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Universal dimming actuator REG-K/ 4x230/250 W

Product manual
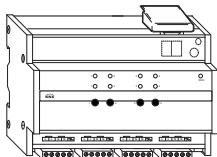
Art. no. 649325

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For your safety

DANGER
Risk of fatal injury due to electrical current
All work on the device must only be carried out by trained and skilled electricians. Observe the country-specific regulations as well as the valid KNX guidelines.

CAUTION
Damage to the device.
- Only operate the device according to the specifications listed in the technical data.
- All devices that are mounted next to the actuator must at least be equipped with basic insulation.
- Do not connect any combination of capacitive and inductive loads to the device.

CAUTION
Danger of device malfunctions.
Each dimming channel requires a minimum load for operation (see technical data). If this is not reached, malfunctions may arise.

Notes
- In the case of a mixed load (combination of ohmic and inductive, or ohmic and capacitive loads) on one channel, the ohmic load may not exceed 30 % of the total connected load of this channel.

Otherwise, the wrong load might be detected. Different loads may be connected to different channels.
- When using inductive transformers, the load connected to the secondary circuit must be at least half the size of the nominal load of the transformer. If the load is too small, the channel may shut down automatically. Only transformers that are certified for use with electronic switches may be connected.
- Socket-outlets must not be dimmed. The risk of overloading and the risk of unsuitable devices being connected is too high.

Getting to know the actuator

The REG-K universal dimming actuator (referred to in the following as the **actuator**) can be used to switch and dim the following loads per channel:
- Ohmic loads (e.g. 230 V incandescent lamps)
- Inductive loads (e.g. inductive transformers with low-voltage halogen lamps)
- Capacitive loads (e.g. electronic transformers with low-voltage halogen lamps)
- A combination of ohmic and inductive loads
- A combination of ohmic and capacitive loads

The actuator automatically recognises the connected loads.

> You can connect the channels of the actuator to different live conductors.

If there is no bus voltage, you can switch and dim the connected luminaires using the channel keys. The luminaires are dimmed continuously (up or down) as long as the channel key is pressed. The settings made via the ETS are not effective.

The actuator has a bus coupler. It is installed on a DIN rail acc. to EN 60715, with the bus connection made via a bus connecting terminal. A data rail is not required.

Connections, displays and operating elements
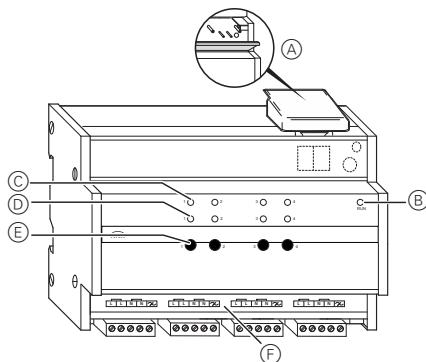
Ⓐ Under the cable cover: Bus connecting terminal, programming button and programming LED (red)

Ⓑ Operating LED "RUN" (green)

Ⓒ Channel status LED (yellow) for the corresponding channel

Ⓓ Channel error LED (red) for the corresponding channel

Ⓔ Channel keys for manually controlling the channel in question

Ⓕ Channel terminals for supply voltage and loads

Meaning of the displays

	Operating LED "RUN" (green)	Channel status LED (yellow)	Channel error LED (red)
Normal mode			
Channel switched off	on	off	off
Channel switched on	on	on	off
No bus voltage			
Channel switched off	off	off	off
Channel switched on	off	on	off
No mains supply	off	off	off
Overload or short circuit. The channel has been switched off.	on	off	on
Overload or short circuit and no bus voltage. The channel has been switched off.	off	off	on
Load detection	on	on	off
No load at output (idle). The channel has been switched off.	on	on	on
No load at output (idle) and no bus voltage. The channel has been switched off.	off	on	on
Excess temperature. All channels that are switched on are dimmed to minimum power/minimum brightness. Channels which are currently switched off cannot be switched on. See also "What should I do if there is a problem?".	Flashes	on/off	All on

Mounting the actuator

⚡ **DANGER**

Risk of fatal injury from electric current.

The outputs may carry an electrical current even when the device is switched off. Always disconnect the fuse in the incoming circuit from the supply before working on connected loads.

⚠ **WARNING**

Risk of fatal injury from electric current. The device may become damaged.

The safety clearance must be guaranteed as per IEC 60664-1. A distance of at least 4 mm must be maintained between individual cores of the 230 V cable and the SELV cable Ⓐ.
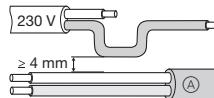

⚠ **CAUTION**

The installation site must provide sufficient cooling and unimpeded air circulation through the cooling slots of the device.

① Position the actuator on the DIN rail.
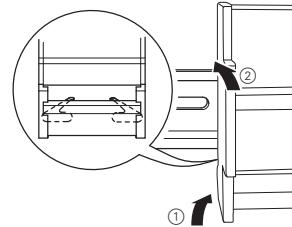
② Connect KNX.
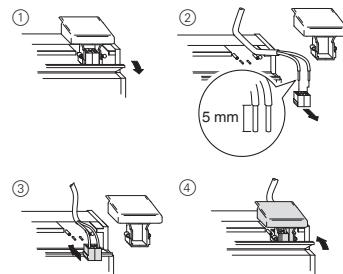
③ Connect the bus voltage.

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ℹ️ The two L and N connections per channel are each bridged internally. When several devices are connected in series, bridges must also be inserted in the connecting terminals so that when the terminals are removed from one device, the next devices in the series are not damaged by power supply surges.
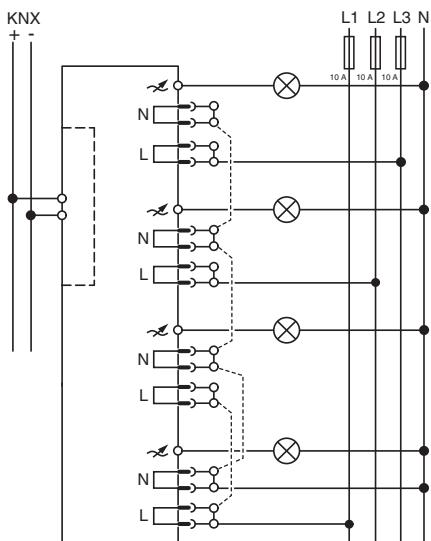
④ Connect the loads.
⑤ Connect the load voltage.

Commissioning the actuator

① Press the programming button.
The programming LED lights up.
② Load the physical address and application into the device from the ETS.
The programming LED goes out.

The operating LED lights up: The application has been loaded successfully, the device is operative.

Load detection
Load detection determines whether an inductive, capacitive or ohmic load is connected.

Load detection is performed:

– The first time a channel is switched after the mains voltage is switched on.
– After a load is connected.
– After a short circuit has been rectified.
– After an output overload has been rectified.

When this happens, the channel switches for approx. 10 seconds to maximum brightness, then goes out briefly, and then dims to parameterised initial brightness of the application.

The dimmer has detected the connected load and is ready for operation.

Operating the actuator

Operate the dimmer via one of the following:
– KNX
– Channel buttons on the actuator

Switching/dimming luminaires
If bus voltage is available, operation via the channel keys depends on the parameters of the application (see the separate application description).

If there is no bus voltage (operating LED off), you can use the channel keys to do the following:
• Switching on/off: Press the key briefly
• Dimming brighter/darker: Press the key longer Dimming will be continuous (up or down) for as long as the key is pressed.
• Activating/deactivating memory function (switching on at last brightness value): Press key briefly ten times

What should I do if there is a problem?

The brightness of the connected lamps is dimmed down and cannot be altered
If the temperature in the actuator is too high, all the channels which are switched on will be dimmed to minimum power/brightness. You can now only switch the channels off; switching on and dimming are no longer possible.
If the temperature drops again within 15 minutes, the previous values are restored. If the temperature increases further, the channels will be switched off automatically.
You can then only switch the channels on again when the temperature has decreased significantly. Any KNX commands received in the intervening period will be lost.

Afterwards, you can use the actuator as normal again.

ℹ️ Excessive temperature in the actuator is normally caused by overloading the outputs, or insufficient heat dissipation from the actuator. When several dimming actuators are installed next to one another, they might cause each other to heat up.

⚠️ **CAUTION**
Make sure that a skilled electrician detects and remedies the cause of the increased temperature before putting the device back into operation.

The connected load switches off automatically and can no longer be switched or dimmed

In the case of a short circuit, an overload or open circuit, the corresponding channel switches off and the channel error LED lights up.

When using inductive transformers, the load connected to the secondary circuit must be at least half the size of the nominal load of the transformer. If the load is too small, the channel may shut down automatically.

Have a skilled electrician rectify the cause. The first time the channel is switched after the fault is rectified, load detection will be carried out automatically.

Afterwards, you can use the actuator as normal again.

All connected loads switch off automatically and can no longer be switched or dimmed

The mains supply has failed. Once the mains supply is switched on again, the channels remain switched off. The first time the channel is switched after the mains supply is switched on, load detection will be carried out automatically.

If there is no bus voltage, the lamp will not be switched to its full brightness if it is switched on via the channel key.

The memory function is activated. The lamp is switched on at the previous brightness value. To toggle (activate/deactivate memory function), press the channel key briefly ten times.

Technical data

|	
Supply from KNX:	DC 24 V, approx. 10 mA
Insulation voltage:	AC 4 kV bus/mains voltage
Nominal voltage:	AC 220 - 230 V, 50/60 Hz
Fuse:	The actuator must be fused using a 10 A circuit breaker.
Minimum nominal power:	
Ohmic loads	> 25 W
Inductive loads	> 50 VA
Capacitive loads	> 50 VA

Maximum nominal power (ohmic loads/inductive or capacitive loads):

Assignment	Channel 1	Channel 2	Channel 3	Channel 4
4 channels	250 W/VA	250 W/VA	250 W/VA	250 W/VA
3 channels	500 W/VA	-*	250 W/VA	250 W/VA
	250 W/VA	250 W/VA	-*	500 W/VA
2 channels	500 W/VA	-*	-*	500 W/VA
1 channel	500 W/VA	-*	-*	-*
	-*	500 W/VA	-*	-*
	-*	-*	500 W/VA	-*
	-*	-*	-*	500 W/VA

* No loads may be connected.

The maximum power values given are for a mains frequency of 50 Hz and an ambient temperature up to approx. 35°C. When operating with a mains frequency of 60 Hz, the maximum power values are reduced by approx. 15 %.

The change in power relative to the ambient temperature can be seen in the following diagram.
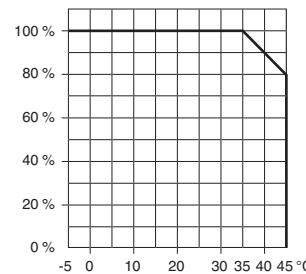
Ambient temperature

Operation:	-5 °C to +45 °C
Max. humidity:	93% relative humidity, no moisture condensation
Environment:	The device is designed for use at elevations up to 2000 m above sea level.
Type of protection:	IP 20
Connections	
Inputs, outputs:	Screw terminals
Single-core:	1.5 mm² to 2.5 mm²
Finely stranded (with core end sleeve):	1.5 mm² to 2.5 mm²
KNX:	Two 1 mm pins for bus connecting terminal
Protective functions:	Electronic load detection, short-circuit, overload, open circuit and excess temperature detection (dimming actuator temperature)
Directives:	Low Voltage Directive 2006/95/EC, EMC Directive 2004/108/EC
Device width:	8 modules = approx. 144 mm

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Settings in ETS:

Selection in the product database

Manufacturer:	Merten	
Product family:	4.6	DIN rail-mounted REG-K
Product type:	4.6.01	
Program name:	Universal dimming 3244/1.0	
Media type:	Twisted Pair	
Product name:	Universal dimming actuator REG-K/ 4x230/250 W	
Order number:	649325	

ℹ️ 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.

Application overview

Application	Vers.	Functions
Universal dimming 3244/1.0	1	Dimming operation (KNX, manual control)
		Various dimming curves and dimming speeds
		Same dimming time
		Memory function
		ON/OFF delay
		Staircase lighting function with/without manual OFF
		Scenes (retrieval of up to 8 internally saved brightness values)
		Central function
		Logic operations or priority operation
		Disable function
		Status feedback
		Behaviour on bus voltage recovery

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Universal dimming 3244/1.0

● Table of contents

● General information on the application

With this software application you can program the universal dimming actuator REG-K/4x230/250 W with manual mode. The universal dimming actuator controls the brightness of the connected lamp. You can configure the control function separately for each output channel of the dimming actuator.
You can also operate the dimming actuator using the channel buttons on the front side of the appliance. For more information, please refer to the section "Manual operation and status displays".
Group addresses are managed dynamically. The maximum number of group addresses and assignments is 172.
The limit for the telegram rate of the device is set to 127 telegrams every 17 seconds.

Caution: If you switch back to the preset values in the ETS, then all of the changes that you have made up to then will be reset.

ℹ️ Note: Due to the fact that some functions depend on other functions, the corresponding tabs and parameters for these functions are only visible and can be selected in the ETS when the respective functions are activated or have been enabled.
If you disable functions or change parameters, group addresses that have already been connected may be deleted again.

ℹ️ Note: The values of some parameters only become active when those functions which are influenced by these parameters are activated.

ℹ️ Adjustable times (staircase timer, ON delay, OFF delay etc.) are adjusted via the time base and time factor parameters. The actual time is calculated by multiplying both values; e.g. time base 1 second times time factor 3 gives 3 seconds.
When only one of these parameters is displayed, the time for the selected parameter setting cannot be set. However, if appropriate, other factors in other tabs may influence the times.

