Switch Logic Time Scene Dis. Prio. Init. 4820/1.1

Introduction

● General information

This software application enables you to program switch actuators using manual mode (referred to below as **actuator**), which switch loads via separate, floating make contacts.

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

¾ **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!

ⓘ **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.

ⓘ **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.

● Application functions

The software application for the actuator provides you with numerous functions. 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". The description is divided into:

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

Device functions

In this chapter you will find explanations about:
– Status messages
– Manual operation and status displays
– Behaviour after failure and recovery of supply voltage
– Behaviour after application download

Parameters and settings

– Overview of all parameters of the application

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 1 and channel 2 operating mode Channel 3 and channel 4 operating mode Channel

The descriptions below relate only to the settings for "Channel 1" and "Channel 2", but they are representative of all channels.

If you select the operating mode "Switch" for two output channels, these output contacts are enabled. To enable you to control these two outputs, the "Switch object - channel 1" and "Switch object - channel 2" communication objects (1 bit) appear.

You can use the "Channel 1" and "Channel 2" tabs to perform individual settings for each channel.

● **Basic function:**
   Switching outputs

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

Tab	Parameter
Channel 1 Channel 2	Relay operation

Output contacts 1 and 2 are controlled using the "Switching object - channel 1" and "Switching object - channel 2" communication objects. Telegram values have different effects, depending on the relay operating mode set:
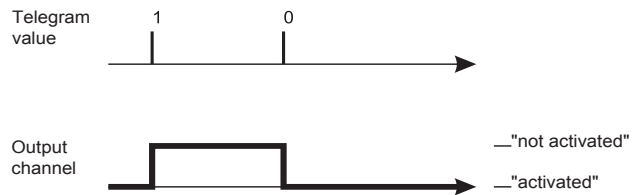
"Make contact" relay operation

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

– not 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
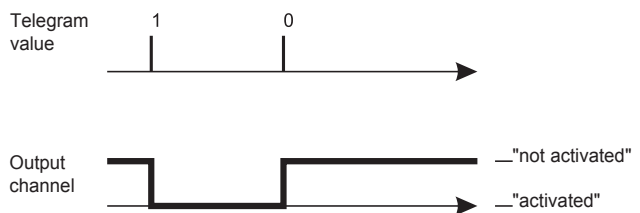
Set the following parameters for this function in the ETS:

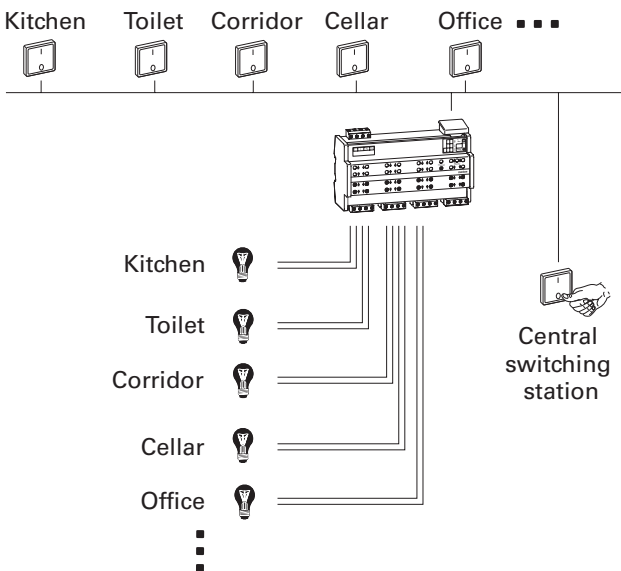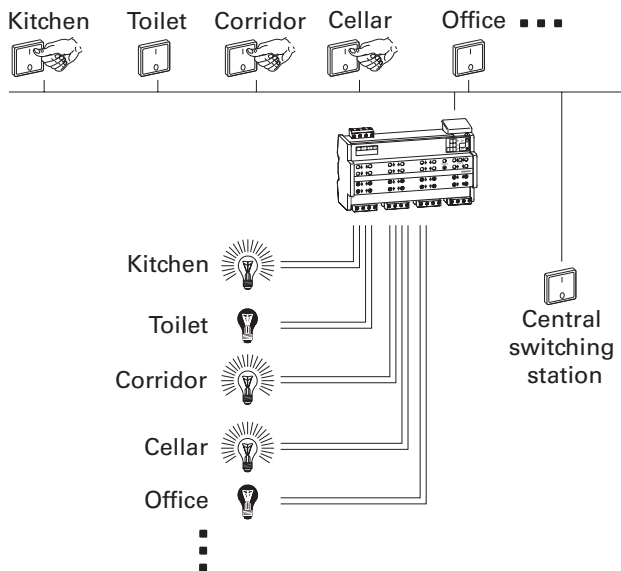| Tab	Parameter
Channel 1 Channel 2	Relay operation

