Chapter 8: Blind actuators

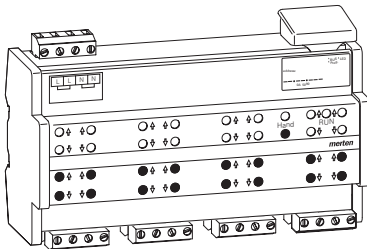8.5 Blind/switch actuator REG-K/ 8x/16x/10 with manual mode
Blinds/switch actuator with manual mode
Art. no. 649908

merten

Blind/switch actuator REG-K/ 8x/16x/10 with manual mode

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1. Function

The **blind/switch actuator REG-K/8x/16x/10 with manual mode** (referred to below as simply **actuator**) can perform the following functions as part of INSTABUS EIB:

– control blind and roller shutter drives with end position switch independently of one another

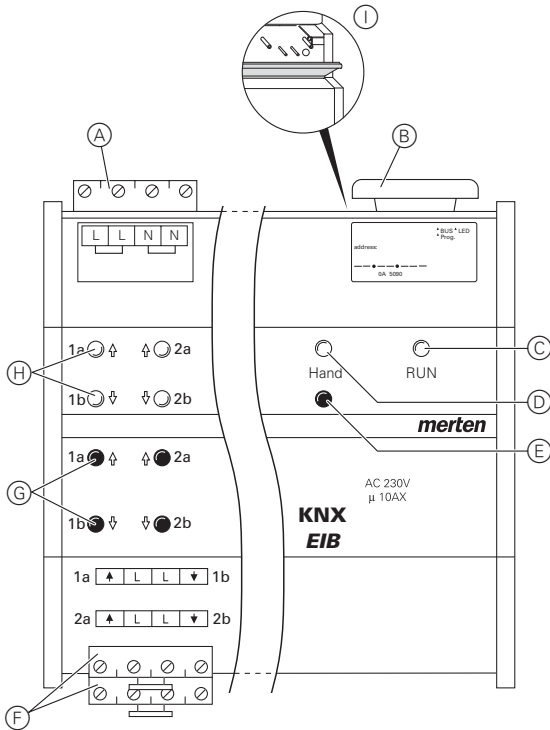– switch loads via separate, floating make contacts

You can operate each channel either as a blind channel or as two switching channels. In the "Switching" channel operating mode, one blind channel is divided into two equal switching channels. You must toggle the channels on the device itself and in the ETS. For further information, please refer to the section "How to toggle between the blind and the switch operation" mode.

You can switch the actuator to manual operation and check that it works even without ETS programming, and you can control the connected loads directly on the actuator in the event of an EIB failure.

The actuator has a bus coupler. It is installed on a DIN rail, with the bus connection made via a bus connecting terminal. It is supplied with power both from the bus voltage and from the mains. This makes three different operating modes possible:

– **Bus and mains supply**
This is the standard operating mode. The actuator is supplied by both the bus and mains voltages.

– **Bus supply only**
This is a further standard operating mode. The actuator is operated solely in bus mode. It can carry out all functions, but there may be a slight time delay (e.g. switching of the relays, slat adjustment). Manual operation is possible.

– **Mains supply only**
If necessary, the actuator can be simply be operated manually, without bus communication. You can activate the loads directly using the channel keys.

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Connections, displays and operating elements

A: Mains connection: The actuator has two connecting terminals each for the N and L cables (looping is possible).

B: Under the cable cover: Bus connecting terminal with programming button and programming LED (red)

C: Operating LED "RUN" (green)

D: Manual operation LED (red)

E: Manual operation key "On/Off"

F: Channel terminals for load voltage

G: Channel keys for manual control of the corresponding channel; only communicate when manual operation is "On"

H: Channel status LEDs (yellow) for the corresponding channel

I: Flap forward to open

2. Installation

⚡ **Risk of fatal injury from electric current**
The actuator may only be installed and connected by skilled electricians. Observe the regulations valid in the country of use, as well as the valid EIB guidelines.
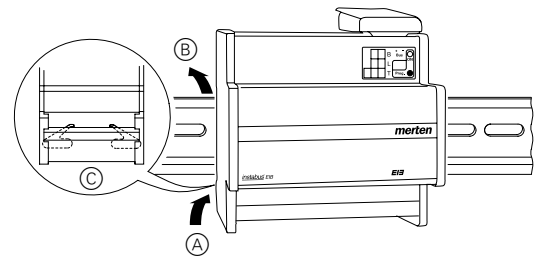

① Place the actuator on the DIN rail from underneath Ⓐ and push it upwards. Then press up it up at Ⓑ so that the claws on the rear side fix into the rail Ⓒ.

⚠ **Caution!** The actuator can become damaged. Use the fuse devices as shown in the Figure:
- Protect connections with a 10 A automatic cutout upstream.
If you use separate fuses for the connections of two related switching channels, these must be on the same phase.
- If the mains voltage is looped, protect the mains connection with a 10 A automatic cutout connected upstream as well
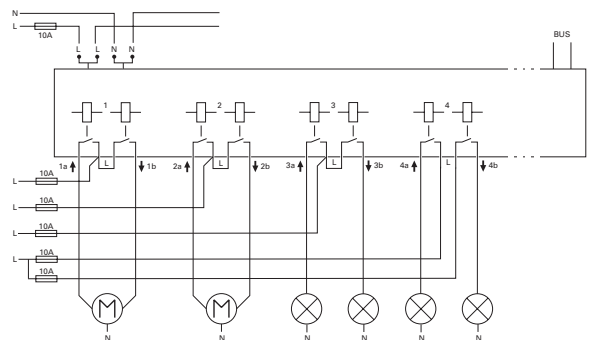
⚠ **Caution!**
The blind actuator can become damaged. Connect the bus/mains voltage first and only then the load voltage.

⚡ **Risk of fatal injury from electric current**
The outputs may be live when the load voltage is connected.
The switch outputs have bistable relays. If subjected to strong vibrations during

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transportation, the switch contacts might change to the enabled state.
After connecting the bus/mains voltage, wait at least 30 seconds. The relays of the blind channels will be switched off. The relays of the switching channels can be set to the position desired simply by switching "On/Off".
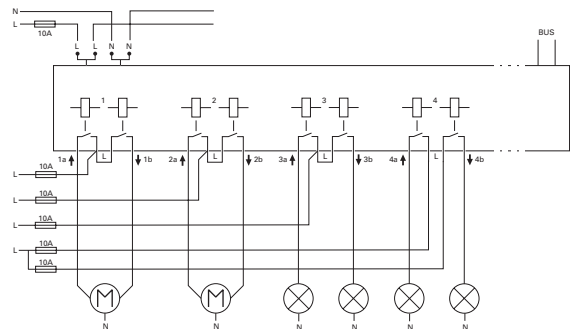
② Connect the EIB.
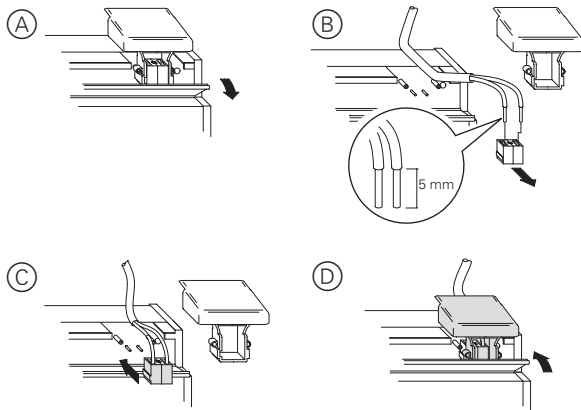
③ Switch on the mains voltage.

④ Connect the bus/mains voltage.

⑤ Wait at least 30 seconds.

⑥ The relays of the switching channels can be set to the position desired simply by switching "On/Off".

⚠ **Caution!**
If the pause on reverse is too short, the blind motors could be damaged. The toggle time is set to 500 ms at the factory (300 ms after a bus voltage failure). Keep to the recommended switchover time. Refer to the manufacturer's specifications in the data sheet for the motor.

⚠ **Caution!**
The blind motors can become damaged. The switching channels are not interlocked. **Only** connect the blind motors to blind channels.

⑦ Connect the loads.

⑧ Connect the load voltage.

Now you can check the functionality of the actuator and the connected loads without having to load the application from the ETS. (see the section "How manual operation works").

If you want to use the channels as switching channels, you must change these over from blind operation to switch operation. For further information, please refer to the section "How to toggle between the blind and the switching operating mode".

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3. Operation

How to toggle between blind and switch operation

Each channel can be operated either as a blind channel or as a switching channel. In "Switch operation", one blind channel is divided into two equal switching channels.

All channels are set to blind operation at the factory. In this state, no application program is loaded. Refer to this chapter to find out how to change the channels.

⚠ **Caution!** If the device is set wrongly, the loads could be damaged. The connected loads must conform to the channel operating mode set on the actuator and the one set in the application.

① Press the manual operation key Ⓔ for at least 3 s and continue to hold it down.
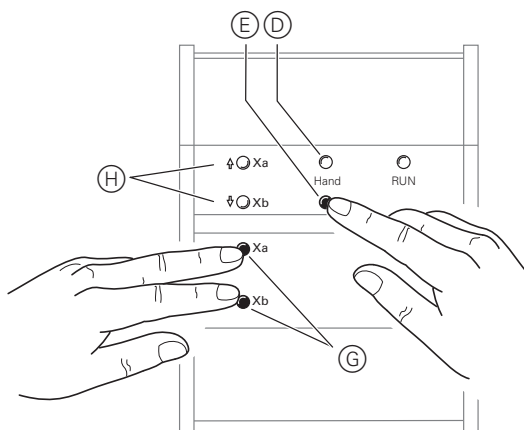
After 3 s, the manual operation LED Ⓓ flashes and the channel status LEDs Ⓗ show the status of the channels.

– Channel status LEDs Ⓗ flash alternately: Blind operation
– Channel status LEDs Ⓗ light up continuously: Switch operation

ℹ **Note:** Letting go of the manual operation key will not change the operating mode. The actuator goes back to the default operating mode.

② Continue to hold down the manual operation key Ⓔ. Also press the two channel keys Ⓖ of the channel to be toggled. The channel changes to "Switch operation" mode. The changeover has been completed successfully when the channel status LEDs light up continuously.

③ Now, let go of all the keys. The LED "Hand" goes out.

The changeover from blind operation to switch operation is completed.

ℹ **Note:** Carry out steps ① to ③ again to change from switch operation to blind operation. The

changeover has been completed successfully when the channel status LEDs light up alternately.

④ Check whether the channel operating mode is set correctly for each channel (step ①). To correct the channel operating mode on the actuator, repeat steps ① to ③.

How to put the actuator into operation

① Open the flap.
② Press the programming button.

The red programming LED lights up.

③ Load the physical address and application from the ETS into the actuator.

The red programming LED goes out.

After downloading, the actuator can have the following statuses:

Only the operating LED "RUN" lights up.

The application was loaded successfully, the actuator is ready for operation. This signalises that the channel operating mode set at the actuator conforms to that set in the application program.

① You should now make sure that the loads connected conform to the operating mode of the channel.

Both channel status LEDs and the operating LED "RUN" flash together.

This signalises an **error message**. The channel operating mode set on the actuator does not match that in the application.

① You should now make sure that the loads connected conform to the operating mode of the channel.

② Set the channel operating mode at the actuator and in the application so that they conform to the load connected.

To correct the channel operating mode on the actuator, follow the steps detailed in the section "How to toggle between blind and switch operation. To correct the channel operating mode in the application, change the parameter "Operating mode".

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How manual operation works

Normally, you control the blinds or lights using push-buttons or by remote control. However, you can also switch the actuator to manual operation and then use the channel keys to manually raise or lower each blind or switch the lights on and off. In order to be able to do this, the ETS parameter "Manual operation enabled" must be set to "enabled" and mains or bus voltage must be present.

Manual operation before downloading the application for the first time

Immediately after the initial installation, you can switch the actuator to manual operation, e.g. in order to test the connections of the blinds.

Manual operation with the ETS setting "Bus and manual operation"

In manual operation, the actuator also responds to EIB telegrams. The command last received is given priority. Exception: Safety and security alarms always have priority with this setting.

*Manual operation with the ETS setting "Manual operation only"*

In manual operation, the actuator does not respond to EIB telegrams, nor to safety alarms! This setting can be useful when carrying out maintenance, for example.

⚠ **Caution!** The loads could become damaged. When operating loads in "Manual operation only" using the channel keys, prioritised safety functions (e.g. weather alarm position, priority control) no longer work. To prevent damage you should therefore be very careful when operating manually.

ℹ **Note:** Make sure that the ETS parameter "Manual operation type" is set to "Bus and manual operation" (not "Manual operation only") when you hand over the system to the operator.

Time-limited manual operation is another function that can be set in the ETS. With this function, you can set a time period after which manual operation (including "Manual operation only") is cancelled automatically. The actuator then responds to EIB telegrams again.

How to set the blind actuator to manual operation
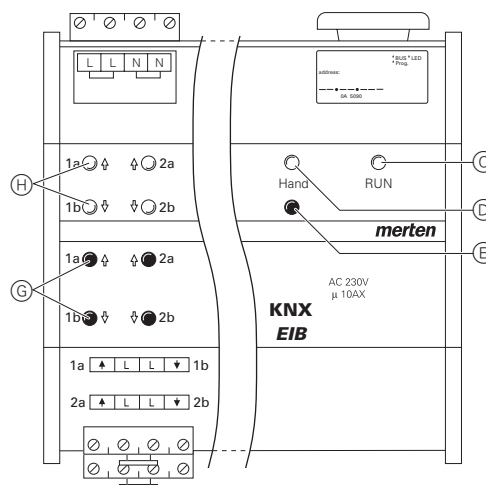
① Briefly press the manual operation key Ⓔ.

The red manual operation LED Ⓓ lights up. The actuator is in manual operation.

– The green operational LED "RUN" Ⓒ goes out when "Manual operation only" is set in the ETS.

– The green operational LED "RUN" Ⓒ remains on when "Bus and manual operation" is set in the ETS.

When both channel status LEDs and the green operating LED "RUN" flash simultaneously in manual operation, this indicates an **error**. The faulty channels cannot be operating manually in this case. Follow the instructions in the section "What should I do if there is a problem?".

How to control the blind/roller shutter in manual operation

⚠ **Warning**
Blinds/roller shutters can cause injury when they are moving. If you are operating blinds/roller shutters using channel keys, make sure that no people are in the range of movement.

① To raise (arrow up) or lower (arrow down) the blind or roller shutter: press the corresponding channel key Ⓖ.

② To halt the movement of travel: press the channel key again.

The corresponding channel status LED lights up during movement.

How to control the lights in manual operation

① To switch lights on and off: press the corresponding channel key Ⓖ.

The corresponding channel status LED lights up when the relay is closed.

How to end manual operation

① Press the manual operation key Ⓔ again.

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The red LED Ⓓ will go out. The green operational LED "RUN" Ⓒ will light up. The actuator now only responds to EIB telegrams.

4. Recognising and rectifying faults

What should I do if there is a problem?

This section contains information about faults which may occur, and their possible causes.

Yellow channel status LEDs and the green operating LED "RUN" flash together.

Cause	Solution
The channel operating mode set on the actuator does not match the channel operating mode set in the application.	Check which channel operating mode this channel should have. Toggle the channel operating mode on the actuator (see section "How to toggle between blind and actuator operation" or the channel operating mode in the application. Check whether the correct loads are connected (motor for the blind channel / luminaire for the switching channel).

The red manual operation LED "Manual" and the green operating LED "RUN" are not lit. Manual operation cannot be activated.

Cause	Solution
Bus and mains voltage have failed.	Check both.

The green operating LED "RUN" is not lit.

Cause	Solution
The bus voltage has failed.	Check bus voltage; only manual operation is possible.
Application was not loaded properly.	Load it again.

The green operating LED "RUN" does not light up, the red manual operation LED lights up.

Cause	Solution
Manual operation is active and "Manual operation only" is set in the ETS. Only manual operation is possible. There is no fault.	Switch off manual operation.

Actuator does not react to the manual operation key, the red manual operation key does not light up, manual operation is not possible.

Cause	Solution
ETS parameter "Manual operation enabled" is not enabled. There is no fault.	Set the "Manual operation enabled" parameter to "Enabled/enable".
"Manual operation enabled" is blocked by an object (value=0), there is no fault.	Enable manual operation via object.

In manual operation, the actuator does not react to the activation of the channel keys, the red manual operation LED lights up, manual mode is not possible.

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Cause	Solution
The green operational LED "RUN" is still lit: The ETS parameter "Manual operating mode" is set to "Bus and manual operation", a prioritised function (e.g. weather alarm or lock) is activated, there is no fault.	Wait until the higher-level function has been completed, or switch the ETS parameter "Manual operation type" to "Manual operation only". Observe the safety note in the section "How manual operation works".
The green operating LED "RUN" is not lit: The bus voltage has failed and the ETS parameter "Manual operation when bus voltage fails" has been disabled.	Check the bus voltage.

In manual operation, the actuator controls connected loads without a channel key being pressed.

Cause	Solution
ETS parameter "Manual operating mode" is set to "Bus and manual operation". The control command for the actuator came via an EIB telegram. There is no fault.	Switch the ETS parameter "Manual operating mode" to "Manual operation only". Observe the safety note in the section "How manual operation works".