● Application functions

With this software application, the universal dimming actuator is capable of executing the following functions:

- Basic functions

Switching (1 bit), relative dimming (4 bit), absolute dimming/value dimming (1 byte)

- Advanced functions

Time functions (ON/OFF delay, staircase timer), scenes, central function

- Higher-level functions

Logic operation or priority control, disable function

The individual functions and the possible parameter settings in ETS are described in the sections below.

### ● Setting the dimming parameters

Dimming range

The range between the minimum and maximum brightness of a lamp which can be set with the aid of a dimmer is specified by the technical dimming range.

The minimum brightness value which can be set corresponds to the dimming value of 1%.

The maximum brightness value which can be set corresponds to the dimming value of 100%.
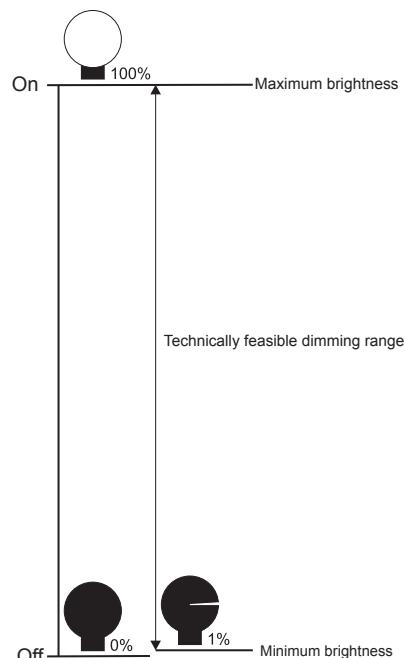
The dimming range which is technically possible can be limited using the software application to a minimum and a maximum dimming value. This limitation can be set individually for each output channel.
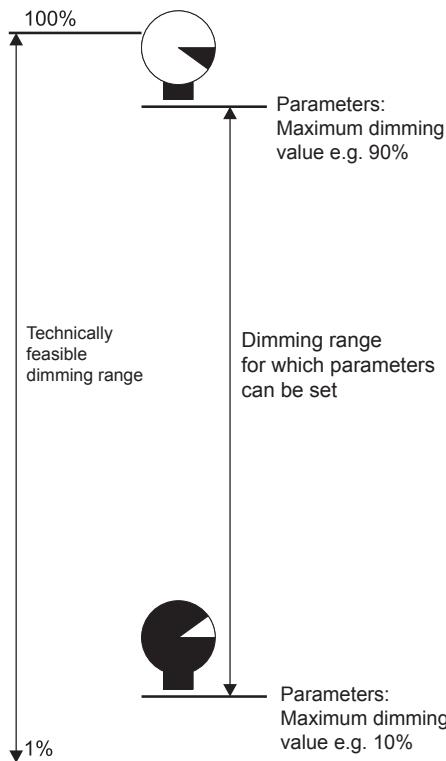
The dimming range which can be parameterised is set using the following parameters:

Tab	Parameter
X: General	Minimum dimming value in %
	Maximum dimming value in %

The limits of the parameterised dimming range may not be exceeded or not reached. If, regardless of the function, a telegram is received which demands a lower or a higher value, the respective minimum or maximum value is set (for information on the possible functions, please refer to the section later on in this manual).

Example:minimum dimming value = 10%, maximum dimming value = 90%
Telegram value = 5% => output = 10%
Telegram value = 70% => output = 70%
Telegram value = 95% => output = 90%

● **Basic dimming curve**

You can use the basic dimming curve to adjust the control behaviour of a channel to the physical characteristics of different luminaires.

Specific basic dimming curves are stored in the software application for incandescent lamps and halogen lamps. You can select the basic dimming curve for each channel via a parameter:

Tab	Parameter
X: General	Basic dimming curve

Base dimming curve set at the factory:

| Base dimming curve	Incandescent lamps	In %	Halogen lamps	In %
1. Threshold value	23 s	25	33 s	25
2. Threshold value	18 s	50	15 s	50
3. Threshold value	12 s	75	8 s	75
Max. dimming value	7 s	100	4 s	100
Total time for base dimming curve	60 s	0 - 100	60 s	0 - 100

If you wish to set your own dimming curve, select "adjustable". You can then change the setting of the threshold values and the times of the dimming sections in the "Basic dimming curve" tab:

Tab	Parameter
X: Basic dimming curve	1. threshold value in %
	2. threshold value in %
	3. threshold value in %
	Time base for 1st dimming section
	Time factor for 1st dimming section (1-255)
	Time base for 2nd dimming section
	Time factor for 2nd dimming section (2-255)
	Time base for 3rd dimming section
	Time factor for 3rd dimming section (3-255)
	Time base for 4th dimming section
	Time factor for 4th dimming section (4-255)

The basic dimming curve is divided into four dimming sections. You can determine the initial value of the dimming curve via the parameter value "Minimum dimming value in %", and the final value via the "Maximum dimming value in %" parameter value. The interim stages are determined by three threshold values.

With the time base and time factor, you define the length of time until the next threshold value is reached.

The time specifications (time base and time factor) are used to determine the dimming speed of the respective dimming section.

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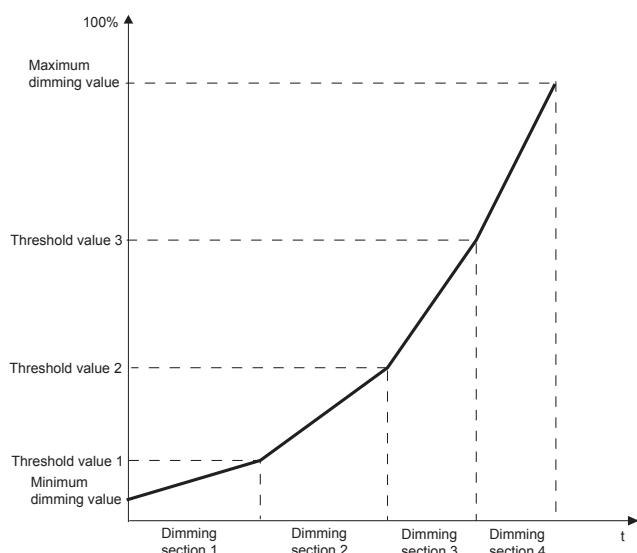
The dimming hardware requires at least 500 ms to run through the entire dimming range from 0% to 100%. Please observe this limit value when setting the dimming times for the individual dimming sections. Overall dimming times which are shorter than 500 ms cannot be executed by the hardware.

Note: The dimming curve (the actual voltage curve applied to the output over the time period) is still influenced by the dimming time reductions of the dimming reduction sets, and by the dimming time reduction object; please refer to the section on dimming speed.

When setting your own dimming curves, please observe the following limitations:

- The period for running through an entire dimming curve is limited to 24 hours. Should longer running times result from the settings you have made, the software application will automatically determine a corrective factor to cut your settings back down to 24 hours.

- The following conditions apply for the set threshold values: The 1st threshold value must be larger than or equal to the set minimum dimming value. Otherwise, the 1st threshold value will be set equal to the minimum value. The 2nd threshold value must be larger than or equal to the 1st threshold value; otherwise, it will be set as equal to it. The 3rd threshold value must be larger than or equal to the 2nd threshold value; otherwise, it will be set as equal to it. The maximum dimming value always determines the upper brightness limit, even when the 3rd threshold value is greater than the maximum dimming value.

● Dimming speed

In the basic dimming curve, you define a basic dimming speed.
This basic dimming speed is then further increased by the reductions in dimming time.
The actual dimming speed therefore results from the time factors for the basic dimming curve and the parameters for the reductions in dimming time.
Here, you can set a dimming time reduction once, regardless of the function or telegram type, and you can also activate another dimming time reduction object via which the dimming time can again be reduced.

The reductions in dimming time always uniformly influence all dimming sections in the basic dimming curve.

You can use these parameters or this object to then reduce the dimming speed of the basic dimming curve. When the value for these parameters or for this object is 100% or 225, the dimming speed corresponds to the total of the times of the basic dimming curve. When the value is 50%, the dimming time of the basic dimming curve is halved, for example.

Since the dimming time can only be reduced with these reductions in dimming time or the dimming time reduction object, it makes sense to parameterise the basic dimming curve to the maximum times required. The speeds can then be adapted to to the respective functions using the dimming time reductions in the dimming time reduction sets.

If the dimming time reduction object is deactivated, or dimming time reduction sets 1 to 3 are blocked, the basic dimming curve is subjected to the dimming time reductions in set 0.
The pre-set values in this set thus always give different dimming speeds for the different functions or incoming telegram types. Only when all dimming time reductions in set 0 are parameterised to 100% or 225 will the dimming speed for all incoming telegrams correspond to the basic dimming curve.

You can define a total of four dimming time reduction sets, which you can then activate using the set object.

You can use the dimming time reduction parameter format to select the input format for this parameter: input as a percentile via a selection list (1% to 100% in defined steps), or numerical input (1 to 225). With the numerical input, the value 225 corresponds to 100%.

Tab	Parameter
X: Dimming time reductions	Format for dimming time reductions for sets

Adapting the dimming speed in relation to the dimming function

The channel output is triggered differently depending on the incoming telegram type (according to the assigned communication object) and the set parameters.

The universal dimming actuator (or the application) provides different functions to control the outputs. The way in which this dimming function operates will be described in the following chapters.

The dimming speed can be changed according to the dimming function. You can change the dimming speed by reducing the dimming time. The different dimming time reductions for the different dimming functions are compiled as sets. You can define four sets.

You can select which set is to be used via the set object. After initialising, set "0" is always active. The other sets must be enabled beforehand.

Tab	Parameter
X: Dimming time reductions	Set 1 to 3

If the set object receives a value between "0" and "3", the respective set is activated. Values outside of this range (invalid values) will cause set "0" to be activated.

Each set has six dimming time reductions available, which can influence the dimming curve depending on the dimming function or type of telegram:

– for switching telegrams (switch object and central switch object), switch on the staircase lighting
– for dimming telegrams (dimming object and central dimming object)
– for switching off the staircase lighting
– for value telegrams (value object and central value object)
– for scene telegrams
– for high priority functions (logic operation, priority control or disable function)

Percentages for the dimming time reductions suggested by the factory:

Dimming time reduction for	Percentage	Dimming time
Switching telegrams and staircase lighting, switch on at	2 %	1.2 s
Dimming telegrams at	6 %	3.6 s
Switch off staircase lighting at	50 %	30 s
Value telegrams at	20 %	12 s
Scene telegrams at	32 %	19.2 s
Higher priority functions at	2 %	1.2 s

Tab	Parameter
X: Dimming time reductions	Set 0 to 3: Dimming time reduction for switching telegrams and switching on staircase lighting at
	Set 0 to 3: Dimming time reduction for dimming telegrams at
	Set 0 to 3: Dimming time reduction for switching off staircase lighting at
	Set 0 to 3: Dimming time reduction for value telegrams at
	Set 0 to 3: Dimming time reduction for scene telegrams at
	Set 0 to 3: Dimming time reduction for high priority functions at

You can use these parameters to modify the dimming speed (based on the basic dimming curve) for a large number of solutions.
Some examples:

– Faster dimming brighter and darker when switching ON and OFF: Dimming time reduction for switching telegrams and switching on staircase lighting at 2 % (1.2 s).
– Faster dimming up and slower dimming down of the staircase lighting: Dimming time reduction for switching telegrams and switching on staircase lighting at 2 % (1.2 s), and dimming time reduction for switching off staircase lighting at 50 % (30 s).
– Slower dimming up and down for value dimming: Dimming time reduction for value telegrams at 100 % (60 s). e.g. for a light alarm clock.
– Slower setting of the scene values: Dimming time reduction for scene telegrams at 32 % (19.2 s).

i With a set value of 100 % or 225, the actual dimming curve corresponds to the basic dimming curve.

i The values for "Switching off staircase lighting" only have an influence when no cut-out warning has been parameterised; see the section "Staircase lighting function".

Adapting the dimming speed using the "Dimming time reduction object"

When the dimming time reduction object is activated, the communication object "Dimming time reduction object" appears.

Tab	Parameter
X: Dimming time reductions	Dimming time reduction object

If the "dimming time reduction object" receives a valid object value between 1 % and 100 %, the dimming time results from: (Parameterised dimming time to date) x (value of "Dimming time reduction object") / 100.

e.g.
Dimming time parameterised to date = 20 s
"Dimming time reduction object" value = 25%
=> Dimming time = 20 x 25 / 100 = 5 s

Functional change while a dimming function is being executed

If the application receives a telegram for another dimming function while a dimming function is running, the parameters for the new dimming function are used immediately. The following illustration shows an example of this principle.
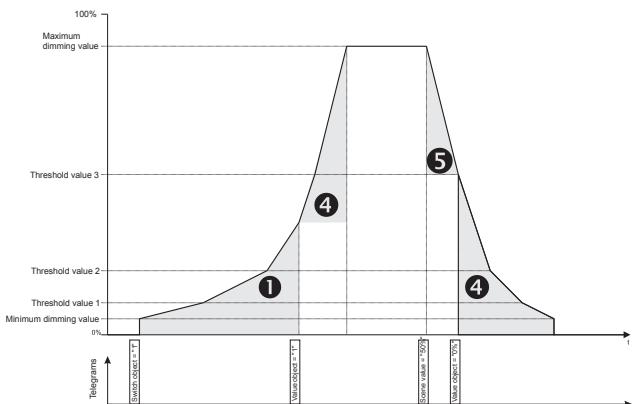

Image legend:

❶: Dimming time reduction for switching telegrams and switching on staircase lighting.

❹: Dimming time reduction for value telegrams.

❺: Dimming time reduction for scene telegrams.

