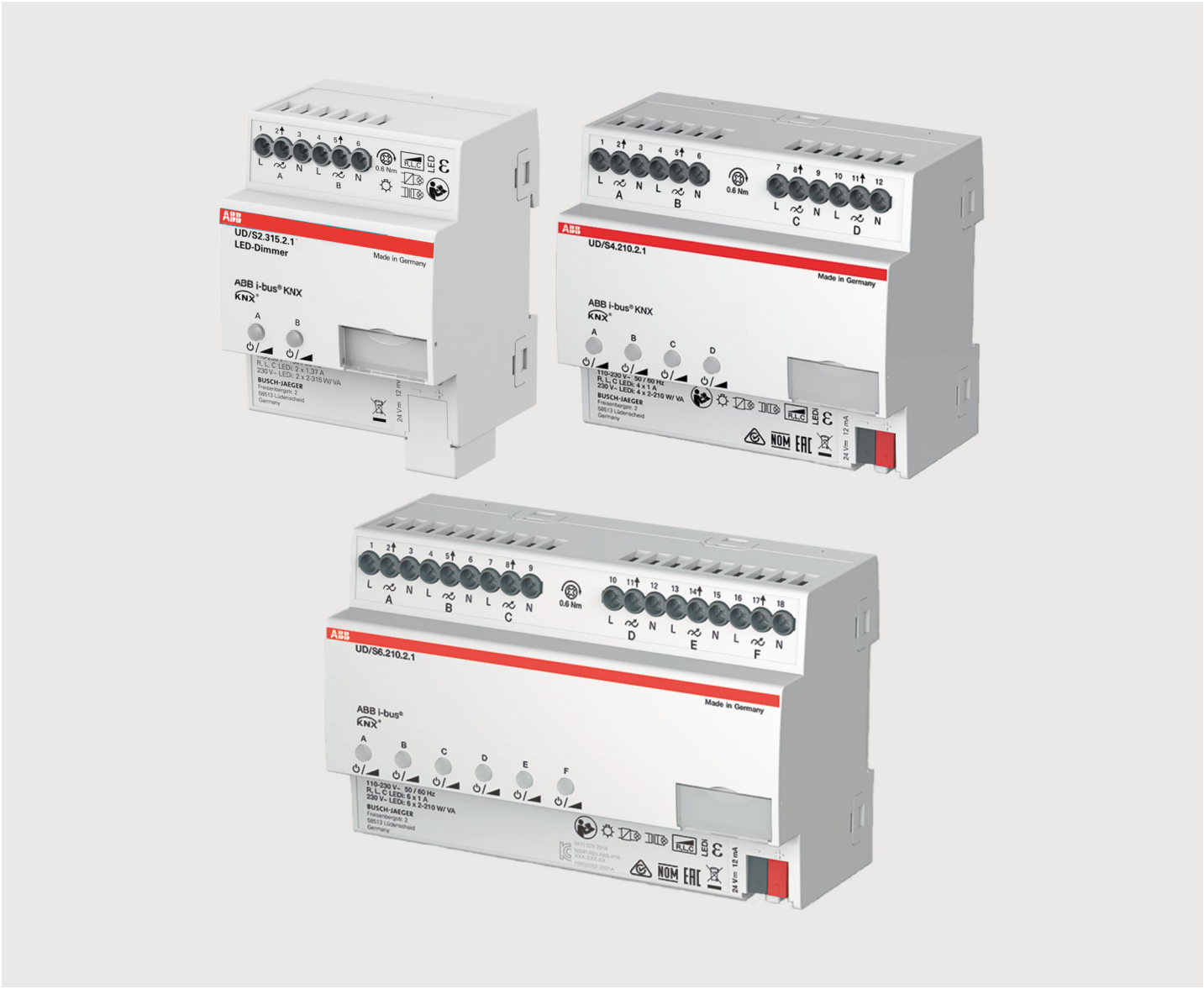
2CKA001473B9659 | 03.07.2020

Product manual

LED dimmer 4/6x210 W, MDRC UD/Sx.210.2.1x

LED dimmer 2/4/6x315 W, MDRC UD/Sx.315.2.1x

LED dimmer 1x1260 W, MDRC UD/Sx.1260.2.1x



1 Notes on the instruction manual

Please read through this manual carefully and observe the information it contains. This will assist you in preventing injuries and damage to property, and ensure both reliable operation and a long service life for the device.

Please keep this manual in a safe place.

If you pass the device on, also pass on this manual along with it.

ABB accepts no liability for any failure to observe the instructions in this manual.

If you require additional information or have questions about the device, please contact ABB or visit our Internet site at:

www.BUSCH-JAEGER.com

2 Safety

The device has been constructed according to the latest valid regulations governing technology and is operationally reliable. It has been tested and left the factory in a technically safe and reliable state.

However, residual hazards remain. Read and adhere to the safety instructions to prevent hazards of this kind.

ABB accepts no liability for any failure to observe the safety instructions.

2.1 Information and symbols used

The following Instructions point to particular hazards involved in the use of the device or provide practical instructions:

Danger

Risk of death / serious damage to health

– The respective warning symbol in connection with the signal word "Danger" indicates an imminently threatening danger which leads to death or serious (irreversible) injuries.

Warning

Serious damage to health

– The respective warning symbol in connection with the signal word "Warning" indicates a threatening danger which can lead to death or serious (irreversible) injuries.

Caution

Damage to health

– The respective warning symbol in connection with the signal word "Caution" indicates a danger which can lead to minor (reversible) injuries.

Attention

Damage to property

– This symbol in connection with the signal word "Attention" indicates a situation which could cause damage to the product itself or to objects in its surroundings.

NOTE

This symbol in connection with the word "Note" indicates useful tips and recommendations for the efficient handling of the product.

This symbol alerts to electric voltage.

2.2 Intended use

The device is an MDRC dimmer (MDRC=Modular DIN-Rail Component) optimized for the control of LEDs.

The device is intended for the following:

- Operation according to the listed technical data.
- Installation in dry interior rooms on a standard distribution rail.
- Use with the connecting options available on the device.

The intended use also includes adherence to all specifications in this manual.

Extensive functions are available for the MDRC dimmer. The range of applications is listed in Chapter 11 “Description of application and parameters“ on page 43 (in languages of the countries DE, EN, ES, FR, IT, NL, PL and RU).

The integrated bus coupler makes possible the connection of a KNX bus line.

Notice

Dimmer capacities > 1000 W only for professional use according to EN 61000-3-2.

Please contact your relevant energy supply company for approval of connection.

2.3 Improper use

Each use not listed in Chapter 2.2 “Intended use“ on page 7 is deemed improper use and can lead to personal injury and damage to property.

ABB is not liable for damages caused by use deemed contrary to the intended use of the device. The associated risk is borne exclusively by the user/operator.

The device is not intended for the following:

- Unauthorized structural changes
- Repairs
- The use in bathroom areas
- Outdoor use

2.4 Target group / Qualifications of personnel

2.4.1 Operation

No special qualifications are needed to operate the device.

2.4.2 Installation, commissioning and maintenance

Installation, commissioning and maintenance of the device must only be carried out by trained and properly qualified electrical installers.

The electrical installer must have read and understood the manual and follow the instructions provided.

The electrical installer must adhere to the valid national regulations in his/her country governing the installation, functional test, repair and maintenance of electrical products.

The electrical installer must be familiar with and correctly apply the "five safety rules" (DIN VDE 0105, EN 50110):

1. Disconnect
2. Secure against being re-connected
3. Ensure there is no voltage
4. Connect to earth and short-circuit
5. Cover or barricade adjacent live parts

2.5 Safety instructions

Danger - Electric voltage!

Electric voltage! Risk of death and fire due to electric voltage of 100 … 240 V.
Dangerous currents flow through the body when coming into direct or indirect contact with live components. This can result in electric shock, burns or even death.

- Work on the 100 … 240 V supply system may only be performed by authorised and qualified electricians.
- Disconnect the mains power supply before installation / disassembly.
- Never use the device with damaged connecting cables.
- Do not open covers firmly bolted to the housing of the device.
- Use the device only in a technically faultless state.
- Do not make changes to or perform repairs on the device, on its components or its accessories.
- Keep the device away from water and wet surroundings.

Danger - Electric voltage!

Install the device only if you have the necessary electrical engineering knowledge and experience.

- Incorrect installation endangers your life and that of the user of the electrical system.
- Incorrect installation can cause serious damage to property, e.g. due to fire.

The minimum necessary expert knowledge and requirements for the installation are as follows:

- Apply the "five safety rules" (DIN VDE 0105, EN 50110):
  1. Disconnect
  2. Secure against being re-connected
  3. Ensure there is no voltage
  4. Connect to earth and short-circuit
  5. Cover or barricade adjacent live parts.
- Use suitable personal protective clothing.
- Use only suitable tools and measuring devices.
- Check the type of supply network (TN system, IT system, TT system) to secure the following power supply conditions (classic connection to ground, protective earthing, necessary additional measures, etc.).

Caution! - Risk of damaging the device due to external factors!

Moisture and contamination can damage the device.

- Protect the device against humidity, dirt and damage during transport, storage and operation.

3 Information on protection of the environment

3.1 Environment

Consider the protection of the environment!

Used electric and electronic devices must not be disposed of with domestic waste.

– The device contains valuable raw materials which can be recycled. Therefore, dispose of the device at the appropriate collecting depot.

All packaging materials and devices bear the markings and test seals for proper disposal. Always dispose of the packaging material and electric devices and their components via the authorized collecting depots and disposal companies.

The products meet the legal requirements, in particular the laws governing electronic and electrical devices and the REACH ordinance.

(EU Directive 2012/19/EU WEEE and 2011/65/EU RoHS)

(EU REACH ordinance and law for the implementation of the ordinance (EC) No.1907/2006).

4 Setup and function

The device is designed primarily for the operation of dimmable 230 V LEDi (Retrofit LED lamps with integrated ballast). Operation can be selected either as leading edge or trailing edge control.

Also controllable are:

- Low-voltage LEDi, incandescent lamps, 230 V halogen lamps and low-voltage halogen lamps on inductive transformers and electronic transformers with LC characteristics.

The device is operated as follows:

- Manual operation at the point of delivery
  - The on-site operation on the device is also possible via the respective channel button when the device has not been integrated in a KNX system (no bus voltage available, not programmed).
  - One LED operating button per channel is available (including a colour status indication) for switching ON and OFF, as well as dimming up and down.
- Operation via KNX sensors

The following manual settings are possible directly on the device:

- Local operation via LED operating button

Notice

Dimmers and LEDs

- Dimmable LEDs are clearly marked.
- At the factory the dimmer is set on operating mode "L,LEDi" (leading edge control) which is optimal for many LEDs. Depending on the LED lamp used, also operating mode "R,C(LEDi") (trailing edge control) can provide better results.

4.1 Device overview

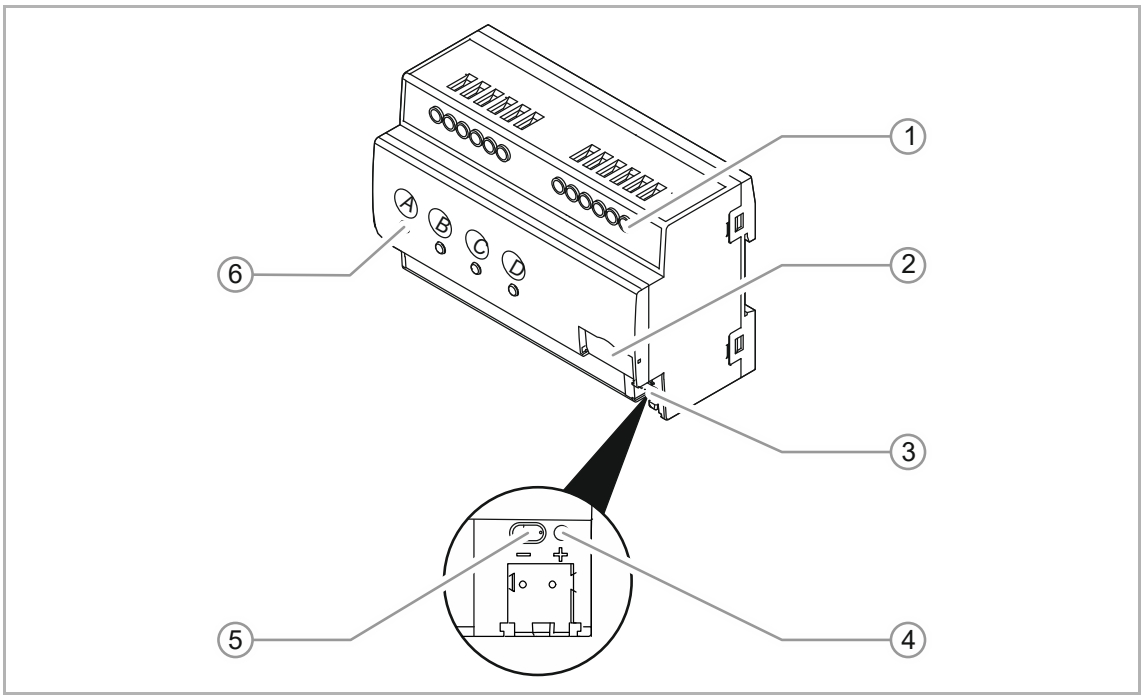


Fig. 1: Overview of devices (Example: 4gang)

[1] Screw-type terminals
[2] Label holder
[3] KNX bus connection terminal
[4] Programming LED
[5] Programming button
[6] LED operating button (A-x)

4.2 Functions

Additional functions:

- Programming of the device also possible without applied 230 V supply voltage.
- Fast parameter setting in ETS using multi-use channel templates.
- Extensive test and diagnosis functions via the i-Bus tool.
- Automatic load detection is parameterizable.
- Connection via different FI circuits.
- Parallel connection of the outputs is possible to increase the output power. Outputs can be connected within a device in any configuration.
  - The minimum load amounts to 2 W.
- The programmed settings are retained after a power failure.
- Wide–range voltage input: 110 - 230 V AC ±10%

4.3 Protective function

4.3.1 Backup fuse

The device is protected against damage from a short-circuited load by means of an electronic fuse.

- In case of a brief short-circuit the device switches off for 0.5 seconds and then switches on again.
- In case of a permanent short-circuit the device switches off permanently after 5 seconds.
  - Disconnect the voltage and then reconnect it.
- LEDi with high design-related recurring peak currents can lead to the activation of the electronic fuse, even if the maximum admissible connecting load has not been reached. This can limit the number of connectable LEDi.
- Continuous load currents above the nominal current are measured by the device and cause it to be switched off.

4.3.2 Thermal fuse

4.3.2.1 Temperature monitoring

The device is protected by temperature monitoring against damage from overheating.

- Temperature monitoring isolates the device from the mains before the temperature limit values are exceeded.

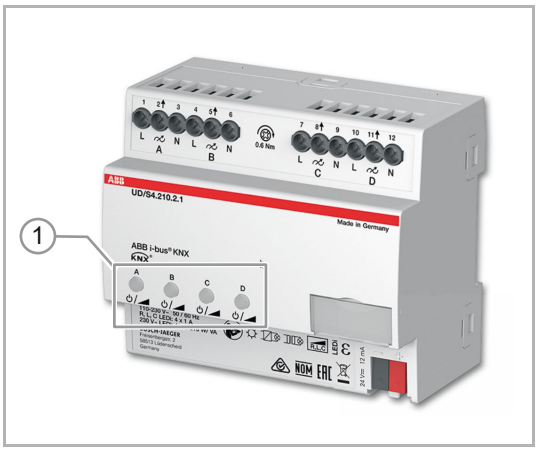


Fig. 2: Local operation (Example: 4gang)

- If temperature monitoring has responded, the device must be switched on again manually via the local operation.
  - The device switches off. The red LED of the corresponding channel [1] flashes red.
  - Press the red LED once (acknowledgement of fault) and then again (switching on).

Notice

In some cases the fault "Excess temperature" can acknowledge itself. Alternatively, the fault must be acknowledged manually.

4.3.2.2 Thermal fuse

In case of an emergency, the device is protected by an additional thermal fuse (not resettable) against damage from overheating.

- The thermal fuse isolates the device from the mains before the circuit board reaches a critical temperature.
  - The thermal fuse is an integral part of the device. Once the thermal fuse has responded, the device must be replaced.

4.3.3 Mains voltage failure

- In case of a mains failure and during deactivation of the mains voltage:
  - The device stores the current brightness value and operating mode.
- In case of a return of voltage and during activation of the mains voltage:
  - The device recalls the stored brightness value and operating mode. The device does not carry out a load test.
  - If the load was deactivated, the dimmer remains off after the return of the mains voltage. The device carries out a load test.

Notice
How the device responds after an interruption of the mains voltage can also be parameterized via the ETS.

4.4 Types of load

Operating mode: Leading edge control

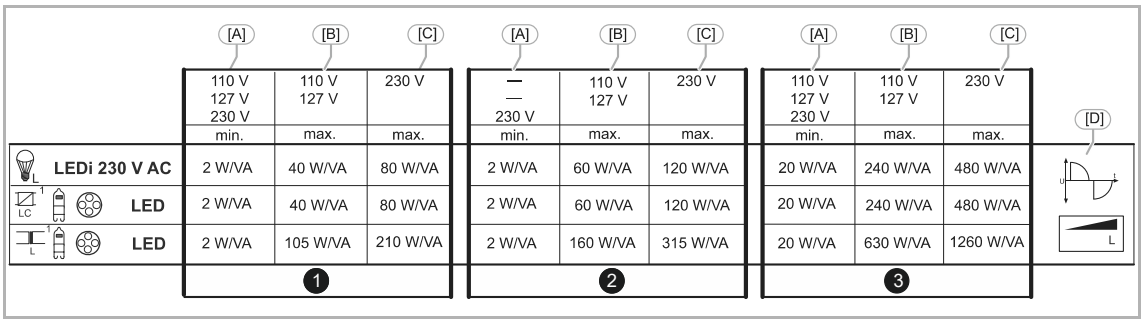


Fig. 3: Loads for operating mode: Leading edge control

[1] UD/Sx.210.2.1x

[2] UD/Sx.315.2.1x

[3] UD/Sx.1260.2.1x

Legend

[A] Minimum load

[B] Maximum load at 110, 127 V per channel

[C] Maximum load at 230 V per channel

[D] Operating mode leading edge control

LEDi 230 V AC	230 V LEDi retrofit with inductive L ballast
LED	Low-voltage LED on electronic LC transformers
LED	Low-voltage LED on inductive L transformers

Table 1: Legend: Icons

Operating mode: Trailing edge control

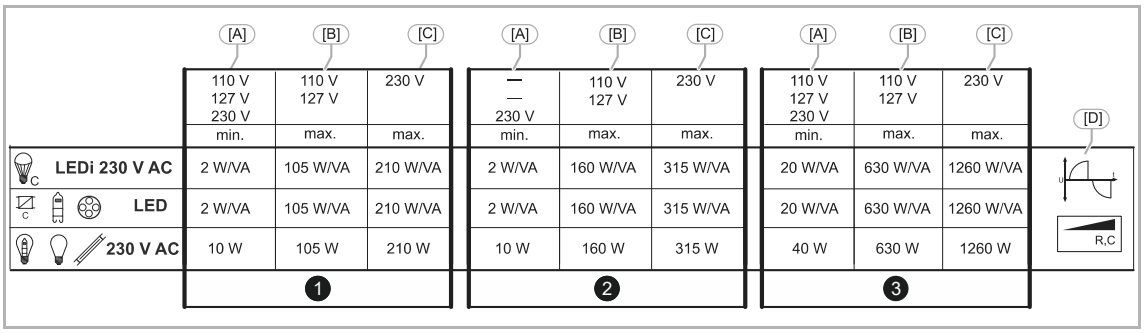


Fig. 4: Loads for operating mode: Trailing edge control

[1] UD/Sx.210.2.1x

[2] UD/Sx.315.2.1x

[3] UD/Sx.1260.2.1x

Legend

[A] Minimum load

[B] Maximum load at 110, 127 V per channel

[C] Maximum load at 230 V per channel

[D] Operating mode trailing edge control

LEDi 230 V AC	230 V LEDi retrofit with capacitive C ballast
LED	Low-voltage LED on electronic C transformers
230 V AC	230 V halogen lamps

Table 2: Legend: Icons

Notice

- Conventional transformers and electronic transformers, electronic transformers with L,C characteristic, as well as electronic transformers with a pure C characteristic, should not be dimmed together. This could cause malfunctions.
- A mixed load of resistive and inductive, or resistive and capacitive loads is possible.
- For UD/Sx.210.2.1x at 230V/60Hz the maximum load amounts to 200W/VA.
- Automatic detection of load characteristics (can be deactivated).
- In leading edge control use only L or LC transformers. Pure C transformers are inadmissible.
- Observe the specifications of the manufacturer of the load for the operating mode (LEDi) and the minimum load (transformers).
- Operating mode, maximum and minimum brightness are parameterizable according the type of load.
- For conventional transformers take ~20% und for electronic transformers take ~5% transformer loss into consideration.

4.4.1 Maximum number of connectable LED lamps

Due to high current peaks and the resulting rise in temperature, a lower maximum operating load is possible with the use of non-conventional lamps on a dimmer channel.

Although many manufacturers in their product descriptions equate the LED retrofit load with the conventional load, a greatly reduced value for the actual maximum load was determined during measurements.

As a rule of thumb, the factor 1/5 can be used, which is already being used by some manufacturers:

If, according to the specifications of manufacturers, a conventional load of 500 W can be operated on the dimmer, a maximum load of 100 W should be used on LED retrofit lamps to avoid the risk of an excessive overheating of the dimmer.

4.5 Channel bridging

4.5.1 Devices with connected load 80/210 W/VA

Operating mode / Max. connected load 230 V AC	6 MW, 4-channel	8 MW, 6-channel	8 MW, 1-channel
LEDi leading edge control	4 x 80 W/VA	6 x 80 W/VA	1 x 480 W/VA
Group LEDi leading edge control	1 x 200 W/VA	1 x 240 W/VA	-
Incandescent lamp + LEDi trailing edge control	4 x 210 W	6 x 210 W	1 x 1260 W
Group incandescent lamp + LEDi trailing edge control	1 x 600 W	1 x 800 W	-

Number of bundled channels 230 V AC	Max. connected load trailing edge control	Max. connected load Leading edge control
2	300 W/VA	100 W/VA
3	450 W/VA	150 W/VA
4	600 W/VA	200 W/VA
5	700 W/VA	225 W/VA
6	800 W/VA	240 W/VA

Notice
For part bundling of channels the maximum connected load of total bundling must not be exceeded.