When and how the LEDs light up

RUN (green)	Manual (red)	Channel status (yellow)	
On	-	-	**Normal operation**
-	On	-	**Manual operation** (ETS: manual operation only)
On	On	-	**Manual operation** (ETS: Bus and manual operation)
Flashing	-	Flashing simultaneously	**Normal operation - error!** The channel whose status LEDs flash: The channel operating mode set on the actuator does not match the channel operating mode set in the application. To rectify the error, see the section "What should I do if there is a problem?".
On	Flashing	Flashing alternately / On	**Status query from channel operation** The channel whose status LEDs flash: flash = blind operation light up permanently = switch operation

Statuses of the LEDs relative to the supply voltage

RUN (green)	Manual (red)	Channel status (yellow)	
On	lights up on manual operation	lights up when activated	**Mains and bus voltage or bus voltage only**
-	lights up on manual operation	lights up when activated	**mains voltage only**

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5. Technical data

External auxiliary voltage:	AC 110–240 V, 50–60 Hz, max. 2 VA
Supply from EIB:	DC 24 V, max. 17.5 mA
Nominal voltage:	AC 230 V

For each blind output

Nominal current:	10 A, inductive load $\cos\varphi = 0.6$
Nominal power of motor	AC 230 V, max. 1000 W

For each switch output

Nominal current:	10 A, ohmic load $\cos \varphi = 1$
	10 A, inductive load $\cos\varphi = 0.6$
Capacitive load:	10 A, max. 105 µF
Incandescent lamps:	AC 230 V, max. 2000 W
Halogen lamps:	AC 230 V, max. 1700 W
Fluorescent lamps:	AC 230 V, max. 1800 W, uncompensated
	AC 230 V, max. 1000 W parallel-compensated

Switching frequency:	max. 15x per minute at nominal load
Fuse:	per channel one 10 A automatic cutout connected upstream;
	only one live conductor may be used per connecting terminal

Ambient temperature

Operation:	-5 to +45 °C
Storage:	-25 to +55 °C
Transport:	-25 to +70 °C

Environment:	can be used at up to 2000 m above sea level (MSL)
Max. humidity:	93 %, no moisture condensation
Operating elements:	1 programming button
	1 "hand" manual operation key
	2 channel keys per blind channel
Display elements:	1 red LED: Programming control
	1 green LED: ready for operation, "RUN"
	1 red LED: Manual operation status
	2 yellow status LEDs per blind channel
EIB connection:	two 1 mm pins for bus connecting terminal
Mains connection:	4-gang screw terminals for max. 2.5 mm^2 2 x L / 2 x N

Load connection:	per blind channel one plug-in 4-gang screw terminal for max. 2.5 mm mm^2

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6. Settings in the EIB Tool Software (ETS)

Selection in the product database

Manufacturer: Merten
Product family: 4.5   Blind actuator
Product type: 4.5.01   DIN rail-mounted REG-K
Program name: Blind.switch 5701/1.0
Media type: Twisted Pair
Product name: Blind/switch actuator REG-K/ 8x/ 16x/10 with manual mode
Order number: 649908

The application is ETS 3 compatible.

> **i** To guarantee the full functionality of the applications under ETS2, the ETS2 program from version 1.2 onwards and Service Release A or higher should be used. If you have any queries, contact the Merten infoline.

Application overview

Application overview

Application	Vers.	Functions
Blind.switch 5701/1.0	1	**Settings for blinds/roller shutters:**
		Moving height position and slat opening angle manually
		Move height position and slat opening angle using absolute position commands
		Calibration/Reference movement
		Scene function – Integrating the blind actuator into scene control
		Weather alarm
		Switching settings:
		Outputs switch in the make contact or break contact relay modes
		Central function
		Time functions (on/off delay, staircase lighting function)
		Scene function for switch outputs
		Higher-level functions (logic operation function, priority control)
		Disable function for switch outputs
		Settings for blinds/roller shutters/ switching:
		Channel configuration
		Manual operation on the device with disable function for manual operation options
		Status response
		Operating display

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6.1 Blind.switch 5701/1.0

Introduction

● General information

This software application enables you to program blind/switch actuators using manual mode (referred to below as **actuator**),

– control blind and roller shutter drives with end position switch independently of one another

– switch loads via separate, floating make contacts

You can operate each channel either as a blind channel or as a switching channel. In the "Switching" channel operating mode, one blind channel is divided into two equal switching channels. You must change over the channels at the device itself and in the ETS.

The ETS allows you to individually set the type of connected load, as well as the functions available to it, for each of the actuator's output channels.

You can also operate the actuator using the push-buttons on the front. For more information see the section "Operation".

All the settings described refer to ETS version 3, but you can use all the settings and functions with ETS version 2 as well.

Maximum number of group addresses: 254
Associations: 255

⚠ **Caution!**
If the device is set wrongly, the loads could be damaged. Make sure that the connected load conforms to the channel operating mode set on the actuator and the application.

⚠ **Caution!**
The blind motors can become damaged. The switching channels are not locked against each other. **Only** connect the blind motors to blind channels.

ℹ **Note:** Due to the fact that the output relays of a blind channel are locked against each other, you cannot switch on both outputs of the channel in question at the same time.

⚠ **Caution!**
If you switch back to the preset values in either ETS 2 or ETS 3 (by clicking "Standard"), then all the values that you have changed so far will be deleted!

ℹ **Note:** Due to the fact that various functions depend on other functions, these dependant functions are only visible and selectable in the ETS when the preceding function has been enabled. If you de-select functions or

parameters, group addresses that have already been connected may be removed.

ℹ **Note:** The application files (vd2 and vd3) are configured in such a way that the application loading time is considerably reduced. When you convert an ETS 2 project to ETS 3, you lose this time saving. It therefore makes sense to load the vd3 file when using ETS 3.

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● Application functions

The software application for the actuator provides you with numerous functions, which can be broken down into three groups for the "Blinds/roller shutters" and "Switching" settings. The description of the functions specifies and explains the parameters that are relevant for these functions. You will find an overview of all the parameters of the ETS application for the actuator in the last section "Parameters and settings".

Settings for blinds/roller shutters

Basic functions
These functions allow you to commission the device and equip it with simple functionality.

– Defining blind type
– Move height positions and slat opening angle manually

Advanced functions
– Move height position and slat opening angle using absolute position commands
– Calibration/Reference movement
– Scene function

Higher-level functions
Higher-level functions are executed before the basic function and advanced functions.

– Weather alarm

Switching settings

Basic function
These functions allow you to commission the device and equip it with simple functionality.

– Switching outputs

Advanced functions
– Central function
– Time function (on/off delay, staircase lighting function)
– Scene function

Higher-level functions
Higher-level functions are executed before the basic function and advanced functions:

– Logic operation function or priority control
– Disable function

Setting the channel operating mode

● Setting the channel operating mode

⚠ **Caution!**
If the device is set wrongly, the loads could be damaged. Make sure that the connected load conforms to the channel operating mode set on the actuator and the application.

⚠ **Caution!**
The blind motors can become damaged. The switching channels are not locked against each other. Only connect the blind motors to blind channels.

Each output channel can be operated in the blind, roller shutter or 2 x switching function. In blind and roller shutter mode, the output contacts of the relay are locked against each other. They cannot therefore switch on both contacts of a channel at the same time. This applies to control via bus telegrams, and to manual operation on the device.

At the factory, all output channels in the hardware are preset to the blinds relay operating mode, and the output contacts are therefore locked.

If you wish to operate an output channel in the 2 x switching operating mode, you need to convert the channel operating mode. In the switching channel operating mode, an output channel is divided into two separate switching outputs. These two switching outputs can be switched on and off independently of each other.

You must set the required channel operating mode directly on the device (hardware) and in the ETS (software) parameter settings.

Tab	Parameter
Channel config	Channel X operating mode

ℹ️ For information on how to convert the channel operating mode on the device, please refer to the section "How to toggle between the blind and the switch operating mode".

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Blind.switch 5701/1.0

Settings for blinds/roller shutters

● Basic function: Defining blind type

If you want to define parameters for a blind, you need to specify the type of your blind before you start programming.

The application differentiates between four types of blind. You can determine the blind type from the position of its slats during movement. Two of these types have a mechanically-determined working position. You can recognise these by the tilted position of the slats when moving downwards. The working position restricts the possible opening angle of the slats, as long as the blind has not reached its lower end position.
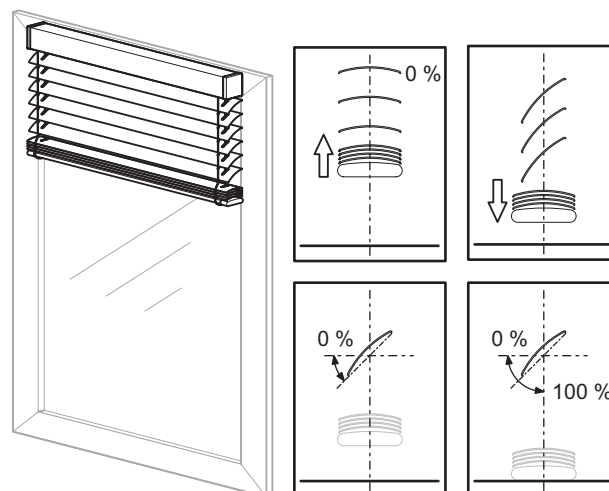
Blind type 1 (without working position)
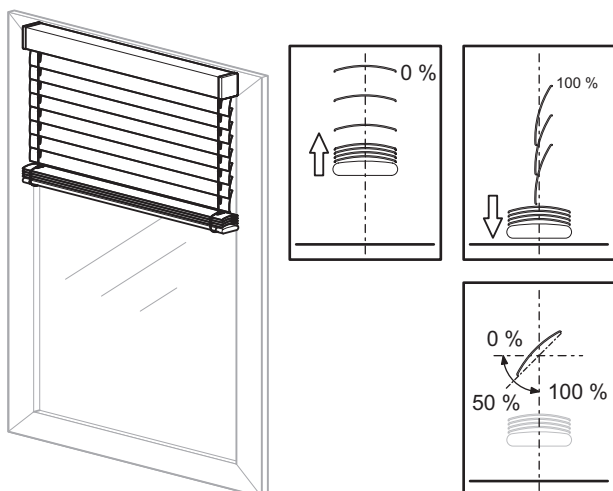
– Upward movement: Slats are in a level, opened position (slat position 0 %)
– Downward movement: Slats are closed downwards (slat position 100 %)
– Possible regulating range for the opening angle of the slats: 0–100 %

For each channel, you can use the "Slat position after movement" parameter to specify the behaviour of the slats following a movement. If you set the parameter to "Working position", you can configure an opening angle that you want the slats to assume after each downward and upward movement (not possible when the height position is 0% following a downward movement). The preset value of 50 % corresponds to a slat opening of approximately 45°. Due to the fact that this position is time-controlled, please note the section "Running times of the drives".

ℹ Note: Unless stated otherwise, the examples in the following set of instructions refer to this type of blind.

Blind type 2 (with working position)

– Upward movement: Slats are in a level, opened position (slat position 0 %)
– Downward movement: Slats tilted downwards in working position (slat position in working position)
– Possible regulating range for the opening angle of the slats:
   0 % to working position, if blind is not in lower end position
   0–100 %, if blind is in lower end position

You can use the parameter "What is the current slat position on downward movement in %?" to configure the opening angle for the working position.

Blind type 3 (without working position)

– Upward movement: Slats are closed upwards (slat position 0 %)
– Downward movement: Slats are closed downwards (slat position 100 %)
– Possible regulating range for the opening angle of the slats: 0–100 %

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For each channel, you can use the "Slat position after movement" parameter to specify the behaviour of the slats following a movement. If you set the parameter to "Working position", you can configure the opening angle that you want the slats to assume after each downward and upward movement. The default value of 50% corresponds to a slat opening of approximately 45°. Due to the fact that this position is time-controlled, please note the section "Running times of the drives".
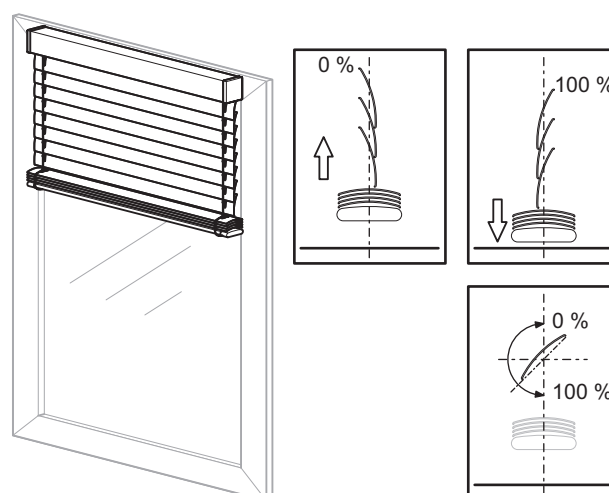
Blind type 4 (with working position)

- Upward movement: Slats are closed upwards (slat position 0 %)
- Downward movement: Slats tilted in working position downwards (slat position in working position)
- When the lower end position is reached, the slats are closed (slat position 100 %)
- Possible adjustment range for the opening angle of the slats:
  0 % to working position, if blind is not in lower end position
  0–100 %, if blind is in lower end position

You can use the parameter "What is the current slat position on downward movement in %?" to configure the opening angle for the working position.
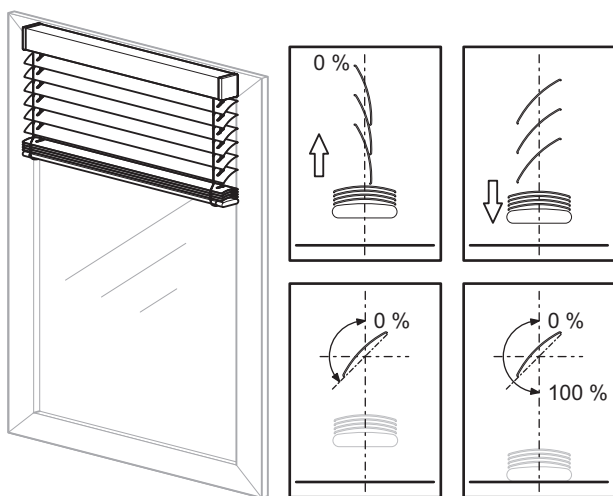
What blind type to select in the ETS?

For the corresponding blind type setting, you can configure the "How does the existing blind move?" parameter in the "X: Blind" tab as follows:

Tab	Parameter
X: Blind control	How does the existing blind move?

Blind type	Setting
1	downwards closed / upwards level
2	downwards tilted / upwards level
3	downwards closed / upwards closed
4	downwards tilted / upwards closed

Also configure the following parameters.

For type 1 and 3:

Tab	Parameter
X: Blind control	Slat position after movement
	Slat working position in % *only when the "Position of slat after movement" parameter = working position)*

For type 2 and 4:

Tab	Parameter
X: Blind control	Slat position after movement
	What is the current slat position on downward movement in %?

Slat adjustment function

Every time the blind moves, the position of the slats also changes depending on the direction of movement. After movement, the slats remain in this new position. This application, however, allows you to automatically adjust or reset the position of the slats after a movement.

Use the "Slat position after movement" parameter to specify the behaviour of the slats after a movement for each blind channel.

Tab	Parameter
X: Blind control	Slat position after movement

The following parameters are available:

- no response (slats remain in the current position)
- working position (slats are moved into the working position)
- last slat position (the slats resume the opening position that they had before the movement started)

The slat opening angle that you specify here is applied after every positioning movement of the blind and also after every manual movement command ended by a stop telegram.

After a bus voltage failure or a download, the last slat position is not clearly defined. As a result, the corresponding working position is used as the last slat position.

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Running times of the drives

i | **Note:** Selecting the smallest possible value as the time basis in each case allows you to achieve the most precise results for the internal device time setting.

The importance of the drive running times setting depends on the desired control task for the blind or roller shutter.

The application provides you with the following parameters for setting running times:

– Height running time

– Slat step interval (for blind function)

– Slat running time (for blind function)

– Pause on reverse for change of direction

You also have various options for compensating small time deviations caused by physical conditions or technical drive properties:

– Running time upwards supplement

– Dead time until upwards movement

– Slat open up start-up supplement (for blind function)

– Slat open down start-up supplement (for blind function)

Selecting the smallest possible value as the time basis in each case allows you to achieve the most precise results for the internal device time setting.

Tips for setting values

If the running times to be set are too short to measure with the clock, then set an approximate value for the time being. Use position commands to test the behaviour of the drive or the slats. If the desired positions are not fully reached, then correct the running times upwards. If the positions are overshot, then correct the running times downwards. Use new position commands to check your corrections. Carry out several tests because you will only see or detect the small discrepancies after a few movements.

When making corrections, it makes sense to change the value for the running time factor and to leave the value for the running time basis the same.

In addition to the discrepancies mentioned, environmental factors (temperature, rain etc.) also lead to variations in the movement behaviour of the drives. Due to the fact that the drives cannot report their current position and the current position can't always be calculated, the blind actuator cannot detect these discrepancies. In order to continue to be able to position the drive precisely, it makes sense to return the drives to a fixed starting position by means of regular reference movements. This allows you to achieve satisfactory positioning precision for a long time.

For more information, refer to the section "Calibration/ Reference movement".