Communication objects

You can select the following communication objects:

Per input:

Function	Object name	Type	Prio	Flags	Behaviour
Channel X Dimming time reduction object for dimming curve	Dimming time reduction object	1 byte	Low	WC	Transmit/ receive
Channel X set 1-3	Set object	1 byte	Low	WC	Transmit/ receive

● "Same dimming time" function

As we have seen earlier in this section, different luminaires can have different dimming curves. The dimming speed is thus also different for these lamps, i.e. the time for running through the dimming range until the required dimming value is reached. Often, different luminaires are combined together in a scene or a central function. If a function of this type is now activated, the entire group of lamps begins to "dim up" to the required value. Depending on the type of luminaire and the scene value, some luminaires will

reach the retrieved value earlier, others later. This effect will also be created when the luminaires addressed when a scene is activated have different brightness values.

The luminaires reach the required scene value at different points in time.
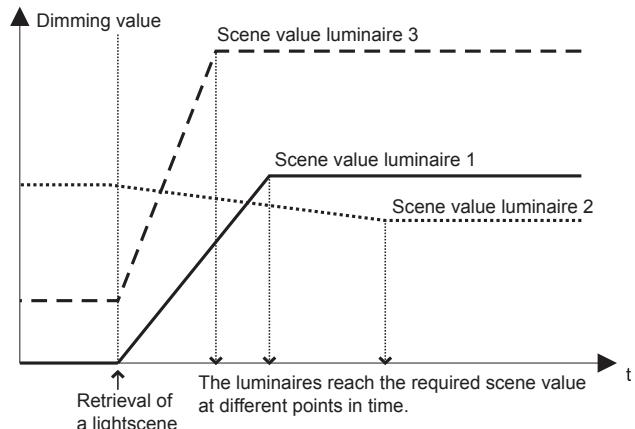
The "Same dimming time" function can be used to synchronise the different dimming times of the channels in such a way that all channels reach their set value at the same time. Using the "Time factor modifiable via the bus" parameter (via the communication object "Factor same dimming time"), the dimming times can also be synchronised for several dimming actuators.

> **i** The "Same dimming time" function is only used in connection with scenes and the central function. If no scene or central function has been activated, the parameters for the same dimming time have no effect.

For the basic dimming curve, an offset factor is calculated when a scene or central function is retrieved, depending on the current output value and on the required function value. The basic dimming curve is extended or compressed, so that all the assigned luminaires reach the required function value at the same time.
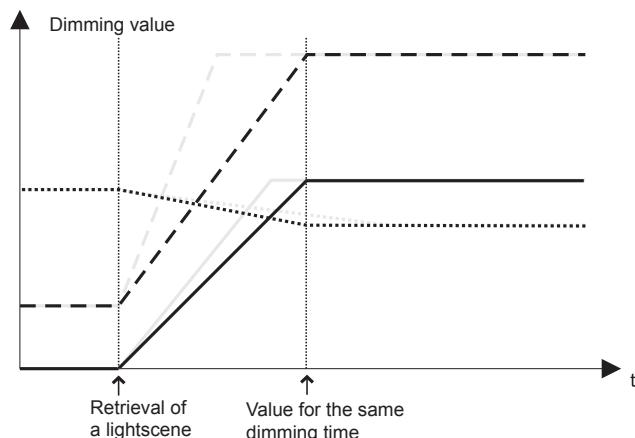
You can release the function globally for the device via a parameter, and set the corresponding dimming time after release:

Tab	Parameter
General	Same dimming time with central function and scenes

If the "Same dimming time" parameter has been activated, you can set the required dimming time in the "Same dimming time" tab and specify whether the time factor should be modifiable via the bus:

Tab	Parameter
Same dimming time	Time base for same dimming time
	Time factor for same dimming time 1-255
	Time factor modifiable via the bus

If you have activated the parameter "Time factor modifiable via the bus", a new communication object will now appear with the designation "Factor same dimming time". This object is now used to set the required time. In this case, the "Factor for same dimming time" parameter is only used for setting the time after a bus reset or download. As soon as the "Factor same dimming time" object has been described with a value for the first time, this value is used to set the time.

The assignment of the individual channels to the "Same dimming time" function is conducted individually for each channel for the scene function and central function.

ℹ The dimming time reduction object and dimming time reduction sets are not taken into account for scenes and the central function for the duration of the same dimming time!

If ON or OFF delays have been parameterised, these delay times are taken into account when the offset factor is calculated, but are not modified. These delay times retain their set value. Only the gradient of the dimming curve, and thus the dimming speed, is modified.

For example:

Current output status: switched off,
ON delay = 1 s,
Same dimming time = 8 s,
Retrieval of central function with output value 100 %

The output channel needs 8 s for the dimming process in order to dim from the OFF status to 100 %. Adding the ON delay of 1 s, that becomes 9 s.
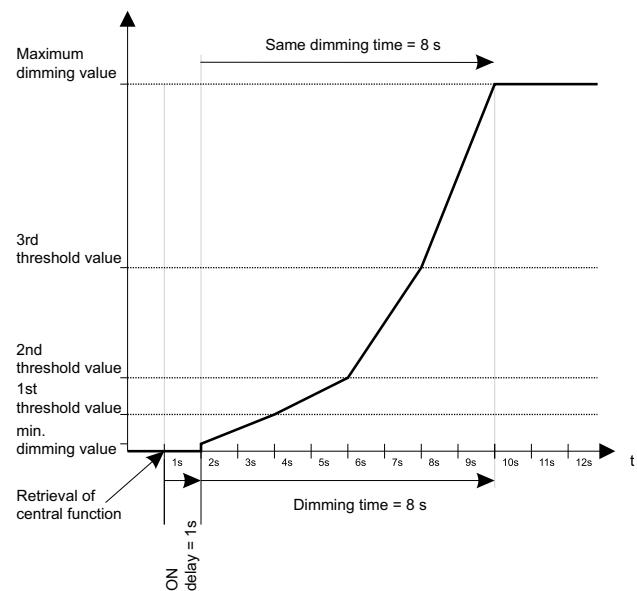
The ON delay is also retained with an identical dimming time. The dimming curve is compressed or extended in such a way that the dimming value is reached after the same dimming time. In other words, the calculation of the new dimming curve takes into account the pure dimming time (the same dimming time minus ON delay time).

ℹ The set dimming time must be larger than 1 second and may not be smaller than any set ON and OFF delays with the individual output channels. If this is not the case, the same dimming time is ignored and the dimming curves are executed normally with the time factors and dimming time reduction sets.

Communication objects

You can select the following communication objects:

Per input:

Function	Object name	Type	Prio	Flags	Behaviour
Same dimming time	Factor same dimming time	1 byte	Low	WC	Transmit/ receive

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● Priorities

The functions of the application comprise different priorities in relation to their processing:

high priority

3	Disable function
2	Logic operation or priority control
1	Switching, dimming, value dimming, time functions, scene, central function

low priority

Priority group 1:

In priority group 1, all functions have an equal status, i.e. they can be overwritten by other functions. A function which is currently active is ended when a new control telegram with the same priority is received. New set values for the scene function, the time functions or the central function act in the same way as an update for the "Switch object" of an output channel in relation to the specification of the priority.

Priority group 2:

When a function from priority group 2 is activated, the dimmer output is triggered according to the now active output value. The function values for priority group 1 are overwritten and are no longer forwarded to the output, as long as the priority function is active. However, all control functions in priority group 1 continue to be calculated and updated in the background.

You can determine the reaction of an output after deactivation of priority control via a parameter (see the chapter in the manual on the priority control function); after a logic operation function has been deactivated, the output is always set to the current output value which the device has calculated in the background.

Priority group 3:

The disable function with the highest priority level 3 overrides all other functions. The functions in priority levels 1 and 2 also continue to be evaluated in the background here, however, so that after the disable function has been deactivated, the dimmer output can be set to the current required value, or can adopt a status for which the parameters have been set. You can also determine this output behaviour via a parameter in the same way as for priority control (for more on this topic, see the chapter in the manual on the disable function).

i Please note that any function changes can also lead to changes in the dimming curve and thus the dimming speed (for more on this topic, see also the section on "dimming speed" earlier in this manual).

● Basic functions

The software application provides three basic functions to control the brightness of the connected luminaires: switching, relative dimming and value dimming.

For each output channel which you have activated via parameters, three communication objects appear to control these basic functions:

Tab	Parameter
X: General	Channel X

If you have set the parameter "Channel X" to the value "activated", the following objects appear:

- for the "Switch" function:"Switch object",length: 1 bit
- for the "Relative dimming" function:"Dimming object", length: 4 bit
- for the "Value dimming" function:"Value object", length: 1 byte

You will also find additional setting parameters on the parameter window for determining the functioning of the dimming output.

Switch function (1 bit)

If the "Switch object" receives a telegram with the value "1", the output is "switched on" and the activated dimming time reduction sets and, where appropriate, the dimming time reduction object, are triggered according to the basic dimming curve and the dimming time reduction "for switching telegrams and switching on staircase lighting". The output is "switched off" with the object value "0". In this case, the dimming curve is run through in reverse (from the maximum value to the minimum value); in other words, it is dimmed down.

You can use parameters to specify the maximum value which is triggered:

Tab	Parameter
X: General	Starting behaviour

Settings:

-max. brightness: The output channel is set to the value which you have set in the parameter "Maximum dimming value in %".

-selectable brightness: With this value, an additional setting parameter appears:

Tab	Parameter
X: General	Initial brightness in %

The output is switched on at the set initial brightness value with a "1" telegram. The initial brightness value should not exceed the maximum dimming value, since this always limits the maximum output brightness, and is also set when you select a higher value for the parameter.

-last brightness value (memory): The output is reset to the last brightness value which it had before switching off after a "1" telegram. After a download or bus voltage

failure, the value is set here which is defined as the maximum dimming value.

Relative dimming function (4 bit)

You can use the "Relative dimming" function to dim the output brighter or darker relative to its current value. The dimming direction is determined via the 4-bit telegram ("dim brighter", "dim darker" or "stop").

Telegrams for the "Relative dimming" function are received via the "Dimming object"

After a relative dimming telegram has been received, a new set value is calculated from the current value, the dimming direction received and the step size received.

Example (minimum dimming value = 10%, maximum dimming value = 90%, current output value = 12%):

Dimming brighter telegram with a step size of 25% => New set value: 12% + 25% = 37%

Dimming darker telegram with a step size of 12.5% => New set value: 37% - 12,5% = 24,5%

The "Minimum dimming value" and "Maximum dimming value" limit values must be reached, or cannot be exceeded with relative dimming.

You can use a parameter to determine the other functions of an output channel when a relative dimming telegram is received:

Tab	Parameter
X: General	Dimming object switches channel

Settings:

-not: This parameter setting prevents switching on and off, i.e. the channel remains off, or at the minimum dimming value.

-only on, not off: The output channel can only be switched on by relative dimming telegrams. If it is switched on and the set value fails to reach the minimum dimming value via relative dimming telegrams, the output remains switched on at the minimum dimming value.

-only off, not on: The output channel cannot be switched on by relative dimming telegrams. If it is switched on and the set value fails to reach the minimum dimming value via relative dimming telegrams, the output remains switched off.

-on and off: The output channel can only be switched on by relative dimming telegrams. If it is switched on and the set value fails to reach the minimum dimming value via relative dimming telegrams, the output remains switched off.

Value dimming function (1 byte)

The "Value dimming" function is used when you want to set the required brightness directly. To do this, send the required brightness value to the "Value object" of the output channel as a percentage between 0% and 100%. The value range is divided into 255 brightness levels. A level has a step width of approximately 0.4%. The telegrams for dimming with absolute values have the 1-byte data format. The required brightness values must lie within the limits which are specified by the minimum and maximum dimming values. If the brightness value exceeds the maximum dimming value, the maximum dimming value will be set as the output value. If the brightness value is lower than the minimum dimming value, the minimum dimming value will be set as the output value. You can complete the settings for switching the dimming output on and off via the "value dimming" function using a parameter:

Tab	Parameter
X: General	Value object switches channel

Settings:

-only on, not off: The output channel can only be switched on by value telegrams. If it is switched on and the "Value object" receives the value 0%, the output remains switched on at the minimum dimming value.

-only off, not on: The output channel cannot be switched on by value telegrams. If it is switched on and the "Value object" receives the value 0%, the output remains switched off.

-on and off: The output channel can only be switched on by value telegrams. If it is switched on and the "Value object" receives the value 0%, the output remains switched off.

-not: This parameter setting prevents switching, i.e. the channel remains at the current value.

Communication objects

You can select the following communication objects:

Per input:

Function	Object name	Type	Prio	Flags	Behaviour
Channel X General	Switch object	1 bit	Low	WC	Transmit/ receive
Channel X General	Dimming object	4 bit	Low	WC	Transmit/ receive
Channel X General	Value object	1 byte	Low	WC	Transmit/ receive

● Advanced functions

The advanced functions are the functions of the software application which share the same priority as the basic functions "switch", "relative dimming" and "value dimming" (for more on this topic, see the section on priorities). The advanced functions are time functions (ON/OFF delay, staircase timer), scenes and a central function. Any update of one of the basic functions or an advanced function overrides the current status, and sets the dimming output according to the last function value received.

Time functions

Delay functions

The delay functions delay the switching on or off of an output channel. They are switched upstream or downstream in relation to the actual output functions, i.e. they delay the execution of the requested output command.
The delay functions affect the basic functions and the advanced functions. The priority functions are always effective immediately and without a delay.

The dimming curve with the delay functions follows the basic dimming curve and the current dimming curve reduction of the current dimming curve reduction set and, when appropriate, the dimming curve reduction object (please refer to the earlier section on "Dimming speed").

You can select the delay functions for each channel via a parameter:

Tab	Parameter
X: General	Delay times

When you have enabled the delay functions for an output channel, a new parameter window will appear for this channel for activation and in order to make detailed settings for the functions.

-- ON delay

The ON delay becomes active when the output is currently switched off, and is now set to be switched on via a new telegram for a basic function or an advanced function.