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 1 Channel 2	Switch object	1 bit	Low	WC	Receive

● **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 function, general

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
Channel 1 Channel 2	Central function

After the "Central function" parameter has been enabled, an output is switched on and off 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 function, general
Channel 1 Channel 2	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

● **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.
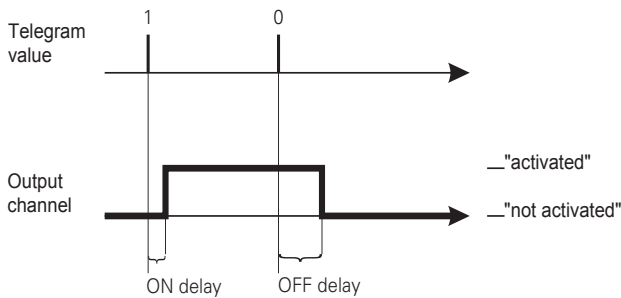
Enabling delay times:

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

| Tab	Parameter
Channel 1 Channel 2	Delay times

After the "Delay times" function has been enabled, you can set the function values in a new tab called "Channel 1/2: Delay times":

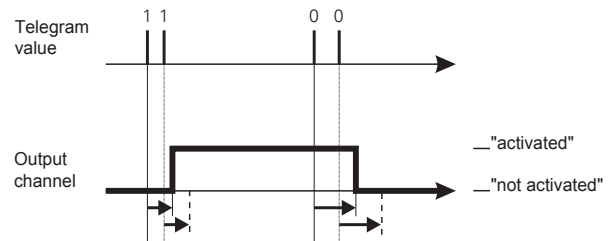| Tab	Parameter
Channel 1: Delay times Channel 2 Delay times	ON delay
	OFF delay

Values to be set:

– blocked:
  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.
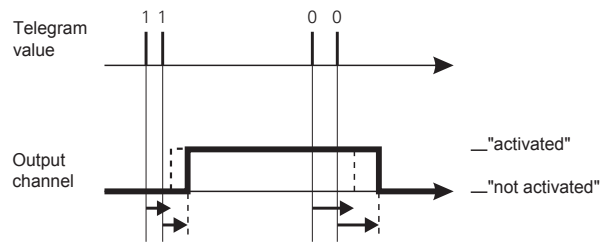
– enabled, not retriggerable:
  When a telegram value is first received, the delay function is started. After the delay time has elapsed, the delay relay is switched, regardless of whether further telegrams with the same value have been received during the delay time.

Tab	Parameter
Channel 1: Delay times Channel 2 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, any ON delay that is running is interrupted.

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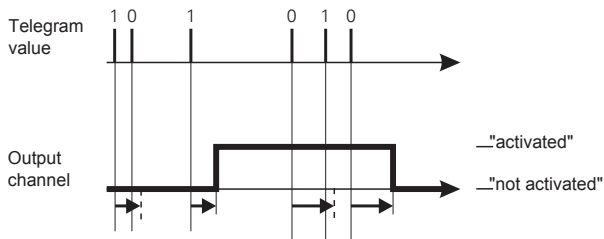
Delay functions and staircase lighting function

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:

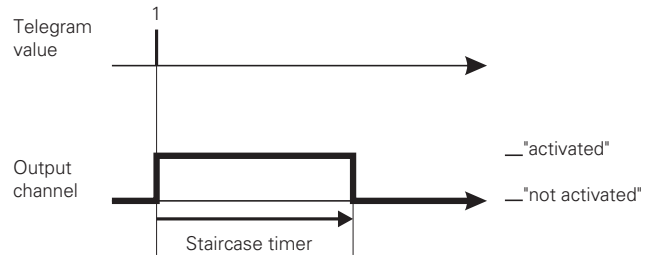| Tab	Parameter
Channel 1 Channel 2	Delay time
Channel 1: Delay times Channel 2 Delay times	ON delay
	Time base for ON delay
	Factor for ON delay (1-255)
	OFF delay
	Time base for OFF delay
	Factor for OFF delay (1-255)