Running times for basic function

You only have to measure and set the following running times in order to configure a simple basic function:

Height running time

Tab	Parameter
X: Drive	Time basis for height running time
	Factor for height running time (10-64000) 1 second = 1000 ms

The running time is always comprised of the time basis multiplied by the factor, e .g. (default value):

100 ms * 1200 = 120 s

The drive needs this period of time to move out of one end position (blind/roller shutter is fully open or closed) into the opposite end position. When the set running time expires, the relay of the corresponding channel is automatically switched off (even if the drive with the values set here has not fully reached its end position). You may want to check whether the drive manufacturer has made any specifications regarding running times.

Slat step interval (only for blind)

Step commands allow you to turn the blind slats. You can change the opening angle of the slats gradually, to prevent glare when the sun changes position, for example. Time basis multiplied by factor allows you to configure the duration of this kind of gradual rotation:

Tab	Parameter
X: Drive	Time basis for slat step interval
	Factor for slat step interval (5-255)

Example (default values):

10 ms * 10 = 100 ms

Depending on the total running time in one direction of movement, the step interval allows you to provide the user with a certain number of steps for opening or closing the slats.

If the running time is 2.5 s for example, then the drive needs approx. 25 steps to go through the entire slat

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opening range in one direction (2.5 s / 100 ms = 25 steps).

Using the same example, if you only want to give the user five slat steps:

2.5 s / 5 steps = 0.5 s step interval

Leave the time basis of the step interval at 10 ms and set the factor of the step interval to 50:

10 ms * 50 = 0.5 s step interval

Slat running time (only for blind)

The slat running time is the period of time it takes the slat to complete a full movement from 0% to 100% (or vice versa). The regulating range through which the opening angle passes depends on the type of blind in use:

	Type 1	Type 2	Type 3	Type 4
Slat position 0 %	level open	level open	up closed	up closed
Slat position 100 %	down closed	down closed	down closed	down closed

Tab	Parameter
X: Drive	Time basis for slat running time
	Factor for slat running time (5-255)

Example (default values):

10 ms * 100 = 1000 ms = 1 s

How to measure small slat running times:

– Move the slats into the closed position (slat position 100 %). This is the lower end position for blind types with working position.

– Count step commands: Now send step commands until the blind moves up, counting the number of steps required.
   Example: The blind requires five steps to go through the slat regulating range. The blind moves upwards on the sixth step.

– The step interval values set (default step interval: 100 ms) is used to calculate the slat running time: 100 ms * 5 steps = 0.5 s

How to measure large slat running times

– Move the slats into the closed position (slat position 100 %). This is the lower end position for blind types with working position.

– Now send a movement command upwards. Before the drive opens the blind, the slats turn into the open position (0 %).
   Measure the time it takes them to turn.

– Stop the drive after turning.

– For blind type 2 and 4 (with working position), ensure that the closed slat position is not engaged until in the lower end position. Then also add on the time it takes to turn from the working position to the closed position.

Note: For blind types 1 and 2, 3 and 4, your setting for the slat running time influences the opening angle after a movement. This is because the selected opening angle (percentage of automatic slat position) is converted into a percentage turning time for the slats. The same applies for the slat adjustment function after a movement.

Pause on reverse for change of direction

When the blind actuator of a drive that is currently moving receives a command to move in the opposite direction, it first stops the drive (both relays off). Before it switches on the relay for the new direction, it waits for the pause on reverse interval to pass. Set the length of the pause on reverse using the factor:

Tab	Parameter
X: Drive	Pause on reverse for change of direction (1-255) factor * 100 ms, manufacturer data!

100 ms is the underlying time basis. Example (default values):

5 * 100 ms (fixed value) = 500 ms

The blind actuator also observes the pause on reverse if, when executing two step commands, it has to turn the slats in different directions.

Caution!
Pauses on reverse that are too short could cause damage to the drive.
When setting values, observe the manufacturer's specifications for the drive under all circumstances.

Running times for advanced functions and positioning commands

The advanced functions and direct positioning commands allow you to move the connected blinds or roller shutters into the desired position directly and, in the case of blinds, configure the opening angle of the slats also.

Tab	Parameter
X: Drive	Advanced drive parameter

Due to the fact that the actuated drive cannot provide any status feedback on its position, these positioning movements are time controlled. Here it is important to set the running time parameter as precisely as possible because the more precisely you set this parameter, the more precisely the desired position can be determined and engaged. This is particularly the case for buildings that demand sophisticated blind control.

Positioning will be more precise the slower and longer a drive moves.

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The settings for the height running time have already been explained. You can also set the following parameters contingent upon physical circumstances and the drive.

Running time upwards supplement

The running time supplement only applies for upward drive movements. This is due to the physical fact of gravity: it takes drives longer to move up than down. Due to the fact that this time variation can be very short, you need to carry out a few movements in order to become aware of this behaviour. It's a good idea to move the drive from 10% to 90% and back to 10% again a few times. If, after these movements, you observe that the drive doesn't quite reach the top end position any more, you can compensate as follows:

Tab	Parameter
X: Drive	Shared time basis for running time supplements/dead time
	Factor for running time upwards supplement

Example (default values):

10 ms * 20 = 200 ms

Dead time until upwards movement

If, when in the closed lower end position, the used blind experiences dead time between the time when the main band is activated and the first upward movement, then you can compensate for this delay as follows:

Tab	Parameter
X: Drive	Advanced drive parameter
	Shared time basis for running time supplements/dead time
	Factor for dead time to upward movement (1-255)

Example:

10 ms * 10 = 100 ms

Slat running time with time-controlled positioning

In addition to the specifications already described for the slat running times, the following values apply in the case of time-control positioning:

– 0 %: Slats open or in the top closed position
– 100 %: Slats closed or in the bottom closed position

The resulting opening angle depends on the type of blind in use.

The device converts the set slat running time to a value between 0% and 100% accordingly and calculates the resulting travel times for the desired position commands.

Start-up supplement

When opening the slats, some blind types need an extra start-up supplement until the slats start to respond depending on the tightening and loosening of the slat cords. This depends on the current position of the slats. You can use the following parameter to set a start-up supplement for both the top and bottom slat position.

These parameters allow you to set the start-up delay for an upwards movement until the slat turns when the slats are in the open position (0%) (the previous blind movement was an upwards movement):

Tab	Parameter
X: Drive	Advanced drive parameter
	Shared time basis for running time supplements/dead time
	Factor for slat open up start-up supplement

The start-up delay until the slat turns that you specify here is always considered when the blind is opened if the slats are in the closed position (100 %) (the previous blind movement was a downwards movement):

Tab	Parameter
X: Drive	Advanced drive parameter
	Shared time basis for running time supplements/dead time
	Factor for slat open down start-up supplement

i **Note:** For every slat movement, it is assumed that the drive is switched on for a minimum running time. This minimum running time of the slat results from the switching capacity of the actuator's relay and is 20 ms. Slat movements that are mathematically less than 20 ms are not carried out.

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● **Basic functions:**
  Moving height position and slat opening angle manually

The basic function allows you to move the connected drive into the desired position. You have two communication objects to do this: "Movement object" and "Stop/step object" (for roller shutters: "Stop object").

– Move drive
  The "Movement object" is responsible for opening and closing the blind or the roller shutter. When the value "1" is received, the drive moves down; "0" moves it up.

– Running time
  The active output remains active until the set running time expires. If a new movement command in the same direction is received, then the drive continues moving.

– Pause on reverse for change of direction
  If, during a drive movement, a control command in the opposite direction is received, then the drive stops and waits for the defined pause on reverse time before moving in the new direction of movement.

– Stop drive
  A drive that is currently moving is stopped when it receives a bus telegram for the "Stop/step object" (for roller shutters: "Stop object"). The object value received is irrelevant.

– Slat adjustment
  When the drive has been stopped, then the slats are turned into the desired position depending on the settings for the "Slat position after movement" parameter.

– Turn blind slats
  The "Stop/step object" allows you to adjust the opening angle of the slats gradually for blinds. The drive must be idle. If the communication object receives the object value "1", then the slats are closed by one increment; if "0" is received, they are opened (type 1).

Note the following special cases:

1. If a step command is executed and the slats subsequently reach the limit of their possible movement range or if they are already in a maximum position, then the drive moves briefly in the desired direction. The duration of this movement also corresponds to the set step interval.

2. If the direction changes from one step command to the next, then the device waits the pause on reverse time between steps in this case also.

Parameter settings in the ETS

Set the following parameters for this function in the ETS:

Tab	Parameter	Blind control	Roller shutter
Channel config	Channel X operating mode	X	X
X: Blind control	How does the existing blind move?	X	
	Slat position after movement	X	
	Slat working position in %	X	
	What is the current slat position on downward movement in %	X	
X: Drive	Time basis for height running time	X	X
	Factor for height running time (10-64000) 1 second = 1000 ms	X	X
	Time basis for slat step interval	X	
	Factor for slat step interval (5-255)	X	
	Time basis for slat running time	X	
	Factor for slat running time (5-255)	X	
	Pause on reverse for change of direction (1-255) factor x 100 ms, manufacturer data!	X	X

Communication objects

Communication objects for blind:

Function	Object name	Type	Prio	Flags	Behaviour
Blind control	Movement object	1 bit	Low	WC	Receive
Blind control	Stop/step object	1 bit	Low	WC	Receive

Communication objects for roller shutters:

Function	Object name	Type	Prio	Flags	Behaviour
Roller shutter	Movement object	1 bit	Low	WC	Receive
Roller shutter	stop object.	1 bit	Low	WC	Receive

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Settings for this function:

– "Movement object" = "0": Blind/Roller shutter open

– "Movement object" = "1": Blind/Roller shutter close

– Drive is moving and "Stop/step object" or "Stop object" = "0" or "1": Stop drive

Extra for blinds:

– Drive is idle and "Stop/step object" = "0": Slats one step upwards

– Drive is idle and "Stop/step object" = "1": Slats one step downwards.

Special cases:

– Slats in top end position (slat position 0 %) and "Stop/step object" = "0": Height position moves one step upwards

– Slats in bottom end position (slat position 100 %) and "Stop/step object" = "1": Height position moves one step downwards.

● **Advanced functions:**
Move height position and slat opening angle using absolute position commands

This function allows you to set a height position, and in the case of blinds the opening angle of the slats, directly using a percentage value. The desired percentage value always relates to the possible movement range of 0–100 % that you set by specifying the running times. You therefore set an absolute height position for the entire movement range.

After receiving a new position value, the blind actuator calculates a proportional movement time from the current position and the new desired position and then moves the drive in the corresponding direction of movement for this period of time. The new position is buffered. The precision of the position settings depends on the precision of your settings for the drive running times.

After a few position movements, there will be minimal deviations between the actual position and the calculated position for physical and mechanical reasons. You can reset these deviations with reference movements.

If a reference movement is necessary before a new position movement, then the blind actuator allows this to be carried out before moving into the new setpoint position (see the section "Calibration/Reference movement").

The communication objects "Height position" and "Slat position" allow you to set the absolute position values.

– Set height position
The "Height position" object is responsible for the height position of the blind or roller shutter. The limit position 0 % means that the blind/roller shutter is fully up. If 100 % is set, then the blind/roller shutter is fully down.

– Turn slats into opening position
The "Slat position" object allows you to set the slat opening angle directly. In slat position 0 % the slats are horizontally open or closed up. At 100 % they are closed down. The actual opening angle of the slats depends on the type of blind in use.

When it receives a new position value, the blind actuator calculates the running time necessary to reach the new position from the current position. Then the drive is moved to the new position for the calculated period of time. The calculation also determines the direction of travel. If, during a positioning movement, the device receives a new position value and the calculation results in the same direction of travel, then the drive continues moving until it reaches the new setpoint position.

– Pause on reverse for change of direction
If, during a drive movement or slat adjustment, a new position command is received and the calculation results in the opposite direction of travel, then the drive stops and waits for the defined pause

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on reverse time before starting the new position movement.

– Slat adjustment
When the height position of the blind is changed and the blind reaches the desired position, then the slat adjustment function is carried out and the slats are moved into the desired position.

Parameter settings in the ETS

Set the following parameters for this function in the ETS:

Tab	Parameter	Blind control	Roller shutter
Channel config	Channel X operating mode	X	X
X: Blind control	How does the existing blind move?	X	
	Slat position after movement	X	
	Slat working position in %	X	
	What is the current slat position on downward movement in %	X	
X: Drive	Advanced drive parameter	X	X
	Time basis for height running time	X	X
	Factor for height running time (10-64000) 1 second = 1000 ms	X	X
	Shared time basis for running time supplements/ dead time	X	X
	Factor for running time upwards supplement	X	X
	Factor for dead time until upwards movement	X	X
	Factor for slat open up start-up supplement	X	
	Factor for slat open down start-up supplement	X	
	Time basis for slat step interval	X	
	Factor for slat step interval (5-255)	X	
	Time basis for slat running time	X	
	Factor for slat running time (5-255)	X	
	Pause on reverse for change of direction (1-255) Factor x 100 ms, manufacturer data!	X	X

Application examples

The following examples show the running times that result in order to reach certain positions.

Starting position and set values:

– Blind type 1, working position 50 %, slat adjustment = working position
– Running times:
Slat open up/down start-up supplement disabled
Height running time 120 s
Running time supplement upwards 0.2 s
Slat running time 2.5 s
– Current height position 0 % (blind up)
– Current slat position 0 % (slats open)
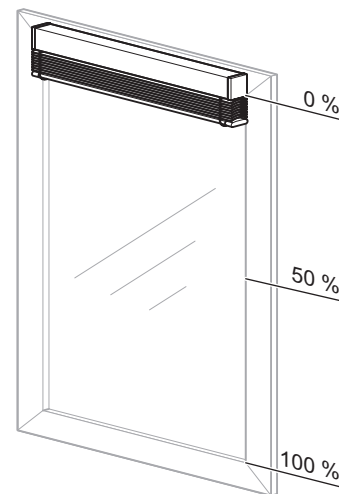
New height position: 50 %

Step 1:
Close slats for downwards movement = **2.5 s**
(Slat running time from 0 % to 100 %)

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Step 2:
Height running time = 60 s, downwards direction
(Difference between current position 0 % and new
position 50 % = 50 % of height running time)

New height position: 30 %

Step 1:
Open slats for the upwards movement = 1.25 s
(Slat running time from 50 % to 0 %)
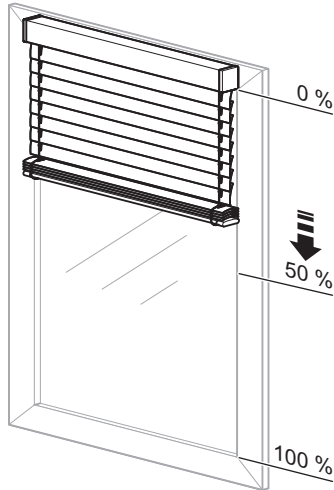
Step 3:
Slat adjustment into the working position after
downwards movement = **1.25 s**
(Slat running time from 100 % to 50 %)
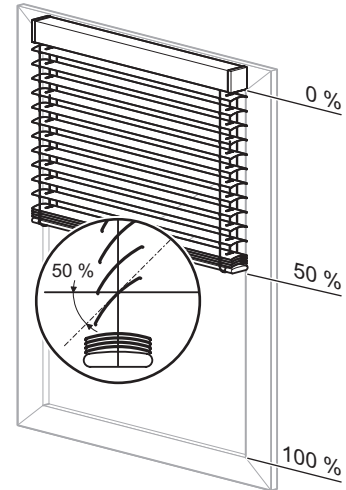
Step 2:
Height running time = 24 s, upwards direction
(Difference between current position 50 % and new
position 30 % = 20 % of height running time)

plus

Running time supplement upwards = 0.04 s
(Difference between current position 50 % and new
position 30% = 20% of running time supplement)

Total movement time therefore:
2.5 s + 60 s + 1.25 s = **63.75 s**

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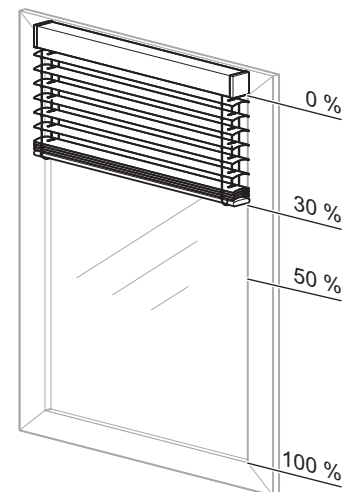
Step 3:
Slat adjustment into the working position after upwards movement = **1.25 s**
(Slat running time from 0 % to 50 %)
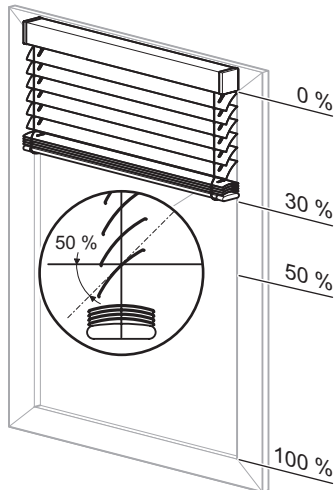
Total movement time therefore:
1.25 s + 24 s + 0.04 s + 1.25 s = **26.54 s**

New slat position: 20 %
Step 1:
Slat running time = 750 ms
(Difference between current position 50 % and new position 20 % = 30 % of slat running time)
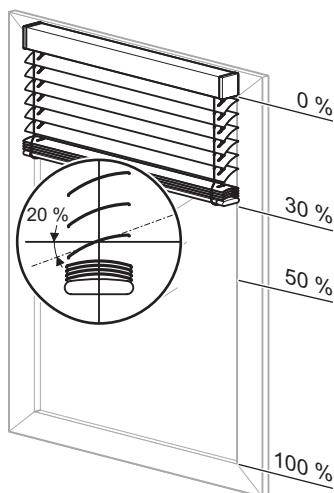
Communication objects

Communication objects for blind:

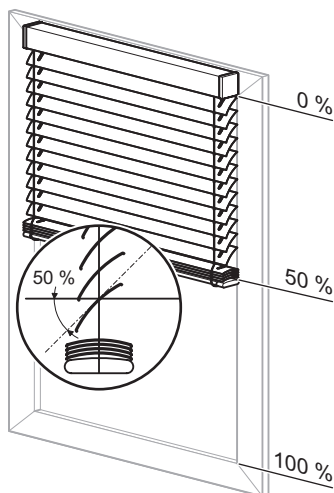| Function	Object name	Type	Prio	Flags	Behaviour
Channel X	Position height	1 byte	Low	WC	Receive
Channel X	Position slats	1 byte	Low	WC	Receive

Communication objects for roller shutters:

Function	Object name	Type	Prio	Flags	Behaviour
Channel X	Position height	1 byte	Low	WC	Receive

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● **Advanced functions:
Calibration/Reference movement**

The blind actuator calculates the current position of a drive from the running times that you set for the drive and also from the control commands that it executes. This calculation has to be performed because the drive cannot provide any status feedback on its position. Even if you set the running times very precisely, small variations occur between the internally calculated height position and the actual height position after a few movements. These are due to mechanical tolerances and weather influences (temperature fluctuations, frost, rain etc.).