If you wish to use the ON delay, you must activate the function:

| Tab	Parameter
X: Delay times	ON delay

Settings:

-deactivated: The ON delay is not active.

-retriggerable: If the channel receives an ON telegram, the ON delay is started. If a new ON telegram now follows while the delay time is running, the delay time is restarted. The value of the new telegram is set as the new set value, which is activated after the delay period has expired. If the new value is the "STOP dimming" value for relative dimming, the output value is set to the minimum dimming value after the delay period has expired.
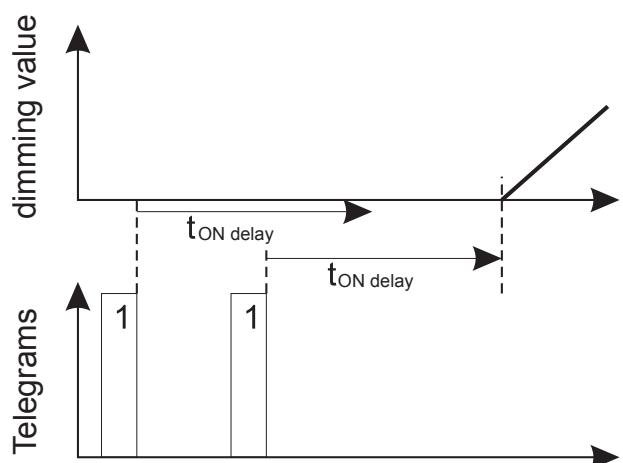

-not retriggerable: If the channel receives an ON telegram, the ON delay is started. If a new ON telegram now follows while the delay time is running, this is ignored and the ON procedure is executed after the delay time initially started has expired. The value of the new telegram is set as the new set value, however, which is activated after the delay period has expired. If the new value is the "STOP dimming" value for relative dimming, the output value is set to the minimum dimming value after the delay period has expired.
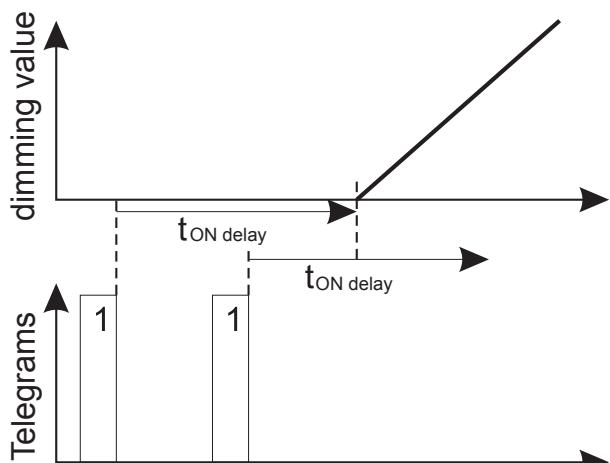
If the channel receives an OFF telegram while an ON delay is active, the ON delay is interrupted.
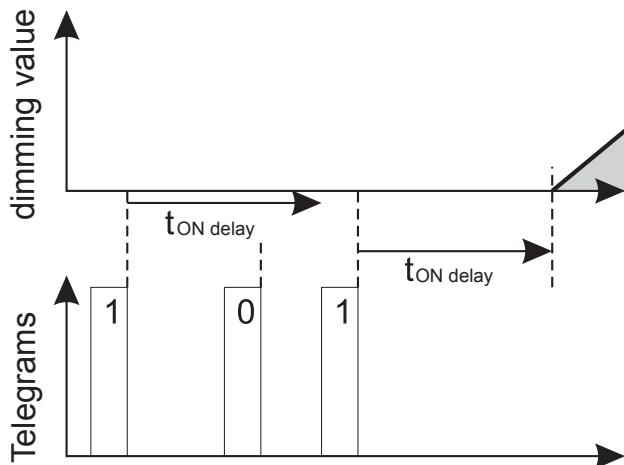
You can use a parameter to set whether the output channel remains switched off during the ON delay, or whether it is already set to the minimum dimming value.

Tab	Parameter
X: Delay times	Output during the ON delay

The specific delay time for the ON delay results as a product from the time base and the factor; the standard values result in an ON delay of 3 seconds.

Tab	Parameter
X: Delay times	Time base for ON delay
	Time factor for ON delay (1-255)

-- OFF delay

The OFF delay becomes active when the output is currently switched on, and is now set to be switched on via a new telegram for a basic function or an advanced function.

Please note: the OFF delay is not effective in a negative dimming direction with relative dimming commands, since these are not specific OFF commands.

If you wish to use the OFF delay, you must activate the function:

Tab	Parameter
X: Delay times	OFF delay

Settings:

-deactivated: The OFF delay is not active.

-retriggerable: If the channel receives an OFF telegram, the OFF delay is started. If a new OFF telegram now follows while the delay time is running, the delay time is restarted.
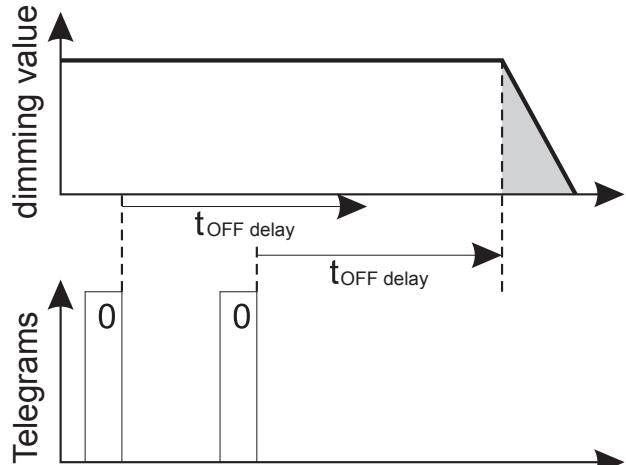
-not retriggerable: If the channel receives an OFF telegram, the OFF delay is started. If a new OFF telegram now follows while the delay time is running, this is ignored and the OFF procedure is executed after the delay time initially started has expired.
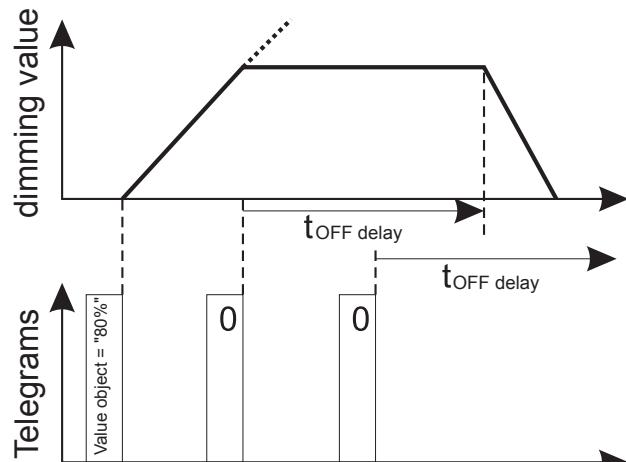
If the output receives a new telegram while an OFF delay is active, which creates an ON status, the OFF procedure is halted and the new set value is set.

If the output is currently conducting a dimming procedure when an OFF telegram is received, this dimming procedure is stopped. The output remains in the current dimming value for the duration of the OFF delay, before it switches off after the delay has expired (see the chart for the "not retriggerable" setting").

If a staircase lighting function with manual OFF is active, the output is not switched off immediately by a manual OFF command, but only when the set delay time has expired (please also refer to the following section on the staircase lighting function).

The specific delay period for the OFF delay results from your settings as a product of the time base and the factor:

Tab	Parameter
X: Delay times	Time base for OFF delay
	Time factor for OFF delay (1-255)

With the standard values, an OFF delay of 3 seconds is produced.

Staircase lighting function

The staircase lighting function offers you the option of switching on a dimmer output with a telegram in such a way that this output switches itself back off automatically after a specified time has expired, and without a new control telegram. Since this function is often used to control the lighting in staircases, it is named accordingly.

The dimming curve with the staircase lighting function follows the current dimming curve reduction of the current dimming curve reduction set and, when appropriate, the dimming curve reduction object (for more information on the dimming time reduction set, please refer to the earlier section on "Dimming speed").

> **i** Please note that different dimming speeds may be present for the ON and OFF procedure.

> **i** The staircase lighting time only begins when the output channel has reached the final dimming value after dimming up. The dimming time is therefore not included in the staircase lighting time. The dimming value during the staircase lighting time is the (parameterised) maximum dimming value.
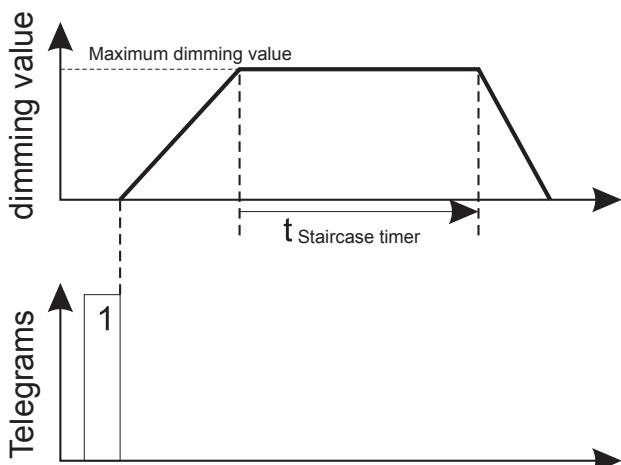
You can activate the staircase lighting function for each channel via a parameter:

Tab	Parameter
X: General	Staircase lighting function

When you have activated the staircase lighting function for an output channel, a new parameter window will appear for this channel, together with a new communication object labelled "Staircase lighting object". The "Staircase lighting object" has a 1 bit format. The staircase lighting function is controlled via the received telegram values of the "Staircase lighting object".

You can set the time duration for the staircase lighting time via the time base and time factor:

Tab	Parameter
X: Staircase timer	Time base for staircase timer
	Time factor for staircase timer (1-255)

The time duration results from the product of your settings for the time base and factor. The standard values therefore result in a staircase lighting time of 3 minutes.

If the "Staircase lighting" object receives a telegram with the value "1", the dimmer output is switched on and is dimmed to the max. dimming value, remains at this value for the set "Staircase lighting time", and the output channel then dims automatically to the value 0%.

> **i** Note: During the staircase lighting time, you can modify the output brightness using dimming telegrams via the "Dimming" or "Value object" objects. If the output fails to reach its minimum dimming value due to these dimming telegrams, or if the value object is described with the value "00h", the parameter settings for the OFF behaviour of these functions apply.

You can use the "Staircase lighting function" parameter to determine whether an active staircase lighting function can be manually interrupted or not:

Tab	Parameter
X: Staircase timer	Staircase lighting function

The individual settings have the following meaning:

- with manual OFF,… / without manual OFF,… : you can initially specify whether an active staircase lighting function can be manually interrupted (= "with manual OFF") or not (= "without manual OFF").
If you have set the parameter to the value "with manual OFF", the output is switched off when the "Staircase lighting" object receives a telegram with the value "0".

> **i** Note: "Manual OFF" does not refer to manual switch-off via the manual keys on the device. "Manual OFF" means switching off via a KNX telegram.
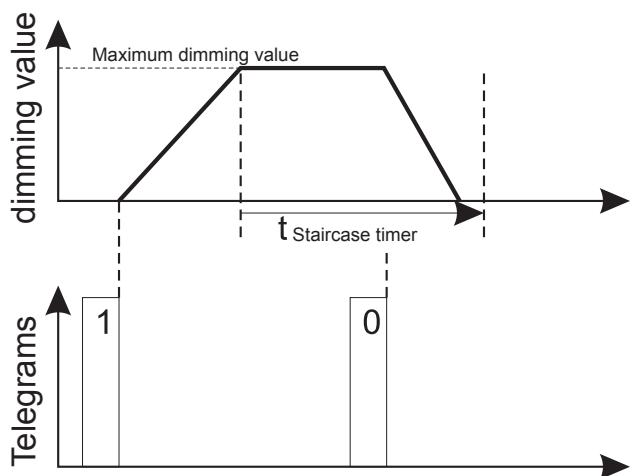
If an OFF delay has been parameterised, this function is now active and the output only switches off after the delay time has expired.
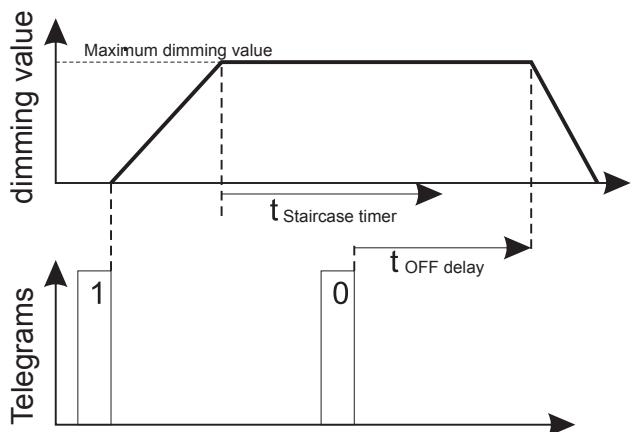
If you have selected the parameter value "without manual OFF", the staircase lighting function is not interrupted when a telegram with the value "0" is received, but continues to run normally until the staircase lighting time has expired.
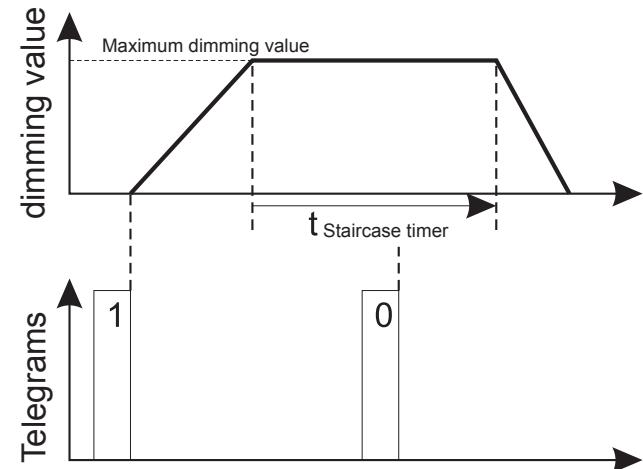
-..., not retriggerable: With this setting, the staircase lighting function which was started initially proceeds normally, even when additional "1" telegrams are received during the staircase timer.