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
Channel 1 Channel 2	Staircase lighting function

After the staircase lighting function has been enabled, you can set the function values in a new tab called "Channel 1/2: Staircase lighting function":

Tab	Parameter
Channel 1: Staircase lighting function Channel 2 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
	Pre-warning 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

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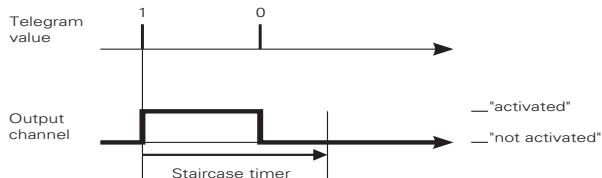
– without manual OFF: A telegram with the object value "0" has no effect. The staircase timer set continues to run normally until the end. An OFF delay cannot be set.

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 effect. The function continues to run normally.
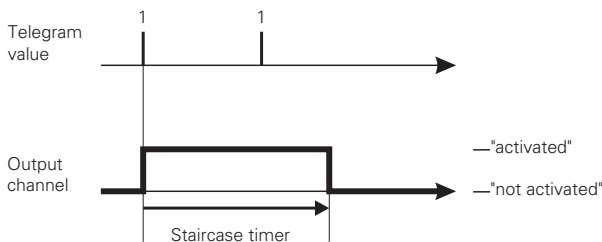
– retriggerable: After a new telegram has been received with the object value "1", the staircase timer is restarted.
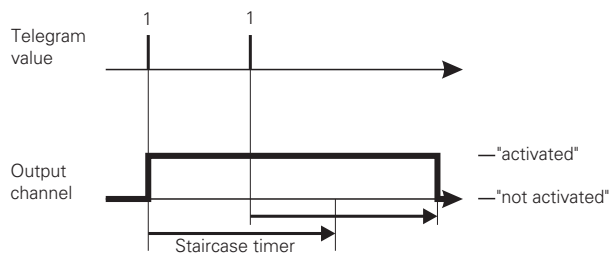
Setting the staircase timer

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 "Pre-warning at end of staircase lighting time" parameter to disable or release the OFF pre-warning. If the OFF pre-warning has been enabled, you can specify whether one, two or three pre-warning impulses should be given. The first pre-warning begins according to the set pre-warning time prior to the normal expiry of the current staircase lighting time. For each pre-warning, 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 pre-warning, a wait time of 5 seconds is maintained between the pre-warning impulses.

If a running staircase lighting function is interrupted by a manual OFF function, no pre-warning is given.

Parameter settings in the ETS

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

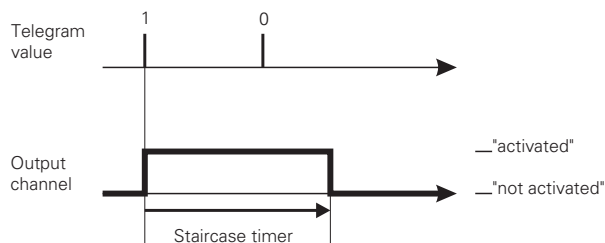| Tab	Parameter
Channel 1 Channel 2	Staircase lighting function
Channel 1: Staircase lighting function Channel 2 Staircase lighting function	Staircase lighting function
	Staircase timer
	Time base, staircase timer
	Factor for staircase timer (1-255)
	Pre-warning at the end of the staircase time
	Pre-warning 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 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 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
Channel 1 Channel 2	Scenes

After you enable the "Scenes" parameter, the "Channel 1: Scenes" or "Channel 2: 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:
– **Channel 1**
Scene 1 active with scene address 10 with relay state OFF
Scene 2 active with scene address 20 with relay state ON
– **Channel 2**
Scene 3 active with scene address 20 with relay state ON

– Scene object receives "Retrieve scene address 20" telegram
Channel 1 switches ON
Channel 2 switches ON
– Scene object receives "Retrieve scene address 10" telegram
Channel 1 switches OFF
Channel 2 remains ON
– Switch object channel 2 receives "OFF" telegram
Channel 1 remains OFF
Channel 2 switches OFF
– Scene object receives "Learn scene address 20" telegram
– Scene object receives "Retrieve scene address 20" telegram
Channel 1 does not react, because the relay state is already "OFF"
Channel 2 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
Channel 1 Channel 2	Scenes
Channel 1: Scenes Channel 2 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.