The blind actuator can reset these deviations with reference movements. To do this, it moves the drives specifically into the top or lower end position. After the reference movement, the internal position calculation re-starts from a fixed value. This means that any deviations that have occurred in the meantime are deleted.

> **i** **Note:** The calibration function is primarily important if you are working with a lot of position commands and require a high level of positioning precision. If you are controlling the blind with the basic function only and position commands are irrelevant, then you don't need this function.

Operation

A reference movement can be triggered after a certain number of movements. When a reference movement is triggered, the drive moves into the desired reference position (end position). If you have set both end positions as reference positions, then the drive moves into the nearest end position, depending on its current position. In order to ensure that the drive reaches the end position fully, the actuator adds a running time supplement of 5% of the total running time to the calculated movement time for every reference movement.

Application example

– Blind type 1, automatic slat position after downwards movement (working position) 50 %

– Open slat start-up supplement: disabled

– Height running time 120 s
  Running time supplement upwards 0.2 s
  Slat running time 2.5 s

– Current height position 40 %
  Current slat position 50 % (work position)
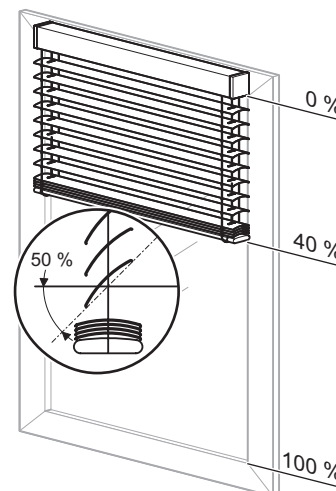
Calculated movement time for reference movement to top end position:

– Open slats fully for the upwards movement = 1.25 s

– plus height running time (40 % of total movement range) 48 s, upwards direction

– plus running time supplement upwards (40 % of 0.2 s) 0.08 s

– Calculated movement time: 49.33 s

– plus supplement for reference movement (5 % of total running time) 6 s

– **Total movement time of the reference movement 55.33 s**

Calibration is also automatically carried out when the drive moves into an end position following a "normal" positioning command. The running time supplement of 5% also applies in the case of automatic calibration.

> **i** **Note:** If during a calibration function a weather alarm is activated, then the calibrating function is cancelled and the higher-level function is executed.

You can activate the calibration function for every channel individually: Enable the "Calibration" parameter.

Tab	Parameter
X: Blind control X: Roller shutter	Calibration

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A new tab "X:Calibration" appears for those channels for which you activated the calibration function. Here you can make the desired settings for each channel.

Using the "Reference position" parameter, first select the end position that you want to use as the reference position.

Tab	Parameter
X: Calibration	Reference position

Then you can specify when a reference movement should be triggered:

Trigger reference movement after a certain number of movements

The actuator adds the number of all movements regardless of which control command triggered the movements. Once the defined number of movements has been reached, the drive carries out a reference movement before the next positioning command. Then it moves into the required position. After the reference movement, the movement counter is reset.

Automatic calibration

Every time the drive moves into the defined end position following a positioning command, the calibration function is carried out. This means that a running time supplement of 5% of the total running time is added to the calculated movement time needed by the drive, so that the drive can reach the desired end position fully. When the end position is reached, the movement counter is reset.

Reference movement after initialisation

The aim of the reference movement after a download or recovered bus voltage is to have an exact starting position for subsequent position movements.

i **Note:** The reference movement after initialisation is always carried out, even if the "General reference movement" function is disabled.

The reference movement is triggered by an absolute positioning command. These are, for example, the receipt of a value on the "Height position"object, the retrieval of scenes, or if an absolute position is assumed in the event of a weather alarm. If after initialisation the "Movement object" object receives a value that moves the blind/roller shutter into the top end position, then the actuator automatically assesses this movement as a reference movement.

In general, the reference movement after initialisation is towards the top end position. Only when the "Reference position" is set to "down" does a reference movement take place towards the lower end position. If you enabled transmission of the status messages "Height status" and/or "Slat status" (active status feedback object), the current status is automatically transmitted via this object.

Parameter settings in the ETS

Set the following parameters for this function in the ETS:

Tab	Parameter
X: Blind control X: Roller shutter	Calibration
X: Calibration	number of movements until a reference movement is executed (1-20)
	Reference position
	Automatic calibration

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● **Advanced functions:**
  Scene function

If you want to change various room functions at the same time using a bus telegram, then the scene function is ideal. Retrieving a scene allows you, for example, to dim the room lighting to a desired value, move the blinds into a desired position and turn the slats, switch heating control to daytime operation and switch on the power to the socket-outlets in a room. Due to the fact that these functions can have different telegram formats and moreover, the telegram values have different meanings (e. g., for lighting value "0" means OFF and for blinds OPEN), without the scene function you would have to send a separate telegram to each actuator to achieve the same result.

The scene function allows you to integrate the blind actuator into scene control. There are up to five different scenes for each output channel. Each of these scenes can be assigned one of 64 possible scene addresses (which correspond to telegram values 0 to 63). You can save height positions, and for blinds also slat opening angles, as scene values. When the actuator receives a telegram that retrieves a scene address, the drive is moved into the saved position and the slats are turned. The scene values that you save on commissioning can be replaced later by users if they wish to make an alteration.

Telegram format

Telegrams for the scene function have the data format L X D D D D D D.

L: Learn bit
X: is not used
DDDDDD: scene address retrieved

If the learn bit in a telegram has the value "0", the position values saved for this scene address are retrieved and engaged.

If the learn bit has the value "1", then the current drive and slat positions are saved as new scene values for the scene address.

Examples:

– Telegram value 2
  Binary 0000 0010
  Hexadecimal 02
  Retrieve scene address 2

– Telegram value 45
  Binary 0010 1101
  Hexadecimal 2D
  Retrieve scene address 45

– Telegram value 173
  Binary 1010 1101
  Hexadecimal AD
  Learn scene address 45

– Telegram value 190
  Binary 1011 1110
  Hexadecimal BE
  Learn scene address 62

Enable scene function

In order to be able to use the scene function for the individual channels, you first have to enable the function for the device once:

Tab	Parameter
General	Scenes general

After you enable the function, the communication object "Scene object" appears. This object receives the scene telegrams.

Now you can enable the function for each channel:

Tab	Parameter
X: Blind control X: Roller shutter	Scenes

After you enable the "Scenes" parameter, the "X: Scenes" tab appears. Here you can assign the scene addresses and scene values. You can individually enable the five scenes.

Parameter settings in the ETS

Set the following parameters for this function in the ETS:

Tab	Parameter
General	Scenes general
X: Blind control X: Roller shutter	Scenes
X: Scenes	Replace scene values in the actuator on download
	Scene 1
	Scene 1: Scene address (0-63)
	Scene 1: Height pos. in %
	Scene 1: Slat pos. in % *(only for blind)*
	Scene 2
	Scene 2: Scene address (0-63)
	Scene 2: Height pos. in %
	Scene 2: Slat pos. in % *(only for blind)*
	Scene 3
	Scene 3: Scene address (0-63)
	Scene 3: Height pos. in %
	Scene 3: Slat pos. in % *(only for blind)*
	Scene 4
	Scene 4: Scene address (0-63)
	Scene 4: Height pos. in %
	Scene 4: Slat pos. in % *(only for blind)*
	Scene 5
	Scene 5: Scene address (0-63)
	Scene 5: Height pos. in %
	Scene 5: Slat pos. in % *(only for blind)*

Retrieving and storing scenes

The "Scene object" object allows you to retrieve scene values. When a scene telegram is received, the actuator evaluates the scene address. If a reference movement is necessary before moving, the reference

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movement is carried out first and then the drive moves into the requested position.

If the "Scene object" receives a scene telegram with learn bit "1", then the current position, and in the case of blind drives, the current slat position, is saved as the new scene value in all those scenes allocated the scene number received.

i **Note:** If a scene address is assigned to several scenes within a channel, only the scene first found with this scene address is retrieved or stored. You can avoid this by issuing different scene addresses within a channel.

Example:
– **Output channel 1**
Scene 1 activated to scene address 13
 Scene 1 height position = 50 %,
  Scene 1 slat position = 75 %,
Scene 2 activated to scene address 7
 Scene 2 height position = 0 %,
  Scene 2 slat position = 0 %,
Scene 3, 4, 5 deactivated
– **Output channel 5**
Scene 1 activated to scene address 7
 Scene 1 height position = 100 %,
  Scene 1 slat position = 0 %,
Scene 3 activated to scene address 21
 Scene 3 height position = 50 %,
  Scene 3 slat position = 50 %,
Scene 2, 4, 5 deactivated

Scene object receives "Retrieve scene address 13" telegram:
– Output channel 1:
moves into position 50 % height, 75 % slat
– Output channel 5:
does not react

Scene object receives "retrieve scene address 1" telegram:
– Actuator does not respond because scene address 1 is not assigned.

Scene object receives "Retrieve scene address 7" telegram
– Output channel 1:
moves into position 0 % height, 0 % slat
– Output channel 5:
moves into position 100 % height, 0 % slat

Scene object receives "Retrieve scene address 21" telegram
– Output channel 1:
does not react
– Output channel 5:
moves into position 50 % height, 50 % slat

Blinds are moved manually into the following positions:
– Output channel 1:
Height position = 30 %, slat position = 70 %

– Output channel 5:
Height position = 20 %, slat position = 10 %

The scene object now receives a learning telegram for scene address 13
– Output channel 1:
Scene 1 height position = 30 %, scene 1 slat position = 70 %
– Output channel 5:
no reaction

Scene object receives "Retrieve scene address 13" telegram
– Output channel 1:
does not react, because the position (30 % height, 70 % slat) has already been reached.
– Output channel 5 does not respond

Note the difference with the first retrieval of scene address 13!

If you enabled the parameter "Replace scene values in the actuator on download", then the scene values saved in the device are replaced with your default values on download. If you don't want to replace the values in the device, then you must disable this parameter. In this case, only those scene values for which the parameters were set during the first download are written into the device memory. If an application is then downloaded, the scene values will remain in the device memory.

Communication objects

Use the following object to retrieve the scene function:

Function	Object name	Type	Prio	Flags	Behaviour
Scenes	Scene object	1 byte	Low	WC	Receive

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● **Higher-level function:**
   Weather alarm

You can use the priority "Weather alarm" function with the blind actuator.

Higher-level functions are executed before the basic function and advanced functions.

The weather alarm functions allow you to protect the blinds or roller shutters from weather damage such as wind and rain. If an alarm is triggered, the drives move into a safe position and stay there until the event has passed.

Enabling the weather alarm function

Enable the weather alarm function for the blind actuator as a higher-level function:

Tab	Parameter
General	Weather alarm function

Once you have enabled the function, the new "General weather alarm" tab appears. Here you can configure the alarm functions in detail for the wind and rain alarm.

You can enable and disable the individual alarm functions separately. For each function you enable, a communication object appears through which the sensor signals are received.

Cyclical monitoring of sensor signals

The signals of the active weather sensors can be monitored cyclically. The device then expects a telegram from the sensor in question within the set cycle time. If it doesn't receive this telegram within the monitoring period, the associated weather alarm is still triggered for security reasons (if for example the sensor or the cable connection between the sensor and the blind actuator is defective and no signalling takes place in the event of a real alarm).

First define the time basis for the monitoring time:

Tab	Parameter
General weather alarm	Time basis for monitoring time of weather alarms

Now you can set the relevant monitoring time for each active sensor by specifying a factor:

Tab	Parameter
General weather alarm	Wind alarm
	(if wind alarm enabled) Factor for wind alarm monitoring time
	Rain alarm
	(if rain alarm enabled) Factor for rain alarm monitoring time

The monitoring time is calculated by multiplying the time basis by the factor. If you have disabled the value of a factor, then cyclical measured value monitoring will not take place for this sensor value. In this case 1-bit telegrams trigger the alarm.

Weather alarm priorities

You can prioritise the weather alarms as you wish.

Tab	Parameter
General weather alarm	Priority sequence of weather alarms

This prioritisation applies for all blind and roller-shutter channels for which you have enabled the weather protection function. Responses to a weather alarm only become active if there is no other higher-level weather alarm active at the same time. If a weather alarm is reset and there is another lower-priority weather alarm active at the same time, then the responses of the lower-priority alarm are carried out.

Response of the individual drives in the event of a weather alarm

After you have prioritised the weather alarm functions, you can specify the behaviour of the drive in the event of a weather alarm for each output channel. First you must enable the weather alarm function for each output channel:

Tab	Parameter
X: Blind control X: Roller shutter	Weather alarm

When you have enabled the weather alarm function for an output channel, a new tab appears: "X: Weather alarm"

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First select how you want the drive to respond to an active weather alarm:

Tab	Parameter
X: Weather alarm	Response to the wind alarm
	Response to the rain alarm

If a wind alarm becomes active, the drive has one of the following responses depending on its settings:

– No response: The drive remains in its current position.
– Up: The drive moves into the top end position.
– Down: The drives moves into the lower end position.
– Move to position: The drives moves into the specified safety position.

When the drive has responded accordingly, it remains in this position and cannot be operated as long as the weather alarm is active. Only when a higher-level function becomes active will the response defined for this function be carried out.

If you want the drive to move into a special safety position, you can define this position using the following parameters:

Tab	Parameter
X: Weather alarm	Height position on weather alarm in %
	Slat position on weather alarm in %

This safety position applies for both weather alarms if you selected the "Move to position" parameter value as the response to a weather alarm.

Drive behaviour after weather alarm ends

When the sensor values of the weather sensors return to within the normal measurement range, the weather alarms are deactivated again. You can specify how you want the drive to respond when the weather alarm ceases to be active.

Tab	Parameter
X: Weather alarm	Behaviour on end of all weather alarm functions

The drive then carries out the following functions:

– No response: The drive remains in its current position.
– Up: The drive moves into the top end position.
– Down: The drives moves into the lower end position.
– Move into position prior to weather alarm: The drive returns to the same position it was in before the weather alarm.

Communication objects

The following communication objects are available:

Function	Object name	Type	Prio	Flags	Behaviour
Weather alarm	Wind alarm	1 bit	Low	WC	Receive
Weather alarm	Rain alarm	1 bit	Low	WC	Receive

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Switching settings

To switch electronic loads on and off, you can set the output channels of the actuator to the "Switching" operating mode. You can select the operating mode for each channel in the "Channel config" tab:

Tab	Parameter
Channel config	Channel X operating mode

If you select the "Switching" operating mode for an output channel, its output contacts are divided into two outputs, XA and XB, which can be switched separately. To enable you to trigger these two outputs, the "Switch object - channel X.A (1bit)" and "Switch object - channel X.B (1bit) communication objects appear.

In the "X.A: Switching" and "X.B: Switching" tabs, you can make the individual settings for each channel. Please also note the "Setting the channel operating mode" section later in this manual when converting the channel operating mode.
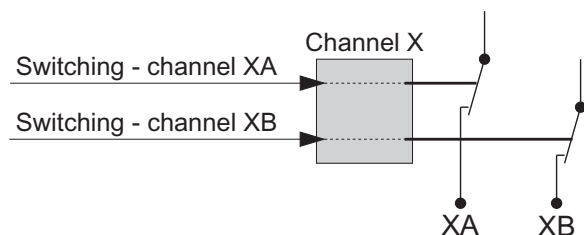
● **Basic function:
   Switching outputs**

You can specify the relay characteristic (make contact or break contact) for each output channel in the "Switching" operating mode in the "Relay operation" parameter:

Tab	Parameter
X.A: Switching X.B: Switching	Relay operation

The XA and XB output contacts are controlled using the "Switching object - channel X.A" and "Switching object - channel X.B" communication objects. Telegram values have different effects, depending on the relay operating mode set:

"Make contact" relay operation

If the "Switching" object receives a telegram with the value "0", the contact is opened.