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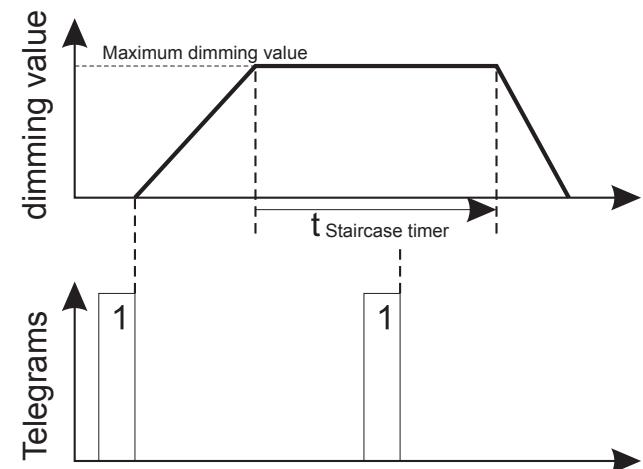
- ..., retriggerable: If the "Staircase lighting" object receives an additional "1" telegram while a staircase lighting function is active, the staircase timer will be restarted. This occurs when a "1" telegram is received while the function is active.
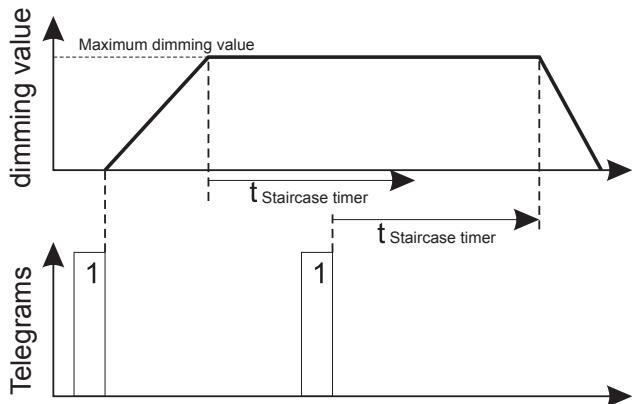
- ..., summing up time: If the "staircase lighting" object receives a second start signal a ("1" telegram) while a staircase lighting function is active, the active staircase timer will be doubled. With a third start signal, the staircase timer will be tripled, and with the fourth start signal, quadrupled. The actual staircase timer therefore results from the staircase timer being multiplied by the number of start signals received. The maximum possible running time for this function is 255 hours.
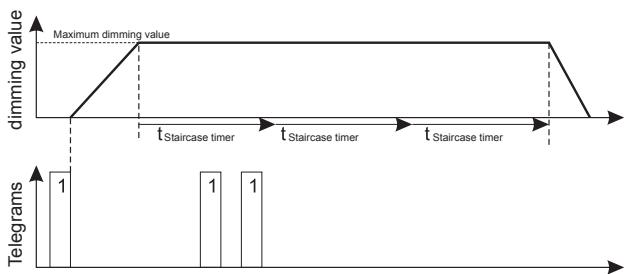
You can limit the potential running time using the "Max. number of time accumulations" parameter.

Tab	Parameter
X: Staircase timer	Max. number of time accumulations (2- 255)

If the staircase lighting time has expired, the dimming output is dimmed down and switched off according to the settings for the dimming speed and the current speed set. You can however use the function "Cut-out warning" to influence the dimming down behaviour over time at the end of a staircase lighting function:

| Tab	Parameter
X: Staircase timer	Cut-out warning for staircase lighting time
	Warning time for staircase lighting time in seconds (1-255)

If you have activated the cut-out warning, you can set a "Warning time" as a time period between 1s and 255s (=4min15s). This "Warning time" determines how long the dimming down procedure should last. The active values for the dimming speed and the dimming time reduction sets are no longer taken into account in this case. The dimming curve is extended or compressed to the set warning time while dimming down.
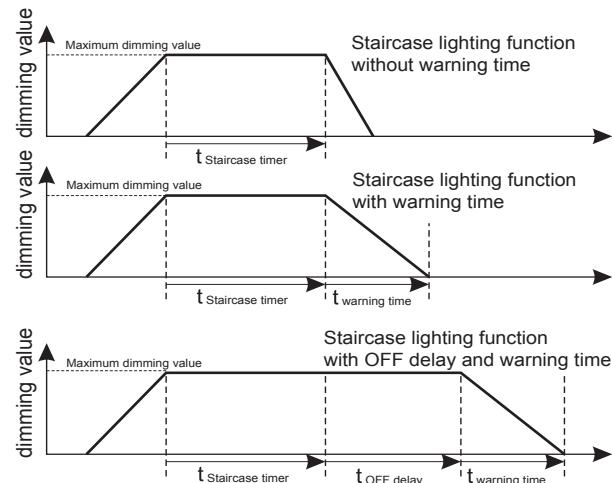
Regardless of which dimming value the output has after the staircase lighting function has expired, the time duration for the dimming down procedure always corresponds to the warning time when the cut-out warning is active.
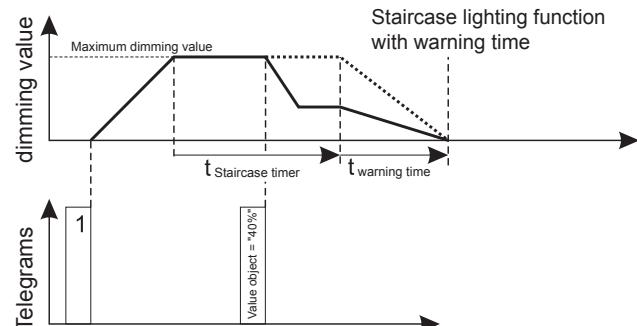
If you have parameterised a cut-out delay for the dimmer output, the warning time begins after the delay period has expired.

Note: After the staircase lighting time has expired, a new staircase lighting function sequence is started when a new "1" telegram is received at the "Staircase lighting" object, or when a new switch impulse is received from an extension unit push-button, even when the output is still dimming down, or when a warning time is active. At this point in time, a "1" telegram or a switch impulse is therefore no longer valid as a trigger signal for restarting the staircase lighting time, or to accumulate the staircase lighting times.

Logic operation between the switch object and the staircase lighting object

In order to control a dimming output, its switch object is connected with its staircase lighting object with a logical OR operation.
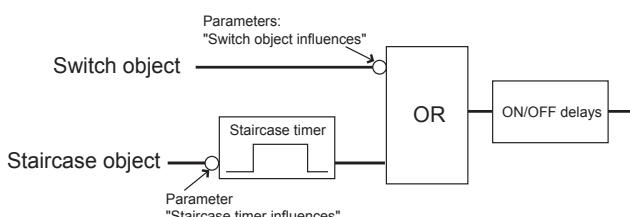
You can invert, or not invert, the effect of the two object values on this logic operation using parameters:

Tab	Parameter
X: General	Switch object influences
X: Staircase lighting time	Staircase object influences

If you set the parameter value to "not inverted", the logic operation is formed with the current object value; the object value "0" remains "0" and the object value "1" remains "1".

If you set the parameter value to "inverted", the logic operation is formed with a value which is opposite to the current object value;
Object value "0" becomes "1" and object value "1" becomes "0".

You can overwrite a running staircase lighting function using a telegram for the switch object. In this case, the staircase lighting function continues to run normally in the background.
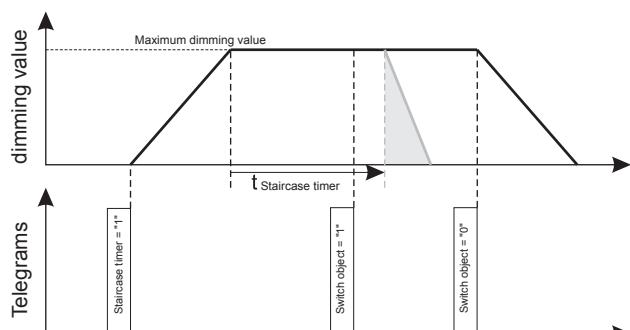
The brightness of the logic operation result and the dimming speed is defined by the last telegram (see the charts below).
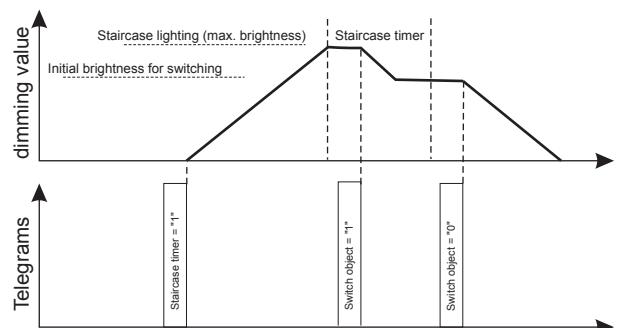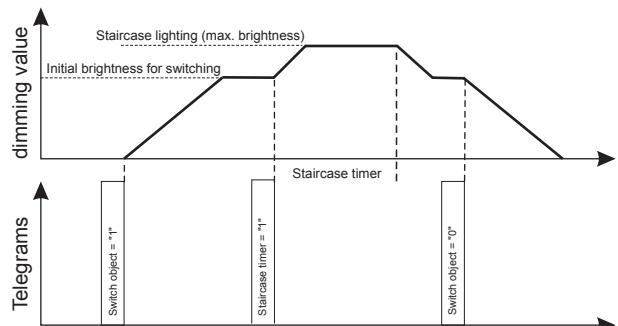
You can use this, for example, for temporary continuous light switching (cleaning lighting). An ON telegram from the switch object causes the light in the staircase lighting function to remain switched on continuously. Value, dimming, scene and central telegrams continue to be influential, however.
For an application of this type, an initial brightness of 100% would be suitable when switching on.

Another potential application is a staircase lighting function with a continuous basic brightness (e.g. in hospital corridors). For this purpose, the required basic brightness is parameterised as the initial brightness when switching on, and the staircase lighting function is switched e.g. via a movement detector.

> **i** Please also refer to the section "Logic operation" in relation to this topic.

Communication objects

You can select the following communication objects:

Per input:

Function	Object name	Type	Prio	Flags	Behaviour
Channel X Staircase lighting object	Switch object	1 bit	Low	WC	Transmit/receive

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● **Scenes**

You can use the scene functions when you wish to give the user the option of modifying different room functions simultaneously via just one bus telegram. Retrieving a room scene allows you, for example, to dim the room lighting to a desired value, move the blinds into a desired position, set the heating control to daytime operation and switch on the power supply to the socket-outlets in a room. Due to the fact that these functions can have different telegram formats and moreover, the telegram values can have different meanings (e.g. value "0" means OFF for lighting and OPEN for blinds), without the scene function you would have to send a separate telegram to each actuator to achieve the same setting.

The scene function allows you to integrate the dimming actuator into scene control. There are memory slots for up to 8 different scene values for each output channel. Each of these 8 scene memories can be assigned to one of 64 possible scene numbers (0 to 63). You can store the brightness value in % as scene values. If the dimming actuator receives a telegram which retrieves a scene number, the assigned output channel is dimmed to the stored brightness. The brightness values for the individual scenes which you save during commissioning can be replaced later by users if they wish.

ℹ If the learn bit in a telegram has the value "0", the brightness values saved for this scene number are retrieved and the dimmer outputs are set accordingly.
If the learn bit has the value "1", then the current brightness values of the assigned dimming outputs are saved as new scene values for the transmitted scene number.

Activating the scene function:

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

Tab	Parameter
General	Scenes

If you have set the "Scenes" parameter to the activated value, the communication object "Scene object" appears, via which the scene telegrams can now be received.

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

Tab	Parameter
X: General	Scenes

If you have activated the "Scenes" parameter of an output channel, a new parameter window appears for this channel, in which you can set the scene values. You can activate each of the eight scene memories separately:

Tab	Parameter
X: Scenes	Scene 1 to scene 8

You can assign a scene number (0-63) to each of the activated scenes and set a brightness value:

Tab	Parameter
X: Scenes	Scene 1 to scene 8, Scene number (0-63)
	Scene 1 to scene 8, Brightness value in %

When setting the brightness values, please observe the limits set by the minimum and maximum dimming values.

Retrieving scene values:

The "Scene object" allows you to retrieve stored brightness values. After receiving a telegram, the transmitted scene number is evaluated. If one of the eight scene memories has been assigned to this scene number, the stored brightness value is set.

ℹ If several of the scene memories 1 to 8 have been assigned to the same scene number, the first memory value is activated.

Storing scene positions:

When the "Scene object" receives a new telegram in which the learn bit has the value "1", the current dimming value is stored as the new brightness value in the first scene memory which is assigned to the received scene number.

Example:

Output channel 1

Scene 1 activated at scene number 13
(Scene 1 brightness = 50%)

Scene 2 activated at scene number 7
(Scene 2 brightness = 30%)

Scenes 3 to 8 deactivated

Output channel 2

Scene 1 activated at scene number 7
(Scene 1 brightness = 90%)

Scene 3 activated at scene number 21
(Scene 3 brightness = 50%)

Scenes 2 and 4 to 8 deactivated

Retrieve scene number 13

=> Output channel 1 dims to 50%

=>Output channel 2 does not respond

Retrieve scene number 1

=> Actuator does not respond because scene number 1 is not assigned.