Example: 6 MW, 4-channel > 3 channels bundled with 450 W/VA > max. connected load on the 4th channel = 150 W/VA

Operating mode / Max. connected load 127 V AC	6 MW, 4-channel	8 MW, 6-channel	8 MW, 1-channel
LEDi leading edge control	4 x 50 W/VA	6 x 50 W/VA	1 x 300 W/VA
Group LEDi leading edge control	1 x 130 W/VA	1 x 160 W/VA	-
Incandescent lamp + LEDi trailing edge control	4 x 100 W	6 x 100 W	1 x 600 W
Group incandescent lamp + LEDi trailing edge control	1 x 300 W	1 x 400 W	-

Number of bundled channels 230 V AC	Max. connected load trailing edge control	Max. connected load Leading edge control
2	150 W/VA	65 W/VA
3	225 W/VA	100 W/VA
4	300 W/VA	130 W/VA
5	350 W/VA	145 W/VA
6	400 W/VA	160 W/VA

4.5.2 Devices with a connected load of 120/315 W/VA

Operating mode / Max. connected load 230 V AC	4 MW, 2-channel	8 MW, 4-channel	12 MW, 6-channel
LEDi leading edge control	2 x 120 W/VA	4 x 120 W/VA	6 x 120 W/VA
Group LEDi leading edge control	1 x 200 W/VA	2 x 1 x 200 W/VA	2 x 1 x 360 W/VA 3 x 1 x 200 W/VA
Incandescent lamp + LEDi trailing edge control	2 x 315 W	4 x 315 W	6 x 315 W
Group incandescent lamp + LEDi trailing edge control	1 x 500 W	2 x 1 x 500 W	2 x 1 x 700 W/VA 3 x 1 x 500 W/VA

Number of bundled channels 230 V AC	Max. connected load trailing edge control	Max. connected load Leading edge control
2	500 W/VA	500 W/VA [1)]
		200 W/VA [2)]
3	700 W/VA	700 W/VA [1)]
		250 W/VA [2)]

1) When connecting conventional transformers with LED loads

2) When connecting all other loads, e.g. LEDi

Operating mode / Max. connected load 127 V AC	4 MW, 2-channel	8 MW, 4-channel	12 MW, 6-channel
LEDi leading edge control	2 x 270 W/VA	4 x 70 W/VA	6 x 70 W/VA
Group LEDi leading edge control	1 x 130 W/VA	2 x 1 x 130 W/VA	2 x 1 x 165 W/VA 3 x 1 x 130 W/VA
Incandescent lamp + LEDi trailing edge control	2 x 160 W	4 x 160 W	6 x 160 W
Group incandescent lamp + LEDi trailing edge control	1 x 250 W	2 x 1 x 250 W	2 x 1 x 350 W 3 x 1 x 250 W

Number of bundled channels 230 V AC	Max. connected load trailing edge control	Max. connected load Leading edge control
2	250 W/VA	250 W/VA [1)]
		130 W/VA [2)]
3	350 W/VA	350 W/VA [1)]
		165 W/VA [2)]

1) When connecting conventional transformers with LED loads

2) When connecting all other loads, e.g. LEDi

Channel 315/120 W/VA	A	B	C	D	E	F
12 MW, 6-channel, 6 x 1	A	B	C	D	E	F
12 MW, 6-channel, 3 x 2	A + B 500/200 W/VA		C + D 500/200 W/VA		E + F 500/200 W/VA	
12 MW, 6-channel, 2 x 3	A + B + C 700/250 W/VA			D + E + F 700/250 W/VA		
12 MW, 6-channel, 1 x 3, 1 x 2	A + B + C 700/250 W/VA			D	E + F 500/200 W/VA	
12 MW, 6-channel, 1 x 3, 1 x 2	A + B 500/200 W/VA		C	D + E + F 700/250 W/VA		

Channel 315/120 W/VA	A	B	C	D
8 MW, 4-channel, 4 x 1	A	B	C	D
8 MW, 4-channel, 2 x 2	A + B 500/200 W/VA		C + D 500/200 W/VA	

Channel 315/120 W/VA	A	B
4 MW, 2-channel, 2 x 1	A	B
4 MW, 2-channel, 1 x 2	A + B 500/200 W/VA	

5 Technical data

5.1 Technical data KNX

Power supply:	(via bus line): 24 V DC
Bus subscribers:	1 (12 mA)
Connection	
Bus connection terminal	0.6 - 0.8 mm
Line type:	J-Y(St)Y, 2 x 2 x 0.8 mm
Skinning length:	5 - 6 mm

5.2 Technical data general

Mains supply:		
▪ Wide voltage input		
UD/S4.210.2.1x UD/S1.1260.2.1x UD/S4.315.2.1x	110 - 230 V AC ±10% 50 / 60 Hz +4% -6%	
Screw terminals:	1.5 - 4 mm^2	
▪ Skinning length:	8 mm	
Module widths / channels		
▪ 4 MW	UD/S2.315.2.1x	2-channel
▪ 6 MW	UD/S4.210.2.1x	4-channel
▪ 8 MW	UD/S1.1260.2.1x	1-channel
	UD/S4.315.2.1x	4-channel
	UD/S6.210.2.1x	6-channel
▪ 12 MW	UD/S6.315.2.1x	6-channel
Protection rating	IP20	
Ambient temperature:	-5°C - +45°C	
Storage temperature:	-20°C - +70°C	
Transformer for low-voltage loads		
▪ Loss for electronic transformers (% of lamp load):		5%
▪ Loss for conventional transformers (% of lamp load):		20%

Power loss	
▪ Maximum admissible total power loss in the ON state:	≤ 5 W
Temperature ranges	
▪ Ambient temperature, 100% nominal load:	-5 - +45 °C*
▪ Ambient temperature, derating range:	+35 - +70 °C
▪ Storage temperature:	-20 - +70 °C
Module width:	4 MW (1 MW = 18 mm) 6 MW (1 MW = 18 mm) 8 MW (1 MW = 18 mm) 12 MW (1 MW = 18 mm)
Short-circuit fuse:	Electronic
Overload protection:	Electronic
Thermal fuse:	Not resettable

* The connected load is derived from the sum of the electric capacity of all values printed on the lamps. For low-voltage halogen lamps the power loss of the transformers is to be taken into account.

* A contact-parallel illumination is not admissible. The illumination of the push-buttons is only possible with N-conductor terminal.

5.3 Dimensional drawings

UD/S2.315.2.1x

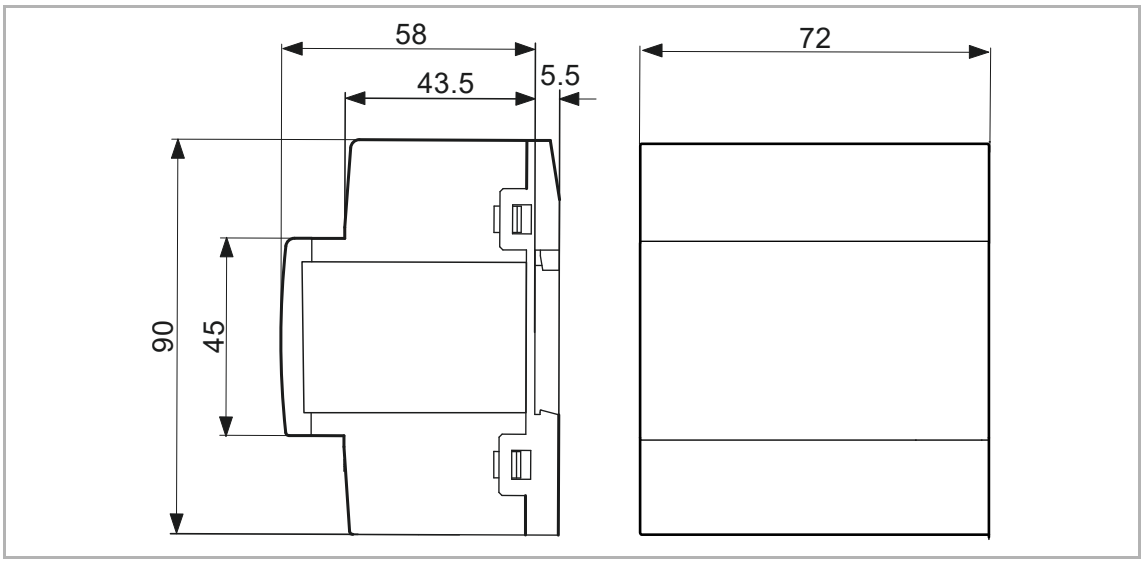


Fig. 5: Dimensions (4 MW)

UD/S4.210.2.1x

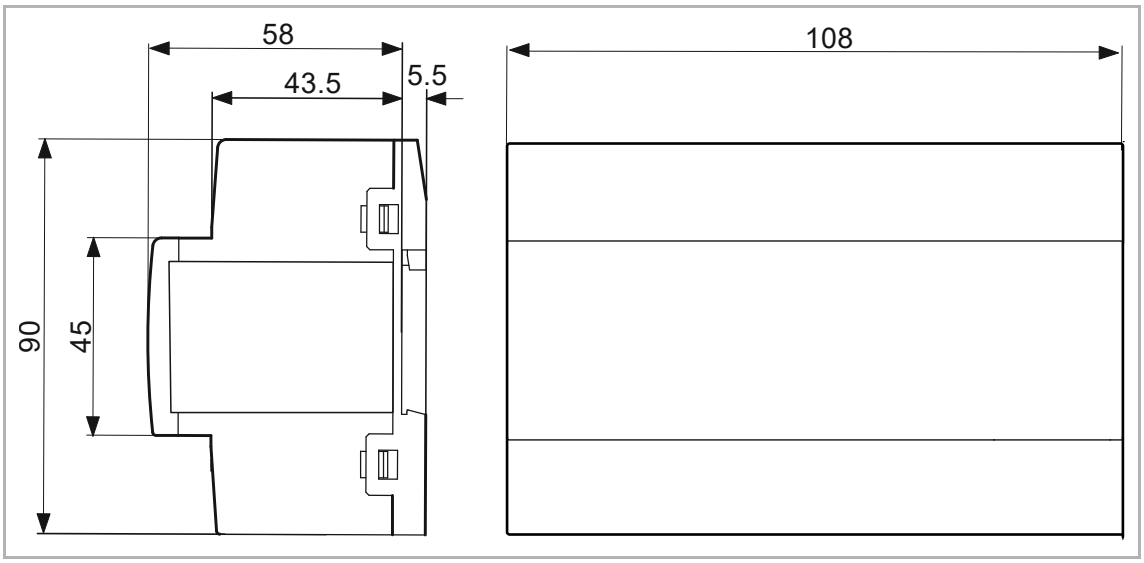


Fig. 6: Dimensions (6 MW)

UD/S6.210.2.1x / UD/S4.315.2.1x / UD/S1.1260.2.1x

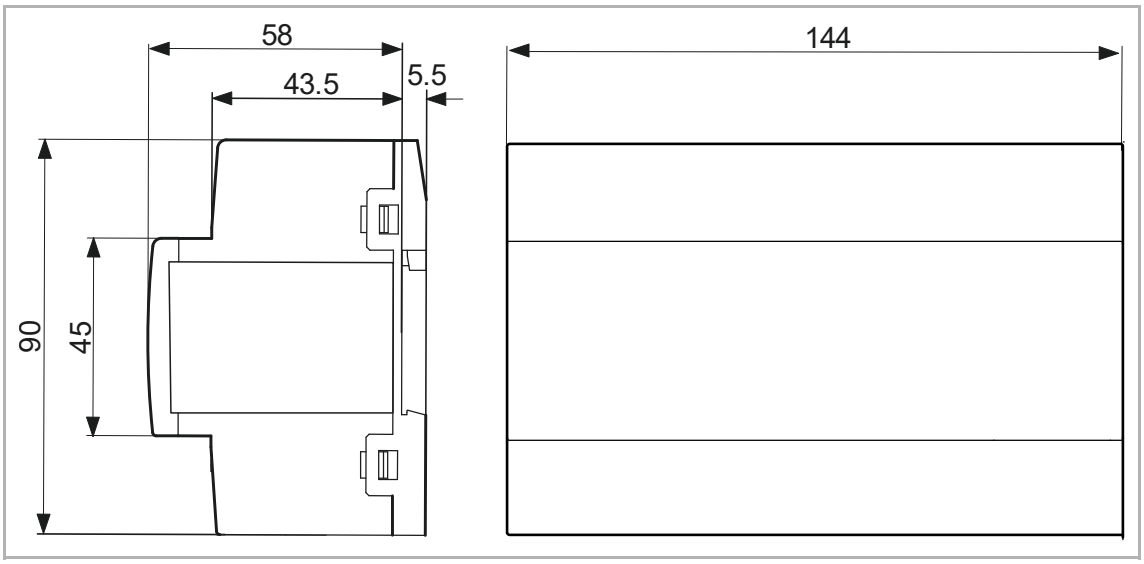


Fig. 7: Dimensions (8 MW)

UD/S6.315.2.1x

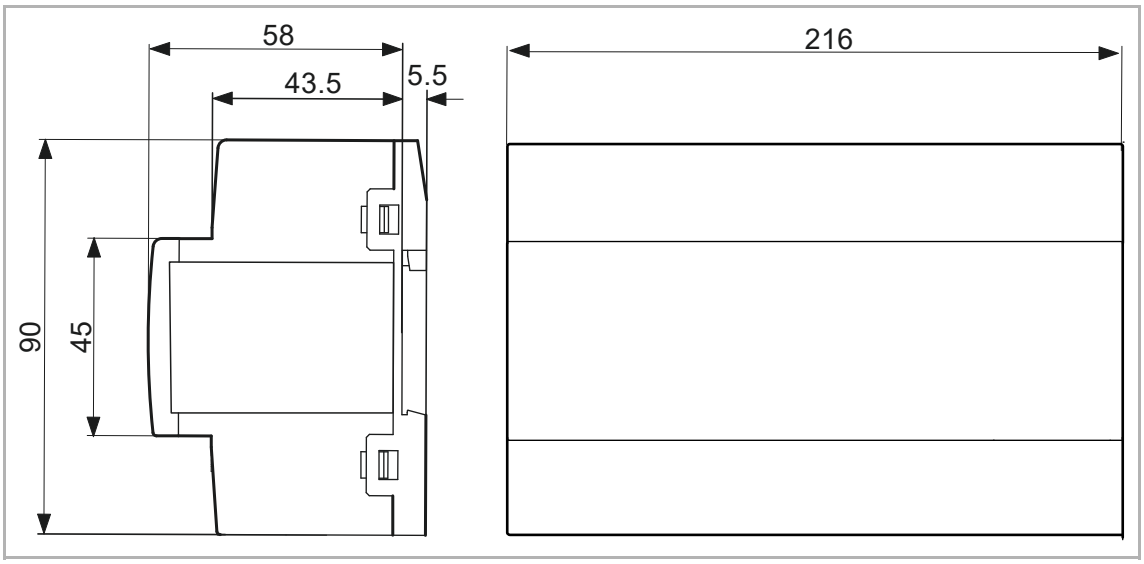


Fig. 8: Dimensions (12 MW)

6 Connection, installation / mounting

6.1 General information

Attention! - Risk of damaging the device

For parallel switching of channels, these must be connected to the same phase. In case of different phases, the dimmer will be destroyed during parallel switching.

– Operation with isolating transformer networks with a connected load of ≤ 10 kVA is not admissible!
– The dimmers are not to be operated without load.

Increasing performance with channel bundling:

Raising performance by means of channel bundling is admissible; it does not, however, lead to a multiplication of the channel load. Channel bundling is parameterized in the ETS.

6.2 Requirements for the electrician

Danger - Electric voltage!

Install the device only if you have the necessary electrical engineering knowledge and experience.

- Incorrect installation endangers your life and that of the user of the electrical system.
- Incorrect installation can cause serious damage to property, e.g. due to fire.

The minimum necessary expert knowledge and requirements for the installation are as follows:

- Apply the "five safety rules" (DIN VDE 0105, EN 50110):
  1. Disconnect
  2. Secure against being re-connected
  3. Ensure there is no voltage
  4. Connect to earth and short-circuit
  5. Cover or barricade adjacent live parts.
- Use suitable personal protective clothing.
- Use only suitable tools and measuring devices.
- Check the type of supply network (TN system, IT system, TT system) to secure the following power supply conditions (classic connection to ground, protective earthing, necessary additional measures, etc.).

6.3 Mounting / dismantling

The modular DIN rail component must only be installed on mounting rails according to DIN EN 50022 / DIN 60715 TH 35 (including industrial version).

Installation

To install the device, perform the following steps:

– Latch the modular DIN rail component onto the mounting rail.

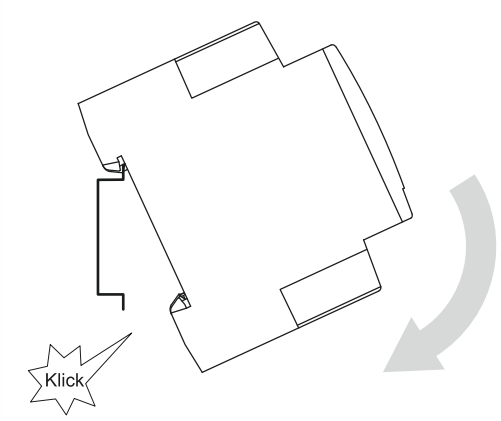


Fig. 9: Installation on mounting rails

Dismantling

To dismantle the device, perform the following steps:

– Press the device down [1] and then fold it toward the front [2].

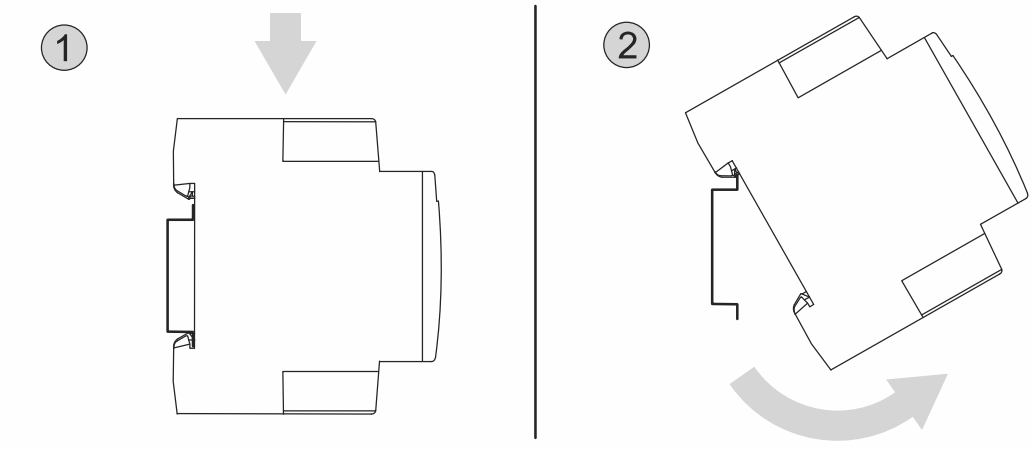


Fig. 10: Removal from the mounting rails

6.4 Electrical connection

The electrical connection is made via screw terminals. The description of the terminals is found on the housing. The connection to the KNX bus is made with the enclosed bus connection terminal. An LS 16 is to be used as circuit breaker. Separate N-connection per channel.

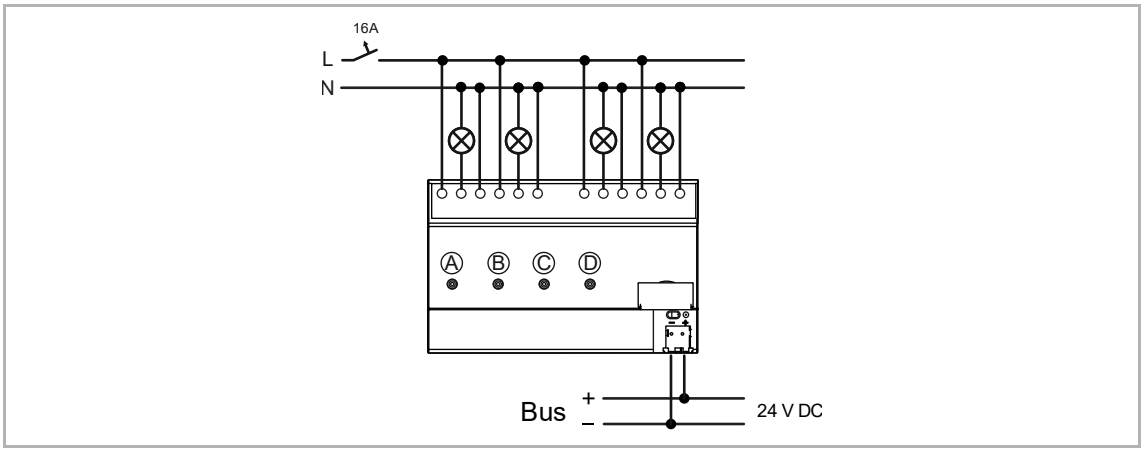


Fig. 11: Example of connection: Single-phase operation, multi-channel dimming actuator

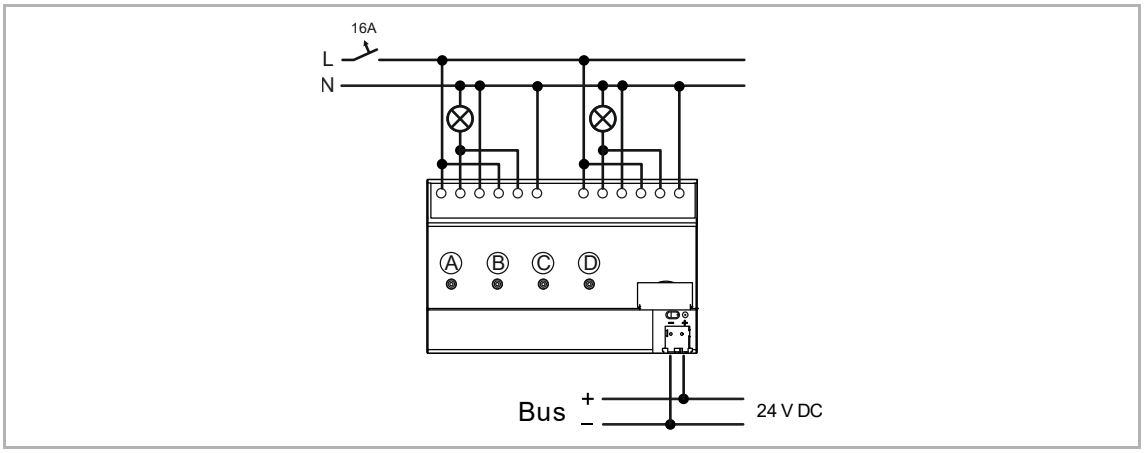


Fig. 12: Example of connection: Channel bundling, two channel respectively (A and B / C and D) connected in parallel

Notice
Operation in different FI circuits is admissible.