If a telegram value of "1" is received, the contact is closed.

Term definition:

The setting values "activated" and "not activated" are used for the different switching states of the output contacts when the parameters are set. In "Make

contact" relay operation, the following relationship exists:

– activated = contact closed
– no activated = contact open
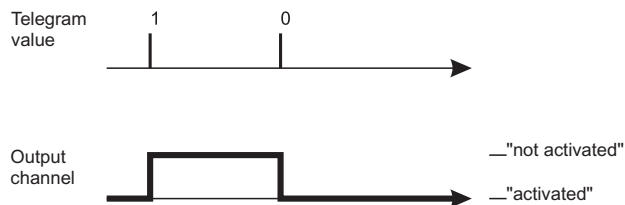
"Break contact" relay operation

If the "Switching object" receives a telegram with the value "0", the contact is closed. If a telegram value of "1" is received, the contact is opened.

Term definition:

The setting values "activated" and "not activated" are used for the different switching states of the output contacts when the parameters are set. In "Break contact" relay operation, the following relationship exists:

– activated = contact open
– not activated = contact closed
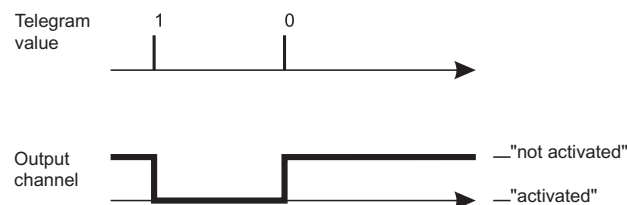
Set the following parameters for this function in the ETS:

Tab	Parameter
X.A: Switching X.B: Switching	Relay operation

Communication objects

The switching commands for the output relay are received via the "Switch object" communication object:

Function	Object name	Type	Prio	Flags	Behaviour
Channel X.A Channel X.B	Switch object	1 bit	Low	WC	Receive

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● **Advanced functions:**
   Central function

You can use the central function to switch or dim several output channels simultaneously with a telegram command. This function is useful, for example, when you wish to switch off all lights at the touch of a button before going to bed in the evening, or when you leave your apartment.
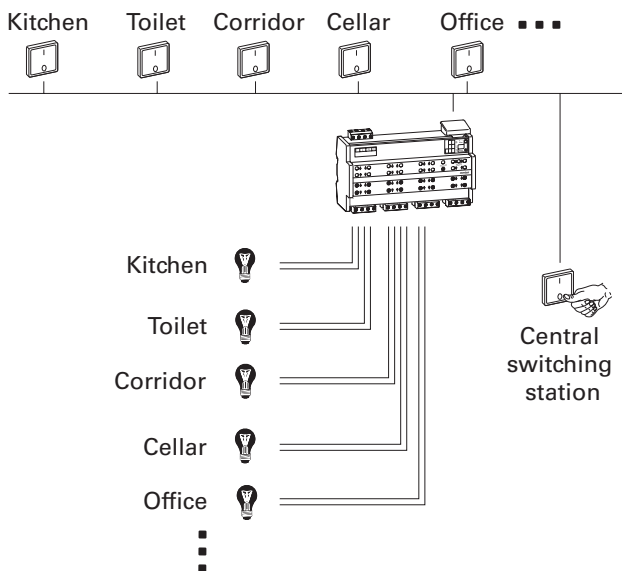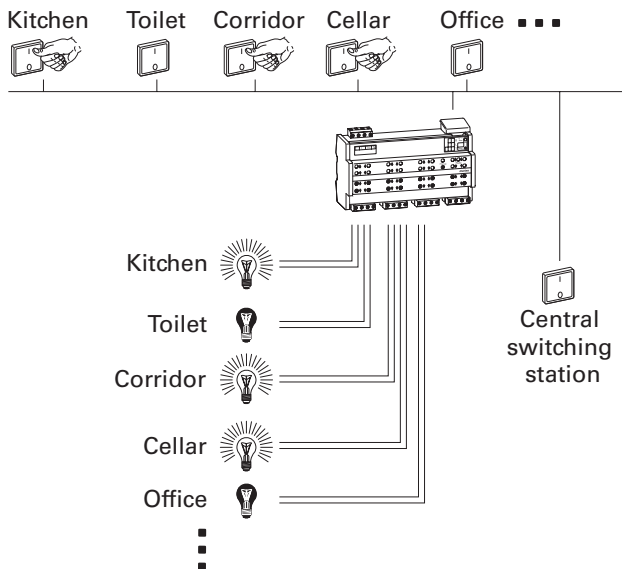
Enabling the central function

In order to be able to use the central function for the individual switching channels, you first have to enable the function for the device once:

Tab	Parameter
General	Central object

After the function has been enabled, the "Central object" communication object appears, which can now be used to receive the central control telegrams.

Now you can activate the central function for each switching channel individually:

Tab	Parameter
X.A: Switching X.B: Switching	Central function

After the "Central function" parameter has been enabled, an output is switched on an doff by the "Central object" when a telegram is received.

Priority

The central function has the same priority as the normal switching function. When a new object value is received via the "Central object", the effect is the same as when a new object value is received for the "Switching object" of the channel. Accordingly, all the assigned channel functions (e.g. time functions, logic operation function) are also executed.

Parameter settings in the ETS

Tab	Parameter
General	Central object
X.A: Switching X.B: Switching	Central function

Communication objects

The central control telegrams can be received via the "Central object" communication object:

Function	Object name	Type	Prio	Flags	Behaviour
Switching	Central object	1 bit	Low	WC	Receive

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● **Advanced functions:**
  Time functions

The software application provides different functions which enable you to switch the connected loads dependant on time. These are:

– ON delay

– OFF delay

– Staircase lighting function

ON and OFF delay

As a result of the delay function, the relay states are not altered immediately after a telegram is received, but only after the set delay time has elapsed:

– The **ON delay** delays the alteration of the relay contact from the "not activated" to the "activated" state after an object value "1" is received on the "switching object".

– The **OFF delay** delays the alteration of the relay contact from the "activated" to the "not activated" state after an object value "0" is received on the "switching object".

You can also use both functions together for one channel.
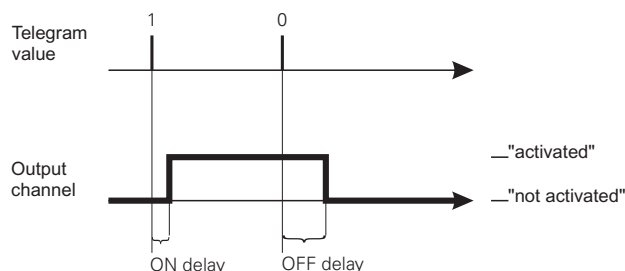
Enabling delay times:

In order to use the delay functions with the switching channels, you must enable them separately for each switching channel:

Tab	Parameter
X.A: Switching X.B: Switching	Delay times

After the "Delay times" function has been enabled, you can set the function values in a new tab called "X.A/ X.B: delay times":

Tab	Parameter
X.A: Delay times X.B: Delay times	ON delay
	OFF delay

Values to be set:

– disabled:
  The function is not active

– enabled, retriggerable:
  When a telegram value is received, the delay function is started. If the "Switch object" receives the same telegram value again while a delay time is

running, the delay time is re-started from the beginning.
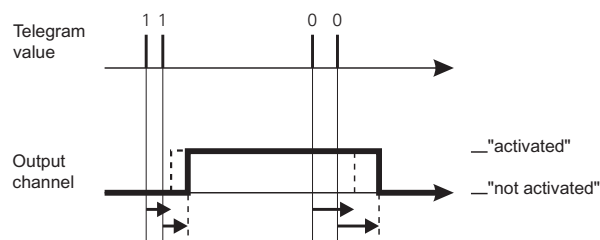
– enabled, not retriggerable:
  When a telegram value is first received, the delay function is started. After the delay time has elapsed, the delay relay is switched, regardless of whether further telegrams with the same value have been received during the delay time.
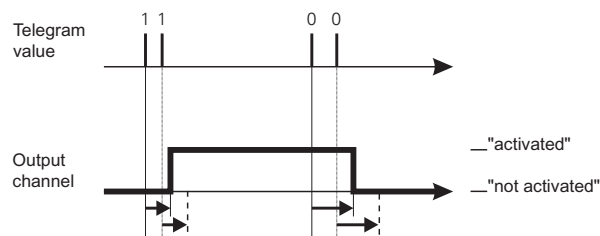
Tab	Parameter
X.A: Delay times X.B: Delay times	Time base for ON delay
	Factor for ON delay (1-255)
	Time base for OFF delay
	Factor for OFF delay (1-255)

The active time delays are each calculated by multiplying their setting values for the time basis x factor. Accordingly, with the standard values, a value of 1 s x 3 = 3 s, results, with a value of 1 s x 120 = 120 s for the OFF delay.

Interrupting the delay function

If a delay function has been started when a new object value is received, and if the output channel receives a telegram with the opposite object value while the delay time is running, the delay function is interrupted. The relay is not switched:

– When the object value "0" is received, a running ON delay is interrupted.

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– When the object value "1" is received, a running OFF delay is interrupted.
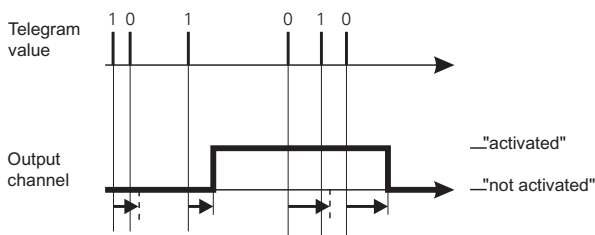
Delay functions and staircase lighting function

The combination of an ON delay with the staircase lighting function results in the delayed start of the staircase lighting function.

The way in which the staircase lighting function is combined with an OFF delay depends on how you have defined the staircase lighting function:

– With the staircase lighting function with manual OFF option ("with manual OFF"), the OFF delay is started on the "Switch object" when a manual OFF telegram is received. The output is switched off once the OFF delay has expired (not activated).

– With the staircase lighting function without manual OFF option ("without manual OFF"), the receipt of a manual OFF telegram has no effect on the "Switch object". The staircase lighting function runs through to the end and switches the output relay directly into the "not activated" state. An OFF delay cannot be set.

Parameter settings in the ETS

Set the following parameters for the delay function in the ETS:

Tab	Parameter
X.A: Switching X.B: Switching	Delay times
X.A: Delay times X.B: Delay times	ON delay
	Time base for ON delay
	Factor for ON delay (1-255)
	OFF delay
	Time base for OFF delay
	Factor for OFF delay (1-255)

Staircase lighting function

As well as the switching delays, the staircase lighting function also provides a third time function for the switch outputs. As the name already suggests, this function is used to switch on a load, such as the light in a staircase, via a bus telegram, and then to switch it back off after an adjustable period of time has elapsed. Switching off therefore requires no manually or automatically generated bus telegram. The actuator conducts the OFF procedure independently.
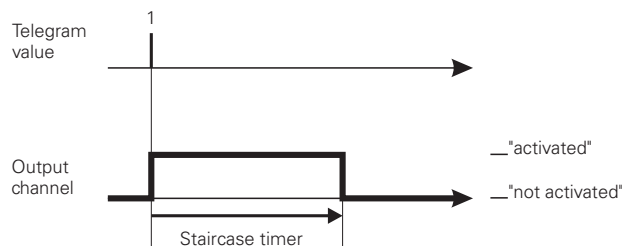
Enabling the staircase lighting function

In order to use the staircase lighting function with the switching channels, you must enable it separately for each switching channel:

| Tab	Parameter
X.A: Switching X.B: Switching	Staircase lighting function

After the has been enabled, you can set the function values in a new tab called "X.A/X.B: staircase lighting function":

Tab	Parameter
X.A: Staircase lighting function X.B: Staircase lighting function	Staircase lighting function
	Staircase timer
	Time base, staircase timer
	Factor for staircase timer (1-255)
	Pre-warning at the end of the staircase time
	Prewarning time (1-255), factor x 1 s

Manually interrupting the staircase lighting function

If the "Switch object" receives a new telegram with the object value "0" while a staircase timer is running, the reaction of the switching channel will depend on your setting for the "staircase timer function" parameter:

– with manual OFF: After the object value "0" is received, the output is switched to the "not activated" position. In this case, an active OFF delay

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delays the transfer of the relay states from "activated" to "not activated".
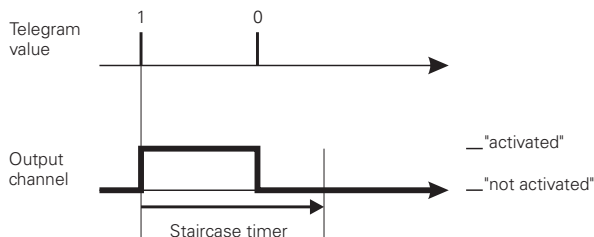
– without manual OFF: A telegram with the object value "0" has no effects. The staircase timer set continues to run normally until the end. An OFF delay cannot be set.
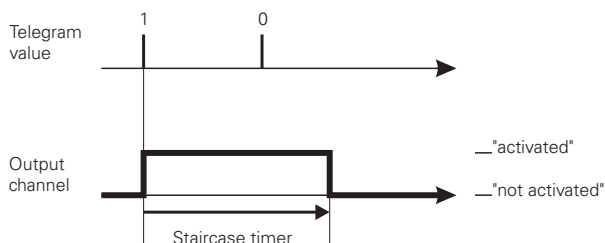
Restarting the staircase lighting function

If the "Switch object" receives a new telegram with the object value "1" while a staircase timer is running, the reaction of the switching channel will depend on your setting for the "staircase timer" parameter:

– not retriggerable: A new telegram received with the object value "1" has no effects. The function continues to run normally.
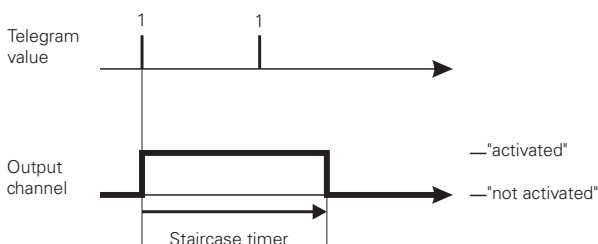
– retriggerable: After a new telegram has been received with the object value "1", the staircase timer is restarted.
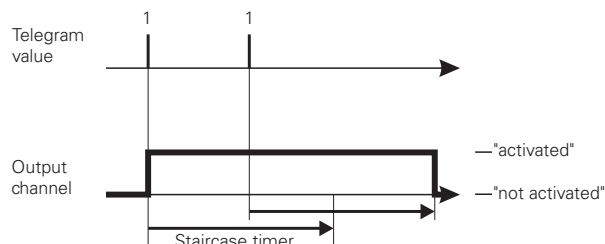
Setting the staircase timer

If the "Switch object" receives a new telegram with the object value "1" when a staircase timer function is active, the output relay of the switching channel is switched to the "activated" position. After the set staircase lighting time has expired, the actuator automatically switches the output relay to the "not activated" position without a new telegram.

The length of the staircase lighting time is calculated by multiplying your set values for the "Time basis for staircase lighting time" parameter x "Staircase lighting time factor (1-255)". A running time of 3 minutes (1 min x 3 = 3 mins.) results with the standard values.

Warning given before switching off

With the warning time before switching off, the user can be informed that the function is due to end soon when the lighting system switches off briefly. The user can restart (retrigger) the staircase lighting function with a push-button action. If they do nothing the function will continue to run normally.

You can use the "Prewarning at end of staircase lighting time" parameter to disable or release the OFF prewarning. When the OFF prewarning has been released, you can specify whether one, two or three prewarning impulses should be given. The first prewarning begins according to the set prewarning time prior to the normal expiry of the current staircase lighting time. For each prewarning, the output contact for the fixed time frame of 500 ms is switched to the "not activated" state. If you have activated more than one prewarning, a wait time of 5 seconds is maintained between the prewarning impulses.

If a running staircase lighting function is interrupted by a manual OFF function, no prewarning is given.

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Parameter settings in the ETS

Set the following parameters for the staircase lighting function in the ETS:

Tab	Parameter
X.A: Switching X.B: Switching	Staircase lighting function
X.A: Staircase lighting function X.B: Staircase lighting function	Staircase lighting function
	Staircase timer
	Time base, staircase timer
	Factor for staircase timer (1-255)
	Pre-warning at the end of the staircase time
	Prewarning time (1-255), factor x 1 s

● **Advanced functions:**
  Scene function

The scene function can be used when room functions for different utilities (e.g lighting, heating, roller shutters) need to be changed simultaneously with a push-button action or an operating command. Retrieving a scene allows you, for example, to switch or dim the room lighting to a desired value, move the blinds into a desired position and turn the slats, switch heating control to daytime operation and switch on the power supply to the socket-outlets in a room.

The telegrams of these functions may not have only different formats, but also values with a different meaning (e.g. "0" for lighting OFF and blinds OPEN). Without the scene functions, you need to send a separate telegram to each actuator in order to achieve the same setting.

The scene function allows you to integrate the channels in the "Switching" operating mode into a scene control. There are up to five different scenes for each output channel. Each of these scenes can be assigned one of 64 possible scene addresses (which correspond to telegram values 0 to 63). You can enter the relay states (activated or not activated) for the output channels as scene values.

When the actuator receives a telegram with the retrieval of a scene address, the output relay is switched to the stored setting. The scene values that you save on commissioning can be replaced later by users if they wish to make an alteration.

