device error alarm**	**1 bit, DPT 1.011**	**C, R, T**
The object allows sending a telegram with error information to the KNX bus when one of the module channels reports incorrect position, mechanical jam, no power / supply circuit fault, motor overheating or obstacle detection by smart motor. In the event of an error, the object assumes a value of “1”. The telegram is sent after the event occurs and cyclically at defined intervals. You can disable the cyclic sending by entering “0” in the “Interval of cyclic device error (alarm) sending” field in the “Global” tab. Telegram: 1 = error in one of the channels, 0 = module is working correctly.				

Flag: C – communication, R – read, W – write, T – transmit, U – update.

4.4.2 Channel objects

Communication objects for all channels are identical and has been discussed based on the channel A.

Blind/shutter control

Number	Name	Object Function	Length	C	R	W	T	U
17	Channel A	Move up/down	1 bit	C	-	W	-	-
18	Channel A	Stop/step up/down	1 bit	C	-	W	-	-
19	Channel A	Dedicated stop	1 bit	C	-	W	-	-
20	Channel A	Set absolute position percentage	1 byte	C	-	W	-	-
21	Channel A	Set absolute position slats percentage	1 byte	C	-	W	-	-
22	Channel A	Current absolute position percentage	1 byte	C	R	-	T	-
23	Channel A	Current absolute position slats percentage	1 byte	C	R	-	T	-
34	Channel A	Channel error alarm	1 bit	C	R	-	T	-

Channel communication objects				
No.	**Object name**	**Object function**	**Data type**	**Flags**
17	**Channel A**	**Move up/down**	**1 bit, DPT 1.008**	**C, W**
The object will be enabled if you select any type of blind/shutter in the “Channel A” field, “Global” tab. It enables the blind/shutter to be moved up and down. The blind/shutter travel started by the object can be stopped by the “STOP” telegram or when the blind/shutter				

Channel communication objects				
No.	**Object name**	**Object function**	**Data type**	**Flags**
reaches the end position. Telegram: 0 = up, 1 = down.				
18	**Channel A**	**Stop/step up/down**	**1 bit, DPT 1.007** **4 bit, DPT 3.008**	**C, W**
The object will be enabled if you select any type of blind/shutter in the “Channel A” field, “Global” tab. In the case of roller shutter / awning / window, the object enables their stepwise movement up or down by a defined value. In the case of slat blinds, the object enables stepwise adjustment of the slats. If the object is defined as 4-bit, it will send such telegrams as “STEP UP”, “STEP DOWN” and “STOP” (the “STEP UP” and “STEP DOWN” telegram starts movement of the blind/shutter or slats by a preset value, and the “STOP” telegram stops their movement). If the object is defined as 1-bit, the step value by which the blind/shutter will be moved or the slats adjusted can be defined in the tab for defining the operating parameters of the channel, in the “Step: value” field. Telegram of a 1-bit object: 0 = step up by the value defined in the “Step: value” field, 1 = step down by the value defined in the “Step: value” field, when the blind/shutter or slats are moving: 0 = STOP, 1 = STOP.				
19	**Channel A**	**Dedicated stop**	**1 bit, DPT 1.017**	**C, W**
The object will be enabled if you select any type of blind/shutter in the “Channel A” field, “Global” tab. If the blind/shutter or slats are moving, the object allows you to stop their movement. Telegram: 0 = STOP, 1 = STOP				
20	**Channel A**	**Set absolute position percentage**	**1 byte** **DPT 5.001**	**C, W**
The object will be enabled if you select any type of blind/shutter in the “Channel A” field, “Global” tab. It sets the blind/shutter to the position defined as percentage opening value, where: 0% = blind/shutter fully open (upper end position), 100% = blind/shutter fully closed (lower end position). See Fig. 4 (roller blind/shutter and Venetian blind), Fig. 5 (vertical blind), Fig. 6 (awning) and Fig. 7 (window). If the object receives the telegram, the blind/shutter position will be set according to the telegram value. Telegram value: 0% = blind/shutter fully open (upper end position), … = intermediate position, 100% = blind/shutter fully closed (lower end position).				