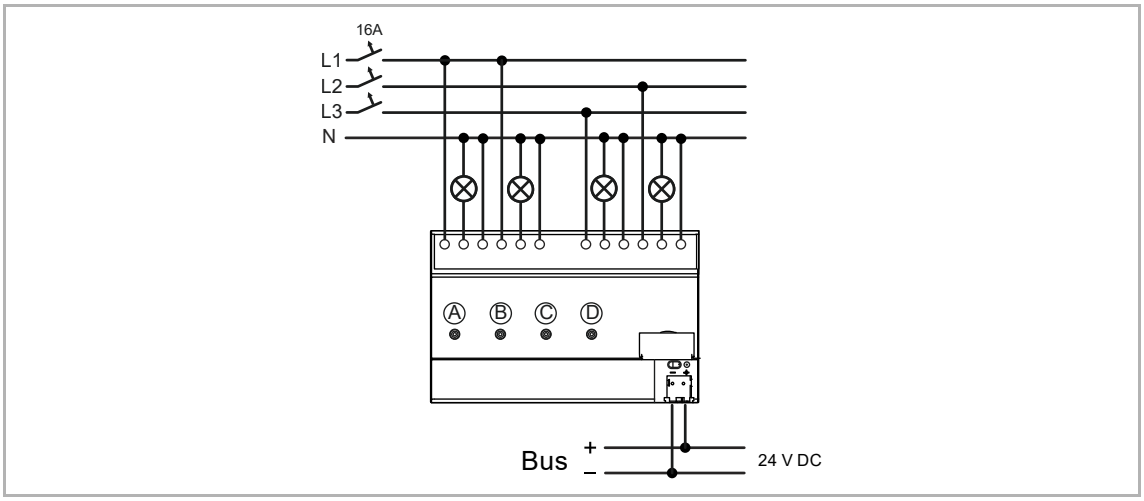


Fig. 13: Example of connection: Multi-phase operation, multi-channel dimming actuator

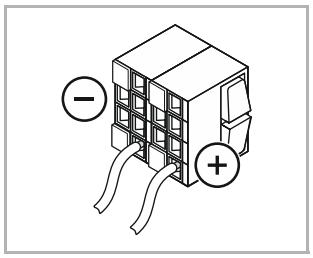


Fig. 14: Connecting terminal KNX

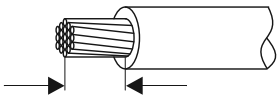


Fig. 15: Skinning length

Skinning length: 8 mm

Skinning length of bus connection terminal: 5 - 6 mm

6.5 Derating

6.5.1 Reduction of the connected load with LEDi

- The heating of the dimmer is essentially determined by the construction of the connected LEDi. LEDis with a low power factor heat the dimmer more strongly so that the connected load might have to be reduced if necessary.
- The electronics for dimmable LEDis are not standardized. The dimming capacity can only be ensured by means of a test.

Attention! - Damage to device

Risk of damaging the device due to overheating!

– When using transformers, ensure that each transformer is fused individually on the primary side or with a thermal fuse according to the manufacturer's specifications.
– Use only wound safety isolating transformers according to DIN EN 61558.

6.5.2 Operation with transformers / calculating the nominal power

Operation with transformers:

The dimmer operation of lamps on conventional transformers is associated with additional power loss. This reduces the maximum connectable performance of the lamps.

Example 1:

P_{nom} = 315 VA

P_{real} = 0.95 * P_{nom} = 299 VA for electronic transformers (-5%)

P_{real} = 0.80 * P_{nom} = 252 VA for CuFE transformers (-20%)

Example 2:

P_{nom} = 210 VA

P_{real} = 0.95 * P_{nom} = 199 VA for electronic transformers (-5%)

P_{real} = 0.80 * P_{nom} = 168 VA for CuFE transformers (-20%)

6.5.3 Derating curve

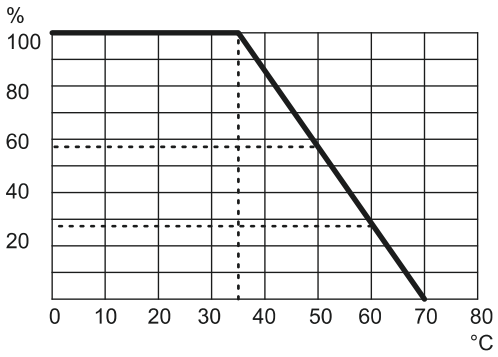


Fig. 16: Derating

Legend:

- %: Percentage value of nominal power
- °C: Ambient temperature

The maximum connected load (100%) is admissible at an ambient temperature of -5°C - +45°C. Beyond this, the derating curve applies.

7 Commissioning

7.1 Initial commissioning / Setup

If the load during initial commissioning is larger than the maximum load of the bridged channels, a bundling of the channels can be used depending on the type used. The group formation (parallel connection) is carried out with the ETS commissioning software.

When the KNX bus has not yet been connected, a load test is triggered on the respective channel during initial commissioning with a brief press of the button on the on-site control.

During initial commissioning and prior to connection, the device can be operated manually via the local control.

Various functions can be implemented via the ETS commissioning software. The function of the device depends on the parameters selected via the respective software application.

Additional commissioning

Attention! - Risk of damaging the device

A waiting period of 30 seconds is to be observed when re-activating via circuit breakers.

Attention! - Risk of damaging the device

Malfunction!

The dimming actuators carry out an automatic load test during commissioning. The channels / groups will not be recognized when commissioning without load.

– Do not operate the dimming actuators without load.

The dimming actuator detects the connected load (parameterizable) automatically after the mains voltage is supplied. If problems arise, the operating mode can be changed individually for each channel via the ETS.

After a power failure the dimming actuator returns to the parameterized settings.

7.2 Software

To start the device a physical address must be assigned first. The physical address is assigned and the parameters are set with the Engineering Tool Software (ETS).

NOTE
The devices are products of the KNX system and meet KNX guidelines. Detailed expert knowledge by means of KNX training sessions for a better understanding is assumed.

7.2.1 Preparation

1. Connect a PC to the KNX bus line via the KNX interface (e.g. via the commissioning interface / commissioning adapter).
   – The Engineering Tool Software must be installed on the PC (native application from ETS 4.0).
2. Switch on the bus voltage.

7.2.2 Assigning a physical address

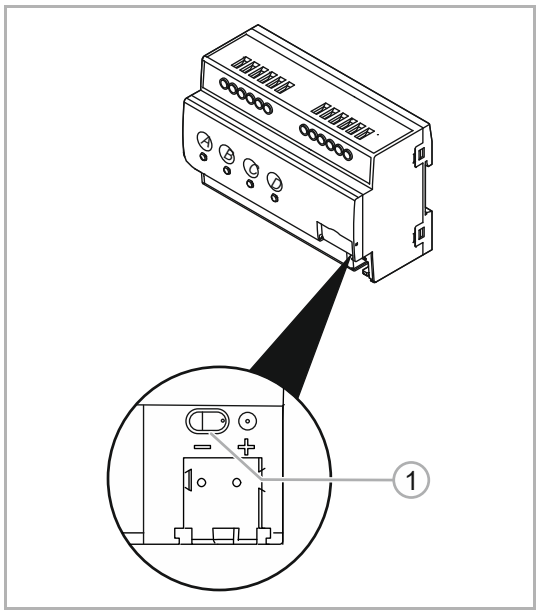


Fig. 17: Programming button (Example: 4gang)

1. Press the programming button [1].
   – The red programming LED flashes.

7.2.3 Assigning the group address(es)

The group addresses are assigned in connection with the ETS.

7.2.4 Selecting the application program

The application is loaded into the device via the ETS.

7.2.5 Differentiating the application program

Various functions can be implemented via the ETS.

Detailed description of parameters, see chapter 11 “Description of application and parameters“ on page 43 (only in languages DE, EN, ES, FR, IT and NL).

8 Updating options

A firmware update is carried out via the KNX bus by means of the ETS app "KNX Bus Update" from ABB Stotz-Kontakt GmbH.

The app makes it possible to update the operating systems of the different KNX devices with changing the hardware. The latest firmware files can be downloaded automatically from the Internet via the ETS.

The ETS can be used to check the firmware that is available in the device. The respective firmware status can be read from the device under menu item "Device info".

The app is made available free of charge in the KNX online shop. There, only licensing with the available ETS license is required.

Notice

The latest firmware can also be downloaded via the online catalogue (www.busch-jaeger-catalogue.com). It is stored on the device page under category "Software".

9 Operation

9.1 Control elements

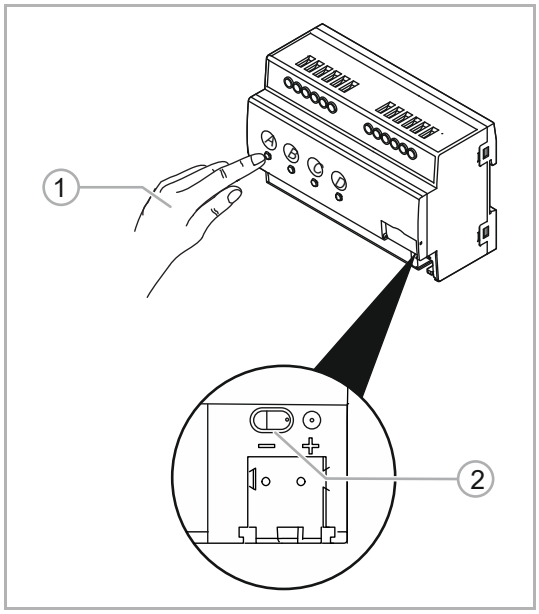


Fig. 18: Control elements (Example: 4gang)

[1] LED operating button per channel (A-x) for local operation and status indication.

[2] Programming button: Switchover to programming mode:

9.2 Status indication

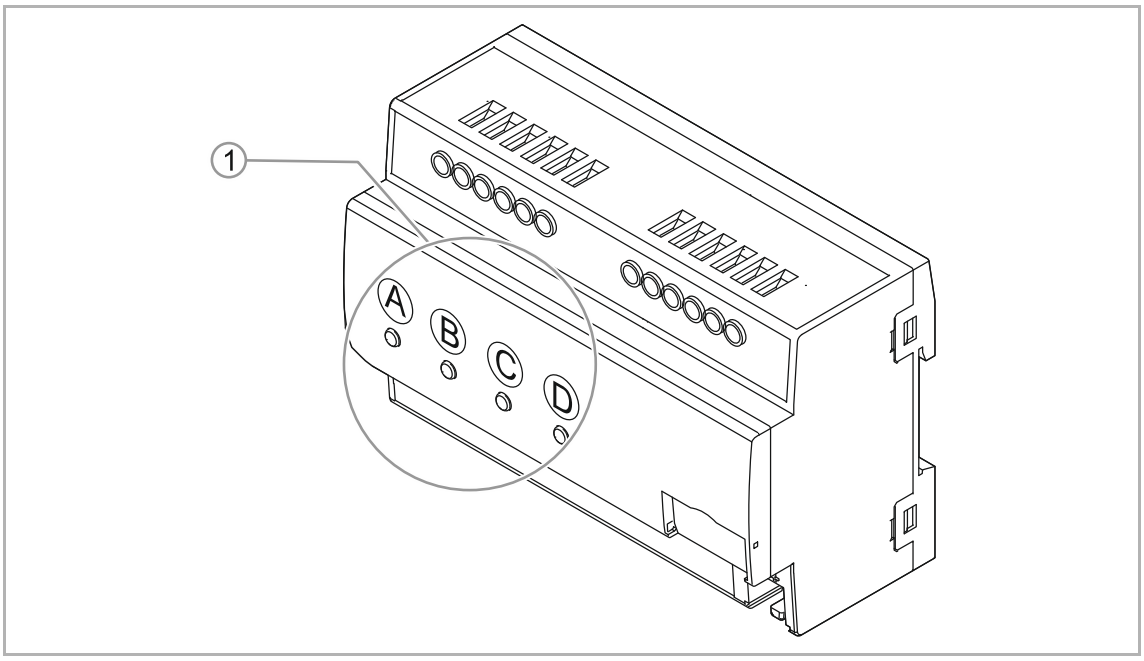


Fig. 19: Status indication (Example 4gang)

Status indication [1] per channel (A-x) via LED button	Status
Red	After activation of the mains voltage ▪ The LED lights up red until the device has been initialized and is ready for operation. A load test is carried out simultaneously.
Off	The device is in the OFF state.
Green	The device is in the ON state for LEDi operation. The corresponding channel is activated.
Flashing red	Error ▪ The corresponding channel is deactivated. Possible faults: ▪ Overvoltage ▪ Excess current ▪ Excess temperature Operation outside of the specified rated values

Table 3: Status indication

9.3 On-site operation on the device

The device is operated via KNX sensors or on the device on-site.

Notice
The on-site operation on the device is also possible via the respective channel button when the device has not been integrated in a KNX system:

Switchover, manual use - KNX operation

To operate the dimming actuator, press respective LED button on the device. If the LED on the button lights up red, the channels can be operated manually. Activation via the bus is blocked. To switch over to KNX mode, press the respective LED button again. However, this function must be parameterized.

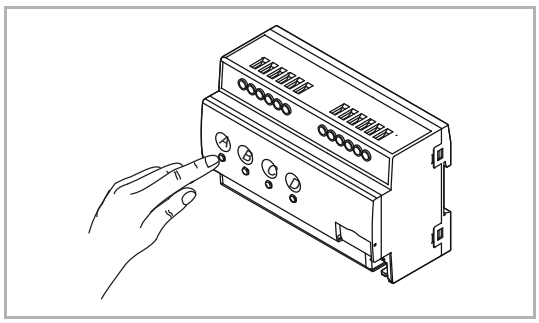


Fig. 20: On-site operation on the device (Example 4gang)

On-site operation on the device via LED operating buttons per channel (A-x)

Switching on/off:

- Brief press of the push-button
  - When switching on: Reaction of the device according to parameter settings.
  - When switching off: Reaction of the device according to parameter settings.

Dimming:

- Long press of the push-button
  - During dimming down to minimum brightness the device remains on this value. If the push-button is pressed for a longer time, the device dims up again.

Fault:

- Brief press of the push-button
  - Confirmation of the error message

Performing the load test:

- Long press of the push-button > 10 seconds
  - When the KNX bus is connected, a load test is triggered on the respective channel with a long press of the push-button > 10 seconds.

10 Maintenance

10.1 Cleaning

Clean dirty devices with a soft dry cloth.

– If this is insufficient, the cloth can be moistened slightly with a soap solution.

11 Description of application and parameters

11.1 Application "Channel allocation"

The physical outputs to the logical KNX channels are allocated with the aid of the channel allocation. This, for example, allows the the outputs to be bundled and connected in parallel for increasing the connectable load.

11.1.1 Bundling outputs

Options:	Yes
	No

11.1.2 Output x

With this parameter the individual outputs can be allocated to the channels and thus bundled.

Example: Output A and output B are to be connected in parallel and thus both be able to be activated as a channel via the logical KNX channel A:

- Output A: Channel A
- Output B: Channel A

Notice
The number of channels (see below) shifts according to the settings made here!

11.2 Application "Device settings"

11.2.1 General

In this parameter window the overriding parameter settings relevant for the entire device are made.

11.2.1.1 Allow manual operation

Options:	Always
	Only at KNX failure

- Always:
  - The push-buttons on the device can always be used.
- Only at KNX failure:
  - The push-buttons on the device can only be used at a KNX failure.

This parameter is used to enable the buttons on the front in general or only at a failure of the KNX bus.

The device is normally enabled with the receipt of an ON telegram via 1-bit communication object "EF: enable" and blocked with an OFF telegram. The parameter can invert this behaviour.

11.2.1.2 Use of the ripple control signal

Options:	Yes
	No

- Yes:
  - The ripple control signals of the network operators are filtered out.
- No (e.g. at generator-operation)
  - The ripple control signal filter is deactivated.

With this parameter the ripple control signals of the network operators can be filtered out via the ripple control signal filter. Since generally no ripple control signals occur with the use of a generator (e.g. on ships), in this case it is recommended to deactivate the ripple control signal filter.

A 1-bit communication object "In operation" can be enabled with this parameter. The further differentiation is carried out via the parameter that is available after enabling.

11.2.1.3 Enable communication object "In operation"

Options:	No
	Yes, send value 0 cyclic
	Yes, send value 1 cyclic

- No:
  - The communication object is not enabled.
- Yes, send value 0 cyclic:
  - The communication object *In operation* is sent to the KNX bus cyclic with value 0.
- Yes, send value 1 cyclic:
  - The communication object *In operation* is sent to the KNX bus cyclic with value 1.

The communication object *In operation* reports the presence of the device to the KNX bus. This cyclical telegram can be monitored with an external device. If no telegram is received, the device may be defective or the KNX line to the sending device may have been interrupted.

11.2.1.4 Sending cycle

Options:	Setting option from 00:00:01 to 18:12:15 (hh:mm:ss)

Notice
This parameter is only available if the parameter enable "Communication object "In operation" is set on "Yes, send value 0 cyclic" or "Yes, send value 1 cyclic"

Here the time interval is set with which the communication object *In operation* sends a cyclical telegram.

11.3 Application "Scenes"

11.3.1 Configure scenes

In this parameter window a KNX scene is allocated to a dimmer scene. This makes it possible to integrate any of the 64 KNX scenes into the dimmer.

The device has 32 scenes per channel. These scenes correspond to the dimmer scenes. Any channels can be allocated to each scene. Scene participants are discussed in the following. A scene participant can also be a member in several scenes.

11.3.1.1 Dimmer scene x: KNX scene

In this parameter window the characteristics of the scenes and participants of the scene are parameterized. Each channel of the dimmer output can be a scene participant.

Notice
In this parameter window all theoretically available channels are displayed. The commissioner himself must ensure that the desired participant is also connected to the output. No check is carried out by the ETS or the dimmer.

Options:	Scene not used
	1 - 64

- Scene not used
  - Dimmer scene x is not used.
- 1 - 64:
  - KNX scene y (1 - 64) is allocated to dimmer scene x. Parameter window dimmer scene x is enabled.

This parameter links a dimmer scene with a KNX scene. This allows all 64 possible KNX scene numbers to be used for the 32 dimmer scenes.

This parameter window is displayed when dimmer scene x is allocated to a KNX scene in parameter window "Configure scenes".

In this parameter window the characteristics of the scenes and participants of the scene are parameterized. Each channel of the dimmer output can be a scene participant. Here all channels can be set with a corresponding brightness value.

11.3.2 Dimmer scene x

Notice
This parameter window is displayed when dimmer scene x is allocated to a KNX scene in parameter window "Configure scenes".

11.3.2.1 Scene transition time

Options:	Setting option from 00:00:00 to 18:12:15 (hh:mm:ss)

This parameter specifies the duration in which the scene participants have reached their scene value (brightness value) after the call-up of a scene. The scene participants reach the parameterized brightness value of the scene when the dimming process is completed.

During the call-up of the scene all scene participants are dimmed within the set time from their current brightness value to the parameterized brightness value.

11.3.2.2 Overwrite stored scene values at download

Options:	No
	Yes

- No:
  - The values of the scene participants are not overwritten by the values set in the ETS after a download or after a return of KNX voltage. If no scene values have been stored, they are set to maximum brightness by the dimmer.
- Yes:
  - The values of the scene participants are overwritten by the values set in the ETS after a download or after a return of KNX voltage.
  - The parameterized values of scenes are normally transmitted to the dimmer during a download. To ensure that manually set scene values are not overwritten during a renewed download, the download of the scene values to the dimmer can be prohibited with this parameter. This retains the scene values stored via KNX.

Notice
The parameterized values of scenes are normally transmitted to the dimmer during a download. It must be ensured that the parameterized scene values are not transmitted again by the ETS when no changes have been made in the ETS application and a partial ETS download is carried out. To also ensure that the scene values are not transmitted to the dimmer during a change in parameters, a normal download is to be carried out in the ETS with "Programming application program".

11.3.2.3 Channel X scene value

Options:	No change
	100% - 0%

- No change (not part of this scene):
  - The channel is not part of this scene. The channel is not affected during a call-up of a scene. The current brightness value remains unchanged; the brightness value is also not stored in the channel when the scene is stored via the KNX bus.
- 100% - 0%:
  - The channel is part of the scene. During the call-up of a scene the scene participant is set on the brightness value parameterized here. If the set brightness value is above or below the set maximum/minimum dimming value of the corresponding scene participant, the corresponding dimming value is stored in the scene.

This parameter specifies the brightness value to which the scene participant sets itself at the scene call-up.

11.4 Application "Parameter masters"

Master parameter windows are found under application "Parameter masters" to which each channel of the dimmer can refer itself. Whether the parameter setting of a channel refers to the master window or to an individual parameter window is to be selected at the start of the parameter setting. This selection is made in the respective parameter window "Channel x" (see chapter “Application "Channel x"“ on page 79).

The master window has the advantage that the parameter setting made here refers to all channels, so that each channel behaves the same at the output.

In addition, the use of the master window can appreciably reduce the effort of parameter setting and maintain a better overview. Since the change in parameters in the master window can have an effect on each channel, the programmer needs to change only one parameter. If, for example, the maximum dimming value is to be limited to 90%, the maximum dimming value must only be set on 90% in the master window and all channels will take over this value.

The master parameter windows are displayed and described in the following. They correspond to the individual parameter windows with the difference that the master window refers to all channels and that individual parameter windows only to a special channel.

11.4.1 Basic settings

In this parameter window the basic settings such as dimming range, switching and dimming behaviour of the dimmer output are parameterized.

11.4.1.1 Load selection

Options:	Automatic load detection
	LED / angle
	LED section and loads with RC behaviour
	Incandescent lamp / trailing edge
	Inductive load / leading edge

- Automatic load detection
  - The dimmer senses automatically whether it is an inductive load. If this is the case, it sets on the basis of leading edge or trailing edge control.

