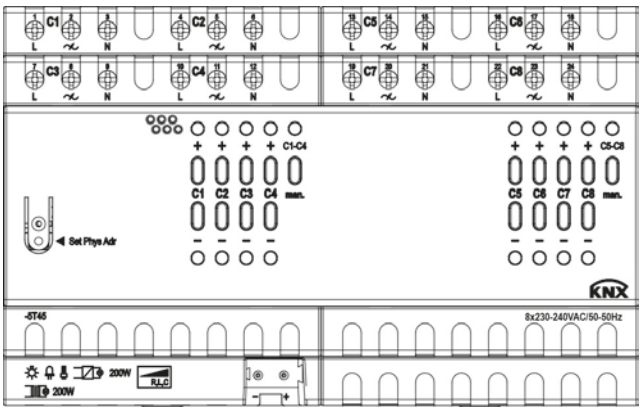
Dimming actuators
GDA-4K KNX
GDA-8K KNX



GDA-4K KNX	108394
GDA-8K KNX	108395

Contents

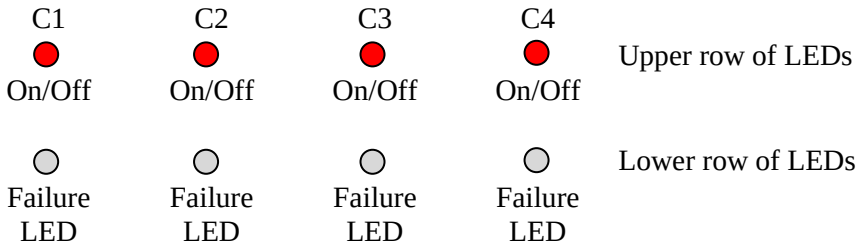
1 Functional characteristics

- 4-way or 8-way universal dimmer actuator
- Dimming range 0–100%
- For dimming incandescent lamps, low voltage and high voltage halogen lamps, dimmable LED retrofit lamps
- Also suitable for dimming dimmable compact fluorescent lamps via different dimming curves
- Also suitable for controlling fans
- LED switching status indicator for each channel
- Manual operation on device
- Dimming output: 200 W per channel
- Automatic load detection (can be deactivated)
- For R, L and C-load

1.1 Operation

The dimming actuator has one manual button each for 4 channels.
When manual mode is activated the dimmer can only be operated with the buttons.
Bus telegrams will not be executed.

2 buttons and 2 LEDs are available for each channel.
The upper LEDs show the current state (LED on = dimming value > 0%):



The device dims down to 0% in the event of excess temperature or a short circuit in the load, and the lower LED flashes.
In case of a short circuit, the lower and the upper LED of the channel will flash.
If a button is blocked, the corresponding LED will flash

The upper buttons switch on the corresponding channel and increase the dimming value by 25% when pressing the button.
The lower buttons decrease the dimming value by 25% and switch off the channel when pressing the button.

In standard operation:
Pressing a button establishes the desired dimming value.
A status established via the channel button can be overwritten via the bus at any time.

In manual operation with the manual button or *Manual* object:
If the "manual" function is selected, the associated LED lights up.
Any time-based functions that are running (e.g. soft switching) will be terminated.
The dimming status will be frozen and can only be changed via the channel buttons.
Bus telegrams will not be executed anymore.

The "Manual" state will be reset in the event of a mains failure.
After manual operation has been cancelled, already received bus events will not be executed again.

2 Technical data

Operating voltage KNX	Bus voltage
Bus current KNX	10 mA[1] or 17.5 mA[2]
Operating voltage	230–240 V AC
Frequency	50 – 60 Hz
Standby output	<1 W
Width	4 TE[3] or 8 TE[4]
Type of installation	DIN-rail
Connection type	Screw terminals | bus connection: KNX bus terminal
Max. cable cross-section	Solid: 0.5 mm² (Ø 0.8) to 4 mm² | strand with crimp terminal: 0.5 mm² to 2.5 mm²
Number of channels	4 channels[5] or 8 channels[6]
Lamp types	Incandescent lamps, low-voltage and high-voltage halogen lamps, dimmable compact fluorescent lamps, and LED
Incandescent/halogen lamp load	200 W
Compact fluorescent lamps	Trailing edge: 200 W | leading edge: 32 W (See next table)
LED lamps	Trailing edge: 200 W | leading edge: 22 W (See next table)
Min. switching capacity	2 W
Max. cable length	100 m
Ambient temperature	-5 °C–+45 °C
Protection rating	IP 20
Protection class	II

[1] GDA-4K KNX
[2] GDA-8K KNX
[3] GDA-4K KNX
[4] GDA-8K KNX
[5] GDA-4K KNX
[6] GDA-8K KNX

Table 1: Load per channel.

Load type	Nominal voltage	Ambient temperature	Leading edge (L mode) Trailing edge (RC mode)	Possible max. load
Incandescent lamps	230 V / 50 Hz	45 °C	RC mode	200 W
	240 V / 60 Hz	35 °C	RC mode	200 W
	240 V / 60 Hz	45 °C	RC mode	185 W
Halogen lamps Transformer (ind.)	230 V / 50 Hz	35 °C	L mode	200 W
	230 V / 60 Hz	35 °C	L mode	200 W
	230 V / 50 Hz	45 °C	L mode	185 W
	230 V / 60 Hz	45 °C	L mode	175 W
LED - lamp load	230 V / 50 Hz	45 °C	RC mode	200 W
	240 V / 60 Hz	35 °C	RC mode	200 W
	240 V / 60 Hz	45 °C	RC mode	185 W
	230 V / 50 Hz	45 °C	L mode	22 W[7]
	240 V / 60 Hz	45 °C	L mode	18 W[8]
Compact fluorescent lamps	230 V / 50 Hz	45 °C	RC mode	200 W
	240 V / 60 Hz	35 °C	RC mode	200 W
	240 V / 60 Hz	45 °C	RC mode	175 W
	230 V / 50 Hz	45 °C	L mode	32 W[9]
	240 V / 60 Hz	45 °C	L mode	30 W[10]
Electronic transformer	230 V / 50 Hz	45 °C	RC mode	200 W
	240 V / 60 Hz	35 °C	RC mode	200 W
	240 V / 60 Hz	45 °C	RC mode	185 W

2.1 Important information

1. The power supply (at the fuse box) must be switched off without fail when replacing lamps.
2. The **connection of dimmers in series or in parallel** is not permitted.
3. However, a parallel connection of the channels is possible (C1-C2, C3-C4, etc.), and can be activated via parameter.
4. Do not install **adjustable transformers** ahead of the dimmer.
5. Ripple control pulses from electric power plants may cause temporary flickering of the lighting.

[7] The output with LED and compact fluorescent lamps in the leading edge is largely depending on the lamp type. Therefore, the dimmer might dim down because of an excess temperature.
In this case, select the trailing edge operating mode!
The device will thus not be damaged.
[8] See previous footnote.
[9] See previous footnote.
[10] See previous footnote.

3 The application programme "GDA-8K KNX"

3.1 Selection in the product database

Manufacturer	GARO AB
Product family	Dimmer
Product type	GDA-8K KNX / GDA-4K KNX
Program name	GDA-8K KNX

Table 2

Number of communication objects	161
Number of group addresses	254
Number of associations	255

3.2 Communication objects

Table 3

No.	Object name	Function	Length DPT	Flags			
				C	R	W	T
0	*Channel C1*	*Switching ON/OFF*	1 bit 1.001	✓	✓	✓	-
1	*Channel C1*	*Brighter/darker*	4 bit 3.007	✓	✓	✓	-
2	*Channel C1*	*Dimming value*	1 byte 5.001	✓	-	✓	-
3	*Channel C1*	*Soft switching*	1 bit 1.001	✓	✓	✓	-
4	*Channel C1*	*Block*	1 bit 1.001	✓	✓	✓	-
5	*Channel C1*	*Call up/save scenes*	1 byte 17.001	✓	✓	✓	-
6	*Channel C1*	*Block scenes = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C1	*Enable scenes = 1*	1 bit 1.001	✓	✓	✓	-
7	*Channel C1*	*Force = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C1	*Force = 0*	1 bit 1.001	✓	✓	✓	-
	Channel C1	*Dimming value with force*	1 byte 5.001	✓	✓	✓	-
	Channel C1	*Force*	2 bit 2.001	✓	✓	✓	-
8	*Channel C1*	*Dimming value limit*	1 byte 5.001	✓	✓	✓	-
9	*Channel C1*	*Feedback On/Off*	1 bit 1.001	✓	✓	-	✓
10	*Channel C1*	*Feedback in %*	1 byte 5.001	✓	✓	-	✓
11	*Channel C1*	*Time to next service*	2 byte 7.001	✓	✓	✓	✓
	Channel C1	*Operating hours feedback*	2 byte 7.001	✓	✓	✓	✓
12	*Channel C1*	*Service required*	1 bit 1.001	✓	✓	-	✓
13	*Channel C1*	*Reset service*	1 bit 1.001	✓	✓	✓	-
	Channel C1	*Reset operating hours*	1 bit 1.001	✓	✓	✓	-

Continuation:

No.	Object name	Function	Length DPT	Flags			
				C	R	W	T
14	*Channel C1*	*General error message*	1 bit 1.001	✓	✓	-	✓
15	*Channel C1*	*Short circuit message*	1 bit 1.001	✓	✓	-	✓
16	*Channel C1*	*Excess temperature message*	1 bit 1.001	✓	✓	-	✓
17	*Channel C1*	*Mains power failure*	1 bit 1.001	✓	✓	-	✓
18	*Channel C1*	*Load type message (R, C/L)*	1 bit 1.001	✓	✓	-	✓
20	*Channel C2*	*Switching ON/OFF*	1 bit 1.001	✓	✓	✓	-
21	*Channel C2*	*Brighter/darker*	4 bit 3.007	✓	✓	✓	-
22	*Channel C2*	*Dimming value*	1 byte 5.001	✓	-	✓	-
23	*Channel C2*	*Soft switching*	1 bit 1.001	✓	✓	✓	-
24	*Channel C2*	*Block*	1 bit 1.001	✓	✓	✓	-
25	*Channel C2*	*Call up/save scenes*	1 byte 17.001	✓	✓	✓	-
26	*Channel C2*	*Enable scenes = 1*	1 bit 1.001	✓	✓	✓	-
26	*Channel C2*	*Block scenes = 1*	1 bit 1.001	✓	✓	✓	-
27	*Channel C2*	*Force = 0*	1 bit 1.001	✓	✓	✓	-
	Channel C2	*Force = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C2	*Dimming value with force*	1 byte 5.001	✓	✓	✓	-
	Channel C2	*Force*	2 bit 2.001	✓	✓	✓	-
28	*Channel C2*	*Dimming value limit*	1 byte 5.001	✓	✓	✓	-
29	*Channel C2*	*Feedback On/Off*	1 bit 1.001	✓	✓	-	✓
30	*Channel C2*	*Feedback in %*	1 byte 5.001	✓	✓	-	✓

Continuation:

No.	Object name	Function	Length DPT	Flags			
				C	R	W	T
31	*Channel C2*	*Time to next service*	2 byte 7.001	✓	✓	✓	✓
	Channel C2	*Operating hours feedback*	2 byte 7.001	✓	✓	✓	✓
32	*Channel C2*	*Service required*	1 bit 1.001	✓	✓	-	✓
33	*Channel C2*	*Reset service*	1 bit 1.001	✓	✓	✓	-
	Channel C2	*Reset operating hours*	1 bit 1.001	✓	✓	✓	-
34	*Channel C2*	*General error message*	1 bit 1.001	✓	✓	-	✓
35	*Channel C2*	*Short circuit message*	1 bit 1.001	✓	✓	-	✓
36	*Channel C2*	*Excess temperature message*	1 bit 1.001	✓	✓	-	✓
37	*Channel C2*	*Mains power failure*	1 bit 1.001	✓	✓	-	✓
38	*Channel C2*	*Load type message (R, C/L)*	1 bit 1.001	✓	✓	-	✓
40	*Channel C3*	*Switching ON/OFF*	1 bit 1.001	✓	✓	✓	-
41	*Channel C3*	*Brighter/darker*	4 bit 3.007	✓	✓	✓	-
42	*Channel C3*	*Dimming value*	1 byte 5.001	✓	-	✓	-
43	*Channel C3*	*Soft switching*	1 bit 1.001	✓	✓	✓	-
44	*Channel C3*	*Block*	1 bit 1.001	✓	✓	✓	-
45	*Channel C3*	*Call up/save scenes*	1 byte 17.001	✓	✓	✓	-
46	*Channel C3*	*Block scenes = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C3	*Enable scenes = 1*	1 bit 1.001	✓	✓	✓	-
47	*Channel C3*	*Force = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C3	*Force = 0*	1 bit 1.001	✓	✓	✓	-
	Channel C3	*Dimming value with force*	1 byte 5.001	✓	✓	✓	-
	Channel C3	*Force*	2 bit 2.001	✓	✓	✓	-

Continuation:

No.	Object name	Function	Length DPT	Flags			
				C	R	W	T
48	*Channel C3*	*Dimming value limit*	1 byte 5.001	✓	✓	✓	-
49	*Channel C3*	*Feedback On/Off*	1 bit 1.001	✓	✓	-	✓
50	*Channel C3*	*Feedback in %*	1 byte 5.001	✓	✓	-	✓
51	*Channel C3*	*Time to next service*	2 byte 7.001	✓	✓	✓	✓
	Channel C3	*Operating hours feedback*	2 byte 7.001	✓	✓	✓	✓
52	*Channel C3*	*Service required*	1 bit 1.001	✓	✓	-	✓
53	*Channel C3*	*Reset service*	1 bit 1.001	✓	✓	✓	-
	Channel C3	*Reset operating hours*	1 bit 1.001	✓	✓	✓	-
54	*Channel C3*	*General error message*	1 bit 1.001	✓	✓	-	✓
55	*Channel C3*	*Short circuit message*	1 bit 1.001	✓	✓	-	✓
56	*Channel C3*	*Excess temperature message*	1 bit 1.001	✓	✓	-	✓
57	*Channel C3*	*Mains power failure*	1 bit 1.001	✓	✓	-	✓
58	*Channel C3*	*Load type message (R, C/L)*	1 bit 1.001	✓	✓	-	✓
60	*Channel C4*	*Switching ON/OFF*	1 bit 1.001	✓	✓	✓	-
61	*Channel C4*	*Brighter/darker*	4 bit 3.007	✓	✓	✓	-
62	*Channel C4*	*Dimming value*	1 byte 5.001	✓	-	✓	-
63	*Channel C4*	*Soft switching*	1 bit 1.001	✓	✓	✓	-
64	*Channel C4*	*Block*	1 bit 1.001	✓	✓	✓	-
65	*Channel C4*	*Call up/save scenes*	1 byte 17.001	✓	✓	✓	-
66	*Channel C4*	*Enable scenes = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C4	*Block scenes = 1*	1 bit 1.001	✓	✓	✓	-

Continuation:

No.	Object name	Function	Length DPT	Flags			
				C	R	W	T
67	*Channel C4*	*Force = 0*	1 bit 1.001	✓	✓	✓	-
	Channel C4	*Force = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C4	*Dimming value with force*	1 byte 5.001	✓	✓	✓	-
	Channel C4	*Force*	2 bit 2.001	✓	✓	✓	-
68	*Channel C4*	*Dimming value limit*	1 byte 5.001	✓	✓	✓	-
69	*Channel C4*	*Feedback On/Off*	1 bit 1.001	✓	✓	-	✓
70	*Channel C4*	*Feedback in %*	1 byte 5.001	✓	✓	-	✓
71	*Channel C4*	*Time to next service*	2 byte 7.001	✓	✓	✓	✓
	Channel C4	*Operating hours feedback*	2 byte 7.001	✓	✓	✓	✓
72	*Channel C4*	*Service required*	1 bit 1.001	✓	✓	-	✓
73	*Channel C4*	*Reset service*	1 bit 1.001	✓	✓	✓	-
	Channel C4	*Reset operating hours*	1 bit 1.001	✓	✓	✓	-
74	*Channel C4*	*General error message*	1 bit 1.001	✓	✓	-	✓
75	*Channel C4*	*Short circuit message*	1 bit 1.001	✓	✓	-	✓
76	*Channel C4*	*Excess temperature message*	1 bit 1.001	✓	✓	-	✓
77	*Channel C4*	*Mains power failure*	1 bit 1.001	✓	✓	-	✓
78	*Channel C4*	*Load type message (R, C/L)*	1 bit 1.001	✓	✓	-	✓
79	*Channel C1-C4*	*Manual*	1 bit 1.001	✓	✓	✓	✓
80	*Channel C5*	*Switching ON/OFF*	1 bit 1.001	✓	✓	✓	-
81	*Channel C5*	*Brighter/darker*	4 bit 3.007	✓	✓	✓	-
82	*Channel C5*	*Dimming value*	1 byte 5.001	✓	-	✓	-

Continuation:

No.	Object name	Function	Length DPT	Flags			
				C	R	W	T
83	*Channel C5*	*Soft switching*	1 bit 1.001	✓	✓	✓	-
84	*Channel C5*	*Block*	1 bit 1.001	✓	✓	✓	-
85	*Channel C5*	*Call up/save scenes*	1 byte 17.001	✓	✓	✓	-
86	*Channel C5*	*Block scenes = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C5	*Enable scenes = 1*	1 bit 1.001	✓	✓	✓	-
87	*Channel C5*	*Force = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C5	*Force = 0*	1 bit 1.001	✓	✓	✓	-
	Channel C5	*Dimming value with force*	1 byte 5.001	✓	✓	✓	-
	Channel C5	*Force*	2 bit 2.001	✓	✓	✓	-
88	*Channel C5*	*Dimming value limit*	1 byte 5.001	✓	✓	✓	-
89	*Channel C5*	*Feedback On/Off*	1 bit 1.001	✓	✓	-	✓
90	*Channel C5*	*Feedback in %*	1 byte 5.001	✓	✓	-	✓
91	*Channel C5*	*Time to next service*	2 byte 7.001	✓	✓	✓	✓
	Channel C5	*Operating hours feedback*	2 byte 7.001	✓	✓	✓	✓
92	*Channel C5*	*Service required*	1 bit 1.001	✓	✓	-	✓
93	*Channel C5*	*Reset service*	1 bit 1.001	✓	✓	✓	-
	Channel C5	*Reset operating hours*	1 bit 1.001	✓	✓	✓	-
94	*Channel C5*	*General error message*	1 bit 1.001	✓	✓	-	✓
95	*Channel C5*	*Short circuit message*	1 bit 1.001	✓	✓	-	✓
96	*Channel C5*	*Excess temperature message*	1 bit 1.001	✓	✓	-	✓
97	*Channel C5*	*Mains power failure*	1 bit 1.001	✓	✓	-	✓