Channel communication objects				
No.	**Object name**	**Object function**	**Data type**	**Flags**
21	**Channel A**	**Set absolute position slats percentage**	**1 byte DPT 5.001**	**C, W**

The object will be enabled if you select “Venetian blind” or “Vertical blind” in the “Channel A” field, “Global” tab. It enables the blind slats to be set to the position defined as a percentage value, where: 0% = upper end position, 100% = lower end position; see Fig. 8 (Venetian blind), Fig. 9 (vertical blind). If the object receives the telegram, the slats will be set to the position corresponding to the telegram value. If the telegram is received during travel of the blind, the slats will be adjusted only after the blind is set to its required position.

Telegram value:

0% = upper end slat position,

… = intermediate position,

100% = lower end slat position.

22	**Channel A**	**Current absolute position percentage**	**1 byte DPT 5.001**	**C, T**

The object will be enabled if you select any type of blind/shutter in the “Channel A” field, “Global” tab. It enables sending a telegram with information about the current position of the blind/shutter. The telegram is always sent after the travel is completed. The position is defined as percentage value, where: 0% = blind/shutter fully open (upper end position), 100% = blind/shutter fully closed (lower end position). See Fig. 4 (roller shutter and Venetian blind), Fig. 5 (vertical blind), Fig. 6 (awning) and Fig. 7 (window).

Telegram value:

0% = blind/shutter fully open (upper end position),

… = intermediate position,

100% = blind/shutter fully closed (lower end position).

23	**Channel A**	**Current absolute position slats percentage**	**1 byte DPT 5.001**	**C, T**

The object will be enabled if you select “Venetian blind” or “Vertical blind” in the “Channel A” field, “Global” tab. It enables sending a telegram with information about the current position of slats. The telegram is always sent after the slat adjustment is completed. The position is defined as percentage value, where: 0% = upper end position, 100% = lower end position; see Fig. 8 (Venetian blind), Fig. 9 (vertical blind).

Telegram value:

0% = upper end slat position,

… = intermediate position,

100% = lower end slat position.

Channel communication objects				
No.	**Object name**	**Object function**	**Data type**	**Flags**
34	**Channel A**	**Channel error alarm**	**1 bit, DPT 1.011**	**C, R, T**
The object allows sending a telegram to the KNX bus with error information when the channel A reports incorrect position, mechanical jam of the blind/shutter, no power / supply circuit fault, motor overheating or obstacle detection by smart motor. In the event of an error, the object assumes a value of “1”. The telegram is sent after the event occurs and cyclically at defined intervals. You can disable the cyclic sending by entering “0” in the “Interval of cyclic device error (alarm) sending” field in the tab for defining channel operating parameters (e.g. “A: Venetian blind”). Telegram: 1 = error in the channel, 0 = channel is workin correctlly.				

Flag: C – communication, R – read, W – write, T – transmit, U – update.

Functions

24	Channel A	Scene	1 byte	C	-	W	-	-
25	Channel A	Call scene 1-bit (1/2)	1 bit	C	-	W	-	-
26	Channel A	Call scene 1-bit (3/4)	1 bit	C	-	W	-	-
27	Channel A	Call scene 1-bit (5/6)	1 bit	C	-	W	-	-
28	Channel A	Call scene 1-bit (7/8)	1 bit	C	-	W	-	-
29	Channel A	Set scene 1-bit (1/2)	1 bit	C	-	W	-	-
30	Channel A	Set scene 1-bit (3/4)	1 bit	C	-	W	-	-
31	Channel A	Set scene 1-bit (5/6)	1 bit	C	-	W	-	-
32	Channel A	Set scene 1-bit (7/8)	1 bit	C	-	W	-	-
33	Channel A	Forced position	1 bit	C	-	W	-	-
34	Channel A	Channel error alarm	1 bit	C	R	-	T	-

Channel communication objects				
No.	**Object name**	**Object function**	**Data type**	**Flags**
24	**Channel A**	**Scene**	**1 byte DPT 17.001 DPT 18.001**	**C, W**
The object will be enabled if you select “Enable” for the “Scene” parameter in the tab for configuring the channel settings (e.g. “A: Venetian blind”). The object enables sending a 1-byte telegram, which can call up a scene or activate the scene learning function. Such a telegram contains the scene number (1-64) and information about whether the scene is to be called, and whether learning is to be enabled during which the current value set in the channel will be saved for the scene with this number. To enable the function of scene learning by the channel, select “yes” for the “Learning scenes from bus” parameter in the “Scene” tab for the channel A. See “Scene”.				