LED / leading edge:

  - No softstart - attuned to the operation of LEDs. The dimmer blocks the current flow to the lamp until the connected LEDs are activated after the expiry of a set time. The LEDs can be set continuously variable by varying the delay time.

- LED trailing edge and loads with RC behaviour
  - For LEDs with trailing edge control: At the zero transit the LEDs are switched on (softstart) and the start behaviour of the LED is adjusted, and switched off again after the expiry of a set time.
- Incandescent lamp / trailing edge
  - At the zero transit the incandescent lamp is switched on and switched off again after the expiry of a set time.
- Inductive load / leading edge:
  - A softstart usually takes place when switching on.

This parameter is used to set the operating mode for the dimmer.

11.4.1.2 Minimum dimming value

Options:	Setting option from 100 to 0.4 (%)

This parameter specifies the minimum brightness value the lamps take on. When setting a minimum dimming value, which lies above the maximum dimming value, the minimum with the maximum dimming value is set in the dimmer.

If a brightness value is received via one of the brightness value communication objects that is below the specified minimum dimming value, the minimum dimming value is set.

The minimum dimming value also applies for dimming and the functions of staircase lighting, slave and scenes.

Notice

When setting brightness values in the individual functions of the dimmer it should be ensured that they are possible by means of the basic settings of the minimum and maximum dimming values made here. This equally applies to the brightness values of forced operation and the parameters that are made in parameter window Parameter master -> Error, e.g. power-on level.

11.4.1.3 Maximum dimming value

Options:	Setting option from 100 to 0.4 (%)

This parameter specifies the maximum brightness value the lamps take on. If a maximum dimming value is set that is below the maximum dimming value, maximum dimming value = minimum dimming value is set in the dimmer.

If a brightness value is received via one of the brightness value communication objects that is below the specified maximum dimming value, the maximum dimming value is set.

The maximum dimming value also applies for dimming, for the functions, as well as scenes.

11.4.1.4 Switch-on value (Switching function)

Options:	Setting option from 100 to 0 (%)

This parameter specifies the brightness value with which the lamp is switched on when an ON telegram is received.

If a value is to be set that is outside the dimming limits (maximum or minimum dimming value), the minimum or maximum dimming value is set as brightness value.

If, for example, the lamp is already switched to a brightness value unequal to the switch-on value and then receives an ON telegram, the parameterized switch-on value is set.

Notice

The last brightness value is stored at each OFF telegram, unless the lamp is already switched off. In this case the OFF status is not stored as the last brightness value at a further OFF telegram.

If a new OFF telegram is received during dimming down, the current brightness value is stored as the last brightness value.

At a KNX power failure, download or restart, the last brightness value is lost is set on a switch-on value of 100%.

For lamps and outputs, separated last brightness values are stored.

If the output is to be dimmed or switched on or off via a central telegram, the last brightness value for the lamp remains unchanged.

11.4.1.5 Dimming time reached up to switch-on value (0 = start-up)

Options:	Setting option from 00:00:00 to 18:12:15 (hh:mm:ss)

- 0:
  - Start-up. The output switches ON immediately (ON command).
- 00:00:01....18:12:15
  - During this period the output is dimmed from 0% brightness to the switch-on value.

A softstart can be set with this parameter. And the period is specified in which the output is dimmed from 0% brightness to the switch-on value at an ON telegram. The duration only refers to an ON telegram (1 bit).

Notice
When dimming times are set smaller than 32 seconds it should observed that these are imaged on the next dimming value (fade time). This means the following transformation:

Switch-on value in 1 s	Fade time used [s] according to DIN EN 62 386-102
0	Start-up
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7 … 9	8
10 … 13	11.3
14 … 18	16.0
19 … 26	22.6
27 … 32	32.0
> 32 … 65,535	Time value used with an error tolerance of +/-3 s

The fade time is specified as time duration required for the change of the lamp power from the current brightness value to the demanded target brightness value.

In case of a switched-off lamp the preheating and ignition times are not included in the fade time.

11.4.1.6 Dimming time adjustable via object "Flexible dimming time/fade time"

Options:	No
	Yes

- No:
  - The dimming time is firmly parameterized and cannot be changed via the KNX bus.
- Yes:
  - The dimming time can be adjusted via the KNX bus with communication object 'Flexible dimming time'.

Notice

The flexible dimming time is received via communication object 'Channel x Flexible dimming time' and has an effect on different functions in the output.

- Dimming time for switch-on / switch-off value
- Dimming time for brightness value
- Transition time for scene

To use the flexible dimming time function, the communication object 'Flexible dimming time' is to be enabled for the output. In addition, the function that can be adjusted via KNX is to be selected for the parameter.

11.4.1.7 Allow switching on via dimming (Relative dimming function)

Options:	No
	Yes

- No:
  - Switching on with the dimming telegram is inadmissible. The output must be switched on for dimming.
- Yes:
  - Switching on with the dimming telegram is admissible.

This parameter is used to parameterize the switch-on behaviour of the output during dimming via communication object 'relative dimming'.

Notice

Further settings can be made via the block "Relative dimming function" (see further below).

11.4.1.8 Allow switching on via dimming value (Dimming value function)

Options:	No
	Yes

- No:
  - Switching on with the brightness telegram is inadmissible. The output must be switched on to be able to set with brightness value.
- Yes:
  - Switching on with the brightness telegram is admissible.

This parameter is used to parameterize the switch-on behaviour of the output during setting of a brightness value with the brightness value communication object.

Notice
Further settings can be made via the block "Dimming value function" (see chapter 11.4.1.15 “Allow switching off via dimming value (dimming value function)“ on page 58).

11.4.1.9 Switching off at switch-off value (Switching function)

Options:	No
	Yes

- No:
  - Switch-off takes place with parameterized dimming time (OFF, brightness value 0%).
- Yes:
  - Switch-off does not take place to value 0, but to the parameterized brightness value, the switch-off value.

This parameter specifies whether the switch-off takes place direct or to a switch-off value when an OFF telegram is received.

Notice
Whether in the switch-off function the channel responds to the switch-off value of the output is to be parameterized in parameter window "Basis settings".

This parameter is used to enable the communication object "Central: activate switch-off brightness". The communication object is used to set that the channel is not switched off at the receipt of OFF commands (value 0 on object "Channel X: switching"). Instead, the channel is to be set on a preset minimum brightness. This, for example, is to prevent the light from being switched off completely during night time in a hospital or corridor of an old people's home.

The participation in this function must be enabled in every channel.

11.4.1.10 Switch-off value

Options:	Setting option from 100 to 0.4 (%)

Notice
This parameter is only visible if the "Switch-off to switch-off value (switching function)" parameter is set on "Yes".

This parameter specifies the brightness value for the switch-off value function with which the output is switched off when an OFF telegram is received.

If a value is to be set that is outside the dimming limits (maximum or minimum dimming value), the minimum or maximum dimming value is set as brightness value.

11.4.1.11 Controlling function via communication object "Activate central switch-off value"

Options:	No
	Yes

Notice
This parameter is only visible if the "Switch-off to switch-off value (switching function)" parameter is set on "Yes".

- No:
  - The output does not evaluate the communication object 'activate switch-off value function'. The switch-off always occurs on the parameterized switch-off value.
- Yes:
  - The output evaluates the communication object 'activate switch-off value function'. If the dimmer receives a telegram via this communication object of the output, the system responds as follows:

  [1] The switch-off value is set on the parameterized brightness value. The switch-off value function is activated. At an OFF command not the brightness value OFF 0% is accepted, but the parameterized switch-off value.

  [0] The switch-off value is set on the brightness value zero. The switch-off value function is not activated and the system is switched off with an OFF command via the communication object switching, the brightness value OFF 0% is accepted.

11.4.1.12 Dimming time reached up to switch-off (0 = start-up)

Options:	Setting option from 00:00:00 to 18:12:15 (hh:mm:ss)

- 0:
  - Start-up. The output switches OFF immediately or on the switch-off value.
- 00:00:01....18:12:15
  - During this period the output is dimmed OFF or on the switch-off value.

A soft switch-off can be set with this parameter. For this, the time is specified during which the output switches off from the current brightness value at an OFF telegram. The dimming time also applies when function 'switching off at switch-off value' is parameterized.

Notice
When dimming times are set smaller than 32 seconds it should observed that these are imaged on the next dimming value (fade time). This means the following transformation:

Switch-on value in 1 s	Fade time used [s] according to DIN EN 62 386-102
0	Start-up
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7 … 9	8
10 … 13	11.3
14 … 18	16.0
19 … 26	22.6
27 … 32	32.0
> 32 … 65,535	Time value used with an error tolerance of +/-3 s

The fade time is specified as time duration required for the change of the lamp power from the current brightness value to the demanded target brightness value.

In case of a switched-off lamp the preheating and ignition times are not included in the fade time.

11.4.1.13 Dimming time adjustable via object "Flexible dimming time/fade time"

Options:	No
	Yes

- No:
  - The dimming time is firmly parameterized and cannot be changed via the KNX bus.
- Yes:
  - The dimming time can be adjusted via the KNX bus with communication object 'Flexible dimming time'.

Notice

The flexible dimming time is received via communication object 'Channel x Flexible dimming time' and has an effect on different functions in the output.

- Dimming time for switch-on / switch-off value
- Dimming time for brightness value
- Transition time for scene

To use the flexible dimming time function, the communication object 'Flexible dimming time' is to be enabled for the output. In addition, the function that can be adjusted via KNX is to be selected for the parameter.

11.4.1.14 Allow switching off via dimming (relative dimming function)

Options:	No
	Yes

- No:
  - Switching off with the dimming telegram is inadmissible. The output dims up to the minimum dimming value and remains there. The output must be switched off via the switching communication object, or if admissible, via the brightness value communication object.
- Yes:
  - Switching off with the dimming telegram is admissible.

This parameter is used to parameterize the switch-off behaviour of the output during dimming via communication object 'relative dimming'.

Notice

Further settings can be made via the block "Relative dimming function" (see chapter 11.4.1.7 “Allow switching on via dimming (Relative dimming function)“ on page 53).

11.4.1.15 Allow switching off via dimming value (dimming value function)

Options:	No
	Yes

- No:
  - Switching off with the brightness telegram is inadmissible. The output must be switched off via the switching communication object, or if admissible, dimmed out.
- Yes:
  - Switching off with the brightness telegram is admissible.

This parameter is used to parameterize the switch-off behaviour of the output during setting of a brightness value with the brightness value communication object.

Notice
Further settings can be made via the block "Dimming value function" (see further below).

11.4.1.16 Dimming time for relative dimming 0 - 100%

Options:	Setting option from 00:00:00 to 18:12:15 (hh:mm:ss)

Notice
Here further settings can be made for the "Relative dimming" function. For this the function should be activated (see above).

This parameter specifies the time in which a dimming process from 0 - 100% is carried out. This dimming time applies only to dimming actions that are received via communication object 'relative dimming'. The dimming times correspond to the dimming times that are stored in the channel.

11.4.1.17 Dimming time reached up to dimming value (0 = start-up)

Options:	Setting option from 00:00:00 to 18:12:15 (hh:mm:ss)

Notice
Here further settings can be made for the "Dimming value" function. For this the function should be activated (see above).

- 0:
  - Start-up. The output switches immediately on the dimming value.
- 00:00:01....18:12:15
  - During this period the output is dimmed on the dimming value.

With this parameter the start of dimming can be parameterized on the set brightness value. The duration only refers to the brightness telegram (8 bit) of the output.

Notice
When dimming times are set smaller than 32 seconds it should observed that these are imaged on the next dimming value (fade time). This means the following transformation:

Switch-on value in 1 s	**Fade time used [s] according to DIN EN 62 386-102**
0	Start-up
1	1.0
2	2.0
3	2.8
4	4.0
5 and 6	5.7
7 … 9	8
10 … 13	11.3
14 … 18	16.0
19 … 26	22.6
27 … 32	32.0
> 32 … 65,535	Time value used with an error tolerance of +/-3 s

The fade time is specified as time duration required for the change of the lamp power from the current brightness value to the demanded target brightness value.

In case of a switched-off lamp the preheating and ignition times are not included in the fade time.

11.4.1.18 Dimming time adjustable via object "Flexible dimming time/fade time"

Options:	No
	Yes

- No:
  - The dimming time is firmly parameterized and cannot be changed via the KNX bus.
- Yes:
  - The dimming time can be adjusted via the KNX bus with communication object 'Flexible dimming time'.

Notice

The flexible dimming time is received via communication object 'Channel x Flexible dimming time' and has an effect on different functions in the output.

- Dimming time for switch-on / switch-off value
- Dimming time for brightness value
- Transition time for scene

To use the flexible dimming time function, the communication object 'Flexible dimming time' is to be enabled for the output. In addition, the function that can be adjusted via KNX is to be selected for the parameter.

11.4.2 Feedback and error messages

In this parameter window the status behaviour is parameterized and thus the feedback and error messages.

11.4.2.1 Enable communication object "Switching status"

Options:	Yes
	No

- Yes:
  - The communication object switching status is enabled. It is used to send a 1-bit telegram with the current switching status to the KNX bus.
- No:
  - The state of the switching status is not sent actively to the KNX bus.

11.4.2.2 Send object value

Options:	No
	In case of change

Notice
This parameter is only visible if the parameter "Communication object "Switching status" is enabled and set on "Yes".

- No:
  - The status is not sent.
- In case of change:
  - The status is sent in case of change.

11.4.2.3 Enable communication object "Dimming value status"

Options:	Yes
	No

- Yes:
  - The communication object brightness value status for the brightness value is enabled.
- No:
  - The brightness value is not sent actively to the KNX bus.

This parameter specifies how the current status of the brightness value of the dimmer output is sent to the KNX bus.

11.4.2.4 Send object value

Options:	No
	In case of change

Notice
This parameter is only visible if the parameter "Communication object "Dimming value status" is enabled and set on "Yes".

- No:
  - The status is not sent.
- In case of change:
  - The status is sent in case of change.

11.4.2.5 Send intermediate values at transitions (e.g. start dimming, scene transition)

Options:	No
	Yes

Notice
This parameter is only visible if the parameter "Communication object "Dimming value status" is enabled and set on "Yes".

- No:
  - When the brightness value is reached the brightness status is sent to the KNX bus.
- Yes:
  - The brightness status is also sent during a brightness transition.

This parameter specifies whether the status of the brightness value is sent only at the end of the brightness value transition or whether intermediate values are sent.

11.4.2.6 Sending cycle

Options:	Setting option from 00:00:00 to 18:12:15 (hh:mm:ss)

Notice
This parameter is only visible if the parameter "Communication object "Error diagnosis" is enabled and set on "Yes".

This parameter is used to specify the sending interval with which the status of the error diagnosis is sent.

11.4.2.7 Enable communication object "Error diagnosis"

Options:	Yes
	No

- Yes:
  - The communication object is not enabled.
- No:
  - The communication object is not enabled.

This parameter is used to enable the 1-byte communication object "Channel x: error diagnosis". When activated, error diagnoses can be set via this parameter.

When the communication object is activated, errors in the final stage are output as coded number. This allows individual error messages to be visualized. The error code can be transmitted in the two data points "Diagnosis format" (see chapter 11.4.2.8 “Diagnosis format“ on page 63) and "Sending cycle" (see chapter 11.2.1.4 “Sending cycle“ on page 45).

11.4.2.8 Diagnosis format

Options:	KNX standard bit field
	Error number

- KNX standard bit field
  - The function is activated.
- Error number
  - The function is activated.

Notice
The options described in the following can only be set when parameter "Diagnisis format" is set on "activated".

This parameter is used to parameterize the functions "KNX standard bit field" and "Error number" described in the following.

KNX standard bit field

Bit fields	Descritpion		Unit / range of values
Attribute	Bit no.		Bit set B_8
Load detection error	0 (lsb)	Load detection failed / incorrect load type	0: true 1: false
Undervoltage	1	Undervoltage of mains supply	0: true 1: false
Excess current	2	Excess current / short-circuit on load side	0: true 1: false
Underload	3	Under load / no load on loa side	0: true 1: false
Faulty load	4	Overvoltage / excess current pulses on load side	0: true 1: false
Lamp failure	5	General lamp failure	0: true 1: false
Overheating	6	Thermal overheating of actuator	0: true 1: false
Reserved	7 (msb)		0: true 1: false

Error number

Format:	8 bit: U_8
Octet no.	1
Designation of field	Value not assigned
Octet no. Encryption Designations of field	Error code 00h = no error 01h = critical temperature 02h = short-circuit 03h = connected unit does not function 04h = excess current 05h = error of device software 06h = mains failure 07h = load defective 08h = error of mains synchronization 09h = overload 0Ah = error of load type 0Bh = internal error 0Ch - FFh = reserved

11.4.2.9 Sending cycle

Options:	Setting option from 00:00:00 to 18:12:15 (hh:mm:ss)

Notice
This parameter is only visible if the parameter "Communication object "Error diagnosis" is enabled and set on "Yes".

This parameter is used to specify the sending interval with which the status of the error diagnosis is sent.

11.4.2.10 Enable communication object "Error"

Options:	Yes
	No

- Yes:
  - The communication object is enabled.

- No:
  - The communication object is not enabled.

This parameter is used to enable the 1-bit communication object "Error". When activated, a selection can be made from the following sub-points at which errors a 1 is to be sent on the object. Errors can also be faded out, to prevent them from being signalled on the KNX.

For overload:

Options:	No
	Yes

For overvoltage:

Options:	No
	Yes

For excess temperature

Options:	No
	Yes

For short-circuit

Options:	No
	Yes

For mains failure

Options:	No
	Yes

For hardware error

Options:	No
	Yes

For "Dimmer detects other load as parameterized

Options:	No
	Yes

11.4.3 Block and forced function

In this parameter window the specifications for forced operation are parameterized.

Function of forced operation

The active forced operation, irrespective of whether triggered via a 1-bit or 2-bit activation, has an influence on the entire behaviour of the channel. When forced operation is called up, the brightness value parameterized in the ETS is set. A currently running dimming telegram is interrupted.

Brightness values received during forced operation are not set, but tracked and stored in the background. Also switching telegrams are stored in the background. Relative dimming telegrams and dimming ramps are ignored. At time variations (e.g. scenes) the end brightness value is noted.

At the end of forced operation the brightness value tracked in the background is set. The channel returns to the state prior to forced operation. If the staircase lighting function was activated prior to forced operation, the staircase lighting function is set to standby after the cancellation of the blockage / forced operation.

The forced operation function has a higher priority than manual operation.

During commissioning of the dimmer the forced operation function is deactivated when the i-bus® tool is in configuration mode.

11.4.3.1 Enable forced operation

Options:	Yes
	No

- Yes:
  - The forced operation function is enabled for the channel.
- No:
  - The forced operation function is not enabled for the channel.

11.4.3.2 Format of the forced object

Options:	1 bit
	2 bit

- 1 bit:
  - The 1-bit communication object forced operation is enabled. If the dimmer receives a telegram with value 1 via this communication object, the channel is force-operated. The forced operation is cancelled with value 0 and the channel is enabled again.
- 2 bit:
  - The 2-bit communication object forced operation is enabled. If the channel receives a telegram with value 2 or 3 via this communication object, the channel is force-operated. The reaction to a different telegram value is described in the following:

Value	Bit 1	Bit 0	Status	Descritpion
0	0	0	Free	If a telegram with value 0 (binary 00) or 1 (binary 01) is received on communication object forced operation, the channel is enabled and can be activated via the different communication objects.
1	0	1	Free	
2	1	0	Forced operation OFF	If a telegram with value 2 (binary 10) is received on communication object forced operation, the forced operation OFF channel is switched and blocked until the forced operation is deactivated again. As long as forced operation is active, the activation via a different communication object is ignored. Telegrams are tracked in the background and the final values are stored. After the forced operation is deactivated, the brightness value constantly tracked in the background is set.
3	1	1	Force ON	If a telegram with value 3 (binary 11) is received on communication object forced operation, the forced operation ON channel is switched with the parameterized brightness value and blocked until the forced operation is deactivated again. As long as forced operation is active, the activation via a different communication object is ignored. Telegrams are tracked in the background and the final values are stored. After the forced operation is deactivated, the brightness value constantly tracked in the background is set.

The transition to the forced operation state takes place suddenly with the time of 0.7 s.

11.4.3.3 Activating dimming at force

Options:	No change (disable)
	100% - 0.4%

Notice
This parameter is only visible if the parameter "Enable forced operation" is set on "Yes".

- No change (disable)
  - The channel is in forced operation and therefore blocked. The channel retains the value specified beforehand.
- 100% - 0.4%:
  - This makes the brightness value with which the channel is switched on at the activation of forced operation parameterizable. A forced switch-off of the channel can also be parameterized.

11.4.3.4 Deactivating dimming value at force

Options:	Current KNX status
	100% - 0.4%

Notice
This parameter is only visible if the parameter "Enable forced operation" is set on "Yes".

- Current KNX status:
  - No forced operation is carried out. The brightness value remains according to the current KNX status.
- 100% - 0.4%:
  - This makes the brightness value with which the channel is switched on at the activation of forced operation parameterizable. A forced switch-off of the channel can also be parameterized (0%).

11.4.3.5 Status after KNX return of voltage

Options:	Inactive
	Switch on forced method
	Status prior to KNX failure

Notice
This parameter is only visible if the parameter "Enable forced operation" is set on "Yes".

- Inactive:
  - The channel is enabled after bus voltage recovery and is no longer in forced operation.
- Forced switch-on
  - The channel is force-operated and switched on with the brightness value that is parameterized in parameter *Dimming value at force*.
- Status prior to KNX failure:
  - The channel is reset to the status it had prior to the power failure.

This parameter is used to parameterize the forced operation after bus voltage recovery.

11.4.3.6 Enable communication object "Forced operation status"

Options:	Yes
	No

- Yes:
  - Forced operation is active. The status is sent.
- No:
  - Forced operation is not active. The status is not sent.

This parameter enables the 1-bit communication object "Channel x: Forced operation status". When activated, this parameter can be used to send the status, if so desired.

11.4.3.7 Send object value

Options:	No
	In case of change

Notice
This parameter is only visible if the parameter "Enable forced operation" is set on "Yes".

- No:
  - The status is not sent.
- In case of change:
  - The status is sent in case of change.

11.4.4 Faults

This parameter window is used to specify how devices are to respond during certain malfunctions.