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
Channel 1 Channel 2	Disable function

For the disable function, the parameter card "Channel 1/2: 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
Channel 1 Channel 2	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 function, the parameter card "Channel 1/2: Logic operation" appears. To set the priority control function, the new parameter card "Channel 1/2: 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.
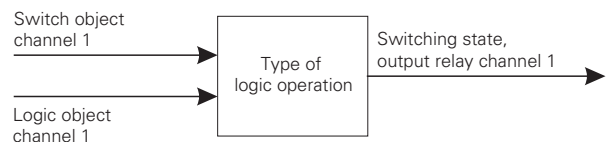
The logical functions AND, OR and XOR are possible as logic operations:

Tab	Parameter
Channel 1: Logic operation Channel 2 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 logical result.

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

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

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

✱ 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 if 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
Channel 1: Logic operation Channel 2 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 "Channel 1/ 2: Failure behaviour" tab determines whether the relay is switched or not in this case.

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
Channel 1 Channel 2	Priority function
Channel 1: Logic operation Channel 2 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 1 Channel 2	Logic object	1 bit	Low	WC	Receive

● **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 2 = 1) or "not activated" (bit 2 = 0), depending on bit 2. 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 if no disable function with a higher priority is active.

Tab	Parameter
Channel 1: Priority control Channel 2 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
Channel 1: Priority control Channel 2 Priority control	Behaviour of priority control after bus voltage recovery

– blocked
  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
Channel 1 Channel 2	Priority function
Channel 1: Priority control Channel 2 Priority control	Behaviour at the end of priority control
	Behaviour of priority control after bus voltage recovery

Communication objects

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

Function	Object name	Type	Prio	Flags	Behaviour
Channel 1 Channel 2	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
Channel 1 Channel 2	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 "Channel 1/2: 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 blocked:

Tab	Parameter
Channel 1: Disable function Channel 2 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
Channel 1: Disable function Channel 2 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.
– actuated
  The output relay switches to the "activated" state.
– not actuated
  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 end of block" parameter:

Tab	Parameter
Channel 1: Disable function Channel 2 Disable function	Behaviour at 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

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
Channel 1: Disable function Channel 2 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 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 start of 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 "Channel 1/2: Failure behaviour" 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
Channel 1 Channel 2	Disable function
Channel 1: Disable function Channel 2 Disable function	Block
	Behaviour at start of block
	Behaviour at end of 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 1 Channel 2	Disable object	1 bit	Low	WC	Receive

Device functions

● 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:

– blocked
  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 signal 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.
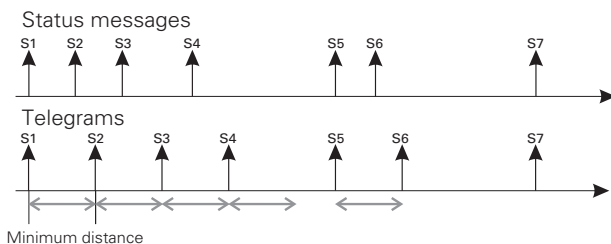
If you want to activate the status messages for an output channel, then you have to enable the "Status message" parameter:

Tab	Parameter
Channel 1 Channel 2	Status report

Possible settings:

– active status feedback object
  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.

– passive status 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".

Communication objects

The following communication objects are available:

Function	Object name	Type	Prio	Flags	Behaviour
Channel 1 Channel 2	Status feedback object	1 bit	Low	CRT	Transmit/ Read out
Channel 1 Channel 2	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 manual operation LED. The manual operation switch allows you to activate and deactivate manual operating mode. Another green operation LED labelled "RUN" (RUN LED) indicates that the device is ready for operation.

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

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

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

Setting manual operation

The connected 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 after which 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 higher-level functions (logic operation, priority control and blocking) 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 block the switch being changed to manual operation.

– "Manual operation type" = exclusively manual operation:
 In this operating mode, the output channels can only be controlled with the channel keys after

switching to manual operation (manual operation LED lights up). Bus telegrams are no longer effective. The higher-level functions are suppressed as long as exclusive manual operation is activated. 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 enable" = "Enabled with status report") or not ("Manual operation enable" = "Enabled").