Continuation:

No.	Object name	Function	Length DPT	Flags			
				C	R	W	T
98	*Channel C5*	*Load type message (R, C/L)*	1 bit 1.001	✓	✓	-	✓
100	*Channel C6*	*Switching ON/OFF*	1 bit 1.001	✓	✓	✓	-
101	*Channel C6*	*Brighter/darker*	4 bit 3.007	✓	✓	✓	-
102	*Channel C6*	*Dimming value*	1 byte 5.001	✓	-	✓	-
103	*Channel C6*	*Soft switching*	1 bit 1.001	✓	✓	✓	-
104	*Channel C6*	*Block*	1 bit 1.001	✓	✓	✓	-
105	*Channel C6*	*Call up/save scenes*	1 byte 17.001	✓	✓	✓	-
106	*Channel C6*	*Enable scenes = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C6	*Block scenes = 1*	1 bit 1.001	✓	✓	✓	-
107	*Channel C6*	*Force = 0*	1 bit 1.001	✓	✓	✓	-
	Channel C6	*Force = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C6	*Dimming value with force*	1 byte 5.001	✓	✓	✓	-
	Channel C6	*Force*	2 bit 2.001	✓	✓	✓	-
108	*Channel C6*	*Dimming value limit*	1 byte 5.001	✓	✓	✓	-
109	*Channel C6*	*Feedback On/Off*	1 bit 1.001	✓	✓	-	✓
110	*Channel C6*	*Feedback in %*	1 byte 5.001	✓	✓	-	✓
111	*Channel C6*	*Time to next service*	2 byte 7.001	✓	✓	✓	✓
	Channel C6	*Operating hours feedback*	2 byte 7.001	✓	✓	✓	✓
112	*Channel C6*	*Service required*	1 bit 1.001	✓	✓	-	✓
113	*Channel C6*	*Reset service*	1 bit 1.001	✓	✓	✓	-
	Channel C6	*Reset operating hours*	1 bit 1.001	✓	✓	✓	-

Continuation:

No.	Object name	Function	Length DPT	Flags			
				C	R	W	T
114	*Channel C6*	*General error message*	1 bit 1.001	✓	✓	-	✓
115	*Channel C6*	*Short circuit message*	1 bit 1.001	✓	✓	-	✓
116	*Channel C6*	*Excess temperature message*	1 bit 1.001	✓	✓	-	✓
117	*Channel C6*	*Mains power failure*	1 bit 1.001	✓	✓	-	✓
118	*Channel C6*	*Load type message (R, C/L)*	1 bit 1.001	✓	✓	-	✓
120	*Channel C7*	*Switching ON/OFF*	1 bit 1.001	✓	✓	✓	-
121	*Channel C7*	*Brighter/darker*	4 bit 3.007	✓	✓	✓	-
122	*Channel C7*	*Dimming value*	1 byte 5.001	✓	-	✓	-
123	*Channel C7*	*Soft switching*	1 bit 1.001	✓	✓	✓	-
124	*Channel C7*	*Block*	1 bit 1.001	✓	✓	✓	-
125	*Channel C7*	*Call up/save scenes*	1 byte 17.001	✓	✓	✓	-
126	*Channel C7*	*Block scenes = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C7	*Enable scenes = 1*	1 bit 1.001	✓	✓	✓	-
127	*Channel C7*	*Force = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C7	*Force = 0*	1 bit 1.001	✓	✓	✓	-
	Channel C7	*Dimming value with force*	1 byte 5.001	✓	✓	✓	-
	Channel C7	*Force*	2 bit 2.001	✓	✓	✓	-
128	*Channel C7*	*Dimming value limit*	1 byte 5.001	✓	✓	✓	-
129	*Channel C7*	*Feedback On/Off*	1 bit 1.001	✓	✓	-	✓
130	*Channel C7*	*Feedback in %*	1 byte 5.001	✓	✓	-	✓
131	*Channel C7*	*Time to next service*	2 byte 7.001	✓	✓	✓	✓
	Channel C7	*Operating hours feedback*	2 byte 7.001	✓	✓	✓	✓

Continuation:

No.	Object name	Function	Length DPT	Flags			
				C	R	W	T
132	*Channel C7*	*Service required*	1 bit 1.001	✓	✓	-	✓
133	*Channel C7*	*Reset service*	1 bit 1.001	✓	✓	✓	-
	Channel C7	*Reset operating hours*	1 bit 1.001	✓	✓	✓	-
134	*Channel C7*	*General error message*	1 bit 1.001	✓	✓	-	✓
135	*Channel C7*	*Short circuit message*	1 bit 1.001	✓	✓	-	✓
136	*Channel C7*	*Excess temperature message*	1 bit 1.001	✓	✓	-	✓
137	*Channel C7*	*Mains power failure*	1 bit 1.001	✓	✓	-	✓
138	*Channel C7*	*Load type message (R, C/L)*	1 bit 1.001	✓	✓	-	✓
140	*Channel C8*	*Switching ON/OFF*	1 bit 1.001	✓	✓	✓	-
141	*Channel C8*	*Brighter/darker*	4 bit 3.007	✓	✓	✓	-
142	*Channel C8*	*Dimming value*	1 byte 5.001	✓	-	✓	-
143	*Channel C8*	*Soft switching*	1 bit 1.001	✓	✓	✓	-
144	*Channel C8*	*Block*	1 bit 1.001	✓	✓	✓	-
145	*Channel C8*	*Call up/save scenes*	1 byte 17.001	✓	✓	✓	-
146	*Channel C8*	*Enable scenes = 1*	1 bit 1.001	✓	✓	✓	-
146	*Channel C8*	*Block scenes = 1*	1 bit 1.001	✓	✓	✓	-
147	*Channel C8*	*Force = 0*	1 bit 1.001	✓	✓	✓	-
	Channel C8	*Force = 1*	1 bit 1.001	✓	✓	✓	-
	Channel C8	*Dimming value with force*	1 byte 5.001	✓	✓	✓	-
	Channel C8	*Force*	2 bit 2.001	✓	✓	✓	-
148	*Channel C8*	*Dimming value limit*	1 byte 5.001	✓	✓	✓	-
149	*Channel C8*	*Feedback On/Off*	1 bit 1.001	✓	✓	-	✓

Continuation:

No.	Object name	Function	Length DPT	Flags			
				C	R	W	T
150	*Channel C8*	*Feedback in %*	1 byte 5.001	✓	✓	-	✓
151	*Channel C8*	*Time to next service*	2 byte 7.001	✓	✓	✓	✓
	Channel C8	*Operating hours feedback*	2 byte 7.001	✓	✓	✓	✓
152	*Channel C8*	*Service required*	1 bit 1.001	✓	✓	-	✓
153	*Channel C8*	*Reset service*	1 bit 1.001	✓	✓	✓	-
	Channel C8	*Reset operating hours*	1 bit 1.001	✓	✓	✓	-
154	*Channel C8*	*General error message*	1 bit 1.001	✓	✓	-	✓
155	*Channel C8*	*Short circuit message*	1 bit 1.001	✓	✓	-	✓
156	*Channel C8*	*Excess temperature message*	1 bit 1.001	✓	✓	-	✓
157	*Channel C8*	*Mains power failure*	1 bit 1.001	✓	✓	-	✓
158	*Channel C8*	*Load type message (R, C/L)*	1 bit 1.001	✓	✓	-	✓
159	*Channel C5-C8*	*Manual*	1 bit 1.001	✓	✓	✓	✓
231	*Central permanent ON*	*ON/OFF*	1 bit 1.001	✓	✓	✓	✓
232	*Central permanent OFF*	*ON/OFF*	1 bit 1.001	✓	✓	✓	✓
233	*Central switching*	*ON/OFF*	1 bit 1.001	✓	✓	✓	✓
234	*Central scenes*	*Call up/save*	1 byte 5.001	✓	✓	✓	✓
250	*Version of bus coupling unit*	*Send*	14 byte 16.001	✓	✓	-	✓
251	*Firmware version 1*	*Send*	14 byte 16.001	✓	✓	-	✓
252	*Firmware version 2*	*Send*	14 byte 16.001	✓	✓	-	✓

Table 4: GDA-8K KNX, overview of channel-related objects

C1	C2	C3	C4	C5	C6	C7	C8
0	20	40	60	80	100	120	140
1	21	41	61	81	101	121	141
2	22	42	62	82	102	122	142
3	23	43	63	83	103	123	143
4	24	44	64	84	104	124	144
5	25	45	65	85	105	125	145
6	26	46	66	86	106	126	146
7	27	47	67	87	107	127	147
8	28	48	68	88	108	128	148
9	29	49	69	89	109	129	149
10	30	50	70	90	110	130	150
11	31	51	71	91	111	131	151
12	32	52	72	92	112	132	152
13	33	53	73	93	113	133	153
14	34	54	74	94	114	134	154
15	35	55	75	95	115	135	155
16	36	56	76	96	116	136	156
17	37	57	77	97	117	137	157
18	38	58	78	98	118	138	158

Table 5: GDA-4K KNX, overview of channel-related objects

C1	C2	C3	C4
0	20	40	60
1	21	41	61
2	22	42	62
3	23	43	63
4	24	44	64
5	25	45	65
6	26	46	66
7	27	47	67
8	28	48	68
9	29	49	69
10	30	50	70
11	31	51	71
12	32	52	72
13	33	53	73
14	34	54	74
15	35	55	75
16	36	56	76
17	37	57	77
18	38	58	78

3.3 Description of objects

- **Object 0 "Switching ON/OFF"**

1 = Switch on load.
0 = Switch off load.
See also: Parameter *Switch-on value*.