11.4.4.1 Dimming value during KNX voltage failure

Options:	No change
	100% - 0%

- No change:
  - The brightness of the channel does not change. Deactivated participants remain deactivated. Time functions, such as staircase lighting and warm-up are not continued.
- 100%....0%:
  - This makes the brightness value with which the channel is switched on at a KNX power failure parameterizable. A forced switch-off of the channel can also be parameterized (0%).

11.4.4.2 Dimming value at KNX return of voltage

Options:	No change
	100% - 0%

- As prior to failure:
  - The brightness of the channel does not change. Deactivated participants remain deactivated. Time functions, such as staircase lighting and warm-up are not continued.

- 100%....0%:
  - This makes the brightness value with which the channel is switched on at a KNX return of voltage parameterizable. A forced switch-off of the channel can also be parameterized (0%).

This parameter specifies how the channel or channels respond after a return of KNX voltage.

Notice
Does not apply when function "Forced operation" is active at the return of KNX voltage.

11.4.4.3 Dimming value at return of mains voltage

Options:	Current KNX status
	100% - 0%

- Current KNX status:
  - The brightness of the channels remains according to the current KNX status. Deactivated participants remain deactivated. Time functions, such as staircase lighting and warm-up are not continued.
- 100% - 0%:
  - This makes the brightness value with which the channel is switched on at the return of mains voltage parameterizable. A forced switch-off of the channel can also be parameterized (0%).

This parameter specifies how the channel responds after a return of mains voltage.

Notice
Does not apply when function "Forced operation" is active at the return of mains voltage.

11.4.4.4 Run-through of load test at return of mains voltage

Options:	Yes
	No

- Yes:
  - In a load test the dimmer checks whether an inductive load is connected.
- No:
  - The load test is not run though after the return of mains voltage.

This parameter is used to define whether the dimmer is to run a load test after its initial switch-on. In a load test serves as test to see whether an inductive load is connected. To ensure that this test is not carried out after each power failure, the automatic load test function is deactivated as standard.

11.4.4.5 Enable communication object "Trigger load test"

Options:	Yes
	No

- Yes:
  - Triggers a load test on the respective channel.
- No:
  - The load test on the respective channel is deactivated.

As alternative to pressing the LED operating button (> 10 seconds), this parameter can be used to carry out a load test on any channel.

A 1-bit communication object "Trigger load test" can be enabled with this parameter, with which a load test is triggered on the respective channel.

11.4.5 Central objects

The operating mode of the central objects "Switching", "Dimming" and "Value" are similar to the normal channel objects "Switching", "Dimming" and "Value". The difference is that central objects, such as broadcast objects, operate simultaneously the same on all channels.

First the participation in the central functions must be enabled in the individual channels.

11.4.5.1 Respond to communication object "Central switching"

Options:	Yes
	No

- Yes:
  - The dimmer responds to central commands.
- No:
  - The dimmer does not respond to central commands.

This parameter activates the 1-bit communication object "Central: Switching". The dimmer responds to central commands via this parameter. The parameter settings determine the brightness value for switching on or off.

11.4.5.2 Respond to communication object "Central dimming"

Options:	Yes
	No

- Yes:
  - The dimmer responds to central commands.
- No:
  - The dimmer does not respond to central commands.

This parameter enables the 4-bit communication object "Central: Dimming". The dimmer responds to central commands via this parameter.

11.4.5.3 Respond to communication object "Central value"

Options:	Yes
	No

- Yes:
  - The dimmer responds to central commands.
- No:
  - The dimmer does not respond to central commands.

The dimmer responds to central commands via this parameter. The parameter enables the 1-byte communication object "Central: Value", which dimms the output to the set value.

11.4.6 Characteristic curve correction

This function is used to correct the set values of problem systems with lamps which continue to exhibit an uneven dimming behaviour in standard settings.

One generally assumes that connected lamps behave in a linear manner,
i.e. a received KNX brightness value of 50% also results in a brightness of 50% in the lamp.
However, if there is a lamp with a non-linear behaviour, the characteristic curve correction is used to approximate a linear behaviour.

Here one measures the actual brightness for certain KNX values (e.g. with a LUX meter) and enters the measured values as parameter.

The characteristic curve is measured ideally in a fully darkened room.

The measured value for KNX value 0% (lamp OFF) serves as offset correction if the room can not be fully darkened. It should be ensured that this offset does not change during the entire recording of the characteristic curve.

The dimmer automatically calculates the corrected set values from the recorded characteristic curve, so that a linear connection is re-established on the lamp between KNX set values and brightness.

If the lamp has a heat-up time, the lamp must be operated at 100% during this time and then the correcting points moved to and measured from the top down.

11.4.6.1 Use characteristic curve

Options:	Yes
	No

- Yes
  - Activates the characteristic curve correction. If the characteristic curve correction is activated, all associated parameter become visible.
- No
  - Deactivates the characteristic curve correction.

11.4.6.2 Number of correcting points

Options:	Setting option from 1 to 4

- 1 - 4
  - Selection of the number of entry points.

Notice
This parameter is only visible if the parameter "Use characteristic curve" is set on "Yes".

Specifies the number of entry points for the brightness values for which the actual lux values can be entered.

11.4.6.3 KNX dimming value 0% (OFF)

Notice
This parameter is only visible if the parameter "Use characteristic curve" is set on "Yes".

The measured brightness value for KNX value 0% (lamp OFF) serves as offset correction if the room can not be fully darkened. It should be ensured that this offset value does not change during the entire recording of the characteristic curve.

11.4.6.4 Measured lux value/sensor value at 0% (Offset correction)

Options:	Setting option from 0 to 65535

Notice
This parameter is only visible if the parameter "Use characteristic curve" is set on "Yes".

The actual measured brightness value must be entered.

11.4.6.5 Correction point x: KNX dimming value

Options:	Setting option from 0 to 100 (%)

Notice
This parameter is only visible if the parameter "Use characteristic curve" is set on "Yes".

This parameter is used to specify the brightness value (e.g. for 20%, 40%, 60%, 80%).

11.4.6.6 Correction point x: Measured lux value/sensor value

Options:	Setting option from 0 to 65535

Notice
This parameter is only visible if the parameter "Use characteristic curve" is set on "Yes".

This parameter is used to enter the lux value measured on this brightness value. The actual light values (in lux) for each set brightness value can be recorded with the aid of a lux meter (e.g. for 20%, 40%, 60%,80%). The light values are entered in the ETS. The dimmer automatically calculates the corrected dimming curve and so cares for an even dimming sequence.

11.4.6.7 KNX dimming value 100%

Notice
This parameter is only visible if the parameter "Use characteristic curve" is set on "Yes".

For this parameter 100% is used as output value for the brightness value. All percentage data below this serve as bench marks.

11.4.6.8 Measured lux value/sensor value 100%

Options:	Setting option from 0 to 100 (%)

Notice
This parameter is only visible if the parameter "Use characteristic curve" is set on "Yes".

With this parameter lamps with a heat-up time for this period can be operated at 100%. Then the correcting can be moved to and measured from the top down.

11.5 Application "Channel x"

Options:	Individual
	Take over from master

- Individual:
  - The channel is parameterized individually. The relevant parameters for the channel are faded in. The content of the individual parameters corresponds to the parameters from the master.
- Take over from master:
  - The channel takes over its parameters from the master.

This parameter specifies whether the parameter setting of the channel is taken over from the master or carried out individually for the channel.

11.6 Application - general functions: channel x

Options:	Telegram cyclical
	Gate
	Staircase lighting
	Delay
	Priority
	Logic gate
	Min/max value transducer
	Threshold value / hysteresis
	Flashing

- Inactive:
  - The application is not active. No parameters are available.
- Cyclic telegrams:
  - After the receipt of a telegram on object "GFx: input", a telegram with the same content is sent cyclic via object "GFx: output". Additional information, Chapter 11.6.1 “Cyclic telegram“ on page 82.
- Gate:
  - The application can be used to filter certain signals and to block the flow of signals temporarily. Additional information, Chapter 11.6.2 “Gate“ on page 87.
- Staircase lighting:
  - The application can be used to supply switching telegrams or value telegrams with a switch-off delay. Additional information, Chapter 11.6.3 “Staircase lighting“ on page 93.
- Delay:
  - Telegrams can be received via the "GFx: input" object with the application. Additional information, Chapter 11.6.4 “Delay“ on page 97.
- Priority:
  - The application can be used to activate a forced guidance (priority) for switching outputs Chapter 11.6.5 “Priority“ on page 102.
- Logic gate:
  - Up to ten input values can be linked with each other via the application Chapter 11.6.6 “Logic gate“ on page 103.
- Min/max value transducer:
  - Up to eight input values can be compared with each other via the application dg_ref_source_inline>Min- Maxwertgeber</dg_ref_source_inline>.
- Threshold value / hystersis:
  - With the "Threshold value / Hysteresis" application, value telegrams can be received on an input communication object and compared with threshold values specified in the device Chapter 11.6.7 “Min/max value transducer“ on page 109Schwellwert / Hysterese</dg_ref_source_inline>.
- Flashing:
  - The "Flashing" parameter specifies whether the flashing sequence is started with an ON or an OFF telegram on the input object Chapter 11.6.8 “Threshold value / hysteresis“ on page 112Blinken</dg_ref_source_inline>.

Notice
The following parameters can only be adjusted when the corresponding application (see above) is selected.

Chapter 11.6.9 “Flashing“ on page 118

Note
The parameters "Priority", "Logic gate", "Min/max transducer", "Threshold value / hysteresis" and "Flashing" are only available for the following device:

- UD/Sx.315.2.1x LED dimmer 2/4/6x315 W, MDRC.

11.6.1 Cyclic telegram

The application can be used to send telegrams cyclic on the bus under fixed conditions.

The following communication objects are available:

- "GFx: input“
- "GFx: output"
- "GFx: enable" (1-bit object)

The objects "GFx: input" and "GFx: output" can take on different sizes (1 bit - 4 byte, depending on the object type selected). The bit sizes of objects "GFx: input" and "GFx: output" can be collectively adjusted for the different applications.

After the receipt of a telegram on object "GFx: input", a telegram with the same content is sent cyclic via the application on the bus via object "GFx: output". The object types for "GFx: input" and "GFx: output" can be collectively parameterised for the different applications. The times for cyclic sending via "GFx: output" object are adjustable.

An additional "GFx: enable" object provides the option of temporarily blocking the function.

Note
The parameters for application "Cyclic telegrams" can be called up via **general parameters** and **extended parameters**.

Note
The number of the object (GF1 - GFx) depends on the channel used.

11.6.1.1 Channel name

Entry:	<Name>

The parameter can be used to name the selected channel. The preset name "Channel" can be replaced with any arbitrary name. The length of the name is limited to 30 characters.

11.6.1.2 Object type

Options:	1-bit switching
	1-bit alarm
	1 byte 0 - 100%
	1 byte 0 - 255
	2-byte float
	2-byte signed
	2-byte unsigned
	4-byte float
	4-byte signed
	4-byte unsigned

- 1-bit switching:
  - The value is sent as 1-bit switching command (0 or 1), e.g. On/Off, enabled/blocked, true/untrue.
- 1-bit alarm:
  - The value is sent as 1-bit switching command (0 or 1), alarm functions On/Off.
- 1 byte 0 - 100%:
  - The value is sent as 1-byte value without a sign (percentage value). (0 = 0%, 255 = 100%)
- 1 byte 0 - 255:
  - The value is sent as 1-byte value without a sign. Any value 0 - 255.
- 2-byte float:
  - The value is sent as floating point value (-671088.6 - 670760.9), e.g. temperature or moisture value.
- 2-byte signed:
  - The value is sent as 2-byte value with a sign, (-32768 - +32767), e.g. time difference or percentage difference.
- 2-byte unsigned:
  - The value is sent as 2-byte value without a sign (0 - 65535), e.g. time or brightness value.
- 2-byte temperature:
  - The value is sent as 2-byte temperature value with a sign (-273 - 670760).
- 4-byte float:
  - The value is sent as 4-byte floating point value, physical values, e.g. luminosity, electric power, pressure.
- 4-byte signed:
  - The value is sent as 4-byte value with a sign (-2147483648 - 2147483647), e.g. counting impulse, time difference.
- 4-byte unsigned:
  - The value is sent as 4-byte value without a sign (0 - 4294967295), e.g. counting impulse.

The set option fixes the data type of the input and output object.

11.6.1.3 Cycle time

Options:	Setting option from 00:00:55 to 01:30:00 (hh:mm:ss)

The telegrams of the object during operation are sent cyclically on the bus.

The parameter specifies the time interval in which a new sending of the telegrams occurs.

11.6.1.4 Enable object

Options:	deactivated
	activated

- Deactivated:
  - Object "GFx: Enable" is not enabled.
- Activated:
  - Object "GFx: Enable" is enabled. The function "Telegram cyclical" can be temporarily blocked via the object.

The 1-bit communication object "GFx: Enable" can be enabled with this parameter.

Notice

If the "Enable object" parameter is activated, the following parameters can be set:

- "Object value enable object"
- "Enable object after return of voltage"

11.6.1.5 Object value enable object

Options:	Normal
	Inverse

- Normal:
  - If an Off telegram is received via the object "GFx: Enable", the function "Telegram cyclical" is blocked. An On telegram deactivates the blockage.
- Inverse:
  - If an On telegram is received via the object "GFx: Enable", the function "Telegram cyclical" is blocked. An Off telegram deactivates the blockage.

The parameter is used to specify whether function "Telegram cyclical" is blocked temporarily at the receipt of an On or Off telegram.

Notice

This parameter can only be set if the "Enable object" parameter is set on "activated".

11.6.1.6 Enable object after return of voltage

Options:	Blocked
	Enabled

- Blocked:
  - Object "GFx: Enable" is not activated at bus voltage recovery. The blocking function is deactivated.
- Enabled:
  - If object "GFx: Enable" was activated prior to bus voltage recovery, it will also be activated after bus voltage recovery.

The parameter serves to ensure that a defined value is present on communication object "GFx: Enable" after a return of bus voltage.

Notice
This parameter can only be set if the "Enable object" parameter is set on "activated".

11.6.1.7 Cyclical sending

Options:	Always activated
	Activated at a specified value
	Activated except at a specified value

- Always activated:
  - Telegrams that are received on object "GFx: Input" are transferred directly to object "GFx: Output" and there sent cyclic.
- Activated at a specified value:
  - This value is sent cyclic via object "GFx: Output" only at the receipt of a specific, set value. If a different value is received on "GFx: Input", no telegram is sent via object "GFx: Output".
- Activated except at a specified value:
  - This deviating value is sent cyclic via object "GFx: Output" only at the receipt of a value that deviates from the set value.

11.6.1.8 Value for cyclical sending

The possible options and setting limits depend on parameter "Object type".

Options for selection "1 bit switching" and "1-bit alarm":

Options:	Off
	On

Options for selection "1 byte 0-100%":

Options:	Setting option from 0 to 100 (%)

Options for selection "1 byte 0-255":

Options:	Setting option from 0 to 255

Options for selection "2-byte float":

Options:	Setting option from -671088.64 to 670760.96

Options for selection "2-byte signed":

Options:	Setting option from -32768 to +32767

Options for selection "2-byte unsigned":

Options:	Setting option from 0 to 65535

Options for selection "2-byte temperature":

Options:	Setting option from -273 to 500

Options for selection "4-byte float":

Options:	Setting option from -4000000 to 4000000

Options for selection "4-byte signed":

Options:	Setting option from -2147483648 to 2147483647

Options for selection "4-byte unsigned":

Options:	Setting option from 0 to 4294967295

The parameter is used to fix the value that must be received on object "GFx: Input" to ensure that the same value is sent cyclic via object "GFx: Output". The bit size depends on parameter "Object type".

Notice

The parameter can only be set if the "Cyclical sending" parameter is set on "activated at a specified value" or on "activated except at a specified value".

11.6.2 Gate

The application allows specific signals to be filtered and the signal flow to be temporarily blocked.

The following communication objects are available:

- "GFx: input“
- "GFx: output"
- "GFx: control input" (1-bit object)

The objects "GFx: input" and "GFx: output" can take on different sizes (1 bit - 4 byte, depending on the object type selected).

The bit sizes of objects "GFx: input" and "GFx: output" can be collectively adjusted for the different applications.

The bit size can be freely assigned with the "Not assigned" setting of the "Object type" parameter. This means that the first internal or external group address or action that is assigned and already connected to an other communication object will specify the size.

The control can occur from "Input to output" or also from "Output to input," provided the control input allows this. Enabling via the control input can take place via an On telegram or an Off telegram.

If, for example, the "Control input" setting is set on "ON telegram," only telegrams from the input are transmitted to the output. The condition is that the control input has received an On telegram.

It is also possible to block signals via the "Filter function" setting. Either "nothing is filtered out" or the signal "on is filtered out" or the signal "off is filtered out". This function is always necessary, for example, when only the On telegram is needed for a sensor and the device does not offer any filter function in its application program.

Note
The parameters for application "Gate" can be called up via **general parameters** and **extended parameters**.

Note
The number of the object (GF1 - GFx) depends on the channel used.

11.6.2.1 Channel name

Entry:	<Name>

The parameter can be used to name the selected channel. The preset name "Channel" can be replaced with any arbitrary name. The length of the name is limited to 30 characters.

11.6.2.2 Object type

Options:	1-bit switching
	1-bit travel
	1-bit stop/adjust
	2-bit priority
	4-bit relative dimming
	1 byte 0 - 100%
	1 byte 0 - 255
	2-byte float
	2-byte signed
	2-byte unsigned
	3-byte time of day
	3-byte date
	4-byte float
	4-byte signed
	4-byte unsigned
	Not assigned

- 1-bit switching:
  - The value is sent as 1-bit switching command (0 or 1), e.g. On/Off, enabled/blocked, true/untrue.
- 1-bit travel:
  - The value is sent as 1-bit switching command, e.g. travel up or down.
- 1-bit stop/adjust:
  - The value is sent as 1-bit switching command, e.g. travel stop, adjust slats.
- 2-bit priority:
  - The value is sent as 2-bit switching command with priority.
- 4-bit relative dimming:
  - The value is sent as 4-bit brightness step.
- 1 byte 0 - 100%:
  - The value is sent as 1-byte value without a sign (percentage value). (0 = 0%, 255 = 100%)
- 1 byte 0 - 255:
  - The value is sent as 1-byte value without a sign. Any value 0 - 255.
- 2-byte float:
  - The value is sent as floating point value (-671088.6 - 670760.9), e.g. temperature or moisture value.
- 2-byte signed:
  - The value is sent as 2-byte value with a sign, (-32768 - +32767), e.g. time difference or percentage difference.
- 2-byte unsigned:
  - The value is sent as 2-byte value without a sign (0 - 65535), e.g. time or brightness value.

- 3-byte time of day:
  - The value is sent as 3-byte daytime value.
- 3-byte date:
  - The value is sent as 3-byte date value.
- 4-byte float:
  - The value is sent as 4-byte floating point value, physical values, e.g. luminosity, electric power, pressure.
- 4-byte signed:
  - The value is sent as 4-byte value with a sign (-2147483648 - 2147483647), e.g. counting impulse, time difference.
- 4-byte unsigned:
  - The value is sent as 4-byte value without a sign (0 - 4294967295), e.g. counting impulse.
- Not assigned:
  - The data type can be freely assigned. This means that the first internal or external group address or action that is assigned and already connected to another communication object will specify the size of the object.

The set option fixes the data type of the input and output object.

11.6.2.3 Filter function

Options:	Deactivated
	On filter out
	Off filter out

- Deactivated:
  - No telegrams are filtered out.
- On filter out:
  - On telegrams are filtered out.
- Off filter out:
  - Off telegrams are filtered out.

The parameter can be used to filter On or Off telegrams (1 bit) out. The function is used, for example, when only the On telegram is needed and the sensor does not offer any filter function in its application program.

Notice
The parameter can only be set if the "Object type" parameter is set on "1-bit switching".

11.6.2.4 Data flow direction

Options:	Input towards the output
	Output towards the input
	In both directions

- Input towards the output:
  - Telegrams are transferred from object "GFx: Onput" to object "GFx: Output".
- Output towards the input:
  - Telegrams are transferred from object "GFx: Output" to object "GFx: Input".
- In both directions:
  - Telegrams are transferred in both directions.

The parameter is used to specify the direction in which the signal is to be transferred.

11.6.2.5 Value output

Options:	Normal
	Inverse

Notice
This function is only active when communication object GFX: Output is set on 1-bit switching!!! (install relevant hint).

- Normal:
  - If an Off telegram is received via the object "GFx: Output", the function "Data flow direction" is blocked. An On telegram deactivates the blockage.
- Inverse:
  - If an ON telegram is received via the object "GFx: Output", the function "Data flow direction" is blocked. An Off telegram deactivates the blockage.

The parameter is used to specify whether function "Data flow direction" is blocked temporarily at the receipt of an On or Off telegram.

11.6.2.6 Enable object

Options:	deactivated
	activated

- Deactivated:
  - Object "GFx: Control input" is not enabled.
- Activated:
  - Object "GFx: Control input" is enabled. The function can be temporarily blocked via object "Sx: Control input".

The 1-bit communication object "GFx: Control input" can be enabled with this parameter.

Notice
If the "Enable object" parameter is activated, the following parameters can be set:
- "Object value enable object"
- "Enable object after return of voltage"
- "Save input signal"

11.6.2.7 Object value enable object

Options:	Normal
	Inverse

- Normal:
  - If an Off telegram is received via the object "GFx: Control input", the function "Gate" is blocked. An On telegram deactivates the blockage.
- Inverse:
  - If an On telegram is received via the object "GFx: Control input", the function "Gate" is blocked. An Off telegram deactivates the blockage.

The parameter is used to specify whether function "Gate" is blocked temporarily at the receipt of an On or Off telegram.

Notice
This parameter can only be set if the "Enable object" parameter is set on "activated".

11.6.2.8 Enable object after return of voltage

Options:	Blocked
	Enabled

- Blocked:
  - The enable object is not activated after bus voltage recovery. The blocking function is deactivated.
- Enabled:
  - If the enable object was activated prior to bus voltage recovery, it will also be activated after bus voltage recovery.

The parameter serves to ensure that a defined value is present on communication object "GFx: Control input" after a return of bus voltage.

Notice
This parameter can only be set if the "Enable object" parameter is set on "activated".

11.6.2.9 Save input signal

Options:	deactivated
	activated

- Deactivated:
  - Input telegrams are not saved during the blocking phase.
- Activated:
  - Input telegrams are saved during the blocking phase.