⅜ Caution!
The loads could become damaged. When operating loads in "Manual operation only" using the channel keys, prioritised safety functions (e.g. priority control) no longer work. To prevent damage you should therefore be very careful when operating manually.

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:

– blocked
 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 operating 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 if the "Release manual operation" object has the value "1". If the object has the value "0", the transfer to manual operation is blocked. If the transfer is disabled via a telegram, the device also automatically blocks any 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.

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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 block the following parameter:

Tab	Parameter
Channel 1 Channel 2	Manual operation on bus voltage failure (mains voltage present)

Possible settings:

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

– enabled
  You can continue to operate the output channels if 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.

¾ **Caution!**
The loads could become damaged. When operating loads in "Manual operation only" using the channel keys, prioritised safety functions (e.g. priority control) no longer work. To prevent damage you should therefore be very careful when operating manually.

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 operating mode" manual operating 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 higher-level function is active in this manual operation mode, the manual operation is blocked.

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 higher-level 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

● Behaviour after failure and recovery of supply voltage

ℹ Note for actuators with 12 or more channels:
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:

¾ Caution!
Switching on the supply voltage can cause the loads to be switched on if the output relay is switched on at the time.
In order to avoid bodily injury or material damage, ensure before switching the supply voltage on again that none of the switched loads present any risk.

ℹ Note: If only the bus voltage is present, the actuator can in principle perform all functions. 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 if the supply voltage fails unexpectedly during operation, then you can configure failure behaviour for each channel.

Tab	Parameter
Channel 1 Channel 2	Failure behaviour

When you have enabled the failure behaviour for a channel, the additional tab "Channel 1/2: 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.

You can set failure behaviour as follows:

Tab	Parameter
Channel 1: Failure behaviour Channel 2 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 which you have defined as an "active feedback object" are sent. 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".

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

Tab	Parameter
Channel 1: Failure behaviour Channel 2 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 higher-level function is activated for the switching channel directly after the bus voltage returns, the following settings apply for these functions.

Behaviour of higher-level functions

Here, the higher-level 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 "Higher-level functions: Priority control").

Tab	Parameter
Channel 1: Priority control Channel 2 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 "Higher-level functions: Logic operation").

Tab	Parameter
Channel 1: Logic operation Channel 2 Logic operation	Value of logic object after bus voltage recovery

– Disable function
  According to your settings, the disable function is blocked 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
Channel 1: Disable function Channel 2 Disable function	Behaviour of the block after bus voltage recovery

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

Mains voltage has failed

For actuators with mains supply:

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. 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:

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

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

Behaviour if the bus voltage fails after a mains voltage failure

The behaviour matches the behaviour when "Bus and mains voltage fail".

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 operating mode 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

● **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
Channel 1 Channel 2	Failure behaviour
Channel 1: Failure behaviour Channel 2 Failure behaviour	Relay status after download

Possible settings:

– no response
  After a download, the relays remain in their current status. The status of active, higher-level functions is set again. This does not result in the relays being switched.

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

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.

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)*	blocked
	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 *(if "Manual operation type" = exclusively manual operation)*	**enabled**
	enabled with status message ⇒*"Manual operation status" object*
Time-dependent reset of manual operation *(if "Enable manual operation" is enabled)*	**blocked**
	enabled
Time for automatic reset of manual operation mode in minutes (5-255) *(if "time-dependent reset of manual operation mode" enabled)*	**60**, 5 to 255
Scenes general	**blocked**
	enabled ⇒*"Scene object" object*
Mains voltage status (Devices with mains supply)	**blocked**
	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
Central object	**blocked**
	enabled ⇒*"Central object" object*

Channel config	
Parameter	**Setting**
Channel 1 and channel 2 operating mode	blocked
	Switching
Channel 3 and channel 4 operating mode	**blocked**
	Switching
Channel 5 and channel 6 operating mode	**blocked**
	Switching
Channel 7 and channel 8 operating mode	**blocked**
	Switching
Channel 9 and channel 10 operating mode	**blocked**
	Switching
Channel 11 and channel 12 operating mode	**blocked**
	Switching
	Switching ⇒*Tab "Channel X"* ⇒*Tab "Channel Y"* ⇒*Object "Switch object" channel X* ⇒*Object "Switch object" channel Y*