- **Object 1** *"Brighter/darker"*

This object is actuated with 4-bit telegrams (DPT 3,007 Control Dimming).
This function can be used to dim the light up or down
in increments.
In the standard application, telegrams are sent with 64 increments.
IMPORTANT: The response to 4-bit telegrams depends on the
“Switching On/Off with a 4-bit telegram” parameter.
See appendix: 4-bit telegrams (brighter/darker)

- **Object 2** *"Dimming value"*

This object can be used to select the desired dimmer setting directly.
Format: 1 byte percentage value EIS 2 dimming, value.
0 = 0%
255 = 100%

- **Object 3** *"Soft switching"*

A “1” on this object starts a soft switching cycle, i.e.:
The brightness is gradually increased, starting from the minimum brightness.
The dimming value remains constant for the programmed time and is then gradually reduced after this time has elapsed.
Once the programmed minimum brightness has been reached, the dimming value is reset to 0%.
The cycle can be extended or prematurely terminated via telegrams

This sequence can also be controlled using a **time switch** if the "*Time between soft ON and soft OFF*" parameter is set to "*Until soft OFF telegram*".
The dimming cycle is then started with a “1” and finished with a “0”.

See appendix: Use of the soft switch function

- **Object 4** *"Block"*

Responses to setting and cancelling the block can be configured if the block function has been activated (parameter page *Channel C1/C2 Configuration options*).
The block only applies when the object is received, i.e. with *Block with OFF telegram* the channel is not blocked after restoration of the bus supply.
If the parameter *Behaviour when setting the block = no reaction*, a running soft-switch process will not be interrupted.

- **Object 5** *"Call up/save scenes"*

Only available if the scene function has been activated (*Configuration options* parameter page).

This object can be used to save and subsequently call up scenes.
Saving stores the dimming value of the channel.
It does not matter how this dimming value is produced (whether via switch commands, central objects or the buttons on the device).
The saved dimming value is reestablished when it is called up.

All scene numbers from 1 to 63 are supported.
Each channel can participate in up to 8 scenes.

See appendix: Scenes

- **Object 6** *"Block scenes = 1, enable scenes = 1"*

Blocks the scene function with a 1 or a 0 depending on the configuration.
As long as it is blocked, scenes cannot be saved or called up.

- **Object 7** *"Force = 1" / "Force = 0" / "dimming value during force"*

The function of the force object can be configured as a 1-bit, 2-bit or 1-byte object.

Table 6

Format of force object	Force		Response with force	
	Trigger with	End with	Start	End
1 bit	1 or 0 (configurable)	0 or 1 (configurable)	configurable in the application program	
2 bit	Force On = 3 Force Off = 2	Deactivate force = 0 or 1	configurable in the application program.	The last dimming value before force is restored
1 byte	1-100%	0	The triggering telegram also acts simultaneously as a force dimming value	The last dimming value before force is restored

- **Object 8** *"Dimming value limit"*

The value received will be configured as the maximum configurable dimming value.
Its range of applicability is defined on the Dimming value restrictions parameter page.

- **Object 9** *"Feedback On/Off"*

Sends the current dimming status:
1 = current dimming value is between 1% and 100%
0 = current dimming value is 0%

- **Object 10** *"Feedback in %"*

Sends the new dimming value after a change as soon as a dimming process is completed, i.e. once the new set point value has been reached.
Format: 1 byte, 0 ... 255 i.e. 0 ... 100%

- **Object 11** *"Operating hours feedback", "Time to next service"*

Only available if the operating hours counter function has been activated
(*Configuration options* parameter page).
Reports, depending on selected *Type of operating hours counter* (*Operating hours counter and service* parameter page), either the remaining period to the next set service or the current status of the operating hours counter.

- **Object 12** *"Service required"*

Only available if the hour counter function has been activated
(*Configuration options* parameter page) and *Type of hour counter = Counter for time to next service*.

Reports if the next service is due.
0 = not due
1 = service is due.

- **Object 13** *"Reset operating hours", "Reset Service"*

Only available if the operating hours counter function has been activated
(*Configuration options* parameter page).

- **Object 14** *"General error message"*

Used as a malfunction signal:
0 = no error
1 = an error has been detected

This message can, for example, be displayed on a screen

- **Object 15** *"Short circuit message"*

0 = OK
1 = Short circuit at dimmer output:
Check connected lines and load.

→ If there is a short circuit, both status LEDs of the channel will flash.

- **Object 16** *"Excess temperature message"*

0 = OK
1 = the dimmer is overloaded:
- connected power is too high,
- ambient temperature is too high,
- incorrect installation position, i.e. device cannot dissipate the heat

→ If there is excess temperature, the lower status LED of the channel will flash.

- **Object 17** *"Mains power failure"*

0 = OK
1 = No mains voltage available:
Mains failure or defective hardware.

- **Object 18 "***Load type message (R/C, L)"*

Currently selected load type feedback.
0 = leading edge (L load connected), conventional transformers
1 = trailing edge (R-, C-load connected), electronic transformers or incandescent lamp load

- **Objects 79 and 159** *"Channel C1-C4 - Manual" or "Channel C5-C8 - Manual"*

Put the respective channels in manual mode or sends the status of the manual *operation*.

Table 7

Telegram	Meaning	Explanation
0	Auto	All channels can be operated via the bus as well as via the buttons.
1	Manual	The channels can only be operated via the buttons on the device. Bus telegrams will not work. Any time-based functions that are running (e.g. soft switching) will be terminated.

The duration of the manual mode, i.e. the *function of the manual button* is adjustable on the *General* parameter page.

After manual operation has been cancelled, already received bus events will not be executed again.
The "Manual" state will be reset in the event of a mains failure.

- **Object 231** *"Central permanent ON"*

Central switch-on function.
Enables simultaneous switching on of all channels with one single telegram.
0 = No function
1 = Permanent ON

Participation in this object can be set individually for each channel
(see *Configuration options* parameter page).

IMPORTANT:
This object takes top priority.
As long as it is set, the other switch commands will not work on the participating channels.

- **Object 232** *"Central permanent OFF"*

Central switch-off function.
Enables simultaneous switching off of all channels with one single telegram.
0 = No function
1 = Permanent OFF

Participation in this object can be set individually for each channel

IMPORTANT: This object has the second highest priority after *Central permanent ON*. As long as it is set, the other switch commands will not work on the participating channels.

- **Object 233** *"Central switching"*

Central switch function.
Enables simultaneous switching on or off of all channels with one single telegram.
0 = OFF
1 = ON
Participation in this object can be set individually for each channel
(see *Configuration options* parameter page).
With this object, every participating channel responds exactly as if its 1st object
(i.e. obj. 0, 20, 40, etc.) were receiving a switch command.

- **Object 234** *"Call up/save central scenes"*

This object can be used to save and subsequently call up "scenes".
When saving, the current status of the dimming channel will be stored, regardless of how the status was brought about (via dimming values, switch commands, central objects or the manual buttons).
The saved status is thus restored when called up.
Each channel can participate in a maximum of 8 scenes.

See appendix: Scenes

- **Objects 235-249**

Not used.

- **Object 250** *"Version of bus coupling unit"*

For diagnostic purposes only.

Sends the software version of the internal bus coupling unit after reset or download.
Can also be read out via the ETS.

Format: **A**xx **H**yy **V**zzz

Code	Meaning
xx	00 .. FF = Version of application without dividing point (10 = V1.0, etc.).
yy	Hardware version 00..99
zzz	Firmware version 000..999

EXAMPLE: A10 H00 V001
- ETS application version 1.0
- Hardware version $00
- Firmware version $001

- **Object 251, 252** *"Firmware version 1.2"*

For diagnostic purposes only.

Sends the firmware versions of the device after reset or download.
Can also be read out via the ETS.

The version is issued as an ASCII character string.
Format: **M**xx **H**yy **V**zzz

Code	Meaning
xx	16 = Module code for GDA-4K KNX and GDA-8K KNX (hexadecimal).
yy	Hardware version 00..99
zzz	Firmware version 000..999

EXAMPLE: M16 **H**00 **V**000
- Module $16 = GDA-4K KNX or GDA-8K KNX
- Hardware version V00
- Firmware version V000

3.4 Parameter

3.4.1 Parameter pages

GDA-4K KNX has 4, GDA-8K KNX has 8 identical channels.
A copy function per channel pair makes programming easier.

Table 8

Function	Description
General	Device type and central parameters.
Channel C1 ***Configuration options***	Characteristics of channel and activation of additional functions (soft switching, force, scenes, etc.).
Dimming response	Load selection, dimming times, dimming switch-on value, etc.
Dimming value limits	Scope of the limit.
Soft switching	Brightness/dimming value and time settings for soft switching.
Block function	Type of block telegram and response to blocking.
Force	Response in forced operation.
Scenes	Selection of scene numbers relevant to the channel.
Feedback	Format of the feedback objects and cyclical transmission time.
Hour counter and service	Type of hour counter and, if required, service interval etc.
Power failure and restoration	Behaviour during mains or bus failure and restoration.
Diagnostic messages	Activate transmission of the diagnostic and error messages.