The parameter is used to specify whether input signals are saved during the blocking phase. The further behaviour depends on the setting of the "Data flow direction" parameter.

Example:

Data flow direction: Input towards the output.

If the setting "activated" has been selected, the output sends its value after the blocking phase if a telegram has been received on the input during the blocking phase.

Notice
This parameter can only be set if the "Enable object" parameter is set on "activated".

11.6.3 Staircase lighting

With the application, switching telegrams and value telegrams can be provided with a switch-off delay.

The application has the following communication objects:

- "GFx: input“
- "GFx: input" (1-bit object)
- "GFx: switch-off delay" (2-byte object)
- "GFx: switch-off prewarning time" (2-byte object)
- "GFx: output"

The objects "GFx: input" and "GFx: output" can take on size 1 bit or 1 byte, depending on the object type selected.

Note
The parameters for application "staircase lighting" can be called up via **general parameters** and **extended parameters**.

Note
The number of the object (GF1 - GFx) depends on the channel used.

11.6.3.1 Channel name

Entry:	<Name>

The parameter can be used to name the selected channel. The preset name "Channel" can be replaced with any arbitrary name. The length of the name is limited to 30 characters.

11.6.3.2 Object type/number

Options:	A 1-bit object for input and output
	Two 1-bit objects for input and output
	Two 1-byte objects for input and output

- A 1-bit object for input and output:
  - When an On telegram is received via the "GFx: Input_Output" object, an adjustable light-on time is started. After expiration of the light-on time, the "GFx: Input_Output" object sends an Off telegram (1 bit).
- Two 1-bit objects for input and output:
  - When a switching telegram (On or Off) is received via the "GFx: input" object, an adjustable light-on time is started. At the same time, a telegram with the same value of the telegram received on the input (On or Off) is sent via object "GFx: output". After expiration of the light-on time, the "GFx: output" object sends an Off telegram (1 bit).
- Two 1-byte objects for input and output:
  - When a value telegram is received via the "GFx: input" object, an adjustable light-on time is started. At the same time, a telegram with the same value of the telegram (1 byte) received on the input is sent via object "GFx: output". After expiration of the light-on time, the "GFx: output" object sends a telegram with value "0" (1 byte).

The parameter is used to fix the size and number of the communication objects for the "Staircase lighting" application.

The light-on time of the staircase lighting is set via the "Light-on time" parameter.

11.6.3.3 Light-on time

Options:	Setting option from 00:00:10 to 01:30:00 (hh:mm:ss)

The parameter is used to set the light-on time of the staircase lighting. The light-on time can be set in steps of one second.

The start of the light-on time is dependent on the setting of the "Object type/number" parameter. The parameter "Object type/number" also specifies whether an Off telegram (1 bit) or a telegram with value "0" (1 byte) is sent after the expiry of the light-on time.

11.6.3.4 Retriggering

Options:	deactivated
	activated

- Deactivated:
  - The set light-on time always runs to its end, so that a telegram is always sent via object "GFx: Output" after the on-time has expired.
- Activated:
  - The light-on time is always restarted when a telegram is received via the "GFx: Input" object.

The parameter is used to specify whether the light-on time is restarted when a further telegram is received via object "GFx: Input". This behaviour is called retriggering.

For example, retriggering makes sense for a light-on time of movement detectors. This ensures that the on-time continues to be reset as long as there is movement detected.

If telegrams with different values are received during the retriggering phase, only the last value received is always sent via the "GFx: Output" object after expiration of the on-time.

11.6.3.5 Switch-off pre-warning

Options:	deactivated
	activated

- Deactivated:
  - The staircase lighting goes out without flickering at the end of the light-on time.
- Activated:
  - The staircase flickers before the expiry of the light-on time.

Before the staircase lighting switches itself off, the end of the illumination period is signalled by means of brief flickering or dimming darker. The user can then keep the light-on in time.

The parameter is used to specify whether an additional value is sent via the output object just before the light-on time expires.

11.6.3.6 Duration of switch-off prewarning (s)

Options:	Setting option from 1 to 5400

The parameter is used to specify when the staircase lighting by means of flickering or dimming darker is to warn of the end of the light-on time. The warning is carried out according to the set time before the expiry of the light-on time.

Notice
This parameter can only be set if the "switch-off prewarning" parameter is set on "activated".

11.6.3.7 Value for switch-off prewarning (%)

Options:	Setting option from 1 to 100 (%)

The parameter is used to set the value that is sent via object "GFx: Output". The value is sent at the time set via parameter "Time for switch-off prewarning".

The set percentage value is sent once and then replaced by the original output value after approximately one second.

Notice
This parameter can only be set if the "Object type/number" parameter is set on "Two 1-byte objects for input and output" and parameter "Switch-off prewarning" is set on "activated".

11.6.3.8 Overwrite light-on time and switch-off prewarning time during download

Options:	deactivated
	activated

- Deactivated:
  - The light-on time and switch-off prewarning time will not be overwritten when the device is reprogrammed.
- Activated:
  - The light-on time and switch-off prewarning time will be overwritten when the device is reprogrammed.

Telegrams with new times can be received via communication objects "GFx: Light-on time" and "GFx: Switch-off prewarning". The received 2-byte values are written to the memory of the device and are retained even after a power failure.

The parameter is used to specify whether the received storage values are to be retained for a reprogramming of the device or replaced by the values specified in the parameterising software.

11.6.4 Delay

The application can be used to receive telegrams via the "Input" object. The telegrams received are sent out via the "Output" object with a set delay time.

The application has the following communication objects:

- "GFx: input“
- "GFx: output"
- "GFx: delay time" ((2 byte object)

The objects "GFx: input" and "GFx: output" can take on different sizes (1 bit - 4 byte, depending on the object type selected).

The bit sizes of objects "GFx: input" and "GFx: output" can be collectively adjusted for the different applications.

Note
The parameters for application "Delay" can be called up via **general parameters** and **extended parameters**.

Note
The number of the object (GF1 - GFx) depends on the channel used.

11.6.4.1 Channel name

Entry:	<Name>

The parameter can be used to name the selected channel. The preset name "Channel" can be replaced with any arbitrary name. The length of the name is limited to 30 characters.

11.6.4.2 Object type

Options:	1-bit switching
	1-bit travel
	1-bit stop/adjust
	1 byte 0 - 100%
	1 byte 0 - 255
	2-byte float
	2-byte signed
	2-byte unsigned
	4-byte float
	4-byte signed
	4-byte unsigned

- 1-bit switching:
  - The value is sent as 1-bit switching command (0 or 1), e.g. On/Off, enabled/blocked, true/untrue.
- 1-bit travel:
  - The value is sent as 1-bit switching command, e.g. travel up or down.
- 1-bit stop/adjust:
  - The value is sent as 1-bit switching command, e.g. travel stop, adjust slats.
- 1 byte 0 - 100%:
  - The value is sent as 1-byte value without a sign (percentage value). (0 = 0%, 255 = 100%)
- 1 byte 0 - 255:
  - The value is sent as 1-byte value without a sign. Any value 0 - 255.
- 2-byte float:
  - The value is sent as floating point value (-671088.6 - 670760.9), e.g. temperature or moisture value.
- 2-byte signed:
  - The value is sent as 2-byte value with a sign, (-32768 - +32767), e.g. time difference or percentage difference.
- 2-byte unsigned:
  - The value is sent as 2-byte value without a sign (0 - 65535), e.g. time or brightness value.
- 4-byte float:
  - The value is sent as 4-byte floating point value (-4000000 to 4000000), physical values, e.g. luminosity, electric power, pressure.
- 4-byte signed:
  - The value is sent as 4-byte value with a sign (-2147483648 - 2147483647), e.g. counting impulse, time difference.
- 4-byte unsigned:
  - The value is sent as 4-byte value without a sign (0 - 4294967295), e.g. counting impulse.

The set option fixes the data type of the input and output object.

11.6.4.3 Delay time

Options:	Setting option from 00:00:01.000 to 01:00:00:000 (hh:mm:ss)

The parameter is used to set the delay with which the telegrams received via object "GFx: Input" are sent via object "GFx: Output".

The delay time can be set in steps of one millisecond.

11.6.4.4 Retriggering

Options:	deactivated
	activated

- Deactivated:
  - The set light-on time always runs to its end, so that a telegram is always sent via object "GFx: Output" after the on-time has expired.
- Activated:
  - The light-on time is always restarted when a telegram is received via the "GFx: Input" object.

The parameter is used to specify whether the light-on time is restarted when a further telegram is received via object "GFx: Input". This behaviour is called retriggering.

For example, retriggering makes sense for a light-on time of movement detectors. This ensures that the on-time continues to be reset as long as there is movement detected.

If telegrams with different values are received during the retriggering phase, only the last value received is always sent via the "GFx: Output" object after expiration of the on-time.

11.6.4.5 Filter active

Options:	deactivated
	activated

- Deactivated:
  - Filter is not active.
- Activated:
  - Filter is active. Filter function and filter value can be set.

The parameter is used to specify whether a filter is used for the delay of telegrams.

11.6.4.6 Filter function

Options:	Filter value is delayed, other values are sent directly
	Filter value is delayed, other values are suppressed
	Filter value is sent directly, other values are delayed
	Filter value is suppressed, other values are delayed

- Filter value is delayed, other values are sent directly.
  - Only the filter value is sent delayed. All other values are sent directly.
- Filter value is delayed, other values are suppressed.
  - Only the filter value is sent delayed. All other values are blocked.
- Filter value is sent direct, others are sent delayed.
  - Only the filter value is sent direct. All other values are sent delayed.
- Filter value is suppressed, others are delayed.
  - Only the filter value is blocked. All other values are sent delayed.

The parameter can be used to specify a condition for the sending of filter values compared to all other values.

Notice
The parameter is only adjustable if the "Filter active" parameter is set to "Activated".

11.6.4.7 Filter value

The possible options and setting limits depend on parameter "Object type".

Options for selection "1 bit switching":

Options:	Off
	On

Options for selection "1 bit moving" and "1-bit stop/adjust":

Options:	Up
	Down

Options for selection "1 byte 0-100%":

Options:	Setting option from 0 to 100 (%)

Options for selection "1 byte 0-255":

Options:	Setting option from 0 to 255

11.6.4.8 Overwrite delay time during download

Options:	deactivated
	activated

- Deactivated:
  - The delay time will not be overwritten when the device is reprogrammed.
- Activated:
  - The delay time will be overwritten when the device is reprogrammed.

A telegram with a new delay time (s) can be received via the 2-byte communication object "GFx: Delay time". The received 2-byte value is written to the memory of the device and is retained even after a power failure.

The parameter is used to specify whether the received storage value is to be retained for a reprogramming of the device or replaced by the values specified in the parameterising software.

11.6.5 Priority

The application can be used to activate a forced guidance (priority) for switching outputs.

The following communication objects are available:

- "GFx: switch input" (1-bit object)
- "GFx: priority input" (2-bit object)
- "GFx: output" (1-bit object)

The telegrams received on "GFx: switch input" are transferred to object "GFx: output" depending on the state of the "GFx: priority input" object.

The 2-bit object "GFx: priority input" can receive and differentiate between four different values (0, 1, 2 and 3). Here, the "GFx: output" object is positively driven. Three different states are differentiated:

- "GFx: priority input" has the value "3". The value that is present on "GFx: switch input" has no meaning. The "GFx: output" object is switched on positively driven and has the value "1".
- "GFx: priority input" has the value "2". The value that is present on "GFx: switch input" has no meaning. The "GFx: output" object is switched off positively driven and has the value "0".
- "GFx: priority input" has the value "1" or "0". The "GFx: output" object is not positively driven. The "GFx: switch input" is linked to the status bit of the priority object OR and transferred to the "GFx: output" object.

During a positive drive, changes of the "GFx: switch input" object are saved, even if the current state on the "GFx: output" object does not immediately change through this. If the positive drive is terminated, the "GFx: output" object sends a telegram corresponding to the current value of the "GFx: switch input" object.

Note
The parameters for application "Priority" can be called up via **general parameters**.

Note
The number of the object (GF1 - GFx) depends on the channel used.

Note
The described parameter is only available for the following device:
- UD/Sx.315.2.1x LED dimmer 2/4/6x315 W, MDRC.

11.6.5.1 Channel name

Entry:	<Name>

The parameter can be used to name the selected channel. The preset name "Channel" can be replaced with any arbitrary name. The length of the name is limited to 30 characters.

11.6.6 Logic gate

Up to ten input values can be linked with each other via the application.

The following communication objects are available:

- "GFx: output"
- "GFx: input x“

All input objects and the output object can take on size 1 bit or 1 byte independent from each other.

The application is used to specify the logic gate the enabled input objects are linked with. At the receipt of new telegrams at the inputs, they are switched according to the selected function. The inputs can also be individually inverted.

The result determined from the inputs is sent via the output object. The default value that is to be sent at a positive result can be adjusted.

Note

The parameters for application "Logic gate" can be called via **general parameters, parameter input x** and **output parameters**.

Note

The number of the object (GF1 - GFx) depends on the channel used.

Note

The described parameter is only available for the following device:

- UD/Sx.315.2.1x LED dimmer 2/4/6x315 W, MDRC.

11.6.6.1 Channel name

Entry:	<Name>

The parameter can be used to name the selected channel. The preset name "Channel" can be replaced with any arbitrary name. The length of the name is limited to 30 characters.

11.6.6.2 Logical function

Options:	AND
	OR
	XOR
	XNOR
	NAND
	NOR

- AND - NOR:
  - Logic gates, with which communication objects can be linked.

The parameter is used to specify the logic gate the communication objects are to be linked with.

11.6.6.3 Number of input objects

Options:	Setting option from 1 to 100

The parameter is used to set the number of input objects that are to be linked in the logic function.

Notice
If the parameter is set on "1", the "logical function" parameter is specified on "NOT".

11.6.6.4 Object type input x

Options:	1 bit
	1 byte

- 1 bit:
  - The input object can take on value "0" or "1".
- 1 byte:
  - The input object can take on value 0 to 255.

The parameter is used to specify the data type for the input object.

11.6.6.5 Initial value input x

Options:	Initialised with 0
	Initialised with 1

- Initialised with 0:
  - After initial commissioning and after the return of voltage the input has the logical value "0".
- Initialised with 1:
  - After initial commissioning and after the return of voltage the input has the logical value "1".

The parameter is used to specify the value the input is to have after initial commissioning and after the return of voltage. Thus, no undefined states can arise.

11.6.6.6 Logic input x

Options:	Normal
	Inverse

- Normal:
  - The input signal of the channel is not inverted.
- Inverse:
  - The input signal of the channel is inverted.

The parameter is used to invert the input signal of the channel.

Notice
For a 1-byte size input object, the "inverse" setting means that only upon receipt of the value "0" will a logical "1" be present on the input. All other values (1 to 255) cause a logical "0" on the input.

11.6.6.7 Object type output

Options:	1 bit
	1 byte

- 1 bit:
  - Object "GFx: Output“ consists of a 1-bit value (0/1).
- 1 byte:
  - Object "GFx: Output“ consists of a 1-byte value (0 - 255).

Each logical function has an output object. The result determined from the inputs is sent on the bus via the output object.

The parameter is used to specify the bit size for the output object.

11.6.6.8 Send output object

Options:	With each input telegram
	With a change of the output object

- With each input telegram:
  - When a telegram is received via the input object, the communication object always sends the value of the output object on the bus. This also happens if the value of the output object has not changed.
- With a change of the output object:
  - The communication object only sends a telegram when the value of the output object has changed.

The parameter is used to specify whether a telegram is sent via communication object "GFx: Output" at each receipt of a telegram or only at a change of the output object.

11.6.6.9 Value of the output object for logics true

Options:	Output is set to 1
	Defined via output default value true

- Output is set on 1:
  - As soon as the condition has been met, a logical "1" is present on the output. This equally applies when the "Object type output" parameter is set on "1 byte".
- Defined via output default value true:
  - The value that is present on the output when the condition has been met, can be set via parameter "Output default value true".

The parameter is used to specify the value of the output object in the logic status "True".

11.6.6.10 Output default value true

Options:	True = 0
	True = 1

- True = 0:
  - When the condition has been met, value "0" is present at communication object "GFx: Output".
- True = 1:
  - When the condition has been met, value "1" is present at communication object "GFx: Output".

The parameter is used to specify the value that is sent via the 1-bit communication object "GFx: Output" when a condition (true) has been met.

Notice
The parameter can only be set if the "Object type output" parameter is set on "1 bit" and parameter "Value of the output object for logic true" is set on "Defined via output default value true".

11.6.6.11 Output default value true

Options:	Setting option from 0 to 255

The parameter is used to set the value that is sent via the 1-byte communication object "GFx: Output" when a condition (true) has been met.

Notice
The parameter can only be set if the "Object type output" parameter is set on "1 byte" and parameter "Value of the output object for logic true" is set on "Defined via output default value true".

11.6.6.12 Value of the output object for logics untrue

Options:	Output is set to 0
	Defined via output default value untrue

- Output is set on 0:
  - As soon as the condition has been met, a logical "0" is present on the output. This equally applies when the "Object type output" parameter is set on "1 byte".
- Defined via output default value untrue:
  - The value that is present on the output when the condition has been met, can be set via parameter "Output default value untrue".

The parameter is used to specify the value that is sent via object "GFx: Output" when a condition (untrue) has not been met.

11.6.6.13 Output default value untrue

Options:	Untrue = 0
	Untrue = 1

- Untrue = 0
  - When a logic has not been met, value "0" is present at communication object "GFx: Output".
- Untrue = 1
  - When a logic has not been met, value "1" is present at communication object "GFx: Output".

The parameter is used to specify the value that is sent via the 1-bit communication object "GFx: Output" when a condition (untrue) has been not been met.

Notice
The parameter can only be set if the "Object type output" parameter is set on "1 bit" and parameter "Value of the output object for logic untrue" is set on "Defined via output default value untrue".

11.6.6.14 Output default value untrue

Options:	Setting option from 0 to 255

The parameter is used to set the value that is sent via the 1-byte communication object "GFx: Output" when a condition (untrue) has been not been met.

Notice
The parameter can only be set if the "Object type output" parameter is set on "1 byte" and parameter "Value of the output object for logic untrue" is set on "Defined via output default value untrue".

11.6.7 Min/max value transducer

Up to eight input values can be compared with each other via the application.

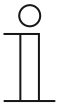
The following communication objects are available:

- "GFx: output"
- "GFx: input x“

The objects "GFx: input x" and "GFx: output" can take on different sizes (1 byte - 4 byte, depending on the object type selected).

The bit sizes of objects "GFx: input x" and "GFx: output" can be collectively adjusted for the different applications.

The application can send either the largest input value, the smallest input value or the average of all input values via the output object. The values are sent either at each input assignment or when the output object is changed.



Note
The parameters for application "Min/max value transducer" can be called up via **general parameters**.

Note
The number of the object (GF1 - GFx) depends on the channel used.

Note
The described parameter is only available for the following device:
- UD/Sx.315.2.1x LED dimmer 2/4/6x315 W, MDRC.

11.6.7.1 Channel name

Entry:	<Name>

The parameter can be used to name the selected channel. The preset name "Channel" can be replaced with any arbitrary name. The length of the name is limited to 30 characters.

11.6.7.2 Object type

Options:	1 byte 0 - 100%
	1 byte 0 - 255
	2-byte float
	2-byte signed
	2-byte unsigned
	4-byte float
	4-byte signed
	4-byte unsigned

- 1 byte 0 - 100%:
  - The value is sent as 1-byte value without a sign (percentage value). (0 = 0%, 255 = 100%)
- 1 byte 0 - 255:
  - The value is sent as 1-byte value without a sign. Any value 0 - 255.
- 2-byte float:
  - The value is sent as floating point value (-671088.6 - 670760.9), e.g. temperature or moisture value.
- 2-byte signed:
  - The value is sent as 2-byte value with a sign, (-32768 - +32767), e.g. time difference or percentage difference.
- 2-byte unsigned:
  - The value is sent as 2-byte value without a sign (0 - 65535), e.g. time or brightness value.
- 4-byte float:
  - The value is sent as 4-byte floating point value, physical values, e.g. luminosity, electric power, pressure.
- 4-byte signed:
  - The value is sent as 4-byte value with a sign (-2147483648 - 2147483647), e.g. counting impulse, time difference.
- 4-byte unsigned:
  - The value is sent as 4-byte value without a sign (0 - 4294967295), e.g. counting impulse.

The set option fixes the data type of the input and output object.

11.6.7.3 Number of input objects

Options:	Setting option from 1 to 8

The parameter is used to set the number of input telegrams to be compared with each other.

11.6.7.4 Output sends

Options:	For every assignment of the inputs
	With a change of the output object

- For every assignment of the inputs:
  - When a telegram is received on one of the input objects, a telegram is always sent via the output object.
- With a change of the output object:
  - An output telegram is only sent when the value of the output object changes.

The parameter is used to specify the conditions under which a telegram is sent.

For the setting "For every assignment of inputs" an output telegram is sent at every receipt of a telegram on one of the inputs. In this case, also an output telegram is sent if the value of the output does not change.

11.6.7.5 Output object

Options:	Adopts the largest value of the inputs
	Adopts the smallest value of the inputs
	Adopts the average value of the inputs

- Adopts the largest value of the inputs:
  - The largest value of all input telegrams is sent via the output object.
- Adopts the smallest value of the inputs:
  - The smallest value of all input telegrams is sent via the output object.
- Adopts the average value of the inputs:
  - The average value of the input telegrams is sent via the output object.

The "Min/max value transducer" application compares the values that are present on the input objects.

The parameter is used to specify whether the largest, smallest or average of all input values is sent. If the average value is sent, the application calculates the arithmetic mean of the inputs. Decimal points are rounded up or down.

Example:

- Object type: "2-byte signed“, 2 input objects
- Input 1: Value "4"
- Input 2: Value "5"

(Input 1 + input 2) / 2 = arithmetic mean; (4 + 5) / 2 = 4.5

Sent average value: 5

11.6.8 Threshold value / hysteresis

With the "Threshold value / Hysteresis" application, value telegrams can be received on an input communication object and compared with threshold values specified in the device.

Predefined values are sent out on the "Output" communication object if the upper threshold is exceeded or the lower threshold drops below the set value. The size of the object can be adjusted for different applications.

The function can be temporarily blocked via an enable object.

If the value of the lower threshold lies above the value for the upper threshold, the function is not executed.