Channel communication objects				
No.	**Object name**	**Object function**	**Data type**	**Flags**
25 … 28	**Channel A**	**Call scene 1-bit (X/Y)** where: X/Y = 1/2, 3/4, 5/6, 7/8	**1 bit, DPT 1.022**	**C, W**
The “Call scene 1-bit (1/2)” object will be enabled if you select “Enable” for the “Scene 1-bit” parameter in the tab for configuring the channel settings (e.g. “A: Venetian blind”). The objects with numbers 3/4, 5/6 or 7/8 will be enabled if you select value 2, 3 or 4 in the “Number of 1-bit scene pairs” field in the “Scene 1-bit” tab for the channel A. The object with number X/Y enables calling up the 1-bit scene with number X and Y assigned to the channel. Telegram: 0 = activates the scene no. (X = 1, 3, 5, 7), 1 = activates the scene no. Y (Y = 2, 4, 6, 8). See “Scene 1-bit”.				
29 … 32	**Channel A**	**Call scene 1-bit (X/Y)** where: X/Y = 1/2, 3/4, 5/6, 7/8	**1 bit, DPT 1.022**	**C, W**
The objects will be enabled for all scenes activated in the channel if you select “yes” for the “Learning 1-bit scenes from bus” parameter in the “Scene 1-bit” tab for the channel A. The object with number X/Y enables the current blind/shutter position (percentage value of opening) to be assigned to the 1-bit scene with number X and Y. Telegram: 0 = current blind/shutter position will be assigned to scene no. X (X = 1, 3, 5, 7), 1 = current blind/shutter position will be assigned to scene no. Y (Y = 2, 4, 6, 8). See “Scene 1-bit”.				
33	**Channel A**	**Forced position**	**1 bit, DPT 1.001**	**C, W**
The object will be enabled, if you select “Enable” for the “Position forcing” parameter in the tab for configuring the channel settings (e.g. "A: Venetian blind"). It enables the blind/shutter to be moved to a defined position and the channel to be locked so as to make another movement impossible. The position in which the blind/shutter will be “locked” is defined in the “Channel reaction to forced position” field, “Position forcing” tab. Repositioning of the blind/shutter will only be possible when the object has received the unlocking telegram. After receiving the telegram, the blind/shutter does not return to the state in which it was before locking. Telegram: 1 = move the blind/shutter to position and lock, 0 = unlock, when the blind/shutter is moving: 0 = STOP, 1 = STOP. See “Position forcing”.				

Flag: C – communication, R – read, W – write, T – transmit, U – update.

4.5 Restoring module factory default settings

1. Press simultaneously the four channel state control buttons located on the module enclosure (see “Description”). The ▲ and ▼ LED indicators will come on.
2. Hold the buttons down until the LEDs go out (about 5 seconds). The module will be restarted and the factory settings will be restored.

5. Specifications

Power supply

Supply voltage (KNX bus) ..... 20…30 VDC
Current consumption from KNX bus ..... <20 mA

Load circuit

U_n rated voltage
KNX-BSA 12L ..... 24 VDC
KNX-BSA 12H ..... 230 VAC
I_n rated current
KNX-BSA 12L ..... 6 A
KNX-BSA 12H ..... 6 A

Connections

Maximum wire cross-section ..... 2.5 mm^2
Maximum tightening torque ..... 0.5 Nm

KNX parameters

Maximum time of reaction to telegram ..... <20 ms
Maximum number of communication objects KNX-BSA12L/KNX-BSA12H 45
Maximum number of group addresses 256
Maximum number of associations 256

Other parameters

Operating temperature range ..... 0°C...+45°C
Storage/transport temperature range ..... -25°C...+70°C
IP code IP20
Number of units on DIN rail 4
Enclosure dimensions ..... 70 x 92 x 60 mm
Weight
KNX-BSA 12L ..... 182 g
KNX-BSA 12H ..... 188 g

Exceeding the limit values of the module working parameters may damage the module and pose hazard to human health or life.