3.4.2 General

Table 9

Designation	Values	Description
Device type	*GDA-4K KNX* *GDA-8K KNX*	4 channel dimmer 8 channel dimmer
Manual operation of the channels	***enabled*** *blocked*	The channels can be operated via the buttons on the device. No manual operation, the buttons on the device are blocked..
Function of the manual button	*applies for 24 hours or until reset via object* *blocked* ***applies until reset via object*** *applies for 30 minutes or until reset via object* *applies for 1 hour or until reset via object* *applies for 2 hours or until reset via object* *applies for 4 hours or until reset via object* *applies for 8 hours or until reset via object* *applies for 12 hours or until reset via object*	Determines how long the device works manually and how this is ended. In manual mode, the channels can only be switched on and off via the buttons on the device. See also: Object 79.

3.4.3 Channel C1: Configuration options

The channels can be copied in pairs or switched in parallel.
The channel pairs are: C1-C2, C3-C4, C5-C6, C7-C8.
Thus, the *Copy main parameters from channel C1* setting is 4 times available and always acts on the corresponding channel pair only.

Table 10

Designation	Values	Description
Copy main parameters from channel C1 *(or copy main parameters from channel C3, C5, C7)*		Only for C2, C4, C6, C8.
	no	Both channels can be configured completely separately from one another.
	yes	C2 is operated automatically with the same settings as C1 (or as the other channel of the pair). Only forced operation, scenes, hour counter and diagnostic messages remain individually configurable.
	yes, channel C2 boosts channel C1	Channel C2 is wired in parallel with C1 and serves only as an output amplifier.
Adjust dimming value limits	***no***	The standard values apply: *Implement limit when executing the object* = no *Limit applies for:* *- Soft switching,* *- absolute dimming,* *- relative dimming,* *- switch command* = no
	yes..	The page *Dimming value restrictions* will be shown and all parameters can be adjusted individually.

Continuation:

Designation	*Values*	Description
Adjust soft switching	***no***	The standard values apply: *- Time for Soft ON = 1 min* *- Dimming value after Soft ON = 100%* *- Time between Soft ON and Soft OFF = 5 min* *- Time for Soft OFF = 1 min*
	yes..	The page *Soft switching* will be shown and all parameters can be adjusted individually.
Adjust block function	***no***	The standard values apply: *- Block with ON telegram* *- Behaviour when setting the block = 10%* *- Behaviour when cancelling the block = update*
	yes..	The page *Block function* will be shown and all parameters can be adjusted individually.
Activate force function	***no***	No force function.
	yes..	The page *Force function* will be shown.
Activate scenes	***no***	Do not use scenes.
	yes..	The *Scenes* will be shown
Participation in central objects	***no***	Central objects are not taken into account.
	yes: in all central objects *only in central permanent ON* *only in central permanent OFF* *only in central switching* *only in central switching and permanent ON* *only in central switching and permanent OFF* *only in central permanent On and permanent OFF*	Which central objects are to be taken into account? Central objects enable simultaneous switching on and off of several channels with one single object.

Continuation:

Designation	*Values*	Description
Adjust feedback	***no***	The standard values apply: - Format of 1-bit feedback = not inverted - Send 1-bit feedback cyclically = no - Send 8-bit feedback: = only after ending dimming process. - Send 8-bit feedback cyclically = no - Time for cyclical transmission of feedback = 60 min
	yes..	The page *Feedback* will be shown, and all parameters can be adjusted individually.
Activate hour counter	***no***	No hour counter.
	yes..	The page *Hour counter* will be shown.
Activate diagnostic messages	***no***	no diagnostic messages
	yes..	The page *Diagnostic messages* will be shown.

3.4.4 Dimming response

Table 11

Designation	Values	Description
Load selection	***automatic***	The dimmer detects what type of load is connected and automatically selects the appropriate dimming strategy (leading edge or trailing edge).
	RC load (incandescent lamps, electronic transformers)	Phase control for resistive and capacitive loads (LED lamps, incandescent lamps, halogen high-voltage lamps etc.). For electronic transformers/power units designated for use with RC mode dimmers (trailing edge phase ctrl.). **Note:** When selecting RC mode, a load detection will always be performed as a precaution. This should prevent the dimmer from being damaged (e.g. wound transformer) when an L-load is connected. The RC mode (trailing edge control) is actually only used when no L-load is detected.
	L-load (wound transformers)	Leading edge control for inductive loads, e.g. wound transformers, but also leading edge LED lamps. **Not** suitable for electronic transformers, can lead to a dimmer overload.
	Dimmable energy-saving lamps with RC response	Generally recommended for ESL, especially for high loads (advantage: less heat generated in the dimmer)

Continuation:

Designation	Values	Description
Load selection (continuation)	*Dimmable energy-saving lamps with L response*	With ESL, only use if a disruptive flickering is noted when dimming up or down. See appendix: Dimming energy-saving lamps (ESL)
	Fan (soft switching deactivated)	Special mode for fans, with configurable start-up time (see below).
	LEDs (RC, 0-90%)	Only for LED lights that cannot be dimmed down at 100% (trailing edge control).
	Reserve 2 … *Reserve 32*	**Do not use.**
Start-up time	*2-60 s*	Only with *Load selection = fan*. Time for which the fan must be driven with full voltage, until it has reached a specific speed.
Minimum dimming value	*1%, 5%,* ***10%****,* *15%, 20%, 25%, 30%* *35%, 40%, 45%, 50%*	Minimum dimming value for all dimming processes (except 0%). Any values (switch-on dimming value, response to bus failure, etc.) which are below this threshold are increased to the minimum dimming value.
Dimming time 1 from 0% to 100%	*1 s, 2 s,* ***4 s*** *6 s, 8 s, 12 s,* *15 s, 24 s, 30 s, 60 s*	This parameter defines the maximum dimming speed from 0 to 100%
Dimming time 2 from 0% to 100%	*1 s, 2 s, 4 s* *6 s,* ***8 s****, 12 s,* *15 s, 24 s, 30 s, 60 s*	For greater flexibility 3 different values can be specified. (see below).
Dimming time 3 from 0% to 100%	*1 s, 2 s, 4 s* *6 s, 8 s,* ***12 s****,* *15 s, 24 s, 30 s, 60 s*	
Behaviour when receiving a switch command (1-bit)	*immediate on*	The change from 0% to 100% or 100% to 0% takes place within max. 1 s.
	soft on with dimming time 1 *soft on with dimming time 2* *soft on with dimming time 3*	The change from 0% to 100% or 100% to 0% takes place within the preset dimming time.

Continuation:

Designation	*Values*	Description
Behaviour when receiving a dimming command (4-bit)	*immediate on*	The change from 0% to 100% or 100% to 0% takes place within max. 1 s (in very quick increments), but can be interrupted by a stop command (release button).
	soft on with dimming time 1 *soft on with dimming time 2* *soft on with dimming time 3*	The change from 0% to 100% or 100% to 0% takes place within the preset dimming time in correspondingly lower increments.
Behaviour when receiving an absolute value (8-bit)	*immediate on*	The received dimming value is adopted immediately (max. delay 1 s).
	soft on with dimming time 1 *soft on with dimming time 2* *soft on with dimming time 3*	The change from the new dimming value takes place within the preset dimming time proportionately to the change in value. Example with dimming time 1 = 12 s: Change from: - 0 to 100% or 100 to 0% in 12 s (= 100% of 12 s) - 25 to 50% or 50 to 25% in 3 s (= 25% of 12 s) etc.
Switch-on value (1 bit)	***Value before previous switch-off***	The last dimming value before switching off is saved and restored.
	minimum value	The configured minimum brightness is applied.
	100% *10%, 20%, 30%* *40%, 50%, 60%* *70%, 80%, 90%*	The dimmer adopts the selected value after it is switched on. Here again the configured minimum dimming value needs to be taken into account.

Continuation:

Designation	*Values*	Description
Switching on/off with a 4-bit dim telegram		Defines the response if the channel is switched off and a 4-bit telegram (brighter/darker) is received. See appendix: 4-bit telegrams (brighter/darker).
	no	Channel status remains unchanged.
	yes	Channel is switched on and dimmed or switched off.

3.4.5 Dimming value limits

The dimming value can be temporarily restricted via Object 8 *Brightness restriction*. This is used, for example, to ensure that basic lighting is not exceeded at night, while during the evening the full range of lighting can be used.

The function is implemented as follows:
If the object value = 0, the dimming value is not restricted.
If the object value is greater than 0, then this value indicates the limits for the dimming value.
If the object value is smaller than the configured minimum dimming value, then the brightness is restricted to this minimum dimming value.
If the restriction is removed, the dimming value continues to remain restricted until a new dimming command is received.
During the restriction, the Soft ON and Soft OFF times are adjusted in such a way that the speed of the change in brightness remains the same as if there were no restrictions.

Table 12

Designation	Values	Description
Perform limit in describing object	***no***	Limit not applied till next dimming process.
	yes	Limit the dimming value as soon as a value is received on the dimming value limit object (Obj. 8, 28..).
Limit applies to switch command (1-bit)	***no***	No limit during switch commands.
	yes	Limit is effective.
Limit applies to relative dimming (4-bit)	***no***	No restriction during brighter/darker commands.
	yes	Limit is effective.
Limit applies to absolute dimming (8-bit)	***no***	No limit for percentage value telegrams.
	yes	Limit is effective.
Limit applies to soft switching	***no***	No limit for soft switching
	yes	Limit is effective.