If "Channel X and channel Y operating mode" in "Channel config" tab = switching:

Channel X Channel Y	
Parameter	**Setting**
Relay operation	**make contact**
	break contact
Staircase lighting function	**blocked**
	enabled ⇒*Tab "Channel X/Y" Staircase lighting function"*
Delay times	**blocked**
	enabled ⇒*Tab "Channel X/Y" Delay times"*
Scenes	**blocked**
	enabled ⇒*Tab "Channel X/Y" Scenes"*
Central function	**blocked**
	enabled
Priority function	**blocked**
	Logic operation ⇒ *Tab "Channel X/Y: Logic operation"* ⇒*Object "Logic object" (for channel X, Y)*
	Priority control ⇒*Tab "Channel X/Y" Priority control"* ⇒*Object "Priority control" (for channel X/Y)*
Disable function	**blocked**
	Logic operation ⇒ *Tab "Channel X/Y: Disable function"* ⇒*Object "Disable object" (for channel X/Y)*
Failure behaviour	**blocked**
	enabled ⇒*Tab "Channel X/Y" Failure behaviour"*

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Channel X Channel Y	
Parameter	**Setting**
Status report	**blocked**
	active status feedback object ⇒ *Object "Status feedback object" (for channel X/Y)*
	passive status object ⇒ *Object "Status object" (for channel X/Y)*
Manual operation on bus voltage failure (mains voltage present)	**blocked**
	enabled

If "Failure behaviour" is enabled in the "Channel X/Y" tab:

Channel X: Failure behaviour Channel Y: Failure behaviour	
Parameter	**Setting**
Relay state after bus voltage failure	**no response**
	actuated
	not actuated
Relay status on bus voltage recovery (higher-level function has priority!)	**no response**
	actuated
	not actuated
Relay status after download	**as for bus voltage recovery**
	no response

If "Staircase lighting function" is enabled in the "Channel X/Y" tab:

Channel X: Staircase lighting function Channel Y: 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	**blocked**
	1 pre-warning
	2 pre-warnings
	3 pre-warnings
Pre-warning time (1-255), factor x 1 s *(if pre-warning activated)*	1–255, **30** default setting

If "Delay function" is enabled in the "Channel X/Y" tab:

Channel X: Delay times Channel Y: Delay times	
Parameter	**Setting**
ON delay	**blocked**
	enabled, retriggerable:
	enabled, not retriggerable
Time base for ON delay *(if "ON delay" enabled)*	100 ms, **1 s**, 1 min
Factor for ON delay (1-255) *(if "ON delay" enabled)*	1–255, **3** default setting

Channel X: Delay times Channel Y: Delay times	
Parameter	**Setting**
OFF delay	**blocked**
	enabled, retriggerable:
	enabled, not retriggerable
Time base for OFF delay *(if "OFF delay" enabled)*	100 ms, **1 s**, 1 min
Factor for OFF delay (1-255) *(if "OFF delay" enabled)*	1–255, **120** default setting

If "Scenes" is enabled in the "Channel X/Y" tab:

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

If "Higher-level function" in the "Channel X/Y" tab = Logic operation:

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

If "Higher-level function" in the "Channel X/Y" tab = Priority control:

Channel X: Priority control Channel Y: Priority control	
Parameter	**Setting**
Behaviour at the end of priority control *(if "staircase lighting function" blocked)*	**no response**
	follows subordinate control commands
Behaviour at the end of priority control *(if "staircase lighting function" enabled)*	**follows subordinate control commands**
Behaviour of priority control after bus voltage recovery	**blocked**
	enabled, not activated
	enabled, activated
	as before bus voltage failure

If "Disable function" is enabled in the "Channel X/Y" tab:

Channel X: Disable function Channel Y: Disable function	
Parameter	**Setting**
Block	for object value "0"
	for object value "1"
Behaviour at start of block	**no response**
	actuated
	not actuated
Behaviour at end of block (higher-level function has priority!) *(if "staircase lighting function" blocked)*	**no response**
	follows subordinate control commands
Behaviour at end of block (higher-level function has priority!) *(if "staircase lighting function" enabled)*	**follows subordinate control commands**
Behaviour of the block after bus voltage recovery	**inactive**
	active
	as before bus voltage failure