Threshold value / hysteresis objects

No.	Object name	Data type	Flags
0	Input (1-byte 0 - 100%)	1 byte EIS6 / DPT 5.001	C, W
	Input (1-byte 0 - 255)	1 byte EIS14 / DPT 5.010	C, W
	Input (2-byte float)	2 byte EIS5 / DPT 9.xxx	C, W
	Input (2-byte signed)	2 byte EIS10 / DPT 8.001	C, W
	Input (2-byte unsigned)	2 byte EIS10 / DPT 7.001	C, W
	Input (4-byte float)	4 byte EIS9 / DPT 14.xxx	C, W
	Input (4-byte signed)	4 byte EIS11 / DPT 12.001	C, W
	Input (4-byte unsigned)	4 byte EIS11 / DPT 13.001	C, W
1	Output (1 bit)	1 bit EIS1 / DPT 1.001	C, T
	Output (1-byte 0 - 100%)	1 byte EIS6 / DPT 5.001	C, T
	Output (1-byte 0 - 255)	1 byte EIS14 / DPT 5.010	C, T
2	Enable	1 bit EIS1 / DPT 1.001	C, W

Note
The described parameter is only available for the following device:
- UD/Sx.315.2.1x LED dimmer 2/4/6x315 W, MDRC.

11.6.8.1 Object type input

Options:	1 bit
	1 byte

- 1 bit:
  - The input object can take on value "0" or "1".
- 1 byte:
  - The input object can take on value 0 to 255.

The parameter is used to specify the data type for the input object.

11.6.8.2 Object type output

Options:	1 bit
	1 byte

- 1 bit:
  - Object "GFx: Output“ consists of a 1-bit value (0/1).
- 1 byte:
  - Object "GFx: Output“ consists of a 1-byte value (0 - 255).

Each logical function has an output object. The result determined from the inputs is sent on the bus via the output object.

The parameter is used to specify the bit size for the output object.

11.6.8.3 Enable object

Options:	deactivated
	activated

- activated:
  - If the "Enable object" parameter is set to "activated", the function can temporarily be blocked via the the 1-bit communication object "Enable"..
- deactivated:
  - If the "Enable object" parameter is set to "deactivated", the function can temporarily be blocked via the the 1-bit communication object "Enable".

The function is active if an ON telegram is received on the 1-bit communication object "Enable". The function is blocked if an OFF telegram is received on the 1-bit communication object "Enable" i.e. no telegram is sent out on the "Output" communication object.

11.6.8.4 Object value enable

Options:	Normal
	Inverse

- normal:
  - If an ON telegram is received via the 1-bit communication object "Enable", the function is disabled. The blocking is cancelled by an ON telegram.
- inverse:
  - If an ON telegram is received via the 1-bit communication object "Enable", the function is disabled. The blocking is cancelled by an OFF telegram.

This parameter determines whether the function is temporarily disabled when an ON or OFF telegram is received.

Note
The parameter can only be set if the "Enable object" parameter is set to "activated".

11.6.8.5 Behaviour enable after return of voltage

Options:	Blocked
	Enabled

- Blocked:
  - The enable object is not activated after bus voltage recovery. The blocking function is deactivated.
- Enabled:
  - If the enable object was activated prior to bus voltage recovery, it will also be activated after bus voltage recovery.

The parameter serves to ensure that a defined value is present on communication object "GFx: Control input" after a return of bus voltage.

Notice
This parameter can only be set if the "Enable object" parameter is set on "activated".

- locked:
  - The enable object is not activated after bus voltage recovery. The disable function is deactivated.
- enabled:
  - If the release object was activated before bus voltage failure, it is also activateda fter bus voltage recovery.

This parameter is used to ensure that a defined value is present at the "GFx: Control input" communication object after bus voltage recovery.

Note
The parameter can only be set if the "Enable object" parameter is set to "activated".

11.6.8.6 Save input signal

Options:	deactivated
	activated

- Deactivated:
  - Input telegrams are not saved during the blocking phase.
- Activated:
  - Input telegrams are saved during the blocking phase.

The parameter is used to specify whether input signals are saved during the blocking phase. The further behaviour depends on the setting of the "Data flow direction" parameter.

Example:

Data flow direction: Input towards the output.

If the setting "activated" has been selected, the output sends its value after the blocking phase if a telegram has been received on the input during the blocking phase.

Notice
This parameter can only be set if the "Enable object" parameter is set on "activated".

11.6.8.7 Behaviour output after return of voltage

Options:	deactivated
	activated

- Activated:
  - A telegram is sent out after return of voltage.
- Deactivated:
  - No telegram is sent out after retrun of voltage.

The parameter "Behaviour output after return of voltage" exists to permit a defined behaviour at the "Output" communication object after a return of voltage. A determination is made here about whether the "Output value upper threshold" or the "Output value lower threshold" is sent out on the output object.

11.6.8.8 Transmission behaviour

Options:	With each input telegram
	With a change of the output object

- With each input telegram:
  - When a telegram is received via the input object, the communication object always sends the value of the output object on the bus. This also happens if the value of the output object has not changed.
- With a change of the output object:
  - The communication object only sends a telegram when the value of the output object has changed.

The parameter is used to specify whether a telegram is sent via communication object "GFx: Output" at each receipt of a telegram or only at a change of the output object.

11.6.8.9 Upper treshold

Options:	Setting option from -671088.64 to 670760.96

The "Upper threshold" parameter specifies the upper threshold. i.e. if the value on the "Input" object is higher than the set value, the "Output value for exceeding the upper threshold" telegram is sent out on the "Output" communication object.

11.6.8.10 Output value for exceeding the upper threshold

Options:	Off
	On

- On:
  - If it is exceeded, the set value is sent on the 1-byte communication object "Output".
- Off:
  - If it is exceeded, no value is sent on the 1-byte communication object "Output".

11.6.8.11 Lower threshold

Options:	Setting option from -671088.64 to 670760.96

The "Lower threshold" parameter specifies the lower threshold. i.e. if the value on the "Input" object is lower than the set value, the "Output value for falling below the lower threshold" telegram is sent out on the "Output" communication object.

11.6.8.12 Output value for falling below the lower threshold

Options:	Off
	On

- Off:
  - If the value falls below this value, the set value is sent on the 1-bit "Output" communication object.
- On:
  - If the value falls below this value, no value is sent on the 1-bit "Output" communication object.

The parameter "Output value for falling below the lower threshold" specifies the value that is sent out on the 1-bit communication object "Output" if the set upper threshold is fallen below. The values ON and OFF can be set.

11.6.9 Flashing

Note
The described parameter is only available for the following device:
- UD/Sx.315.2.1x LED dimmer 2/4/6x315 W, MDRC.

In order to trigger a flashing sequence on the output object, a telegram must be received on the input object beforehand.

The "Flashing" parameter specifies whether the flashing sequence is started with an ON or an OFF telegram on the input object. Alternatively, the flashing sequence can be also be started with a "Change of state" i.e. if the input signal switches from "0" to "1" or from "1" to "0".

11.6.9.1 Channel name

Entry:	<Name>

The parameter can be used to name the selected channel. The preset name "Channel" can be replaced with any arbitrary name. The length of the name is limited to 30 characters.

11.6.9.2 Flashing

Options:	Off
	On

- Off:
  - The flashing sequence starts with an OFF telegram.
- On:
  - The flashing sequence starts with an OFF telegram.

In order to trigger a flashing sequence on the output object, a telegram must be received on the input object beforehand.

The "Flashing" parameter specifies whether the flashing sequence is started with an ON or an OFF telegram on the input object. Alternatively, the flashing sequence can be also be started with a "Change of state" i.e. if the input signal switches from "0" to "1" or from "1" to "0".

11.6.9.3 Switch-on interval (s) – LED on

Options:	Setting option from 01.000 to 10.000 (ss.fff)

The "Switch-on interval (s)– LED on" parameter specifies how long the flashing signal ON shall be until an OFF telegram is sent out again.

11.6.9.4 Switch-off interval (s) LED off

Options:	Setting option from 01.000 to 10.000 (ss.fff)

The "Switch-off interval (s)– LED off" parameter specifies how long the flashing signal OFF shall be until an ON telegram is sent out again.

11.6.9.5 Flashing cycle limit

Options:	deactivated
	activated

- deactivated:
  - The maximum number of switch-on and switch-off operations cannot be specified.
- activated:
  - The maximum number of switch-on and switch-off operations can be defined via the parameter "Number of flashing cycles".

If a telegram is received on the input object for starting the flashing procedure, ON and OFF telegrams are sent out on the output object in specified time intervals. The flashing procedure is stopped if a corresponding stop command is received on the input object.

Via the "Flashing cycle limit" parameter, the number of sent-out ON and OFF telegrams can be specified. If the parameter is "activated", the maximum number of switch-on and switch-off procedures can be specified via the "Number of flashing cycles" parameter.

11.6.9.6 Flashing cycle limit

Optiongs:	Setting from 2 to 20

The parameter "Number of flashing cycles" defines the maximum number of switch-on and switch-off operations.

Note
The flashing is stopped when an OFF telegram is received, even if not all set flashing cycles have been processed.

12 Communication objects

For a quick overview of the options of the dimmer functions, all communication objects are listed in an overview table. The detailed function can be read in the description following the individual communication objects.

Notice
Some communication objects are dynamic and only visible when the corresponding parameters have been activated in the application program. In the following description channel x is representative for a channel.

The communication objects are listed in the following overview:

No.	Name	Object function	Length	Data type	Flags
					C, T, W, R
1	Central: Commissioned	Output	1 bit	1.017 trigger	x x x
2	Central: Switching	Input	1 bit	1,001 Switching	x x
3	Central: Dimming	Input	4 bit	3,003 Dimmer step	x x
4	Central: Value	Input	1 byte	5,001 Percent (0..100%)	x x
5	Central: activate switch-off brightness	Input	1 bit	1,001 Switching	x x
6	Scene: Scene	Input	1 byte	18,001 Scene control	x x
7, 24, 41, 58	Channel x: Switching	Input	1 bit	1,001 Switching	x x
8, 25, 42, 59	Channel x: Relative dimming	Input	4 bit	3,007 Dimmer step	x x
9, 26, 43, 60	Channel x: Brightness value	Input	1 byte	5,001 Percent (0..100%)	x x
10, 27, 44, 61	Channel x: Status Switching	Output	1 bit	1,011 Switching	x x x
11, 28, 45, 62	Channel x: Brightness value status	Output	1 byte	5,001 Percent (0..100%)	x x x
12, 29, 46, 63	Channel x: Flexible Dimming time	Input / Output	2 bytes	7,005 Time (s)	x x x
13, 30, 47, 64	Channel x: Error diagnosis	Output	1 byte		x x x
14, 31, 48, 65	Channel x: Error	Output	1 bit	1,005 Alarm	x x x

15, 32, 49, 66	Channel x: Forced operation 1 bit	Input	1 bit	1,001 Switching	x x
--	Channel x: Forced operation 2 bit	Input	2 bit	2,001 Prio. switching	x x
16, 33, 50, 67	Channel x: Status Forced operation	Output	1 bit	1,001 Switching	x x x
17, 34, 51, 68	Channel x: Trigger load test	Input	1 bit	1,017 Triggers	x x

No.	Name	Object function	Length	Data type	Flags
General Functions					
75, 79, 83, 87, 91 (can vary!)	GFx: Input	Input	Depending on application and object type (see general functions)	Depending on application and object type (see general functions)	Depending on application and object type (see general functions)
76, 80, 84, 88, 92 (can vary!)	GFx: Output	Output	Depending on application and object type (see general functions)	Depending on application and object type (see general functions)	Depending on application and object type (see general functions)
76, 80, 84, 88, 92 (can vary!)	GFx: Input_Output	Input / output	1 bit	1,001 Switching	x x x
77, 81, 85, 89, 93 (identical to GFx: control input) (can vary!)	GFx: Enable	Input	1 bit	1,001 Switching	x x
77, 81, 85, 89, 93 (identical to GFx: enable) (can vary!)	GFx: Control input	Input	1 bit	1,001 Switching	x x
76, 80, 84, 88, 92 (can vary!)	GFx: Switch-off delay	Input	2 byte	7,005 Time (s)	x x x
77, 81, 85, 89, 93 (can vary!)	GFx: Switch-off pre-warning time	Input	2 byte	7,005 Time (s)	x x x
77.81, 85.89, 93 (can vary)	GFx: Delay time:	Input	2 byte	7,005 Time (s)	x x x

12.1 Communication objects - Dimmer

Notice

Central communication objects "In operation", "Switching", "Dimming", "Value" and "Activate switch-off brightness" act similar to the "normal" channel objects "Switching", "Dimming" and "Value"; however, they must simultaneously affect all channels similar to broadcast objects.

First the participation in the central functions must be enabled in the individual channels.

Note

The communications objects for the parameters "Priority", "Logic gate", "Min-max value transmitter", "Threshold value / hysteresis" and "Flashing" are only available for the following device:

- UD/Sx.315.2.1x LED dimmer 2/4/6x315 W, MDRC.

12.1.1 Central: In operation

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
1	Central: In operation	Output	1 bit	1,017 Triggers	x.x x

Dependent on parameter: Enable communication object "In operation"

This communication object is enabled when parameter Enable communication object "In operation" has been parameterized with yes in parameter window general, see chapter 11.2.1 “General“ on page 44.

To regularly monitor the presence of the device on the KNX bus, an in-operation telegram can be sent cyclic on the bus.

A parameterized in-operation telegram is sent as long as the communication object is activated.

12.1.2 Central: Switching

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
2	Central: Switching	Input	1 bit	1,001 Switching	x x

Dependent on parameters: None

All participants connected to the device are switched on or off with the parameter default settings specified in the parameter window, see chapter 11.5 “Application "Channel x"“ on page 79, via this communication object.

Telegram value:	0 = OFF All lamps switched off
	1 = ON All lamps switched on

At the receipt of an ON telegram the parameter settings determine whether a specified brightness value or the value prior to switch-off is set. If participants are already switched on and the dimmer receives an ON telegram, all participants are set with the parameterized brightness value of the switch-on value.

Parameterizable is whether the dimmer dims the brightness value or starts up. If the switch-on values are above or below the maximum or minimum dimming values (dimming limits), the corresponding dimming limit is set.

Notice
If the auxiliary staircase lighting function is activated, the function is triggered with an ON telegram (value 1) and the corresponding time duration is started.

12.1.3 Central: Dimming

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
3	Central: Dimming	Input	4 bit	3,003 Dimmer step	x x

Dependent on parameter: Respond to communication object "Central dimming"

This communication object is enabled when parameter "On communication object "Central: Dimming" has been parameterized with "Yes".

The output is dimmed via this 4-byte communication object at the receipt of a dimming telegram.

12.1.4 Central: Value

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
4	Central: Value	Input	1 byte	5,001 Percent (0 - 100%)	

Dependent on parameter: "Enable communication object "Dimming value status"

The output is dimmed to the corresponding value via this 1-byte communication object at the receipt of a value telegram.

When for parameter "Enable communication object "Status dimming value" the function "Send object value" is enabled, a status telegram is also sent out with the corresponding dimming value via this object, if the dimming actuator is switched on or dimmed.

12.1.5 Central: Activate switch-off brightness"

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
5	Central: Activate switch-off brightness"	Input	1 bit	1,001 Switching	x x

Dependent on parameter: Controlling function via *communication object "Activate switch-off value function"*.

This communication object is enabled when in parameter window channel X or parameter master: switch-off behaviour, see chapter 11.5 “Application "Channel x"“ on page 79, the control function parameter via *communication object "Activate switch-off value function"* has been parameterized with option "*Yes*".

This communication object serves for activating/deactivating the switch-off brightness during switching off. The function is also used for the *staircase lighting* function.

Telegram value:	0 = Switch-off brightness function deactivated 1 = Switch-off brightness function activated The switch-off brightness is set on the parameterized brightness value.

The switch-off brightness is a function that can be used for the following functions:

- Switch-off function
- Staircase lighting function

The brightness switch-off function specifies whether the switch-off takes place directly at the receipt of an Off telegram or the switch-off brightness is switched to.

The switch-off brightness has no influence of the forced operation function or scenes. The switch-off brightness is also not applied during the setting of dimming and brightness value commands.

The switch-off brightness status is retained after the download. If no value is known, the object is written with value 0, the *switch-off brightness* function is deactivated.

Whether the output responds to the communication object *Controlling function via communication object "Activate switch-off value function"*, is parameterizable.

Brightness limit priorities:

- Physical min (cannot be changed, specified by the physics of the channel)
- Min dimming value (parameterizable, is written to the channel)
- Switch-off brightness (parameterizable, values smaller than minimum dimming value are imaged on the minimum dimming value.
- Basic brightness for staircase lighting is equal to switch-off brightness.

12.1.6 Scene: Scene

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
6	Scene: Scene	Input	1 byte	18,001 Scene control	x x

Dependent on parameter: A scene is allocated.

This communication object is enabled when parameter *Dimmer scene x: KNX scene* has been allocated a scene in parameter window "Configure scenes", see chapter 11.3.2 “Dimmer scene x“ on page 47.

The 8-bit communication object can be used to send a scene telegram via an encoded telegram that integrates the group into a KNX scene. The telegram contains the number of the activated scene and the information as to whether the scene is to be called up or the current brightness values of the group contained in the scene are to be allocated to the scene.

Telegram values (1 Byte):	M0SS SSSS
	(MSB) (LSB)
M:	0 = Scene is called up
	1 = Scene is stored (if permitted)
S:	Line number of the scene (1… 13: 00000000…00001101)

KNX 8-bit telegram value		Meaning
Decimal		Hexadecimal
00 01 02 …	00h 01h 02h …	Call up scene 1: Call up scene 2: Call up scene 3: …
128 129 130 …	80h 81h 82h …	Save scene 1 Save scene 2 Save scene 3 …

12.1.7 Communication objects channel x

Communication objects channel x

In column Number (object number) the object number of the corresponding channels and in the second line the object numbers of the of the first two channels are listed. Depending the channel bundling, the objects appear or not.

The reference to a parameter window of a channel is also differentiated only in the designation channel x. All channels have the same communication objects which are differentiated only in the name of the communication object.

12.1.8 Channel x: Switching

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
7, 24, 41, 58	Channel x: Switching	Input	1 bit	1,001 Switching	x x

Dependent on parameter: Channel x / basic settings

This communication object is used to switch the channel or the individual participant on or off with the brightness values specified in parameter window channel x / basic settings, see chapter 11.4.1 “Basic settings“ on page 49.

Telegram value:	0 = OFF All lamps switched off
	1 = ON All lamps switched on

At the receipt of an ON telegram the parameter settings determine whether a specified brightness value or the value prior to switch-off is set. If participants are already switched on and the dimmer receives an ON telegram, all participants are set with the parameterized brightness value of the switch-on value.

Parameterizable is whether the dimmer dims the brightness value or starts up. If the switch-on values are above or below the maximum or minimum dimming values (dimming limits), the corresponding dimming limit is set.

Notice
If the auxiliary staircase lighting function is activated, the function is triggered with an ON telegram (value 1) and the corresponding time duration is started.

12.1.9 Channel x; Relative dimming

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
8, 25, 42, 59	Channel x: Relative dimming	Input	4 bit	3,007 Dimmer step	x x

Dependent on parameters: None

This communication object is used to receive the relative dimming telegram of all participants connected to the channel (output). These are the dimming telegrams BRIGHTER, DARKER, STOP. After receipt of a START telegram the brightness value is changed into the specified direction and changed with the parameterized speed. If a STOP telegram is received prior to finishing the dimming process, the dimming process is stopped and the brightness value reached is retained.

The maximum or minimum dimming limits are valid and cannot be exceeded.

12.1.10 Channel x: Brightness value

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
9, 26, 43, 60	Channel x: Brightness value	Input	1 byte	5.001 percent (0 … 100%)	x x

Dependent on parameters: None

This communication object is used to receive a brightness value for the corresponding channel x.

In parameter window channel x (also parameter masters), see chapter 11.5 “Application "Channel x"“ on page 79, it can be parameterized after which dimming time the brightness value is reached.

Brightness values above or below the specified dimming values (dimming limit) are not activated.

Telegram value:	0 = OFF
	255 = 100%

12.1.11 Channel x: Switching status

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
10, 27, 44, 61	Channel x: Switching status	Output	1 bit	1,011 Switching	x x x

Dependent on parameter: Enable communication object "Switching status"

This communication object is enabled when in parameter window channel X master (or parameter masters), see chapter 11.5 “Application "Channel x"“ on page 79, the parameter communication object "Switching status" is parameterized with option yes.

The value of the communication object displays the current switching state of the channels.

Telegram value:	0 = OFF, all participants of the channel are switched off
	1 = ON, at least one participant of the channel is switched on

The status can be sent at a change or when requested.

12.1.12 Channel x: Brightness value status

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
11, 28, 45, 62	Channel x: Brightness value status	Output	1 byte	5.001 percent (0 … 100%)	x x x

Dependent on parameter: Enable communication object "Dimming value status"

This communication object is enabled when in parameter window channel X master (or parameter masters), see chapter 11.5 “Application "Channel x"“ on page 79, the parameter communication object "Dimming value status" is parameterized with option yes.

Telegram value:	0 = OFF
	255 = 100%

This communication object signals the status of the current brightness value of channel x. The displayed brightness value can be limited with minimum or maximum dimming limits.

I can be parameterized:

- Whether the value of the communication object updates also during a dimming process or the status is first sent after the final value is reached.
- Whether the status is sent at a change or when requested.

12.1.13 Channel x: Flexible dimming time

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
12, 29, 46, 63	Channel x: Flexible dimming time	Input / Output	2 bytes	7,005 Time (s)	x x x

Dependent on parameter: Communication object dimming time adjustable via object "Flexible dimming time/fade time"

This communication object is enabled when in parameter window channel X basic settings (or parameter default settings), see chapter 11.5 “Application "Channel x"“ on page 79, the parameter dimming time adjustable via object "Flexible dimming time/fade time" is parameterized with option yes.

With this communication object there is the option of adjusting the dimming time via the KNX bus.

There is only one flexible dimming time per output which has an effect on all parameterized flexible dimming times of the output:

- Dimming time for switch-on / switch-off value
- Dimming time for brightness value
- Transition time for scene

It should be noted that the sent KNX value is not used for the scene transition in the device, but the closest value which is defined as fade time in the DALI Standard DIN EN 62 386-102. The device carries out a mathematical rounding in order to determine the suitable value.