Telegram format

Telegrams for the scene function have the following data format: L X D D D D D D.

– L = learning bit
– X = is not used
– DDDDDD = scene address retrieved

If the learn bit in a telegram has the value "0", the relay states stored for this scene address are retrieved and set.

If the learn bit has the value "1", then the current output states are saved as new scene values for the scene address.

Examples:

– Telegram value 57
  Binary 0011 1101
  Hexadecimal 39
  Retrieve scene address 57
– Telegram value 29
  Binary 0001 1101
  Hexadecimal 1D
  Retrieve scene address 29

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– Telegram value 157
  Binary 1001 1101
  Hexadecimal 9D
  Learn scene address 29
– Telegram value 141
  Binary 10001101
  Hexadecimal 8D
  Learn scene address 13

Activating the scene function

In order to be able to use the scene function for the individual switching channels, you first have to enable the function for the device once:

Tab	Parameter
General	Scenes general

After you enable the function, the communication object "Scene object" appears. This object is now able to receive the scene telegrams.

Now you can activate the function for each switching channel individually:

Tab	Parameter
X.A: Switching X.B: Switching	Scenes

After you enable the "Scenes" parameter, the "X.A: scenes" or "X.B: scenes" tab appears, in which you can specify the switching state of the output relay when a scene is retrieved. You can activate each of the five scenes independently of each other.

Retrieving and storing scenes

The "Scene object" object allows you to retrieve scene values for the output relay. After a scene telegram is received, the actuator evaluates the transmitted scene address and switches the outputs to the stored scene values.

If the "Scene object" receives a scene telegram with learn bit "1", then the current relay state is saved as the new scene value in all those scenes allocated the scene number received.

i **Note:** If a scene address is assigned to several scenes within a channel, only the scene first found with this scene address is retrieved or stored. You can avoid this by issuing different scene addresses within a channel.

Example - State after downloading:
– **Output channel 1.A**
  Scene 1 active with scene address 10
  with relay state OFF
  Scene 2 active with scene address 20
  with relay state ON
– **Output channel 5.B**
  Scene 3 active with scene address 20
  with relay state ON

– Scene object receives "Retrieve scene address 20" telegram
  Output channel 1.A: switches ON
  Output channel 5.B: switches ON
– Scene object receives "Retrieve scene address 10" telegram
  Output channel 1.A: switches OFF
  Output channel 5.B: remains ON
– Switch object 5.B receives "OFF" telegram
  Output channel 1.A: remains OFF
  Output channel 5.B: switches OFF
– Scene object receives "Learn scene address 20" telegram
– Scene object receives "Retrieve scene address 20" telegram
  Output channel 1.A: does not react, because the relay state is already "OFF"
  Output channel 5.B: does not react, because the relay state is already "OFF"

If you enabled the parameter "Replace scene values in the actuator on download", then the scene values saved in the device are replaced with your default values on download. If you don't want to replace the values in the device, then you must disable this parameter. In this case, only those scene values for which the parameters were set during the first download are written into the device memory. If an application is then downloaded, the scene values will remain in the device memory.

Parameter settings in the ETS

Set the following parameters for the scene function in the ETS:

Tab	Parameter
General	Scenes general
X.A: Switching X.B: Switching	Scenes
X.A: Scenes X.B: Scenes	Replace scene values in the actuator on download
	Scene 1
	Scene 1 scene address (0-63)
	Scene 1 relay state
	Scene 2
	Scene 2 scene address (0-63)
	Scene 2 relay state
	Scene 3
	Scene 3 scene address (0-63)
	Scene 3 relay state
	Scene 4
	Scene 4 scene address (0-63)
	Scene 4 relay state
	Scene 5
	Scene 5 scene address (0-63)
	Scene 5 relay state

Priority

The scene function has the same priority as the normal switching function via the "Switch object". This should be taken into account with regard to the priority of the higher-level functions.

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Communication objects

The scene telegrams can be received via the "Scene object" communication object:

Function	Object name	Type	Prio	Flags	Behaviour
Scenes	Scene object	8 bit	Low	WC	Receive

● Higher-level functions

Higher-level functions (blocking, logic operation, priority control) have a higher priority than the basic functions (switching) and the advanced functions (central function, time functions, scene function).

The priority sequence is as follows:

1. Disable function
2. Logic operation / priority control
3. Switching, central function, time function, scenes

You can enable the "disable function" via:

Tab	Parameter
X.A: Switching X.B: Switching	Disable function

For the disable function, the parameter card "X.A/X.B: disable function" appears.

A parameter enables you to activate one of the two higher-level functions, "logic operation" or "priority control" for each switching channel:

Tab	Parameter
X.A: Switching X.B: Switching	Priority function

Depending on which higher-level functions you select, new parameter cards appear in which you can complete the additional function settings.

For the logic operation function, the parameter card "X.A/X.B: logic operation" appears. To set the priority control function, the new parameter card "X.A/X.B: priority control" appears.

● Higher-level function: logic operation

If you activate the logic operation function, a new object is available called the "logic object". The value of the logic object is logically operated with the current value of the switch object. The state of the output relay is determined by the logic result, if no disable function with a higher priority is active.
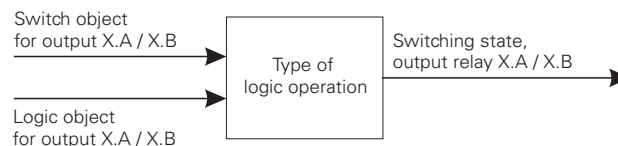
The logical functions AND, OR and XOR are possible as logic operations:

Tab	Parameter
X.A: Logic operation X.B: Logic operation	Type of logic operation

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The output relay is switched to the "activated" or "not activated" state, depending on the result.

Logic operation type = AND		
Object Switch object*	**Object logic operation**	**Relay status**
0	0	not activated
0	1	not activated
1	0	not activated
1	1	activated

Logic operation type = OR		
Object Switch object*	**Object logic operation**	**Relay status**
0	0	not activated
0	1	activated
1	0	activated
1	1	activated

Logic operation type = XOR		
Object Switch object*	**Object logic operation**	**Relay status**
0	0	not activated
0	1	activated
1	0	activated
1	1	not activated

✳ a running staircase lighting timer function corresponds to object value 1

Example:

A permanent ON or permanent OFF function can be realised, for example, using the logic operation function:

– Permanent ON function: OR logic operation and logic object = "1"
The output is always activated, regardless of the operation on site. If the logic object receives the value "0", the output can be operated normally again on site.

– Permanent OFF function: AND logic operation and logic object = "0"
The output remains permanently not activated until the logic object receives the value "1". Only then can the output also be switched on site. In this way, the light in a school classroom can be enabled and blocked using a timer switch, for example.

i A logic operation is only effective when no disable function with a higher priority is active.

Logic operation function following bus voltage recovery and downloading

The initial value of the logic object after a bus voltage recovery and downloading is applied at the logic operation function input.

After the bus voltage recovery, the logic object can adopt the following values:

– „0"
– „1"

The relay is directly switched in the specified direction via the logic operation function and the object values, if no disable function is active.

Tab	Parameter
X.A: Logic operation X.B: Logic operation	Value of logic object after bus voltage recovery

After downloading, the logic operation function is also reinstated after a bus voltage recovery. The "Relay state after downloading" parameter in the "Failure behaviour" tab determines, however, whether the relay is switched or not.

If the "Relay state after downloading" parameter is set to "No reaction", the logic operation function is activated as described, although the relay is not switched.

If the "Relay state after downloading" parameter is set to "As for bus voltage recovery", the logic operation function is activated as described, and the relay is switched accordingly.

You will find further information on this subject in the chapter "Operating behaviour on failure and recovery of supply voltage".

Parameter settings in the ETS

Set the following parameters for this function in the ETS:

Tab	Parameter
X.A: Switching X.B: Switching	Priority function
X.A: Logic operation X.B: Logic operation	Type of logic operation
	Value of logic object after bus voltage recovery

Communication objects

The logic operation telegrams can be received via the "Logic operation object" communication object:

Function	Object name	Type	Prio	Flags	Behaviour
Channel X.A Channel X.B	Logic object	1 bit	Low	WC	Receive

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● **Higher-level functions:**
   Priority control

If you have selected priority control as the higher-level function for a switching channel, a new communication object called "Priority control" is provided for this channel.

The object values of the priority control object have the following meaning:

Bit 1	Bit 2	Behaviour of the output
1	1	Priority control active, relay state "activated"
0	1	End of priority control, relay state depends on the "Behaviour at end of priority control" parameter.
1	0	Priority control active, relay state "not activated"
0	0	End of priority control, relay state depends on the "Behaviour at end of priority control" parameter.

The priority control is activated when the value "1" is received on bit 1. The assigned output relay is then switched to "activated" (bit 0 = 1) or "not activated" (bit 0 = 0), depending on bit 0. An active priority control is then enabled again by a new telegram with the value "0" on bit 1. As long as a priority control function is active, the relevant output channel cannot be controlled via the "Switch object" and the advanced functions (central function, time functions, scene function).

After the end of a priority control, the behaviour of the output relay is determined by the "Behaviour at end of priority control" parameter:

i	A priority control is only effective when no disable function with a higher priority is active.

Tab	Parameter
X.A: Priority control X.B: Priority control	Behaviour at the end of priority control*

The setting values lead to the following reactions after a priority control is lifted:

– no response
   The output relay remains unchanged in its current position.

– follows subordinate control commands
   During priority control, all switching commands for the subordinate functions (basic function and advanced functions) are followed by the application and the switch state is loaded internally. In this way, at the end of a priority control, the switch state for the relay can be set which it would currently have had without priority control.

*If the staircase lighting timer function has been enabled, the behaviour at the end of the priority control is set to the fixed value "Follow subordinate control commands".

Behaviour of the priority control following bus voltage recovery and downloading

You can use the "Behaviour of priority control after bus voltage recovery" parameter to specify the reaction of

the output channel following bus voltage recovery, together with the corresponding switching behaviour of the relay contact:

Tab	Parameter
X.A: Priority control X.B: Priority control	Behaviour of priority control after bus voltage recovery

– disabled
   The priority control remains deactivated. The switching state of the output relay results from your settings for the other higher-level functions, or from the set switching behaviour following bus voltage recovery.

– enabled, not activated
   The priority control is automatically activated when the bus voltage recovers, and the relay contact is switched to the "not activated" state.

– enabled, activated
   The priority control is automatically activated when the bus voltage recovers, and the relay contact is switched to the "activated" state.

– as before bus voltage failure
   The priority control function is set to the status which it had before the bus voltage failure. If the priority control was previously active, the output relay is switched to the state which it had before.

After downloading, the priority control function is also reinstated as after a bus voltage recovery. The "Relay state after downloading" parameter in the "Failure behaviour" tab determines, however, whether the relay is switched or not.

If the "Relay state after downloading" parameter is set to "No reaction", the priority control is activated as described, although the relay is not switched.

If the "Relay state after downloading" parameter is set to "As for bus voltage recovery", the priority control is activated as described, and the relay is switched accordingly.

Parameter settings in the ETS

Set the following parameters for this function in the ETS:

Tab	Parameter
X.A: Switching X.B: Switching	Priority function
X.A: Priority control X.B: Priority control	Behaviour at the end of priority control
	Behaviour of priority control after bus voltage recovery

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Communication objects

The scene telegrams can be activated and deactivated via the "Priority control" communication object:

Function	Object name	Type	Prio	Flags	Behaviour
Channel X.A Channel X.B	Priority control	2 bit	Low	WC	Receive

● **Higher-level function: Disable function**

You can use the disable function to systematically activate/not activate an output channel, and to disable it in this position. The state of the output channel cannot be changed by other control commands as long as the block is active. You can activate the disable function for each switching channel individually:

Tab	Parameter
X.A: Switching X.B: Switching	Disable function

After the disable function is released, a new communication object called "Disable object" is provided for the switching channel, together with a new parameter card called "Disable function". You can use "Disable object" to activate and deactivate a channel block.

First choose the object value at which the output should be disabled:

Tab	Parameter
X.A: Disable function X.B: Disable function	Block

If the "Disable object" receives a telegram with the object value which you have specified for the "Block" parameter, then all other channel functions are blocked. You can define the reaction of the output relay via the "Behaviour at start of block" parameter:

Tab	Parameter
X.A: Disable function X.B: Disable function	Behaviour at start of block

The set values lead to the following reactions:

– no reaction
  The output relay remains unchanged in its current position.
– activated
  The output relay switches to the "activated" state.
– not activated
  The output relay switches to the "not activated" state.

If the disable object receives a telegram with the opposite object value to the activation, the block is removed and the output relay takes on the state which you have specified in the "Behaviour at the end of block" parameter:

Tab	Parameter
X.A: Disable function X.B: Disable function	Behaviour at the end of block*

The set values lead to the following reactions:

– no reaction
  The output relay remains unchanged in its current position.
– follows subordinate control commands
  During the disable function, all switching commands for the subordinate functions are followed by the application and the switch state is

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loaded internally. In this way, at the end of the block, the switch state for the relay can be set which it would currently have had without the block.

If one of the higher-level functions, logic operation or priority control is active after the block has ended, the "Behaviour after the block has ended" parameter is ineffective. The state of the output relay is immediately controlled by the active function.

*If the staircase lighting timer function has been enabled, the behaviour at the end of the disable function is set to the fixed value "Follow subordinate control commands".

Disable function following bus voltage recovery and downloading

The "Behaviour of the block following bus voltage recovery" parameter allows you to specify how you want the disable function to respond after the bus voltage returns:

Tab	Parameter
X.A: Disable function X.B: Disable function	Behaviour of the block after bus voltage recovery

Values to be set:

– inactive
  After bus voltage has been recovered, the disable function is deactivated, regardless of its status prior to bus voltage failure.

– active
  After a bus voltage recovery, the disable function is activated and the output is switched back into the state which you have specified in the "Behaviour at the start of the block" parameter. If you have set the "no reaction" value here, the output is blocked in its current state.

– as before bus voltage failure
  The disable function is switched to the state which was active before the bus voltage failure. If the disable function was active, the output is controlled by its settings in the "Behaviour at the start of the block" parameter.

After downloading, the disable function is also set as it was after a bus voltage recovery. The "Relay state after downloading" parameter in the parameter card "X.A/ X.B: behaviour on failure" determines whether the relay is switched or not in this case.

If the "Relay state after downloading" parameter is set to "No reaction", the block is activated as was previously set, but the output relay is not switched.

If the "Relay state after downloading" parameter is set to the value "As for bus voltage recovery", the disable function is activated as previously specified, and the relay is switched accordingly.

Parameter settings in the ETS

Set the following parameters for the disable function in the ETS:

Tab	Parameter
X.A: Switching X.B: Switching	Disable function
X.A: Disable function X.B: Disable function	Block
	Behaviour at start of the block
	Behaviour at the end of the block
	Behaviour of the block after bus voltage recovery

Communication objects

The disable function can be activated and deactivated via the "Disable object" communication object:

Function	Object name	Type	Prio	Flags	Behaviour
Channel X.A Channel X.B	Disable object	1 bit	Low	WC	Receive

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Settings for
blind/roller shutter/switching

● Status messages/status feedback

The software application provides you with options to report the current device status and the status of output channels via communication objects. Depending on these status messages, you can trigger certain control processes or enable and disable functions in the system.

In addition, status messages are also suitable for displaying current operating statuses by means of visualisation software.

The status messages of the output channels are made available through communication objects. You can set the transmission characteristics of these status objects to one of the following values using parameters:

– disabled
  The status object is not active.

– active status feedback object
  After a change is made, the new values are automatically transmitted (position height, angle of rotation of the slat, relay closed or open)

– passive status object
  The status object does not transmit its values. However, the current status is available and can be read out by other bus devices.

Transmission behaviour of the status messages in time

You can prioritise the interval between two status telegrams for the device. This setting applies for the transmission behaviour of all status messages.

Tab	Parameter
General	Minimum interval between status messages

If there is only one pending transmission job, then the message is sent immediately. If there are several status messages pending, then the first one is sent immediately and the remainder are staggered according to the delay time specified in the "Minimum interval between status messages" parameter.
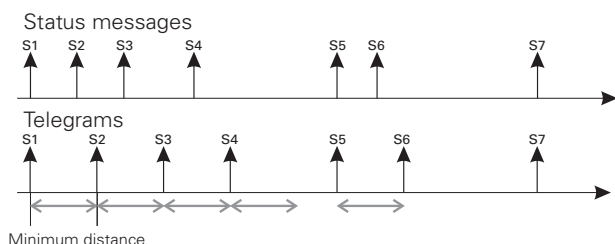
If you want to activate the status messages for an output channel, then you have to enable the "Status messages" parameter:

Tab	Parameter
X: Blind control X: Roller shutter	Status messages
X.A: Switching X.B: Switching	Status message

After enabling, a new tab for "Blind/roller shutter" - "X: status messages" - appears for the output channel. Here you make settings for the possible status messages. No new tab appears for "Switching".

Status messages, blind/roller shutter height operating mode

The current position of the drive is available as a value between 0 –100 %. The associated status objects change name depending on whether the status is to be transmitted (Height status feedback) or read out (Height status).

Tab	Parameter
X: Status messages	Height status

The height status object is only updated when the drive has reached a fixed position after a movement.