3.4.6 Soft switching

Table 13

Designation	Values	Description
Time for Soft ON	*0 s, 1 s , 2 s, 4 s* *6 s, , 8 s, 12 s, 15 s* *24 s, 30 s, 45 s,* ***1 min*** *2 min, 3 min, 4 min, 5 min* *6 min, 7 min, 8 min, 9 min* *10 min, 12 min, 15 min, 20 min* *30 min, 40 min, 50 min, 60 min*	Duration of the dimming-up phase (t1) for Soft switching (see appendix). 0 sec. = switch on immediately. **IMPORTANT**: See appendix for further details: Retriggering and premature switch off
Dimming value after Soft ON	*10%, 20%, 30%* *40%, 50%, 60%,* *70%, 80%, 90%,* ***100%***	Final value at the end of the Soft on phase (val) Note: Here again the configured minimum dimming value needs to be taken into account.
Time between Soft ON and Soft OFF	*until Soft OFF telegram* *1 s, 2 s, 3 s, 4 s* *5 s, 6 s, 7 s, 8 s, 9 s* *10 s, 15 s, 20 s, 30 s* *40 s, 50 s, 1 min, 2 min* *3 min, 4 min,* ***5 min****, 6 min* *7 min, 8 min, 9 min, 10 min* *12 min, 15 min, 20 min, 30 min* *40 min, 50 min, 60 min*	No time restriction; Soft OFF phase is initiated by a telegram. Delay (t2) until the start of the Soft OFF phase
Time for Soft OFF	*0 s, 1 s , 2 s, 4 s* *6 s, , 8 s, 12 s, 15 s* *24 s, 30 s, 45 s,* ***1 min*** *2 min, 3 min, 4 min, 5 min* *6 min, 7 min, 8 min, 9 min* *10 min, 12 min, 15 min, 20 min* *30 min, 40 min, 50 min, 60 min*	Duration of the Soft OFF phase (t3). 0 sec. = switch off immediately **IMPORTANT**: See appendix for further details: Retriggering and premature switch off

3.4.7 Block function

Table 14

Designation	Values	Description
Block telegram	***Block with ON telegram***	0 = Cancel block 1 = Block
	Block with OFF telegram	0 = Block 1 = Cancel block **Note:** The block is always deactivated after reset.
Response when setting the block	*no change*	No response.
	100% *0%, **10%**, 20%, 30%* *40%, 50%, 60%,* *70%, 80%, 90%*	Dim to the set value
Response when cancelling the block	*no change*	No response.
	Update	If a telegram was received during the block: Apply state. Otherwise: restore state before the block.
	100%, 0%,10%, 20%, 30% *40%, 50%, 60%,* *70%, 80%, 90%*	Dim to the set value

3.4.8 Force

Table 15

Designation	Values	Description
Format of force object	***1 bit***	Force is triggered by: Switch telegram.
	2 bit	Priority telegram.
	1 byte (%)	Dimming value.
1 bit		
Activate force function with	***1***	Recommended.
	0	After reset/download, forced operation is already activated and must be cancelled if necessary.
Behaviour at start of force	***no change***	Response to the receipt of a force telegram. Here again the configured minimum dimming value needs to be taken into account.
	minimum dimming value	
	100%	
	OFF	
	10%, 20%, 30%	
	40%, 50%, 60%	
	70%, 80%, 90%	
Behaviour at end of force	*update*[11]	Response to cancellation of force. Here again the configured minimum dimming value needs to be taken into account.
	Value before force	
	minimum dimming value	
	100%	
	OFF	
	10%, 20%, 30%	
	40%, 50%, 60%	
	70%, 80%, 90%	
2 bit		
Response with force ON	***no change***	Response to the receipt of a force telegram. Here again the configured minimum dimming value needs to be taken into account.
	minimum dimming value	
	100%	
	OFF	
	10%, 20%, 30%	
	40%, 50%, 60%	
	70%, 80%, 90%	
Response with force OFF	*OFF*	-

[11] *4-bit commands received during the force (brighter/darker) will not be considered.*
Soft ON and Soft OFF processes will be aborted.

Continuation:

Designation	Values	Description
Behaviour at end of force	*update*[12] ***Value before force*** *minimum dimming value* *100%* *OFF* *10%, 20%, 30%* *40%, 50%, 60%* *70%, 80%, 90%*	Response to cancellation of force Here again the configured minimum dimming value needs to be taken into account.
1 byte (%)		
Behaviour at end of force	*update*[13] ***Value before force*** *minimum dimming value* *100%* *OFF* *10%, 20%, 30%* *40%, 50%, 60%* *70%, 80%, 90%*	Response to cancellation of force Here again, the configured minimum dimming value needs to be taken into account.

[12] 4-bit commands received during the force (brighter/darker) will not be considered. Soft ON and Soft OFF processes will be aborted.

[13] 4-bit commands received during the force (brighter/darker) will not be considered. Soft ON and Soft OFF processes will be aborted.

3.4.9 Scenarios

This page appears when the *Scenes* are activated on the *Configuration options* parameter page.
Each channel can participate in up to 8 scenes.
Scene numbers 1-63 are permitted.

Table 16

Designation	Values	Description
Block telegram for scenes	***Block with ON telegram***	0 = Cancel block 1 = Block
	Block with OFF telegram	0 = Block 1 = Cancel block **Note:** The block is always deactivated after reset.
All channel scene statuses	***Overwrite on download***	A download deletes all scene memories in a channel, i.e. all previously taught-in scenes. When a scene number is called, the channel assumes the configured *Status after download* (see below). See appendix: Entering scenes without telegrams
	Unchanged after download	All previously taught-in scenes are saved. However, the scene numbers the channel should react to can be changed (see below: *Channel reacts to*).
Participation in central scene object	***No*** *yes*	Should the device react to the central scene object?
Channel reacts to	*No scene number* ***Scene number 1*** *Scene number 63*	First of the 8 possible scene numbers the channel is to react to.
Allocated dimming value	*Off* ***10%***, *20%, 30%* *40%, 50%, 60%,* *70%, 80%, 90%, 100%*	New dimming value to be assigned to the selected scene number. Only possible if the scene statuses are to be overwritten after download.

Continuation:

Designation	*Values*	Description
Permit teach in	*No* ***Yes***	Scenes can only be called up. The user can both call up and teach in or amend scenes.
Channel reacts to	*No scene number* *Scene number1* ***Scene number 2*** … *Scene number 63*	Second of the 8 possible scene numbers
Allocated dimming value	*Off* *10%, **20%**, 30%* *40%, 50%, 60%,* *70%, 80%, 90%, 100%*	See above.
Permit teach in	*No* ***Yes***	See above.
Channel reacts to	*No scene number* *Scene number1* … ***Scene number 3*** … *Scene number 63*	Third of the 8 possible scene numbers
Allocated dimming value	*Off* *10%, 20%, **30%*** *40%, 50%, 60%,* *70%, 80%, 90%, 100%*	See above.
Permit teach in	*No* ***Yes***	See above.
Channel reacts to	*No scene number* *Scene number1* … ***Scene number 4*** … *Scene number 63*	Fourth of the 8 possible scene numbers
Allocated dimming value	*Off* *10%, 20%, 30%* ***40%**, 50%, 60%,* *70%, 80%, 90%, 100%*	See above.
Permit teach in	*No* ***Yes***	See above.
Channel reacts to	*No scene number* *Scene number1* … ***Scene number 5*** … *Scene number 63*	Fifth of the 8 possible scene numbers

Continuation:

Designation	Values	Description
Allocated dimming value	*Off* *10%, 20%, 30%* *40%, **50%**, 60%,* *70%, 80%, 90%, 100%*	See above.
Permit teach in	*No* ***Yes***	See above.
Channel reacts to	*No scene number* *Scene number1* … ***Scene number 6*** … *Scene number 63*	Sixth of the 8 possible scene numbers
Allocated dimming value	*Off* *10%, 20%, 30%* *40%, 50%, **60%**,* *70%, 80%, 90%, 100%*	See above.
Permit teach in	*No* ***Yes***	See above.
Channel reacts to	*No scene number* *Scene number1* … ***Scene number 7*** … *Scene number 63*	Seventh of the 8 possible scene numbers
Allocated dimming value	*Off* *10%, 20%, 30%* *40%, 50%, 60%,* ***70%**, 80%, 90%, 100%*	See above.
Permit teach in	*No* ***Yes***	See above.
Channel reacts to	*No scene number* *Scene number1* … ***Scene number 8*** … *Scene number 63*	Last of the 8 possible scene numbers
Allocated dimming value	*Off* *10%, 20%, 30%* *40%, 50%, 60%,* *70%, **80%**, 90%, 100%*	See above.
Permit teach in	*No* ***Yes***	See above.

3.4.10 Feedback

Each channel has 2 feedback objects (e.g. Obj. 9 + 10, 29 + 30, etc.)

Table 17

Designation	Values	Description
Format of 1-bit feedback	***Not inverted***	Standard setting: 1-100% = 1 0% = 0
	inverted	1-100% = 0 0% = 1
Send 1-bit feedback cyclically	***no*** *yes*	Send at regular intervals?
Send 8-bit feedback	***only after ending dimming process***	Only send current dimming value when the new dimming value has been reached.
	every 10% *every 20%* *every 30%*	Send even during the dimming process
Send 8-bit feedback cyclically	***no*** *yes*	Send at regular intervals?
Time for cyclical transmission of feedback (if available)	*2 min, 3 min , 5 min* *10 min, 15 min, 20 min* *30 min, 45 min,* ***60 min***	At what interval? This setting applies for both feedback objects (1 and 8-bit)

3.4.11 Hour counter and service

This page appears when *Activate operating hours counter* is selected on the *Configuration options* parameter page.