Retrieve scene number 7

=> Output channel 1 dims to 30%

=> Output channel 2 dims to 90%

Retrieve scene number 21

=>Output channel 1 does not respond

=> Output channel 2 dims to 50%

Outputs are manually dimmed to the new values:

Output channel 1: Brightness = 70%

Output channel 2: Brightness = 20%

Program scene number 13

=> Output channel 1: Scene 1 Brightness value = 70%

=> Output channel 2: does not respond, since scene number 13 has not been assigned.

Retrieve scene number 13

=> Output channel 1 dims to 70%

=>Output channel 2 does not respond

Note the difference from the first retrieval of scene number 13 above!

If you activate the parameter "Replace scene values in the actuator on download", then the scene values programmed during operation which are stored in the device for this channel are replaced with your default values on download. If you don't wish to replace the values in the device when downloading, then you must disable this parameter:

Tab	Parameter
X: Scenes	Replace scene values in the actuator on download

Same dimming time for scene function

The general information section in this manual on "Dimming speed" contains an explanation of the "Same dimming time" function. You can assign the scene functions of an output channel to this function via a parameter:

Tab	Parameter
X: Scenes	Same dimming time

Extension unit function for scenes

This function allows you to also activate or re-program the scene values for the scene memories 1 to 4 also using 1-bit telegrams. The extension unit function is activated once for the device:

Tab	Parameter
General	Extension unit scenes

If you have enabled "Extension unit scenes", the additional communication objects will appear with the 1-bit data format:
"Recall scene 1/2", "Recall scene 3/4",
"Save scene 1/2", "Save scene 3/4".

You can also use these objects to retrieve scenes 1 to 4 or to re-program them:
"Retrieve scene 1/2" = "0": Scene 1 is activated
"Retrieve scene 1/2" = "1": Scene 2 is activated
"Retrieve scene 3/4" = "0": Scene 3 is activated
"Retrieve scene 3/4" = "1": Scene 4 is activated

"Save scene 1/2" = "0": Scene 1 is programmed
"Save scene 1/2" = "1": Scene 2 is programmed
"Save scene 3/4" = "0": Scene 3 is programmed
"Save scene 3/4" = "1": Scene 4 is programmed

The actions correspond to a normal retrieval or program command for scenes 1, 2, 3 or 4 using the "Scene object". The extension unit function is not available for scenes 5 to 8. You can only address these scene numbers using the "Scene object".

Communication objects

You can select the following communication objects:

Per input:

Function	Object name	Type	Prio	Flags	Behaviour
Scenes	Scene object	1 byte	Low	WC	Transmit/receive

Per device:

Function	Object name	Type	Prio	Flags	Behaviour
Extension unit scenes	Recall scene 1/2	1 bit	Low	WC	Transmit/receive
Extension unit scenes	Recall scene 3/4	1 bit	Low	WC	Transmit/receive
Extension unit scenes	Save scene 1/2	1 bit	Low	WC	Transmit/receive
Extension unit scenes	Save scene 3/4	1 bit	Low	WC	Transmit/receive

● 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 switch off all the lights at the press of a button when leaving your house, and when you wish to switch on a certain group of lights at the press of a button when you return home. Another possible application for the central function could be to set the lights to a low dimming value on the way to the bathroom at the press of a button, in order not to wake the other people living in your house.

If you wish to use the central function for one or more output channels, you must priority enable the function for the device once:

Tab	Parameter
General	Central function

If you have activated the central function for the appliance, three new communication objects will be available, which you can in turn activate or deactivate individually using parameters:

Tab	Parameter
General	Central switch object
	Central dimming object
	Central value object

The activated objects appear as new communication objects "Central switch object", "Central dimming object" and "Central value object" after they have been activated.

Assigning the output channel to the central function:

You can select the assignment of an output channel to the central function individually for each channel when parameterising:

Tab	Parameter
X: General	Central function

When you have assigned a channel to the central function, the output value of this dimming output cannot be controlled only via the specific switching, dimming or value objects for the channel (see the "Basic functions" section), but also via the enabled objects in the central function. The central function controls the entire assigned group of channels simultaneously.

Switching via a central object:

After the central function for an output channel has been activated, a new parameter window appears for this channel. In this parameter window, you can set how the assigned channel should respond when a new telegram value is received via the "Central switch object":

Tab	Parameter
X: Central function	Function with the central switch object = 0
	Function with the central switch object = 1

First select how the output should react when a new object value is received for the central object. If you wish to set a variable brightness, you can specify the required values in further parameters:

Tab	Parameter
X: Central function	Required brightness with central switch object = 0 in %
	Required brightness with central switch object = 1 in %

Please ensure here that the set values lie within the limitation set by the minimum and maximum dimming values respectively.

Relative dimming and value dimming via the central function

The two dimming functions in the central function operate in the same manner as the corresponding basic functions (see also the section "Basic functions").

With these functions, the telegrams also affect the entire group of assigned output channels simultaneously. The "Central dimming object" causes relative dimming operations, while the "Central value object" sets a new absolute dimming value for the group.

Dimming speed of the central function

The dimming speed for operations via the central functions corresponds to the settings for the corresponding basic functions. The dimming time for setting a new brightness value therefore corresponds to the setting for the active dimming reduction set for the switch function, the setting for the active dimming time reduction set for relative dimming and the setting for the active dimming time reduction set for value dimming.

Same dimming time for central function

The software application also offers you the option of activating the "Same dimming time" function for the central switching and value dimming functions. In this way, all dimming outputs in a channel group which are controlled via the central function reach the required dimming value simultaneously. The settings for the dimming speeds are ignored with this function option (for further information, please refer to the section on dimming speed). You can use a parameter to determine whether an output should also be assigned to the "Same dimming time" function in relation to the central function:

Tab	Parameter
X: Central function	Same dimming time

● Higher priority functions

With the logic operation, priority control and disable functions, the software application offers you three prioritised functions (with higher priority). The functions with higher priority are processed before functions with lower priority.

high priority

3	Disable function
2	Logic operation or priority control
1	Switching, dimming, value dimming, time functions, scene, central function

low priority

Alternatively, you can activate the logic operation or priority control functions for an output channel using a parameter:

Tab	Parameter
X: General	Higher priority functions

You can also use a parameter to activate a disable function with the highest priority for each output channel:

Tab	Parameter
X: General	Disable function

Logic operation

A new object with the label "Logic object" (1 bit) is available for each output channel for which you have selected the logic operation as the prioritised function. The value of the "Logic object" is then logically linked both to the value of the "Switch object" and of the "Staircase lighting" object of this output channel.
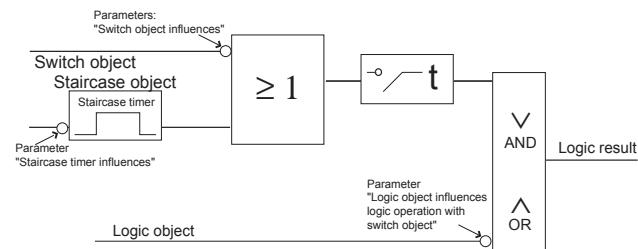
AND and OR functions are possible as logic operations:

Tab	Parameter
X: Logic operation	Logic operation

You can use the logic object to "override" the current brightness of a switch or staircase lighting function and to set it to a parameterisable brightness value.

Tab	Parameter
X: Logic operation	Brightness with logic object "0" in % (with AND logic operation)
X: Logic operation	Brightness with logic object "1" in % (with OR logic operation)

With an OR logic operation, the brightness for which the parameters can be set is specified with an object value "1", and with an AND logic operation, with an object value "0".

You can invert, or not invert, the effect of the current object values on this logic operation using parameters:

You can determine the input behaviour for the logic object:

Tab	Parameter
X: Logic function	Logic object influences

If you set the parameter value to "not inverted", the logic operation is formed with the current object value; the object value "0" remains "0" and the object value "1" remains "1".

If you set the parameter value to "inverted", the logic operation is formed with a value which is opposite to the current object value;
Object value "0" becomes "1" and object value "1" becomes "0".

ℹ️ The switch object and staircase lighting object are also combined via an OR logic operation when the logic function is inactive - see the "Staircase lighting function" section.

merten

Please note the following important special feature:
You can also use telegrams for the "Dimming object" and "Central dimming object" (4 bit) or "Value object" and "Central value object" (1 byte) and scene telegrams to modify the brightness value of the dimming output while a logic function is active. However, the central object cannot be inverted.
Here, the output can also be switched on or off, even when you have selected a different behaviour when the logic function is active! Otherwise, an active logic function can only be overridden by the disable function with a higher priority.
Each time a telegram is received via the switch object, the central object or the staircase lighting object (before the warning), the logic function is updated and the logic operation result is re-calculated.
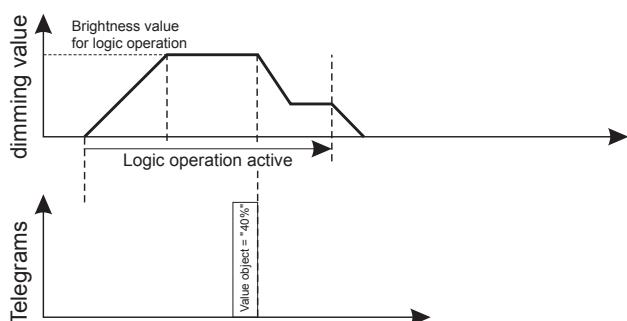
The brightness of the logic operation result and the dimming speed is defined by the last telegram.

If you have activated the logic function, the set value is activated after downloading or after the bus voltage has returned at the input to the logic functions, and is immediately effective.

Tab	Parameter
X: Logic function	Value of the logic object after bus voltage failure and downloading

Here, please also refer to the section "Startup and failure behaviour".

Priority control

If you have selected priority control for a channel, a new communication object labelled "Priority control" is provided for this channel, together with a new parameter window for further function settings. The "Priority control" object has a length of 2 bits, with the following data format:

Bit1	Bit0	Behaviour of the output
1	1	Priority control, dimming output "on"
0	1	End of priority control
1	0	Priority control, dimming output "off"
0	0	End of priority control

Activating priority control:

The priority control for the output is activated when the value "1" is received at bit1. Depending on bit0 of the received telegram, the assigned dimming output is then set according to your parameter settings:

- For bit0 = "1":

Tab	Parameter
X: Priority control	Behaviour at start of priority control "on"

If you wish to set a specific brightness, you can set this brightness via an additional parameter:

Tab	Parameter
X: Priority control	Required brightness at start of priority control "on" in %

- For bit0 = "0":

Tab	Parameter
X: Priority control	Behaviour at start of priority control "off"

If you wish to set a specific brightness, you can set this brightness via an additional parameter:

Tab	Parameter
X: Priority control	Required brightness at start of priority control "off" in %

Settings on start of a priority control:

- no response: The dimming output remains at its current brightness value at the start of the priority control. This output value can only be changed while the priority control is active by the disable function which has a higher priority.

- switch off: The dimming output is switched off.

- switch on at variable brightness: The dimming output is set to the defined brightness value.

Deactivating priority control

The priority controlled dimming output remains in the selected status until the priority control is released again by a new telegram with the value "0" to bit1. You can use parameters to set how a dimming output should respond when the priority control has been removed again:

| Tab	Parameter
X: Priority control	Behaviour at the end of priority control

Setting options at the end of priority control:

- no response: The dimming output remains at its current output value until the output receives the next switch or dimming telegram.

- switch off: The dimming output is switched off at the end of priority control.

- switch on to variable brightness: The dimming output sets the brightness value which you have determined via an additional parameter:

- follows subordinate functions: Telegrams for the subordinate functions continue to be processed in the background while a priority control is active, but are not forwarded to the dimming outputs. After the priority control, the output is set to the value which has been calculated in the background.

Tab	Parameter
X: Priority control	Required brightness at end of priority control in %

Dimming speed of priority control

The dimming speed for changes in brightness during activation, deactivation and priority control is influenced by the dimming time reduction for higher priority functions in the current dimming time reduction set (please also refer to the section on dimming speeds). If a subordinate dimming procedure is currently active when the priority control is released, and you have set the "Behaviour at the end of priority control" to the "follows subordinate functions" value, the lights are dimmed down to the current dimming value with the dimming time reduction for higher priority functions in the current dimming time reduction set. The lights then continue to be dimmed with the dimming speed of the function which is currently active.
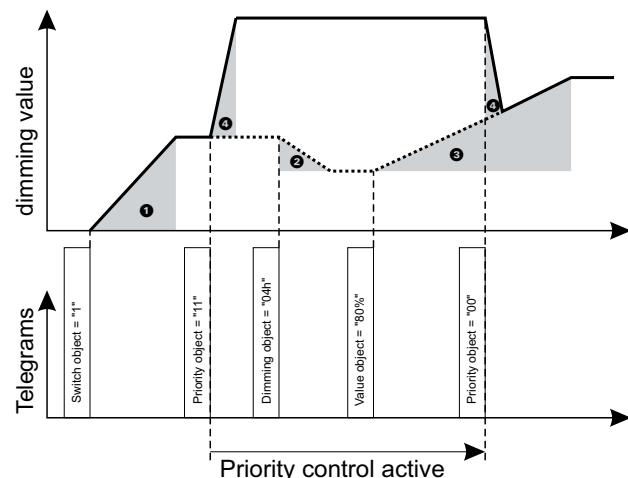
Parameter settings for the example in the image:
- Behaviour at start of priority control "on" = "switch on to variable brightness"
- Required brightness at start of priority control "off" in % = 100
- Behaviour at the end of priority control = "follows subordinate functions"

Image legend:

❶: Dimming time reduction for switching telegrams and switching on staircase lighting.

❷: Dimming time reduction for dimming telegrams.

❸: Dimming time reduction for value telegrams.