Status messages, blind/roller shutter slat operating mode

The current angle of rotation of the blind slats is available as a value between 0 –100 %. The associated status objects change name depending on whether the status is to be transmitted (Slat status feedback) or read out (Slat status).

Tab	Parameter
X: Status messages	Slat status

The slat status object is only updated when the drive has reached a fixed position after a movement.

Status messages, switching operating mode

If you have set the "Status message" parameter to the "Active status feedback object" value, the switching status of the output relay is transmitted each time the status is changed via the "Status feedback object" object.

If you have specified the object behaviour as "passive status object", the output status is not transmitted when the status changes, but is simply updated in the "Status object" object. The value of the "Status object" can then by read out by another bus device, e.g. by a visualisation software program.

The object value corresponds to the current status of the relay, regardless of the "break contact" or "make contact" relay operating mode. If the relay is switched on, the object value is "1"; if it is switched off, the object value is "0".

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Communication objects, blind/roller shutter operating mode

The following communication objects are available:

Function	Object name	Type	Prio	Flags	Behaviour
Channel X	Height status feedback	1 bit	Low	CRT	Transmit/Read out
Channel X	Height status	1 bit	Low	CR	Read out
Channel X	Slat status feedback	1 bit	Low	CRT	Transmit/Read out
Channel X	Slat status	1 bit	Low	CR	Read out

Communication objects, switching operating mode

The following communication objects are available:

Function	Object name	Type	Prio	Flags	Behaviour
Channel X.A Channel X.B	Status feedback object	1 bit	Low	CRT	Transmit/Read out
Channel X.A Channel X.B	Status object	1 bit	Low	CR	Read out

● Manual operation and status displays

On the front of the device there is a channel key and a yellow LED for each channel to display the operating statuses of the channel (channel status LED).

In addition to the channel keys for the output channels and the channel status LED, the device also has a toggle switch and a red LED labelled "Manual" (manual operation LED). The toggle switch allows you to activate and deactivate manual operation, and to change the channel operating mode. Another green operation LED labelled "RUN" (RUN LED) indicates that the device is ready for operation.

The programming key for programming the physical address of the device and an associated red programming LED are located under the cover of the bus connection.

ℹ **Note:** For more information see the chapter "Operation".

After the mains or bus voltage has been connected, you can move the connected drives or loads using the operating keys, if you have activated manual operation. The status LEDs allocated to the channels indicates the current switching status.

Setting manual operation

The connected drives or loads are operated manually via the channel keys. The "Manual operation switch" allows you to activate and deactivate manual operation of the channels. The "Manual operation switch" function is controlled via parameter settings and communication objects:

Tab	Parameter
General	Manual operation type
	Manual operation activation
	Time-dependent reset of manual operation
	Time in minutes when hand operation will be automatically reset (5-255) *(if "Time-dependent reset of manual operation" is enabled):*

Setting the manual operation type

– "Manual operation type" = bus and manual operation:
  If you have selected the setting value "Bus and manual operation" for the "Manual operation type" parameter, the output channels can be controlled equally via bus telegrams and manual operation. The superordinate functions (weather alarm or logic operation, priority control and lock) also take priority with manual operation, however, and disable manual operation via the channel keys.
  The option of switching to manual operation depends on your settings for the "Manual operation release" parameter, which is described in the next section. Here, you can also fully disable the switch to manual operation.

– "Manual operation type" = exclusively manual operation:
  In this operating mode, the output channels can

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only be controlled with the channel keys after switching to manual operation (hand LED lights up). Bus telegrams are no longer effective. The superordinate functions are suppressed as long as exclusive manual operation is active.
The switch to exclusive manual operation is always possible via the "Manual operation key". Using the "Manual operation release" parameter, you can only specify here whether the switch between bus mode and manual mode should be reported to the bus via a status telegram ("Manual operation release" = "released with status report") or not ("Manual operation release" = "released").

⚠ **Caution!**
The loads could become damaged. When operating loads in "Manual operation only" using the channel keys, prioritised safety functions (e.g. weather alarm position, priority control) no longer work. To prevent damage you should therefore be very careful when operating manually.

ℹ **Note:** Make sure that the ETS parameter "Manual operating mode" is set to "Bus and manual operation" (**not** "Manual operation only"), when you hand over the system to the operator.

Manual operation activation

If you have specified the manual operation type as "Bus and manual operation", you can select using the "Manual operation release" parameter whether and how a switch to manual operation should be possible:

– disabled
  Switching to manual operation using the "manual operation key" is not possible.

– enabled
  Switching to manual operation using the "manual operation key" is possible. The manual operation LED indicates the current manual operation mode.

– enabled with status message
  Switching to manual operation using the "manual operation key" is possible. The manual operation LED indicates the current manual operation mode. When you switch to manual operation mode, a telegram with the value "1" is sent via the "Manual operation status" object. When manual operation is reset, a telegram with the value "0" is sent.

– Enable via object
  The transfer to manual operation is only possible when the "Release manual operation" object has the value "1". If the object has the value "0", the transfer to manual operation is disabled. If the transfer is disabled via a telegram, the device also automatically disables a manual operation which is currently active.

– Enable via object with status message
  In addition to enabling manual operation with the

"Enable manual operation" object, the "Manual operation status" object reports the switching status.

ℹ **Note:** To switch the actuator to manual operation, press the manual operation key before pressing a channel key.

Resetting manual operation dependent on time

You can limit the switch to manual operation on a time basis. To do this, set the "Time-dependent reset of manual operation" parameter to "enabled".

Then set the "Time for automatic reset of manual operation in minutes" parameter. When the time you specify here expires, the device automatically resets manual operation. You can read the current operating status in each case on the manual operation LED, and you will receive feedback via the "Manual operation status" object if you have enabled this function.

Enabling manual operation on bus voltage failure

If bus voltage fails, then you can provide users with an additional control option for the connected loads: manual operation. Mains voltage must still be present however. You can enable manual operation on bus voltage failure for each channel individually. Enable or disable the following parameter:

Tab	Parameter
X: Blind control X: Roller shutter X.A: Switching X.B: Switching	Manual operation on bus voltage failure (mains voltage present)

"Manual operation on bus voltage failure" disabled

If the bus voltage has failed, no manual operation is possible. If you activate a channel key, the actuator will not react.

"Manual operation on bus voltage failure" enabled

You can continue to operate the output channels when the bus voltage fails by using the channel keys (to activate manual operation, press the "Manual operation key"). Manual operation during bus voltage failure is possible independently of the settings for manual operation activation. The channel status LEDs indicate the current output status. When bus voltage is recovered, manual operation is automatically reset.

⚠ **Caution!**
The loads could become damaged. When operating loads in "Manual operation only" using the channel keys, prioritised safety functions (e.g. weather alarm position, priority control) no longer work. To prevent damage you should therefore be very careful when operating manually.

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Manual operation for blind/roller shutter

When manual operation is enabled, you can move connected drives using the channel keys (see section "Operation").

The running time of the drive is preset to 2 min and the switching time to 500 ms. Please observe the specifications of the drive manufacturer. After the first download, the set ETS parameters will always be effective.

⚠ **Warning**
Blinds/roller shutters can cause injury when they are moving. If you are operating blinds/ roller shutters using channel keys, make sure that no people are in the range of movement.

If you press a channel key when manual operation is not active or has been temporarily disabled by a higher-level function, nothing happens.

Manual operation for switching channels

When you release manual operation, the connected load can be controlled via the corresponding channel key. The output contact is toggled each time the key is pressed. If the output contact was switched off, it will be switched on the next time the key is pressed, and vice-versa.

In "Bus and manual operation" manual operation mode, pressing a key will effect a channel key in the same way as a new telegram to the switch object. This means that with manual operation, the set time functions (on/off delay, staircase timer function) are also active. If a superordinate function is active in this manual operation mode, the manual operation is disabled.

In "Exclusive manual operation" mode, the bus functions are not active during manual operation. Each time a channel key is pressed, the output relay is directly affected, and switches is on and off in alternation. The superordinate functions are in this case not effective.

Communication objects

The following communication objects are available:

Function	Object name	Type	Prio	Flags	Behaviour
Manual operation	Enable manual operation	1 bit	Low	CW	Receive
Manual operation	Manual operation status	1 bit	Low	CRT	Transmit/ Read out

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● Behaviour after failure and recovery of supply voltage

i | **Note:** Normally, the device is connected to both bus and mains voltage. All device functions can only be fully guaranteed if the device is receiving both supply voltages correctly.

If the supply voltage for the loads fails or is recovered, the blind actuator itself doesn't carry out any action. Please note the following however:

⚠ **Caution!**
Switching on the supply voltage can cause the drives to move if the output relay is switched on at the time.
In order to avoid bodily injury or material damage, ensure that before switching the supply voltage on again that all connected blinds and roller shutters can move freely and the switched loads do no present any risk.

i | **Note:** If only bus voltage is available, the actuator can generally carry out all functions, possibly with a short time delay however (e.g., switching relays, slat adjustment). Manual operation is possible.

Without bus voltage (mains voltage only), the actuator may only work in manual operation without bus communication. You can activate the drives or loads directly using the channel keys.

i | **Note:** Without bus voltage, the safety functions are no longer effective.

If you want the actuator to respond in a certain way when supply voltage fails unexpectedly during operation, then you can configure failure behaviour for each channel.

Tab	Parameter
X: Blind control X: Roller shutter X.A: Switching X.B: Switching	Failure behaviour

When you have enabled the failure behaviour for a channel, the additional tab "X: Failure behaviour" appears. Here you can set more parameters.

Three different types of voltage failure are described below:

– Possibility 1:
 Bus voltage failure/recovery
 Mains voltage present
– Possibility 2:
 Bus voltage present
 Mains voltage failure/recovery
– Possibility 3:
 Bus voltage failure/recovery
 Mains voltage failure/recovery

Possibility 1: Bus voltage failure/recovery, mains voltage present

Bus voltage has failed

The RUN LED is not lit when bus voltage fails. If the output channels for manual operation are enabled in the event of bus voltage failure, you can operate the connected drives and loads using the channel keys.

Behaviour of channels for blind/roller shutters

You can set failure behaviour as follows:

Tab	Parameter
X: Failure behaviour	Behaviour on bus voltage failure (fixed pause on reverse = 300 ms)

Possible settings:

– no response
 The drive remains in its current status, in other words, it doesn't move or it completes its current movement until the running times have expired.
– Stop
 The drive stops immediately.
– Up
 The drive moves upwards. If it was in the middle of an downwards movement, then it stops and waits the default pause on reverse time of 300 ms before beginning the upwards movement.
– Down
 The drive moves downwards. If it was in the middle of an upwards movement, then it stops and waits the default pause on reverse time of 300 ms before beginning the downwards movement.

⚠ **Caution!**
If it is possible that your settings may result in a change of direction in the event of bus voltage failure (up or down settings), it is important to remember the pause on reverse. This is pre-set to a fixed value of 300 ms for bus voltage failure. The parameterised value for the drive is not active in this case. If the drive in use requires a longer pause on reverse (see manufacturer specifications), then you may not use the "up" or "down" settings in order to avoid damaging the drive.

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i When making your settings, ensure that the higher-level safety functions are not active during bus voltage failure. So that this doesn't cause damage, it makes sense to make the settings in such a way that the drive assumes a safe position during bus voltage failure.

Behaviour of the channels for switching

You can set failure behaviour as follows:

Tab	Parameter
X.A: Failure behaviour X.B: Failure behaviour	Relay state after bus voltage failure

Possible settings:

– no reaction
  The relay contact remains unchanged in its current position. If time functions (staircase lighting function, ON delay, OFF delay) are currently active, these are interrupted.

– actuated
  With a make contact, the relay is closed, and with a break contact, it is opened. Current time functions are deactivated.

– not actuated
  With a make contact, the relay is opened, and with a break contact, it is closed. Current time functions are deactivated.

Bus voltage is recovered

The RUN LED is lit, thus indicating that bus voltage is present again. The behaviour that you specified for bus voltage recovery is also carried out if the device receives a restart instruction (management function) through a bus.

Thirty seconds after bus voltage is once again stably present, the device starts transmitting the activated messages of all the channels one after another. However, only those messages are sent which you have defined as "active feedback object". The object value of the status objects valid at the time of transmission is always sent as the status message, even if it has changed once or several times since bus voltage has been recovered. For more information, refer to the section "Status messages".

Behaviour of channels for blind/roller shutters

After bus voltage has been recovered, all output relays are opened (all drives stop) and the pause on reverse specified by the parameters is started. Only after the pause on reverse time has expired will the behaviour that you set with the following parameter be carried out:

Tab	Parameter
X: Failure behaviour	Behaviour on bus voltage recovery

Possible values:
– Stop
  The drive stays in its current idle state.
– Up
  The drive moves upwards.
– Down
  The drive moves downwards.
– Move to position
  The blind moves into a position defined by you. The new parameter "Height position on bus voltage recovery in %" appears to allow you to set this position.
  Set the desired height position in the possible travel range of 0 –100 %.
  In the case of blind drives, the additional parameter "Slat position on bus voltage recovery in %" allows you to define the opening angle of the slats in the regulating range of 0 –100 %.

Behaviour in connection with the weather alarm

If no weather alarm is present, the device executes the behaviour parameterised when the bus voltage returns. If a weather alarm is given, the parameterised behaviour is executed when the bus voltage returns. Only then does the device react according to its settings for this weather alarm.

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Behaviour of the channels for switching

You can set the behaviour of the bus voltage on its return as follows:

Tab	Parameter
X.A: Failure behaviour X.B: Failure behaviour	Relay state after bus voltage recovery

Possible settings:

– no reaction
The relay contact remains unchanged in its current position.

– actuated
With a make contact, the relay is closed, and with a break contact, it is opened.

– not actuated
With a make contact, the relay is opened, and with a break contact, it is closed.

The reaction to the behaviour set here when the bus voltage returns has a lower priority. If a superordinate function is activated for the switching channel directly after the bus voltage returns, the following settings apply for these functions.

Behaviour of the superordinate functions with switching channels

Here, the superordinate functions are always executed first (relays are switched).

– Priority control
The behaviour of the priority control function after bus voltage returns can be disabled, enabled or set to the same status as before the bus voltage failure. If you enable the priority control function here, you can also determine whether the relay contact should be "actuated" or "not actuated" (see also the section "Superordinate functions: priority control").

Tab	Parameter
X.A: Priority control X.B: Priority control	Behaviour of priority control after bus voltage recovery

– Logic operation
If you have activated a logic operation function for a switching channel you can use this parameter to set the value of the logic object after the bus voltage has returned, or set an application download (see also the section "Superordinate functions: logic operation").

Tab	Parameter
X.A: Logic operation X.B: Logic operation	Value of logic object after bus voltage recovery

– Disable function
According to your settings, the disable function is disabled or enabled after a bus voltage failure, or adopts the status again which is had before the bus voltage failure. (See also the section: "Extended functions: disable function).

Tab	Parameter
X.A: Disable function X.B: Disable function	Behaviour of the block after bus voltage recovery

Possibility 2: Bus voltage present, mains voltage failure/recovery

Mains voltage has failed

The actuator can still carry out all functions if supplied by bus voltage only. The power supply for switching the relays, however, is provided primarily by the mains voltage. If the mains voltage fails, it can still carry out all functions, but there may be a slight time delay (e.g. switching of the relays, slat adjustment). Manual operation is possible.

You can transmit the status of the mains voltage to the to bus via a communications object. You can set the transmission behaviour of this status object with a parameter:

Tab	Parameter
General	Mains voltage status (Devices with mains supply)

Possible settings:

– disabled
The current status of the mains voltage is not transmitted to the bus and cannot be read out either. No communication object is available.

– active status feedback object
If it changes, the current status of the mains voltage is transmitted to the bus via the "Mains voltage status feedback" communication object. If mains voltage is present, the object value is "1", if there is no mains voltage "0".

– passive status object
You can export the current status of the mains voltage using the "Main voltage status" communication object. The object value is not sent in the case of changes.

For more information see the section "Status messages".

Mains voltage is recovered

When the mains voltage is present again, then the device is once again in normal operation and the switching processes can be carried out as normal. You can transmit the status of the mains voltage to the bus as described above, or make it available for readout.

In this case the status object has the value "1".

Possibility 3: Bus and mains voltage failure/recovery

Bus and mains voltage fail

If the power supply for switching the relays fails in addition to the bus functions, the actuator cannot carry out any more switching actions. All channel status

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LEDs, together with the manual operation LED and the RUN LED go out. Manual operation using the channel keys is no longer possible.

Behaviour of channels for blind/roller shutters

The parameterised "Behaviour when bus voltage fails" is executed, although the run times set (up/down) are no longer effective. The relays remain permanently in their current switching position. The switching status of the relays can only be changed when bus voltage is recovered.

Possible settings:

– no response
 The drive remains in its current status, in other words, it doesn't move or it completes its current movement until the running times have expired.

– Stop
 The drive stops immediately.

– Up
 The drive moves upwards. The relay status remains constantly at "UP". If it was in the middle of an downwards movement, then it stops and waits the default pause on reverse time of 300 ms before beginning the upwards movement.

– Down
 The drive moves downwards. The relay status remains constantly at "DOWN". If it was in the middle of an upwards movement, then it stops and waits the default pause on reverse time of 300 ms before beginning the downwards movement.

Behaviour of the channels for switching

The behaviour of the switching channels is determined by their settings when the bus voltage fails.