Table 18

Designation	Values	Description
Type of hour counter	***Hour counter***	Forward counter for duty cycle of the channel.
	Counter for time period before next service	Backward counter for duty cycle of the channel.
Hour counter		
Reporting of operating hours when changing (0..100 h, 0 = no report)	*0..100* *Default value =* ***10***	At what interval is the current meter reading to be sent? Example: 10 = Send each time the meter reading increases by another 10 hours.
Report operating hours cyclically	***No*** *yes*	Send at regular intervals?
Time for cyclical transmission	*2 minutes, 3 minutes, 5 minutes, 10 minutes, 15 minutes, 20 minutes, 30 minutes, 45 minutes* ***60 Minutes***	At what interval?
Counter for time period before next service		
Service interval (0..2000, x10 h)	*0..2000* Default value = ***100***	Desired timescale between 2 services. Example: 10 = 10 x 10 h = 100 hours
Reporting of changes to time to service (0..100 h, 0 = no report)	*0..100* Default value = ***10***	At what interval is the current meter reading to be sent? Example: 10 = Send each time the meter reading decreases by another 10 hours.
Report time to service cyclically	***no*** *Yes*	Send **remaining** time to next service at regular intervals? → Object *Time to next service.*

Continuation:

Designation	Values	Description
Report service cyclically	***no*** *Yes*	Send **expiry** of time to next service at regular intervals? → Object *Service required.*
Time for cyclical transmission (time to service and service	*2 minutes, 3 minutes, 5 minutes, 10 minutes, 15 minutes, 20 minutes, 30 minutes, 45 minutes* ***60 Minutes***	At what interval?

3.4.12 Power failure and restoration

Table 19

Designation	Values	Description
Dimming value during download and bus failure	***same as before failure***	Restore status before download or maintain status before bus failure.
	100%, 0%, 10%, 20%, 30% 40%, 50%, 60% 70%, 80%, 90%	Apply set value here. Here again the configured minimum dimming value needs to be taken into account.
Dimming value during restoration of the mains supply or bus supply	***same as before failure***	Restore status before failure
	100%, 0%, 10%, 20%, 30% 40%, 50%, 60% 70%, 80%, 90%	Apply set value here. Here again the configured minimum dimming value needs to be taken into account.

3.4.13 Diagnostic messages

The diagnostic messages are used during troubleshooting when there are faults.

Table 20

Designation	Values	Description
Send general error cyclically	***no*** *Yes*	Which messages should be sent cyclically?
Send short circuit cyclically	***no*** *Yes*	
Send excess temperature cyclically	***no*** *Yes*	
Send mains failure cyclically	***no*** *Yes*	
Send load type cyclically	***no*** *Yes*	
Cycle time for all diagnostic messages (if used)	*2 minutes, 3 minutes, 5 minutes, 10 minutes, 15 minutes, 20 minutes, 30 minutes, 45 minutes* ***60 Minutes***	At what interval?

4 APPENDIX

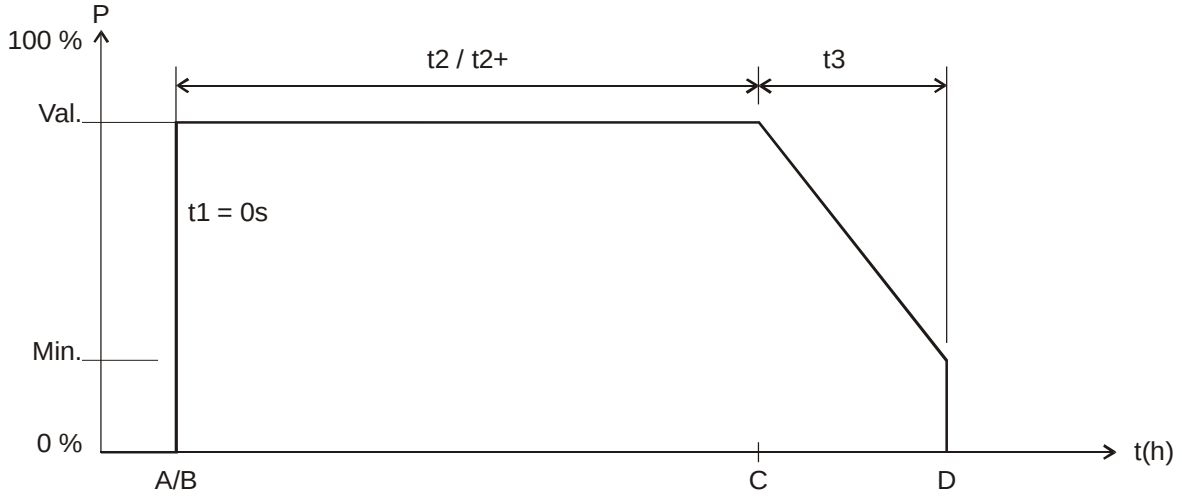
4.1 Use of the soft switch function

4.1.1 General

The Soft switch function is a cycle consisting of switch-on, dimming up,
Maintain target brightness, dimming down and switch-off.

4.1.2 Soft ON for staircase lighting

The following function is recommended for staircase lighting:
When the light switch is operated: Full brightness.
After required length of time: Lighting is slowly dimmed down and then switched off.



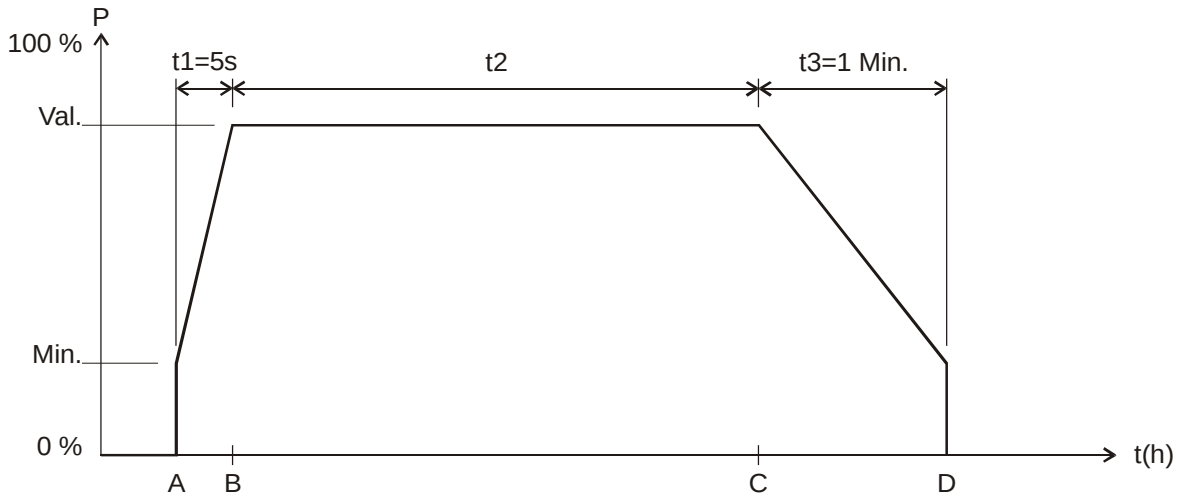
A	Button sends *Soft ON* telegram.
t1	The *Soft ON* time is equal to 0, i.e. the "Dim up slowly" function is deactivated
B	The brightness is immediately adjusted to the configured value after *Soft ON*
t2	Configured time between *Soft ON* and *Soft OFF*[14] elapses
t2+	It is possible for t2 to be extended with another *Soft ON* telegram
C	t2 or t2+ has elapsed, or a *Soft OFF* telegram was received: Start of the *Soft OFF* phase
t3	The brightness is gradually reduced within the configured time for *Soft OFF*
S	t3 has elapsed, the configured *minimum brightness* has been reached and the system dims to 0%

The light can be turned off with a Soft OFF telegram or
retriggered with a Soft ON telegram.

[14] *Soft OFF* via configured time or via *Soft OFF* telegram.

4.1.3 Driveway lighting

A motion detector activates the dimmer via the soft switching object.
The lighting is dimmed up within 5 seconds if a movement is detected.
This delay gives the eyes enough time to adjust to the light without being dazzled
The lighting is gradually dimmed down within a minute and then switched off after the configured time has elapsed or a Soft OFF telegram is received via the button or via the motion detector (cyclic).