❹: Dimming time reduction for prioritised functions.

Value of priority control after bus voltage failure

The bus voltage may fail while the priority control is active. You can specify the behaviour of the priority control when the bus voltage recovers by setting a parameter:

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

The settings have the following meaning:

- inactive: After a bus voltage failure, the priority control is not active. It must be activated by a new telegram if necessary.

- active "off": After a bus voltage failure, the priority control is directly active "off". Subordinate functions are not set, but are processed only in the background. In order to deactivate, the actuator must receive an appropriate telegram.

- active "on": After a bus voltage failure, the priority control is directly active "on". Subordinate functions are not set, but are processed only in the background. In order to deactivate, the actuator must receive an appropriate telegram.

- as before bus voltage failure: The priority control is set to the status which was active before the bus voltage failure. If the function was active, it is now

switched back to active again; if it was deactivated, it now remains switched off.

Disable function

If you have activated the disable function for a switching channel, a new communication object appears for this channel as a 1-bit object with the label "Disable object" and a new parameter window in which you can make the further function settings.

Activating the disable function

Please first specify the starting behaviour of the disable function.

Tab	Parameter
X: Disable function	Lock

You can use the "Lock" parameter to set the object value at which the function should be activated. If the "Disable object" receives a telegram with the object value "0" or "1" for activation, the disable function is started. It remains active until the "Disable object" receives a telegram with the opposite object value. You can use additional setting options to specify the behaviour of the dimming output at the start and the end of a disable function:

Tab	Parameter
X: Disable function	Behaviour at start of lockout

Setting options:

- no response: The dimming output remains at its current value at the start of a disable function. This value can now no longer be changed as long as the disable function is active.

- switch off: The dimming output is switched off and remains in this state until the end of the disable function, or until the disable function receives the first active switching or dimming telegram.

- switch on at variable brightness: The dimming output sets the brightness value which you have determined via a parameter:

Tab	Parameter
X: Disable function	Required brightness at start of lockout in %

Deactivating the disable function

The disabled dimming output remains in the selected status until the disable function is released again by a new telegram with the value "0" or "1". You can use parameters to set how a dimming output should respond when the disable function has been removed again:

Tab	Parameter
X: Disable function	Behaviour at end of lockout

Settings:

- no response: The disable function is deactivated without the dimming output responding. The output remains at its current brightness value until the next active switching or dimming telegram.

- switch off: The dimming output is switched off at the end of the disable function.

- switch on to variable brightness: In order to set a variable brightness at the end of a disable function, an additional parameter appears:

Tab	Parameter
X: Disable function	Required brightness at end of lockout in %

- follows subordinate functions: Telegrams for the subordinate functions continue to be processed in the background while a disable function is active, but are not forwarded to the dimming outputs. After the end of the disable function, the dimming output is set to the value which has been calculated in the background for the subordinate functions.

Dimming speed of the disable function

The dimming speed for changes in brightness during activation, deactivation and during a disable function is influenced by the setting for the current dimming time reduction set (please also refer to the section on dimming speeds). If a subordinate dimming procedure is currently active at the end of a disable function, and you have set the "Behaviour at end of lockout" to the "follows subordinate functions" value, the lights are dimmed down to the current dimming value with the dimming time reduction for higher priority functions in the dimming time reduction set. The lights then continue to be dimmed with the dimming speed of the function which is currently active.
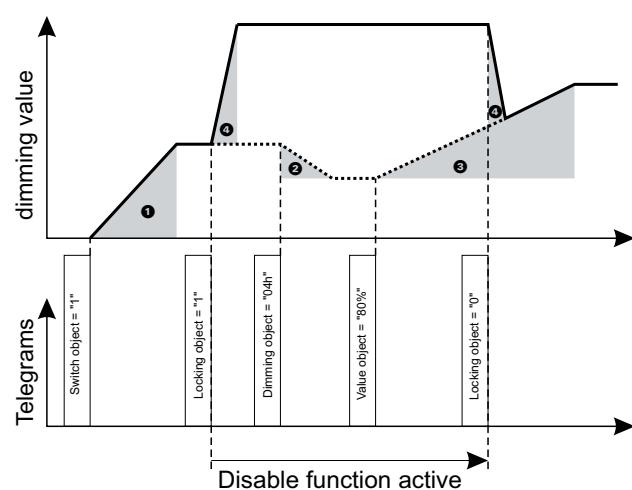
Parameter settings for the IMAGE:
- Lock = with object value "1"
- Behaviour at start of lockout = "switch on at variable brightness"
- Required brightness at start of lockout in % = 100

- Behaviour at end of lockout = "follows subordinate functions"

Image legend:

❶: Dimming time reduction for switching telegrams and switching on staircase lighting.

❷: Dimming time reduction for dimming telegrams.

❸: Dimming time reduction for value telegrams.

❹: Dimming time reduction for prioritised functions.

Value of disable function after bus voltage failure

The bus voltage may fail while the disable function is active. You can specify the status of the disable function when the bus voltage recovers by setting a parameter:

Tab	Parameter
X: Disable function	Lockout status after bus voltage recovery

The settings have the following meaning:

- inactive: After a bus voltage failure, the disable function is not active. It must be activated by a new telegram if necessary.

- active: After a bus voltage failure, the disable function is directly active. Subordinate functions are not set, but are processed only in the background. In order to deactivate, the "Disable object" must receive an appropriate telegram.

- as before bus voltage failure: The disable function is set to the status which was active before the bus voltage failure. If the function was active, it is now switched back to active again; if it was deactivated, it now remains switched off.

Communication objects

You can select the following communication objects:

Per input:

Function	Object name	Type	Prio	Flags	Behaviour
Channel X Higher priority function	Logic object	1 bit	Low	WC	Transmit/ receive
Channel X Higher priority function	Priority operation	2 bit	Low	WC	Transmit/ receive
Channel X Disable function	Disable object	1 bit	Low	WC	Transmit/ receive

● Status messages

The software application provides you with numerous options to report the current device status and the status of the dimming channels via communication objects. Depending on these status messages, you can trigger certain control processes or release and disable functions in the system. In addition, status messages are also suitable for displaying current operating states 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:

-deactivated:

The status object is not active.

-active status response object

When the status changes, the new status is automatically transmitted.

- passive status object:

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

Status error (device-specific)

A communication object is provided in order to report error states caused by hardware, which you can priority activate for the appliance via a parameter:

Tab	Parameter
General	Status error

After activation, the additional communication object appears with the label "Feedback error" or "Status error", depending on the parameters set.

If a short circuit/overload, idle or excess temperature error occurs, this error status is reported. The error message is issued regardless of the output channel in which this error occurs. The object contains the value "1". A fault analysis is possible on site using the LEDs on the device. If the error has been rectified and the appliance again operates correctly, the object will receive the value "0".

If you have selected the value "Active status feedback object" for "Status error", the current status of the object is transmitted when an error occurs after the bus voltage returns.

For further information on the display of the device function, please refer to the following manual section "Manual operation and status displays".

Status of switch object (channel-specific)

The option is provided for each output channel to query or report the current status of the channel using the status feedback object. You can activate the feedback object for each channel individually. When you activate the feedback object, you simultaneously determine its transmission characteristic:

Tab	Parameter
X: General	Status switch

After you have activated the status feedback for the switch object in a channel, a new communication object appears for this channel. Depending on the transmission characteristic which you have selected, the designation of this object alternates between the "Feedback switch" or "Status switch" values.

The value of the feedback object of a channel always corresponds to the current output status ON or OFF. When dimmed, the setting corresponds to ON. The status of the feedback object corresponds to the status display "ON" of the channel (for further information, please refer to the section on "Manual operation and status displays"). If you have set the feedback object as the status feedback object, the current object value is transmitted to the bus with each status change from OFF to ON, or vice versa.

i	The value of the switch object may differ from the current channel value (e.g. with parameterised delay times). For this reason, use the status of the channel as the status feedback object.

Status of value object/brightness value (channel-specific)

The option is also provided for each output channel to query or report the current brightness value of the channel using the communication object. You can activate the feedback object for each channel individually. When you activate the feedback object, you simultaneously determine its transmission characteristic:

Tab	Parameter
X: General	Status of value object/ brightness value

After you have activated the status feedback for the brightness value of a channel, a new communication object appears for this channel. Depending on the transmission characteristic which you have selected, the designation of this object alternates between the "Feedback value object/brightness value" or "Status value object/brightness value" values.

The value of the feedback object of a channel always corresponds to the current dimming value of the output between 0% and 100% in 255 steps.

If you have set the feedback object as the status feedback object, the current object value is transmitted to the bus, **when the output has reached**

a stable dimming value. The object value is therefore transmitted when:
- a dimming procedure is completed
- the minimum or maximum dimming value has been reached
- a dimming procedure has been stopped by manual operation

The object value of the feedback object as a passive status object always corresponds to the current output value.

Communication objects

You can select the following communication objects:

Per input:

Function	Object name	Type	Prio	Flags	Behaviour
Channel X, status feedback	Feedback switch	1 bit	Low	CT	Transmit/ receive
Channel X; status	Status switch	1 bit	Low	CR	Transmit/ receive
Channel X, status feedback	Status feedback value object/ brightness value	1 byte	Low	CT	Transmit/ receive
Channel X; status	Status of value object/brightness value	1 byte	Low	CR	Transmit/ receive

Per device:

Function	Object name	Type	Prio	Flags	Behaviour
Status feedback	Status feedback error	1 bit	Low	CT	Transmit/ receive
Status	Status error	1 bit	Low	CR	Transmit/ receive

● **Manual operation**

Manual operation

A channel key for each output channel is located at the front of a dimming actuator. You can use this channel key to manually operate the assigned output (channel key operation). For further information, please refer to the operating instructions for the appliance.

Releasing / disabling channel operation

You can specify as a priority the operation options for the appliance using channel buttons by setting the following parameters:

Tab	Parameter
General	Channel button operation

You can continuously enable and disable the manual operation options using the parameter values "enabled" and "disabled".

If you have selected the parameter setting "can be switched on and off via object", a new communication object appears which enables you to enable the function via bus telegrams, depending on the control. The description of the new communications object is "Disable channel operation". With this disable option, the respective function is disabled when the telegram value "1" is received, and enabled when the telegram value "0" is received.

| **i** | In this case, operation is always switched on following initialisation and the application download. |

Channel operation

If you have switched on the channel button operation or have enabled it via an object, dimming commands (longer push-button action) or switch commands (short push-button action) are generated when operating the corresponding operating elements. Here, both operating options function with the same priority.

The channel operation always affects the "switch object" and the "dimming object" of the corresponding channel.

Commands from channel button operation which influence the "switch object" and "dimming object" of a channel have the same value as the commands via these objects. The last active command is forwarded to the dimming output. Each push-button action during channel button operation influences the last output value in the same way as a toggle key. This means that the output is switched off after a short push-button action, when it has previously been switched on, and is switched on when it has previously been switched off. A long push-button action on the channel button acts in the same way as a relative dimming command. The output is dimmed up or down for the period of the push-button action, depending on which dimming direction was previously active for a relative dimming command. Relative dimming commands are either

issued following a long push-button action during channel button operation, or via the "dimming object" or "central dimming object".

Priority of channel button operation

Channel button operation functions with the same priority level as the switching function and dimming function (please refer to the section on priority) which they influence. This means that a manual operation via these function is not forwarded to the dimming outputs as long as a higher priority function is active. The corresponding operations are processed in the background by the software, however.

Channel key operation during emergency operation

When only the operating voltage, but not the bus voltage is applied to the appliance, the device is in the "emergency operation" mode. In emergency operation mode, the channel key operation is always switched on and function in parallel. In this way, the output channels can also be switched on and off (short push-button action) or dimmed (long push-button action) without bus telegrams.

| **i** | In emergency operation mode, the dimming direction changes when the maximum or minimum dimming value is reached. In other words, as long as the key is kept pressed down, the output dims continuously up and down! |

| **i** | In emergency operation mode, all parameter settings are deactivated! The missing values for the minimum/maximum dimming value and for the dimming curves must be taken into account in particular. |

Communication objects

You can select the following communication objects:

Per device:

Function	Object name	Type	Prio	Flags	Behaviour
Channel button operation	Disable channel operation	1 bit	Low	SLK	Transmit/ receive

● **Status displays**

The dimming actuator has different LED displays, which show the current status of the appliance hardware (red error LED for each output), the current status of the switch outputs (yellow status LED for each output), and the operation status (green run LED).

Status of the appliance hardware:

A red LED display (error LED) is assigned to each output channel in order to indicate error output states or an excess temperature in the appliance. In normal operating mode, the error LEDs are switched off. Please note that some error states must be acknowledged in order to deactivate them.

The following errors may occur:

– Overload and short circuit
  If an overload or a short circuit occurs on an output channel, the channel concerned is switched off. The error LED on the output lights up. The status LED on the output does not light up.
  After the error state has been rectified, you can acknowledge this error message in two different ways:
  - Acknowledgement via push-button action on the channel button: After acknowledgement, the output channel carries out a load detection. If this is successful, the output is dimmed to the max. brightness.
  - Acknowledgement by switching the operating voltage off and on: In this case, the load detection is only carried out when the first switching or dimming signal is issued on the output (by pressing the channel button or KNX). When the load detection is initialised by the channel button, the max. dimming value is then set.

– Idle state
  If the appliance hardware detects an idle state at an output channel, the channel is switched off. The error LED on the output lights up. The status LED on the output lights up.
  This state does not need to be acknowledged.
  After a load is connected, the actuator runs through a load detection when the first switching or dimming signal is received (by pressing the channel button or the KNX). When the load detection is initialised by the channel button, the max. dimming value is then set.