Behaviour when bus voltage fails after mains voltage failure

The parameterised "Behaviour when bus voltage fails" is executed, although the run times set (up/down) are no longer effective. If the bus voltage fails after the main voltage has previously failed, then the relays remain in their current switching position permanently. The switching status of the relays can only be changed when bus voltage is recovered.

Possible settings:

– no response
 The drive remains in its current status, in other words, it doesn't move or it completes its current movement until the running times have expired.

– Stop
 The drive stops immediately.

– Up
 The drive moves upwards. The relay status remains constantly at "UP". If it was in the middle of an downwards movement, then it stops and waits the default pause on reverse time of 300 ms before beginning the upwards movement.

– Down
 The drive moves downwards. The relay status remains constantly at "DOWN". If it was in the middle of an upwards movement, then it stops and waits the default pause on reverse time of 300 ms before beginning the downwards movement.

Behaviour when mains voltage fails after bus voltage failure

If the mains voltage fails after the bus voltage has previously failed, there is no additional response. The relays remain in their current switching position. The channel status LEDs, together with the manual operation LED and the RUN LED go out.

Bus and mains voltage are recovered

The RUN LED is lit, thus indicating that bus voltage is present again. The channel status LEDs of the channels indicate the current output statuses. The manual LED is switched off, thus indicating that manual operation is deactivated.

The output channels behave in line with your settings following the return of the bus voltage (see option 1).

The relays are not switched until there is enough power to do so safely.

Feedback messages

The device can transmit messages again. For more information see "Behaviour after bus voltage recovery" (option 1).

Behaviour of higher-level functions

The settings and behaviour of higher-level functions correspond to those described under bus voltage recovery (option 1).

Behaviour on recovery of bus voltage without mains voltage

In this case, the device behaves as described under "Bus and mains voltage are recovered". It transmits the status of the mains voltage with the value "0".

Behaviour on recovery of mains voltage without bus voltage

If mains voltage is recovered without bus voltage, the device behaves as described under bus voltage failure with mains voltage present (option 1).

Communication objects

The following communication objects are available:

Function	Object name	Type	Prio	Flags	Behaviour
Status	Mains voltage status feedback	1 bit	Low	KÜL	Transmit
Status	Mains voltage status	1 bit	Low	CR	Transmit/ Read out

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● **Behaviour after application download**

Before the first download after commissioning, all relays are switched off (default setting). Manual operation is deactivated; the manual operation LED is switched off.

You can specify the download behaviour of the output channels:

Tab	Parameter
X: Blind control X: Roller shutter X.A: Switching X.B: Switching	Failure behaviour
X: Failure behaviour X.A: Failure behaviour X.B: Failure behaviour *(if failure behaviour enabled)*	Relay status after download

Possible settings:

– no response
  After a download, the relays remain in their current status. In the "switching" operating mode, the status of active, superordinate functions is set again. The relays are not switched as a result.

– as for bus voltage recovery
  The relays behave in line with your settings for a return of bus voltage for this channel. If a superordinate function (logic operation, priority control or lock) is active in the "Switching" operating mode, the behaviour is executed which you have specified for this function.

If an internal error or a defective download results in a status in which the application is no longer operational, the device does not respond. The output relays remain in their last position. All LEDs are switched off.

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Parameters and settings

This section lists all the parameters of the ETS application with their settings and default settings.

General	
Parameter	**Setting**
Manual operation type	**Bus and manual operation**
	Manual operation only
Manual operation activation *(if "Manual operation type" = bus and manual operation)*	disabled
	enabled
	enabled with status message ⇒*"Manual operation status" object*
	Enable via object ⇒*"Manual operation enable" object*
	Enable via object with status message ⇒*"Manual operation status" object* ⇒*"Manual operation enable" object*
Manual operation activation *(when "Manual operation type" = exclusively manual operation)*	**enabled**
	enabled with status message ⇒*"Manual operation status" object*
Time-dependent reset of manual operation *(when "Enable manual operation" = enabled or enable via object)*	**disabled**
	enabled
Time for automatic reset of manual operation mode in minutes (5-255) *(when "time-dependent reset of manual operation mode" enabled)*	**60**, 5 to 255
Scenes general	**disabled**
	enabled ⇒*"Scene object" object*
Mains voltage status (Devices with mains supply)	**disabled**
	active status feedback object ⇒*"Mains voltage feedback" object*
	passive status object ⇒*"Mains voltage status" object*
Minimum interval between status messages	100 ms, **200 ms**, 500 ms, 1 s, 1.5 s, 2 s
Weather alarm function	**disabled**
	enabled ⇒*"Weather alarm general" tab*
Central object	**disabled**
	enabled ⇒*"Central object" object*

Channel config	
Parameter	**Setting**
Channel X operating mode	disabled (default setting for all channels except 1)
	Blind (default setting for channel 1) ⇒*Tab "X: blind"* ⇒*Tab "X: drive"* ⇒*"Movement object" object* ⇒*"Stop/step object" object* ⇒*"Position height" object* ⇒*"Position slat" object*
	Roller shutter ⇒*Tab "X: Roller shutter"* ⇒*Tab "X: drive"* ⇒*"Movement object" object* ⇒*"Stop object" object* ⇒*"Position height" object*
	Switching ⇒*Tab "X.A: switching"* ⇒*"Switch object" object* ⇒*Tab "X.B: switching"* ⇒*"Switch object" object*

If weather alarm is enabled in the "General" tab:

General weather alarm	
Parameter	**Setting**
Time basis for monitoring time of weather alarms	1 s, **1 min**, 1 hr
Priority sequence of weather alarms	**1. wind alarm, 2. rain alarm**
	1. rain alarm, 2. wind alarm
Wind alarm	**disabled**
	enabled ⇒*"Wind alarm" object*
(if wind alarm enabled) Factor for wind alarm monitoring time	**disabled**, 1 to 255
Rain alarm	**disabled**
	enabled ⇒*"Rain alarm" object*
Factor for rain alarm monitoring time *(if rain alarm enabled)*	**disabled**, 1 to 255

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When "Channel X operating mode" in "Channel config" tab = blind:

X: Blind control X: Roller shutter	
Parameter	**Setting**
How does the existing blind move?	**downwards closed / upwards level (= blind type 1)**
	downwards tilted / upwards level (= blind type 2)
	downwards closed / upwards closed (= blind type 3)
	downwards tilted / upwards closed (= blind type 4)
Slat position after movement	no response
	Working position
	last slat position
Slat working position in % *(for blind type 1 and 3 - if working position)*	0–100 Default settings: Blind type 1: 50% Blind type 3: 75%
What is the current slat position on downward movement in %? *(for blind type 2 and 4)*	0–100 Default settings: Blind type 2: 50% Blind type 4: 75%
Scenes	**disabled**
	enabled ⇒ *Tab "X: Scenes"*
Calibration	**disabled**
	enabled ⇒ *Tab "X: Calibration"*
Weather alarm	**disabled**
	enabled ⇒ *Tab "X: Weather alarm"*
Failure behaviour	**disabled**
	enabled ⇒ *Tab "X: failure behaviour"*
Status messages	**disabled**
	enabled ⇒ *Tab "X: Status messages"*
Manual operation on bus voltage failure (mains voltage present)	**disabled**
	enabled

X: Drive	
Parameter	**Setting**
Advanced drive parameter	**enabled**
	disabled
Time basis for height running time	10 ms, **100 ms**
Factor for height running time (10-64000) 1 second = 1000 ms	10–64000, **1200** default setting
Shared time basis for running time supplements/dead time	**10 ms**, 100 ms
Factor for running time upwards supplement	disabled, 1–255, **20** default setting
Factor for dead time until upwards movement	**disabled**, 1–255
Factor for slat open up start-up supplement *("Blind" only)*	**disabled**, 1–255
Factor for slat open down start-up supplement *("Blind" only)*	**disabled**, 1–255
Time basis for slat step time *("Blind" only)*	**10 ms**, 100 ms
Factor for slat step time (5-255) *("Blind" only)*	5–255, **10** default setting
Time basis for slat running time *("Blind" only)*	**10 ms**, 100 ms

X: Drive	
Parameter	**Setting**
Factor for slat running time (5-255) *("Blind" only)*	5–255, **100** default setting
Pause on reverse for change of direction (1-255) factor x 100 ms, manufacturer data!	1–255, **5** default setting

If "Scenes" in the tab "X:: blind" enabled:

X: Scenes	
Parameter	**Setting**
Replace scene values in the actuator on download?	**disabled**
	enabled
Scene 1	**disabled**
	enabled
Scene 1: Scene address (0-63) *(only if scene 1 enabled)*	(0-63), **0** default setting
Scene 1: Pos. height (1-64) *(only if scene 1 enabled)*	0–100, **0** default setting
Scene 1: Pos. slat in % *(blind operation only and only if scene 1 enabled)*	0–100, **0** default setting
Scene 2	**disabled**
	enabled
Scene 2: Scene address (0-63) *(only if scene 2 enabled)*	(0-63), **1** default setting
Scene 2: Pos. height (2-64) *(only if scene 1 enabled)*	0–100, **0** default setting
Scene 2: Pos. slat in % *(blind operation only and only if scene 2 enabled)*	0–100, **0** default setting
Scene 3	**disabled**
	enabled
Scene 3: Scene address (0-63) *(only if scene 3 enabled)*	(0-63), **2** default setting
Scene 3: Pos. height (3-64) *(only if scene 1 enabled)*	0–100, **0** default setting
Scene 3: Pos. slat in % *(blind operation only and only if scene 3 enabled)*	0–100, **0** default setting
Scene 4	**disabled**
	enabled
Scene 4: Scene address (0-63) *(only if scene 4 enabled)*	(0-63), **3** default setting
Scene 4: Pos. height (4-64) *(only if scene 1 enabled)*	0–100, **0** default setting
Scene 4: Pos. slat in % *(blind operation only and only if scene 4 enabled)*	0–100, **0** default setting
Scene 5	**disabled**
	enabled
Scene 5: Scene address (0-63) *(only if scene 5 enabled)*	(0-63), **4** default setting
Scene 5: Pos. height (5-64) *(only if scene 1 enabled)*	0–100, **0** default setting
Scene 5: Pos. slat in % *(blind operation only and only if scene 5 enabled)*	0–100, **0** default setting

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If "Calibration" in the tab "X:: blind" enabled:

X: Calibration	
Parameter	**Setting**
Number of movements until a reference movement is executed (1-20)	1–20, **7** default setting
Reference position	**up**
	down
	up and down
Automatic calibration	**top end position**
	top and lower end position

If "Weather alarm" in the tab "X:: blind" enabled:

X: Weather alarm	
Parameter	**Setting**
Response to the wind alarm	**no response**
	Up
	Down
	Move to position
Response to rain alarm	**no response**
	Up
	Down
	Move to position
Height position on weather alarm in %	0–100, **0** default setting
Slat position on weather alarm in %	0–100, **0** default setting
Behaviour on end of all weather alarm functions	**no response**
	Up
	Down
	Move into position prior to weather alarm

If "Failure behaviour" in the tab "X:: blind" enabled:

X: Failure behaviour	
Parameter	**Setting**
Behaviour on bus voltage failure (fixed pause on reverse = 300 ms)	**no response**
	Stop
	Up
	Down
Behaviour on bus voltage recovery	**Stop**
	Up
	Down
	Move to position
Height position on bus voltage recovery in % *(only for "Move to position")*	0–100, **0** default setting
Slat position on bus voltage recovery in % *(only for "Move to position")*	0–100, **0** default setting
Relay status after download	**no response**
	as for bus voltage recovery

If "Status reports" in the tab "X:: blind" enabled:

X: Status messages	
Parameter	**Setting**
Height status	**disabled**
	active status feedback object
	passive status object
Slat status	**disabled**
	active status feedback object
	passive status object

When "Channel X operating mode" in "Channel config" tab = switching:

X.A: Switching X.B: Switching	
Parameter	**Setting**
Relay operation	**make contact**
	break contact
Staircase lighting function	**disabled**
	enabled ⇒ *Tab "X.A/X.B: Staircase lighting function"*
Delay times	**disabled**
	enabled ⇒ *Tab "X.A/X.B: Delay times"*
Scenes	**disabled**
	enabled ⇒ *Tab "X.A/X.B: Scenes"*
Central function	**disabled**
	enabled
Priority function	**disabled**
	Logic operation ⇒ *Tab "X.A/X.B: logic operation"* ⇒ *"Logic object" object (for channel A, B)*
	Priority control ⇒ *Tab "X.A/X.B: Priority control"* ⇒ *"Priority control" object (for channel A, B)*
Disable function	**disabled**
	Logic operation ⇒ *Tab "X.A/X.B: disable function"* ⇒ *"Disable object" object (for channel A, B)*
Failure behaviour	**disabled**
	enabled ⇒ *Tab "X.A/X.B: failure behaviour"*
Status report	**disabled**
	active status feedback object ⇒ *"Status feedback object" object (for channel A, B)*
	passive status object ⇒ *"Status object" object (for channel A, B)*
Manual operation on bus voltage failure (mains voltage present)	**disabled**
	enabled

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If "Failure behaviour" in the tab "X.A/X.B: switching" enabled:

X.A: Failure behaviour X.B: Failure behaviour	
Parameter	**Setting**
Relay state after bus voltage failure	**no response**
	actuated
	not actuated
Relay state after bus voltage recovery	**no response**
	actuated
	not actuated
Relay status after download	**as for bus voltage recovery**
	no response

If "Staircase lighting function" in the tab "X.A/X.B: switching" enabled:

X.A: Staircase lighting function X.B: Staircase lighting function	
Parameter	**Setting**
Staircase lighting function	**with manual OFF**
	without manual OFF
Staircase timer	not retriggerable
	retriggerable
Time base, staircase timer	1 s, **1 min**, 1 hr
Factor for staircase timer (1-255)	1–255, **3** default setting
Pre-warning at the end of the staircase time	**disabled**
	1 prewarning
	2 prewarnings
	3 prewarnings
Prewarning time (1-255), factor x 1 s	1–255, **30** default setting

If "Delay times" in the tab "X.A/X.B: switching" enabled:

X.A: Delay times X.B: Delay times	
Parameter	**Setting**
ON delay	**disabled**
	enabled, retriggerable:
	enabled, not retriggerable
Time base for ON delay *(when "ON delay" enabled)*	100 ms, **1 s**, 1 min
Factor for ON delay (1-255) *(when "ON delay" enabled)*	1–255, **3** default setting
OFF delay	**disabled**
	enabled, retriggerable:
	enabled, not retriggerable
Time base for OFF delay *(when "OFF delay" enabled)*	100 ms, **1 s**, 1 min
Factor for OFF delay (1-255) *(when "OFF delay" enabled)*	1–255, **120** default setting

If "Scenes" in the tab "X.A/X.B: switching" enabled:

X.A: Scenes X.B: Scenes	
Parameter	**Setting**
Replace scene values in the actuator on download?	**disabled**
	enabled
Scene 1	**disabled**
	enabled
Scene 1: Scene address (0-63) *(only if scene 1 enabled)*	(0-63), **0** default setting
Scene 1: Relay status *(only when scene 1 enabled)*	**not actuate**d
	actuated
Scene 2	**disabled**
	enabled
Scene 2: Scene address (0-63) *(only if scene 2 enabled)*	(0-63), **1** default setting
Scene 2: Relay status *(only when scene 2 enabled)*	**not actuate**d
	actuated
Scene 3	**disabled**
	enabled
Scene 3: Scene address (0-63) *(only if scene 3 enabled)*	(0-63), **2** default setting
Scene 3: Relay status *(only when scene 3 enabled)*	**not actuate**d
	actuated
Scene 4	**disabled**
	enabled
Scene 4: Scene address (0-63) *(only if scene 4 enabled)*	(0-63), **3** default setting
Scene 4: Relay status *(only when scene 4 enabled)*	**not actuate**d
	actuated
Scene 5	**disabled**
	enabled
Scene 5: Scene address (0-63) *(only if scene 5 enabled)*	(0-63), **4** default setting
Scene 5: Relay status *(only when scene 5 enabled)*	**not actuate**d
	actuated

If "Superordinate function" in the tab "X.A/X.B: switching" = logic operation:

X.A: Logic operation X.B: Logic operation	
Parameter	**Setting**
Type of logic operation	AND
	OR
	XOR
Value of logic object after bus voltage recovery	**0**
	1

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If "Superordinate function" in the tab "X.A/X.B: switching" = priority control:

X.A: Priority control X.B: Priority control	
Parameter	**Setting**
Behaviour at the end of priority control *(when "staircase lighting function" disabled)*	**no response**
	follows subordinate control commands
Behaviour at the end of priority control *(when "staircase lighting function" enabled)*	**follows subordinate control commands**
Behaviour of priority control after bus voltage recovery	**disabled**
	enabled, not activated
	enabled, activated
	as before bus voltage failure

If "Disable function" in the tab "X.A/X.B: switching" enabled:

X.A: Disable function X.B: Disable function	
Parameter	**Setting**
Block	For object value "0"
	For object value "1"
Behaviour at start of blocking	**no response**
	actuated
	not actuated
Behaviour at end of block (superordinate function has priority!) *(when "staircase lighting function" disabled)*	**no response**
	follows subordinate control commands
Behaviour on lock end (superordinate function has priority!) *(when "staircase lighting function" enabled)*	**follows subordinate control commands**
Behaviour of the block after bus voltage recovery	**inactive**
	active
	as before bus voltage failure