For switching on/off and for setting a brightness value it is not the rounded value that is used for times larger than 32 s, but the exact time value. In this case an error tolerance of +/- of 3 s should be expected. An exception are the transition times of scenes. For scenes, the rounded times in the entire range apply, which makes the maximum transition time of 90.5 s possible.

Telegram value: 0 - 65,535 x 1 s:

Telegram value in 1 s	Effective fade time [s] according to DIN EN 62 386-102
0	
1	
2	
3	
4	
5 and 6	
7 … 9	
10 … 13	
14 … 18	
19 … 26	
27 …	32
> 32 … 65,535	Time value used with an error tolerance of +/-3 s
Scene	For transition times of the scene, the rounded times for the entire range apply.
27 … 38	32.0
39 … 54	45.3
55 … 77	64.0
78 … 91	90.5
> 91 … 65,535	Are imaged for the scene to 90.5 seconds.

The fade time is specified as time duration required for the change of the lamp power from the current brightness value to the demanded target brightness value. In case of a switched-off lamp the preheating and ignition times are not included in the fade time. The value 2.0 s is set as default value until the first value is received. In case of a KNX failure or download, the dimming time received via the KNX bus is lost and is replaced with the default value of 2.0 s.

12.1.14 Channel x: Error diagnosis

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
13; 30; 47; 64	Channel x: Error diagnosis	Output	1 byte		x x x

Dependent on parameter: Enable communication object "Error diagnosis"

This communication object is enabled when in parameter window channel X -> feedback and error messages (or parameter masters) the parameter communication object "Error diagnosis" is parameterized with yes.

12.1.15 Channel x: Error

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
14, 31, 48, 65	Channel x: Error	Output	1 bit	1.0005 Alarm	x x x

Dependent on parameter: Enable communication object "Error"

This communication object is enabled when in parameter window channel X -> feedback and error messages (or parameter masters) the parameter communication object "Error" is parameterized with yes.

12.1.16 Channel x: 1-bit / 2-bit forced operation

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
15, 32, 49, 66	Channel x: Forced operation 1 bit	Input	1 bit	1,001 Switching	x x
--	Channel x: Forced operation 2 bit	Input	2 bit	2,001 Prio. switching	x x

Dependent on parameter: Enable forced operation

This communication object is enabled when in parameter window channel X -> block and forced function (or parameter masters) the parameter forced operation is set on yes and is additionally parameterized with the desired option (forced operation 1-bit / forced operation 2-bit). In dependence of the parameter setting, this communication object can therefore only take on one of the following functions:

- Forced operation 1 bit
- Forced operation 2 bit

Via the communication object *forced operation 1 bit*, channel x can be force-operated, e.g. with an overriding control. The value of the communication object directly indicates the forced position of the channel:

Telegram value:	0 = The channel is not force-operated, the forced operation is cancelled.
	1 = The channel is force-operated and switched on with the parameterized brightness value. Forced operation is active.

Via the communication object forced operation 2 bit, channel x can be force-operated, e.g. with an overriding control. The value of the communication object directly indicates the forced position of the channel:

Telegram value:	0 or 1 = The channel is not force-operated, an existing forced operation is cancelled.
	2 = The channel is switched off force-operated. Forced operation is active.
	3 = The channel is force-operated and switched on with the parameterized brightness value. Forced operation is active.

The brightness value of the channel is calculated for incoming telegrams also during forced operation, but not displayed. Dimming speeds are not taken into account during the calculation, i.e. the immediate final values are always stored in the background. After the end of forced operation the brightness value tracked in the background is set.

A dimming, scene or staircase lighting call-up is not recorded again.

After a download, communication object forced operation has value 0, forced operation is not activated.

After bus voltage recovery the status is parameterizable.

12.1.17 Channel x: Forced operation status

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
16, 33, 50, 67	Channel x: Forced operation status	Output	1 bit	1,001	x x x

Dependent on parameter: Enable communication object "Forced operation status"

This communication object is enabled when in parameter window channel X -> block and forced function (or parameter masters) the parameter communication object "Forced operation status" is parameterized with yes.

12.1.18 Channel x: Trigger load test

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
17, 34, 51, 68	Channel x: Trigger load test	Input	1 bit	1,017 Triggers	x x

Dependent on parameter: Enable communication object "Trigger load test"

This communication object is enabled when in parameter window channel X -> errors (or parameter masters) the parameter communication object "Trigger load test" is parameterized with yes.

12.2 Channels (General functions)

Channels (General functions)

The communication objects regarding the channels (general functions) appear in the same sequence depending on the parameter setting. Only one sequence is explicitly presented in the following. The individual channels are differentiated with channel numbering (e.g. GF1, etc.). The characteristic values are replaced with "X" in the following. The same applies to the numbering of the channels.

12.2.1 Cyclic telegram - Input

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
75, 79, 83, 87, 91 (can vary)	GFx: Input	Input	1 bit	1,001 Switching	x x
	GFx: Input	Input	1 bit	1,001 Switching	x x
	GFx: Input	Input	1 byte	5,001 Percent (0 … 100%)	x x
	GFx: Input	Input	1 byte	5,010 Counting pulses (0 … 255)	x x
	GFx: Input	Input	2 byte	9. * 2-byte Floating point value	x x
	GFx: Input	Input	2 byte	8.001 Pulse difference	x x
	GFx: Input	Input	2 byte	7,001 Pulses	x x
	GFx: Input	Input	2 byte	7,001 Temperature (°C)	x x
	GFx: Input	Input	4 byte	17. * 4-byte Floating point value	x x
	GFx: Input	Input	4 byte	13,001 Counting pulse (signed)	x x
	GFx: Input	Input	4 byte	12,001 Counting pulse (unsigned)	x x

Dependent on parameters: None

The communication object is used to receive telegrams for controlling gates and for display. The object can take on different sizes. The bit size (-length) is specified via the "Object type" parameter.

12.2.2 Cyclic telegram - Output

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
76, 80, 84, 88, 92 (can vary!)	GFx: Output	Output	1 bit	1,001 Switching	x x
	GFx: Output	Output	1 bit	1,001 Switching	x x
	GFx: Output	Output	1 byte	5,001 Percent (0 … 100%)	x x
	GFx: Output	Output	1 byte	5,010 counting pulses (0 … 255)	x x
	GFx: Output	Output	2 byte	9. * 2-byte floating point value	x x
	GFx: Output	Output	2 byte	8,001 Pulse difference	x x
	GFx: Output	Output	2 byte	7,001 Pulses	x x
	GFx: Output	Output	2 byte	7,001 Temperature (°C)	x x
	GFx: Output	Output	4 byte	14. * 4-byte Floating point value	x x
	GFx: Output	Output	4 byte	13,001 Counting pulse (signed)	x x
	GFx: Output	Output	4 byte	12,001 Counting pulse (unsigned)	x x

Dependent on parameters: None

The communication object is used to send telegrams for controlling gates and for display. The object can take on different sizes. The bit size (-length) is specified via the "Object type" parameter.

12.2.3 Cyclic telegram - Enable

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
77, 81, 85, 89, 93 (identical to GFx: control input) (can vary!)	GFx: Enable	Input	1 bit	1,001 Switching	x x

Dependent on parameters: Enable object

This communication object is enabled when during the activated application "Cyclic telegram" in parameter window general functions -> channel x -> extended parameters, the parameter "Enable object" is parameterized on active.

The function "Cyclic telegram" can be temporarily blocked or enabled via the 1-bit communication object.

12.2.4 Gate - Input

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
75, 79, 83, 87, 91 (can vary!)	GFx: Input	Input	1 bit	1,001 Switching	x x x
--	GFx: Input	Input	1 bit	1,008 Up / down	x x x
	GFx: Input	Input	1 bit	1,001 Switching	x x x
	GFx: Input	Input	2 bi	2,001 Prio. switching	x x x
	GFx: Input	Input	4 bit	3,007 Dimmer step	x x x
	GFx: Input	Input	1 byte	5,001 Percent (0 … 100%)	x x x
	GFx: Input	Input	1 byte	5,010 Counting pulses (0 ... 255)	x x x
	GFx: Input	Input	2 byte	9.* 2-byte Floating point value	x x x
	GFx: Input	Input	2 byte	8,001 Pulse difference	x x x
	GFx: Input	Input	2 byte	7,001 Pulses	x x x
	GFx: Input	Input	3 byte	10,001 Daytime	x x x
	GFx: Input	Input	3 byte	11,001 Date	x x x
	GFx: Input	Input	4 byte	14.* 4-byte Floating point value	x x x
	GFx: Input	Input	4 byte	13,001 Counting pulse (signed)	x x x
	GFx: Input	Input	4 byte	12,001 Counting pulse (unsigned)	x x x

Dependent on parameters: None

The communication object is used to receive telegrams for controlling gates and for display. The object can take on different sizes. The bit size (-length) is specified via the "Object type" parameter.

12.2.5 Gate - Output

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
76, 80, 84, 88, 92 (can vary!)	GFx: Output	Output	1 bit	1,001 Switching	x x x
	GFx: Output 0020	Output	1 bit	1,008 Up / down	x x x
	GFx: Output	Output	1 bit	1,001 Switching	x x x
	GFx: Output	Output	2 bit	2,001 Prio. switching	x x x
	GFx: Output	Output	4 bit	3,007 Dimmer step	x x x
	GFx: Output	Output	1 byte	5,001 Percent (0 - 100%)	x x x
	GFx: Output	Output	1 byte	5,010 Counting pulses (0 ... 255)	x x x
	GFx: Output	Output	2 byte	9.* 2-byte Floating point value	x x x
	GFx: Output	Output	2 byte	8,001 Pulse difference	x x x
	GFx: Output	Output	2 byte	7,001 Pulses	x x x
	GFx: Output	Output	3 byte	10,001 Daytime	x x x
	GFx: Output	Output	3 byte	11,001 Date	x x x
	GFx: Output	Output	4 byte	14.* 4-byte Floating point value	x x x
	GFx: Output	Output	4 byte	13,001 Counting pulse (signed)	x x x
	GFx: Output	Output	4 byte	12,001 Counting pulse (unsigned)	x x x

Dependent on parameters: None

The communication object is used to send telegrams for controlling gates and for display. The object can take on different sizes. The bit size (-length) is specified via the "Object type" parameter.

12.2.6 Gate - Control input

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
77, 81, 85, 89, 93 (identical to GFx: enable) (can vary!)	GFx: Control input	Input	1 bit	1,001 Switching	x x

Dependent on parameters: Enable object

This communication object is enabled when during the activated application "Gate" in parameter window general functions -> channel x -> extended parameters, the parameter "Enable object" is parameterized on active.

The function "Gate" can be temporarily blocked or enabled via the 1-bit communication object.

12.2.7 Staircase lighting - Input

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
75, 79, 83, 87, 91 (can vary!)	GFx: Input_Output	Input / output	1 bit	1,001 Switching	x x x
	GFx: Input	Input	1 bit	1,001 Switching	x x
	GFx: Input	Input	1 byte	5,001 Percent (0 … 100%)	x x x

Dependent on parameters: None

The 1-bit communication object can be used to receive On and Off telegrams to start or stop the switch-off delay for staircase lighting. Off telegrams are transferred directly to the output and the switch-off delay is stopped.

The 1-byte communication object can be used to receive value telegrams (percentage values), to start or stop the switch-off delay for staircase lighting. After expiration of the switch-off delay, the "Output" object sends a telegram with value "0".

The bit size (-length) of the object is specified via the "Object type/number" parameter.

12.2.8 Staircase lighting - Switch-off delay

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
76, 80, 84, 88, 92 (can vary!)	GFx: Switch-off delay	Input	2 byte	7,008 Time (s)	x x x

Dependent on parameters: None

The 2-byte communication object is used to receive telegrams with the set switch-off delay. The received values are written to the memory of the device and are retained also after a power failure.

12.2.9 Staircase lighting - Switch-off pre-warning time

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
77, 81, 85, 89, 93 (can vary!)	GFx: Switch-off pre-warning time	Input	2 byte	7,005 Time (s)	x x x

Dependent on parameters: switch-off pre-warning

This communication object is enabled when during the activated application "Staircase lighting" in parameter window general functions -> channel x -> extended parameters, the parameter "Switch-off pre-warning" is parameterized on active.

The 2-byte communication object "GFx: Switch-off pre-warning time" is used to receive telegrams with the set time for switch-off pre-warning. The received values are written to the memory of the device and are retained also after a power failure.

12.2.10 Staircase lighting - Output

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
78, 82, 86, 90, 94 (can vary)	GFx: Output	Output	1 bit	1,001 Switching	x x
	GFx: Input	Input	2 byte	5,001 Percent (0 … 100%)	x x

Dependent on parameters: None

The 1-bit communication object is used to send On and Off telegrams.

The 1-byte communication object is used to send value telegrams (percentage values). Telegrams that are received via communication object "Input" are transferred direct to

object "Output". After expiration of the switch-off delay, the "Output" object sends an Off telegram or value "0". The bit size (-length) of the object is specified via the "Object type/number" parameter.

12.2.11 Delay - Input

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
75, 79, 83, 87, 91 (can vary!)	GFx: Input	Input	1 bit	1,001 Switching	x x
	GFx: Input	Input	1 bit	1,008 Up / down	x x
	GFx: Input	Input	1 bit	1,001 Switching	x x
	GFx: Input	Input	1 byte	5,001 Percent (0 - 100%)	x x
	GFx: Input	Input	1 byte	5,010 Counting pulses (0 ... 255)	x x
	GFx: Input	Input	2 byte	9.* 2-byte Floating point value	x x
	GFx: Input	Input	2 byte	8,001 Pulse difference	x x
	GFx: Input	Input	2 byte	7,001 Pulses	x x
	GFx: Input	Input	4 byte	14.* 4-byte Floating point value	x x
	GFx: Input	Input	4 byte	13,001 Counting pulse (signed)	x x
	GFx: Input	Input	4 byte	12,001 Counting pulse (unsigned)	x x

Dependent on parameters: None

The communication object is used to receive telegrams with a fixed size. The function that is triggered depends on the application selected. The bit size (-length) of the object is specified via the "Object type" parameter.

12.2.12 Delay - Output

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
76, 80, 84, 88, 92 (can vary!)	GFx: Output	Output	1 bit	1,001 Switching	x x
	GFx: Output	Output	1 bit	1,008 Up / down	x x
	GFx: Output	Output	1 bit	1,001 Switching	x x
	GFx: Output	Output			x x
	GFx: Output	Output			x x
	GFx: Output	Output	1 byte	5,001 Percent (0 … 100%)	x x
	GFx: Output	Output	1 byte	5,010 Counting pulses (0..255)	x x
	GFx: Output	Output	2 byte	9.* 2-byte Floating point value	x x
	GFx: Output	Output	2 byte	8,001 Pulse difference	x x
	GFx: Output	Output	2 byte	7,001 Pulses	x x
	GFx: Output	Output			x x
	GFx: Output	Output			x x
	GFx: Output	Output	4 byte	14.* 4-byte Floating point value	x x
	GFx: Output	Output	4 byte	13,001 Counting pulse (signed)	x x
	GFx: Output	Output	4 byte	12,001 Counting pulse (unsigned)	x x

Dependent on parameters: None

The telegrams received via communication object "GFx: Input" are transferred to object "GFx: Output" depending on the state of the "GFx: Delay time" object. The bit size (-length) of the object is specified via the "Object type" parameter.

12.2.13 Delay - Delay time

Number	Name	Object function	Length	Data type	Flags
					C, T, W, R
77.81, 85.89, 93 (can vary)	GFx: Delay time:	Input	2 byte	7,008 Time (s)	x x x

Dependent on parameters: None

The 2-byte communication object is used to receive telegrams with the set delay time. The received values are written to the memory of the device and are retained also after a power failure.

12.2.14 Priority - Switching input

Name	Object function	Data type
GFx: Switching input	Input	1.001 Switching

The switching telegrams received via the 1-bit communication object are transmitted to object "GFx: Output" depending on the

state of the "GFx: Priority input" object.

12.2.15 Priority - Input priority

Name	Object function	Data type
GFx: Input priority	Input	2.001 Switching priority

The values 0, 1, 2 and 3 can be received via the 2-bit communication object. Each value triggers a specific forced operation of object "GFx: Output".

12.2.16 Priority - Output

Name	Object function	Data type
GFx: Output	Output	1.001 Switching

The telegrams received via communication object "GFx: Switching input" are transferred to object "GFx: Output" depending on the state of the "GFx: Input priority" object.

12.2.17 Logic gate - Output

Name	Object function	Data type
GFx: Output	Output	1.001 Switching
GFx: Output	Output	5.001 Percent (0..100%)

The result determined from the inputs is sent via the communication object. The value that is to be sent for a logic function that was fulfilled or not fulfilled is adjustable. The bit size of the object is specified via the "Object type output" parameter.

12.2.18 Logic gate - Input

Name	Object function	Data type
GFx: Input x	Input	1.001 Switching
GFx: Input x	Input	5.001 Percent (0..100%)

The values received via the communication objects are linked via the logic gate. The bit size of the object is specified via the "Object type input x" parameter.

12.2.19 Min/max value transducer - Output

Name	Object function	Data type
GFx: Output	Output	5.001 Percent (0..100%)
GFx: Output	Output	5.010 counting pulses (0..255)
GFx: Output	Output	9.* 2-byte Floating point value
GFx: Output	Output	8.001 Pulse difference
GFx: Output	Output	7.001 Pulses
GFx: Output	Output	14.* 4-byte Floating point value
GFx: Output	Output	13.001 Counting pulse (signed)
GFx: Output	Output	12.001 Counting pulse (unsigned)

The communication object is used to send either the largest input value, the smallest input value or the average of all input values. The bit size of the object is specified via the "Object type" parameter.

12.2.20 Min/max value transducer - Input x

Name	Object function	Data type
GFx: Input	Input	5.001 Percent (0..100%)
GFx: Input	Input	5.010 counting pulses (0..255)
GFx: Input	Input	9.* 2-byte Floating point value
GFx: Input	Input	8.001 Pulse difference
GFx: Input	Input	7.001 Pulses
GFx: Input	Input	14.* 4-byte Floating point value
GFx: Input	Input	13.001 Counting pulse (signed)
GFx: Input	Input	12.001 Counting pulse (unsigned)

The communication objects (GFx: Input 1 to 8) are used to receive telegrams with a fixed size. The bit size of the object is specified via the "Object type" parameter.

12.2.21 Threshold value / hysteresis

With the "Threshold value / Hysteresis" application, value telegrams can be received on an input communication object and compared with threshold values specified in the device.

Predefined values are sent out on the "Output" communication object if the upper threshold is exceeded or the lower threshold drops below the set value. The size of the object can be adjusted for different applications.

The function can be temporarily blocked via an enable object.

If the value of the lower threshold lies above the value for the upper threshold, the function is not executed.

Threshold value / hysteresis objects

No.	Object name	Data type	Flags
0	Input (1-byte 0 - 100%)	1 byte EIS6 / DPT 5.001	C, W
	Input (1-byte 0 - 255)	1 byte EIS14 / DPT 5.010	C, W
	Input (2-byte float)	2 byte EIS5 / DPT 9.xxx	C, W
	Input (2-byte signed)	2 byte EIS10 / DPT 8.001	C, W
	Input (2-byte unsigned)	2 byte EIS10 / DPT 7.001	C, W
	Input (4-byte float)	4 byte EIS9 / DPT 14.xxx	C, W
	Input (4-byte signed)	4 byte EIS11 / DPT 12.001	C, W
	Input (4-byte unsigned)	4 byte EIS11 / DPT 13.001	C, W
1	Output (1 bit)	1 bit EIS1 / DPT 1.001	C, T
	Output (1-byte 0 - 100%)	1 byte EIS6 / DPT 5.001	C, T
	Output (1-byte 0 - 255)	1 byte EIS14 / DPT 5.010	C, T
2	Enable	1 bit EIS1 / DPT 1.001	C, W

12.2.22 Flashing — Input

Numbre	Name	Object function	Length	Data type	Flags
					K L S Ü
(can differ)	Flashing	Input	1 bit	1.001 Switching	K S

This 1-bit communication object can be used to trigger a flashing sequence on the 1-bit "Output" communication object when a switching telegram is received. The receipt of a further switching telegram stops the flashing immediately. Whether an ON telegram, an OFF telegram or an ON and OFF telegram starts or stops the flashing sequence is determined via the "Flashing" parameter

Note
Even if not all set flashing cycles (parameter "Number of flashing cycles") have been processed, the flashing is stopped when a stop command is received.

12.2.23 Flashing — Output

Number	Name	Object function	Length	Data type	Flags
					K L S Ü
(can differ)	Flashing	Output	1 bit	1.001 Switching	x x

Dependant on parameter: None

ON and OFF telegrams are sent via this 1-bit communication object. In this way, for example, a linked switching actuator can be made to flash.

When, how many and at what intervals telegrams are transmitted is determined via the parameters.

13 Fault repair

The i-bus tool can be used for extensive test and error diagnosis functions.

Overview

The overview page provides a comprehensive overview of the essential settings and statuses of the individual dimming channels.

Detail

The detail page can be used by the user to set specific dimming values separately for each channel, and so record the limits of the dimming ranges for example. Also a load test can be triggered or an error acknowledged. Additional information about load types, a possible existing error or about a possible restricted guidance that has been set, the user can read in the "Status" overview block.

Status outputs

Detailed information about possible existing errors is provided channel-related on page "Status outputs". The physical outputs of the dimmers are portrayed in column "Output", while column "Channel" provides information about which channel the respective physical address is assigned to in the ETS. This information is especially important for the bundling of channels. This, for example, would allow output A and output B to be bundled and then parameterized and controlled on the ETS side via channel A.

Errors	Recommended solution
Excess temperature	Reduce connected loads, provide sufficient cooling and increase the distance to adjacent devices.
Short-circuit	Check the wiring and rectify the short-circuit.
No load	Check the wiring and lamps.
Overvoltage	Check the wiring, supply voltage and parameterized load type.
Final stage defective	Switch the voltage off and on again. If the error persists, exchange the device.
230 V failure	Check the supply voltage.
Load failure	Check wiring and lamps and, if necessary, replace defective lamps.
Mains failure	Check the supply voltage.
Overload	Reduce the connected load.
Conflict of load type	The load type detected by the dimmer did not correspond to the load set in the ETS. The dimmer automatically adjusted the load type to prevent possible damage.
Internal error	Disconnect the bus and supply voltage from the device and reconnect it again.

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