– Excess temperature
  The temperature in the housing of the dimming actuator is constantly monitored. If the measured temperature exceeds a critical value, all the dimming outputs which are switched on are dimmed down to the min. dimming brightness.
  In this case, the run LED flashes, all error LEDs light up, and your only option is to switch off the dimming channels.
  If the temperature value remains above the critical value within the next 15 minutes, or if it continues to rise, all outputs are switched off. You can only switch the outputs back on when the temperature

value has cooled to its normal range.
If the temperature value falls back to its normal range within 15 minutes following an excess temperature, all dimming outputs are set back to their former dimming value.

ℹ️ If one of the above error states occurs, this can also be reported as a status via a bus telegram. Please refer to the manual section on "Status reports".

ℹ️ If a short circuit or idle state occurs on an output channel during operation, no further bus telegrams are evaluated for this channel, and after the error has been reported via the status object, no further bus telegrams are transmitted. If a successful load detection has been completed for this channel after such an error has occurred (the output is switched to the max. brightness), bus operation is again possible.

ℹ️ If another error is identified during a load detection, or if another error occurs, the load detection is interrupted. A maximum of 3 load detections can be triggered via bus telegrams. After the third unsuccessful load detection, the load detection can only be triggered via the channel keys!

Status of the switch outputs

The yellow status display on a channel indicates the switching or dimming status of an output channel. If the channel is switched off, the status display is also switched off. The status display lights up when the channel is switched on or dimmed.

Operational status

The green run LED lights up when the dimming actuator is functioning correctly, the software application is running and the operating voltage and bus voltage are being applied.

Overview of status displays

	Operating LED "RUN" (green)	Channel status LED (yellow)	Channel error LED (red)
Normal mode			
Channel switched off	on	off	off
Channel switched on	on	on	off
No bus voltage			
Channel switched off	off	off	off
Channel switched on	off	on	off
No mains supply	off	off	off
Overload or short circuit. The channel has been switched off.	on	off	on
Overload or short circuit and no bus voltage. The channel has been switched off.	off	off	on
Load detection	on	on	off
No load at output (idle). The channel has been switched off.	on	on	on
No load at output (idle) and no bus voltage. The channel has been switched off.	off	on	on
Excess temperature. All channels that are switched on are dimmed to minimum power/minimum brightness. Channels which are currently switched off cannot be switched on. See also "What should I do if there is a problem?".	flashes	on/off	All on

● Startup and failure behaviour

Load detection

In order to be able to set the dimming behaviour (phase control or phase alignment) automatically to the connected lamp load, each channel must conduct a "load detection" prior to operation. The load detection can be conducted as soon as the loads are connected and the operating voltage has been switched on. You can trigger the load detection by activating a channel key, If the appliance has already been programmed, you can also activate the load detection via the initial ON or dimming telegram.

A load detection is required when a short circuit or idle state has occurred at an output (see also the section on "Status displays").

During the load detection, the output is switched on at max. brightness for approx. 10s; then it is switched off and dimmed back up to the max. brightness or to the parameterised value. The channel is then ready for operation.

> **i** If another error is identified during a load detection, or if another error occurs, the load detection is interrupted. A maximum of 3 load detections can be triggered via bus telegrams. After the third unsuccessful load detection, the load detection can only be triggered via the channel keys!

Physical address

When the operating and bus voltage have been applied to the dimming actuator, you can issue the physical address using the ETS software. Press the programming key to put the appliance into programming mode. This is indicated when the red programming LED lights up. Now you can load the physical address. When the load has been successfully completed, the red programming LED goes out.

Behaviour after download

The behaviour after the application has been downloaded corresponds to the behaviour following the recovery of the bus voltage when the operating voltage is present, as described below. You can parameterise whether the priority control and the disable function are active after a download. For the scene function, you can also specify whether the stored brightness values should be overwritten by your settings during a download, or not (please refer to the section "Scene function").

Behaviour on failure of the operating voltage

No functions are possible when the operating voltage fails. All channels and display elements are switched off. Please note that the appliance must in all cases conduct a load detection when the operating voltage returns.

Behaviour when the operating voltage returns and the bus voltage is absent (emergency operation)

All channels remains switched off. As soon as you wish to switch on a channel by activating the channel key, the appliance conducts a load detection. After the load detection, you can operate the output channels using the channel keys

Behaviour when the operating voltage returns and the bus voltage is present

The channels remains switched off. As soon as you wish to switch on a channel by activating the channel key, or via a bus telegram, the appliance conducts a load detection. After the load detection, you can continue to operate the output channels as before.

Behaviour when the bus voltage fails and the operating voltage is present

When the bus voltage fails, the brightness values on the output channels do not change. The appliance is now running in emergency operation mode. You can operate the output via the channel keys .The operating display (run LED) is switched off.

The current values of the priority control or logic object and the disable object are stored.

Behaviour when the bus voltage returns and the operating voltage is present

You can set the behaviour of the appliance functions individually for each channel of the dimming actuator following a bus voltage failure.

After a bus voltage failure, the speed set "0" is active. The dimming speed is oriented to the active function.

- Value of switch object after bus voltage failure

You can specify the behaviour of the switch object after a bus voltage failure or a download using a parameter:

Tab	Parameter
X: General	Behaviour during bus voltage recovery and download

Settings:

- no response: The output channel remains at is current brightness value.

-switch off: The output is switched off.

-switch on with starting behaviour, see the "Starting behaviour" parameters in the tab Channel:X. The output is switched on at the set initial brightness.

If other advanced or priority functions are active when a bus voltage failure occurs, your settings for the reaction of the switch object may be overwritten.

- Value of logic object after bus voltage failure

Tab	Parameter
X: Logic operation	Value of the logic object after bus voltage failure and download

If you have activated the logic function, the set value for each output channel is activated after downloading or after the bus voltage has returned at the input of the logic functions.

- Value of priority control after bus voltage failure

Sie können das Verhalten der Zwangsführung bei Wiederkehr der Busspannung durch einen Parameter festlegen:

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

The settings have the following meaning:

- inactive: After a bus voltage failure, the priority control is not active. It must be activated by a new telegram if necessary.

- active "off": After a bus voltage failure, the priority control is directly active with the behaviour at the start of priority control "off". Subordinate functions are not set, but are processed only in the background. In order to deactivate, the actuator must receive an appropriate telegram.

- active "on": After a bus voltage failure, the priority control is directly active with the behaviour at the start of priority control "on". Subordinate functions are not set, but are processed only in the background. In order to deactivate, the actuator must receive an appropriate telegram.

- as before bus voltage failure: The priority control is set to the status which was active before the bus voltage failure. If the function was active, it is now switched back to active again; if it was deactivated, it now remains switched off.

- Value of disable function after bus voltage failure

You can specify the status of the disable function when the bus voltage recovers by setting a parameter:

Tab	Parameter
X: Disable function	Lock status after bus voltage recovery

The settings have the following meaning:

- inactive: After a bus voltage failure, the disable function is not active. It must be activated by a new telegram if necessary.

- active: After a bus voltage failure, the disable function is directly active. Subordinate functions are not set, but are processed only in the background. In order to deactivate, the "disable object" must receive an appropriate telegram.

- as before bus voltage failure: The disable function is set to the status which was active before the bus voltage failure. If the function was active, it is now switched back to active again; if it was deactivated, it now remains switched off.

Parameters and settings

This section contains all the parameters of the ETS application with their settings. Preset values are printed in bold.

General	
Parameter	Setting
Channel X	**deactivated**
	activated
Scenes	**disabled**
	enabled
Extension unit scenes	disabled
	enabled
Central function	**disabled**
	enabled
Central switch object	deactivated
	activated
Central dimming object	deactivated
	activated
Central value object	deactivated
	activated
Same dimming time with central function and scenes	**disabled**
	enabled
Channel operation	**enabled**
	disabled
	can be switched on and off via the object
Status error	**deactivated**
	active status feedback object
	passive status object

Same dimming time	
Parameter	Setting
Time base for same dimming time	**1s**, 1min, 1hour
Time factor for same dimming time 1-255	1..**5**..255
Time factor for same dimming time modifiable via the bus	**deactivated**
	activated

X: General	
Parameter	Setting
Minimum dimming value in %	1..**7**..100
Maximum dimming value in %	1....**100**
Starting behaviour	**Max. brightness**
	variable brightness
	last brightness value (memory)
Basic dimming curve	**Incandescent lamps**
	Halogen lamps
	modifiable
Dimming object switches channel	not at all
	only on, not off
	only off, not on
	on and off
Value object switches channel	not at all
	only on, not off
	only off, not on
	selectable via object

Delay times	disabled
	enabled
Staircase lighting function	deactivated
	activated
Switch object influences logic operation	**unchanged**
	inverted
Scenes	disabled
	enabled
Central function	disabled
	enabled
Higher priority functions	deactivated
	Logic operation
	Priority control
Disable function	deactivated
	activated
Behaviour during bus voltage return and downloading	**no response**
	switch off
	switch on starting behaviour
Status switch	**deactivated**
	activated
Status of value object/brightness value	**deactivated**
	activated

X: Basic dimming curve	
Parameter	Setting
1. threshold value in %	0..**25**..100
2. threshold value in %	0..**50**..100
3. threshold value in %	0..**75**..100
Time base for 1st dimming section	**100ms**, 1s, 1min, 1hour
Time factor for 4th dimming section (1-255)	1..**230**..255
Time base for 2nd dimming section	**100ms**, 1s, 1min, 1hour
Time factor for 4th dimming section (2-255)	1..**180**..255
Time base for 3rd dimming section	**100ms**, 1s, 1min, 1hour
Time factor for 4th dimming section (3-255)	1..**120**..255
Time base for 4th dimming section	**100ms**, 1s, 1min, 1hour
Time factor for 4th dimming section (4-255)	1..**70**..255

X: Dimming time reductions	
Parameter	Setting
Dimming time reduction object for dimming curve	**deactivated**
	activated
Set 0 to 3: Dimming time reduction (1-100) or (1-255) for switching telegrams and switching on staircase lighting	1..**2**..100
Set 0 to 3: Dimming time reduction (1-100) or (1-255) for dimming telegrams	1..**10**..100
Set 0 to 3: Dimming time reduction (1-100) or (1-255) for switching off staircase lighting	1..**50**..100
Set 0 to 3: Dimming time reduction (1-100) or (1-255) for value telegrams	1..**20**..100

Set 0 to 3: Dimming time reduction (1-100) *or* (1-255) for scene telegrams	1..**32**..100
Set 0 to 3: Dimming time reduction (1-100) *or* (1-255) for higher priority functions	1..**2**..100
Set 1 to 3	**disabled**
	enabled

Delay times	
Parameter	Setting
ON delay	deactivated
	retriggerable
	not retriggerable
Output during the ON delay	**switched off**
	at minimum brightness / lower dimming limit
Time base for ON delay	100 ms
	1 s
	1 min
	1 hour
Time factor for ON delay (1-255)	1..**3**..255
OFF delay	deactivated
	retriggerable
	not retriggerable
Time base for OFF delay	100 ms
	1 s
	1 min
	1 hour
Time factor for OFF delay (1-255)	1..**3**..255

X: Staircase timer	
Parameter	Setting
Staircase lighting function	**with manual OFF, cannot be retriggered**
	with manual OFF, can be retriggered
	with manual OFF, accumulate time
	without manual OFF, cannot be retriggered
	without manual OFF, can be retriggered
	without manual OFF, accumulate time
Max. number of time accumulations (2-255)	2..**3**..255
Time base for staircase timer	1 s
	1 min
	1 hour
Time factor for staircase timer (1-255)	1..**3**..255
Staircase timer influences logic operation	**unchanged**
	inverted
Cut-out warning for staircase lighting time	deactivated
	activated
Warning time for staircase lighting time in seconds (1-255)	1..**30**..255

X: Scenes	
Parameter	Setting
Replace scene values in the actuator on download	deactivated
	activated
Same dimming time	**deactivated**
	activated
Scene 1 to scene 8	**deactivated**
	activated (**scene 1 activated**)
Scene 1 to scene 8 scene number (0-63)	**0**..63
Scene 1 to scene 8 brightness value in %	0..**15**..100%

X: Central function	
Parameter	Setting
Same dimming time	**deactivated**
	activated
Function with the central switch object = 0	no response
	switch off
	switch on at variable brightness
Function with the central switch object = 1	no response
	switch off
	switch on at variable brightness
Required brightness with central switch object = 0 in %	5..**100**
Required brightness with central switch object = 1 in %	5..**100**

X: Logic operation	
Parameter	Setting
Logic operation	AND
	OR
Logic object influences	**unchanged**
	inverted
Value of the logic object after bus voltage failure and downloading	**0**
	1
Brightness with logic object "0" in % *(with AND logic operation)*	5..**100**
Brightness with logic object "1" in % *(with OR logic operation)*	5..**100**

X: Priority control	
Parameter	Setting
Behaviour on start of priority control "on"	no response
	switch off
	switch on at variable brightness
Required brightness on start of priority control "on" in %	5..**100**
Behaviour on start of priority control "off"	no response
	switch off
	switch on at variable brightness
Required brightness on start of priority control "off" in %	5..100
Behaviour at the end of priority control	no response
	switch off
	switch on at variable brightness
	follows subordinate functions
Required brightness at end of priority control in %	5..**100**
Behaviour of priority control after bus voltage recovery	**inactive**
	active "off"
	active "on"
	as before bus voltage failure

X: Disable function	
Parameter	Setting
Lock	for object value "0"
	for object value "1"
Behaviour at start of lockout	no response
	switch off
	switch on at variable brightness
Required brightness at start of lockout in %	5..**100**
Behaviour at end of lockout	no response
	switch off
	switch on at variable brightness
	follows subordinate functions
Required brightness at end of lockout in %	5..**100**
Lock status after bus voltage recovery	**inactive**
	active
	as before bus voltage failure