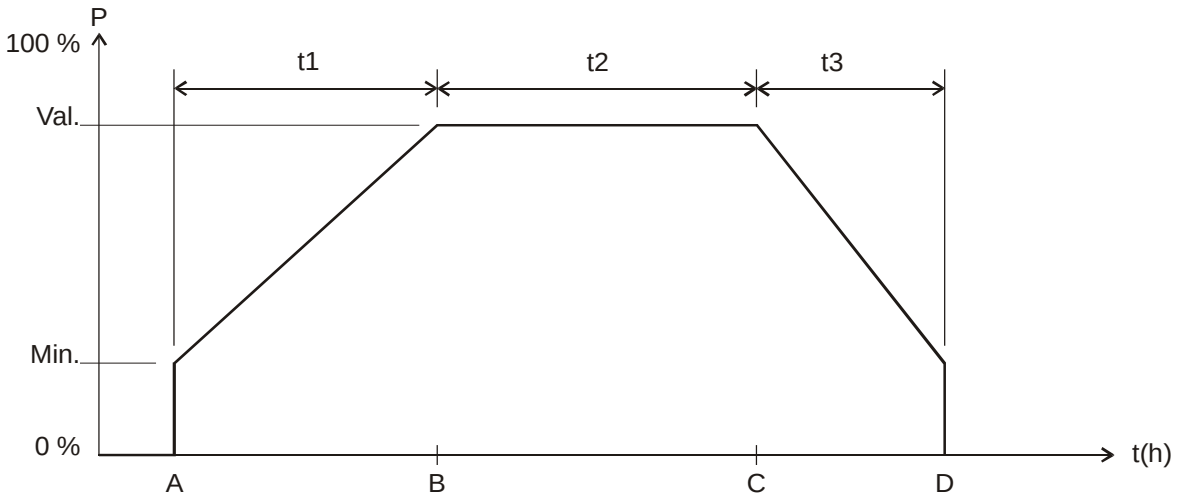
Sequence:

A	*Soft ON* is sent by the motion detector: The brightness is immediately adjusted to the configured *Minimum dimming value*
t1	The brightness is gradually increased within the configured time for *Soft ON* (5 s)
B	Configured value after *Soft ON* is reached
t2	Time between *Soft ON (1) and Soft OFF*
C	*Soft OFF* telegram was received or configured time has elapsed: Start of the *Soft OFF* phase
t3	The brightness is gradually reduced within the configured time for *Soft OFF*
S	t3 has elapsed, the configured *Minimum dimming value* has been reached and the system dims to 0%

4.1.4 Simulation of daily routine

Using a time switch, it is possible to simulate an entire daily routine with sunrise and sunset. To do this, the "Time between Soft ON and Soft OFF" parameter needs to be set to "Until Soft OFF telegram" (See object 3, Soft switching).

The timer switch sends object 3 a Soft On telegram (=1) in the morning and a Soft Off telegram (=0) in the evening.



Key:

Min.	Configurable *Minimum dimming value*
Val.	Target dimming value, i.e. configured *Dimming value after Soft ON*
t(h)	Time

Sequence:

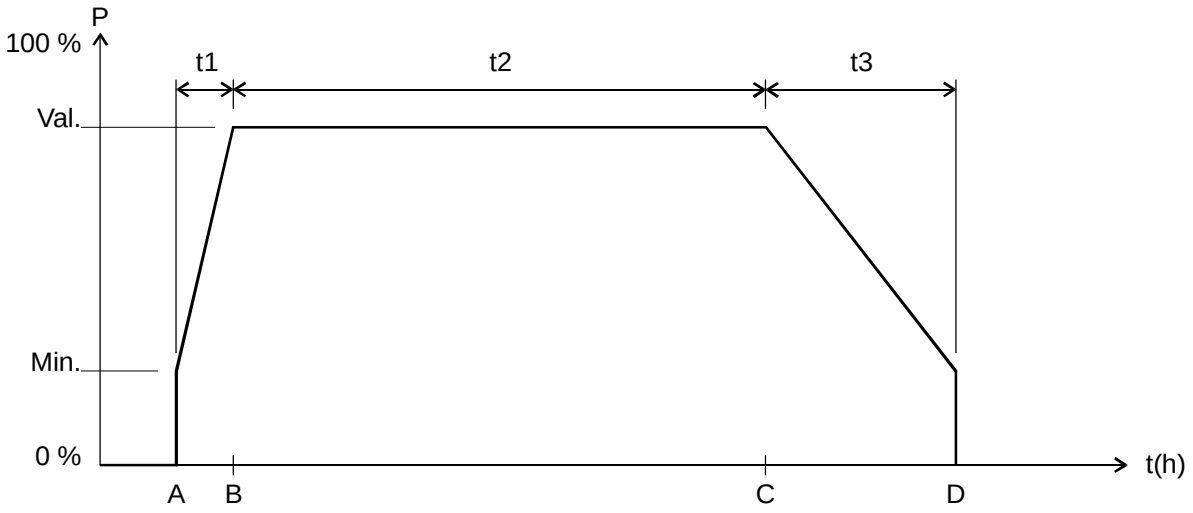
A	*Soft ON* will be sent by the timer: The brightness is immediately adjusted to the configured *Minimum dimming value*
t1	The brightness is gradually increased within the configured time for *Soft ON*
B	Configured value after *Soft ON* is reached
t2	Time programmed in the time switch between *Soft ON* (1) and *Soft OFF* telegram (0)
C	*Soft OFF* telegram has been received: Start of the *Soft OFF* phase
t3	The brightness is gradually reduced within the configured time for *Soft OFF*
S	t3 has elapsed, the configured *minimum brightness* has been reached and the system dims to 0%

4.1.5 Retriggering and premature switch off

It is also possible to influence the soft switching process while it is still active. Depending on which phase is currently being executed, the following responses can be triggered by Soft ON and Soft OFF telegrams.

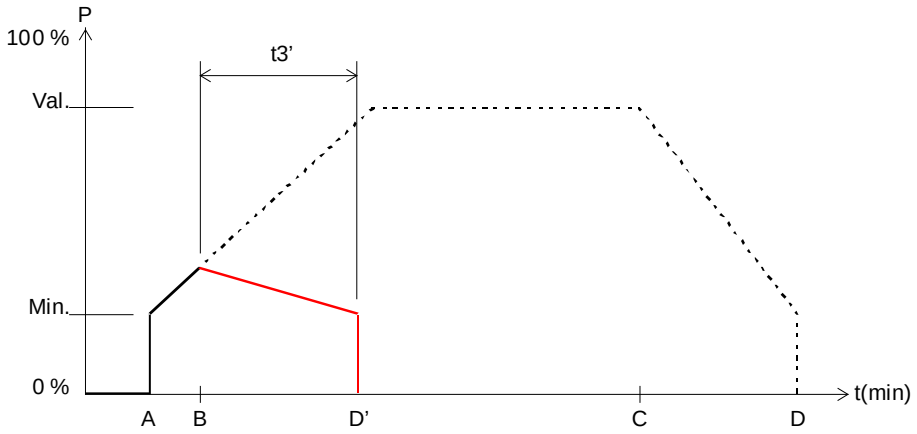
Table 21

Telegram	Response
Soft ON during t1	none
Soft ON during t2	t2 is restarted
Soft ON during t3	A new Soft On process is started. See below.
Soft OFF during t1	The Soft ON process is stopped and the Soft OFF phase started immediately. See below.
Soft OFF during t2	the Soft OFF phase starts immediately
Soft OFF during t3	none

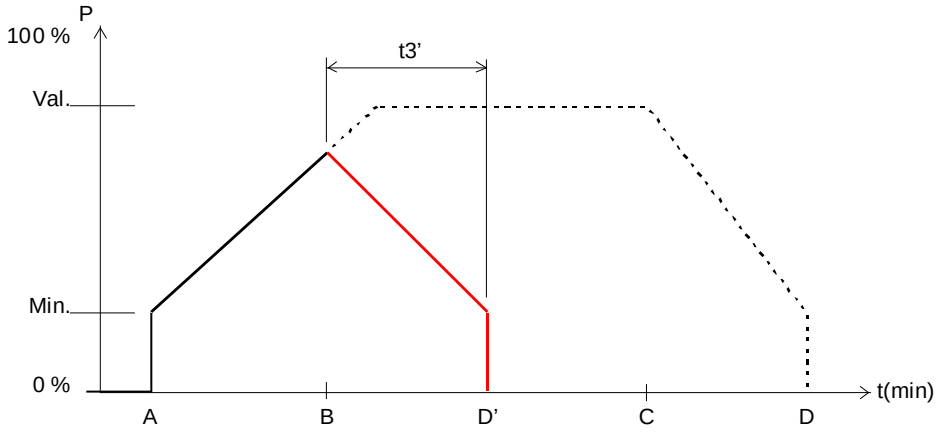


4.1.6 Soft OFF telegram during a Soft ON process

The duration of the Soft OFF phase (t3') is always equivalent to the configured time, independent of the current dimming value.



Example 1: Soft OFF at the start of the Soft ON phase.



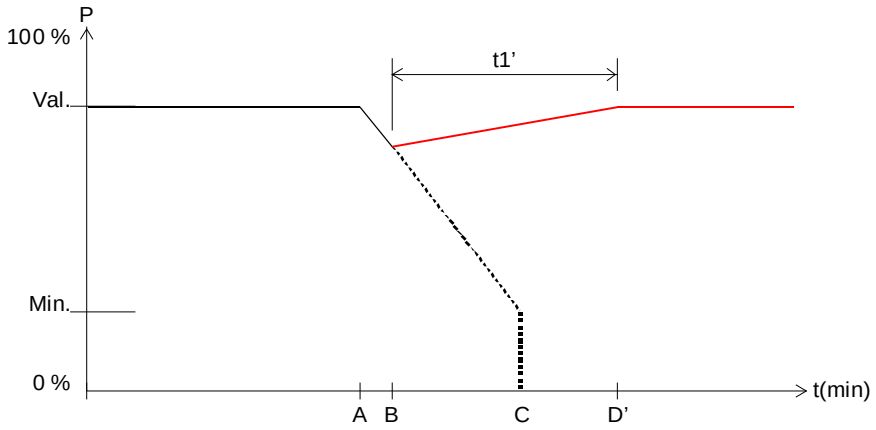
Example 2: Soft OFF at the end of the Soft ON phase.

Sequence:

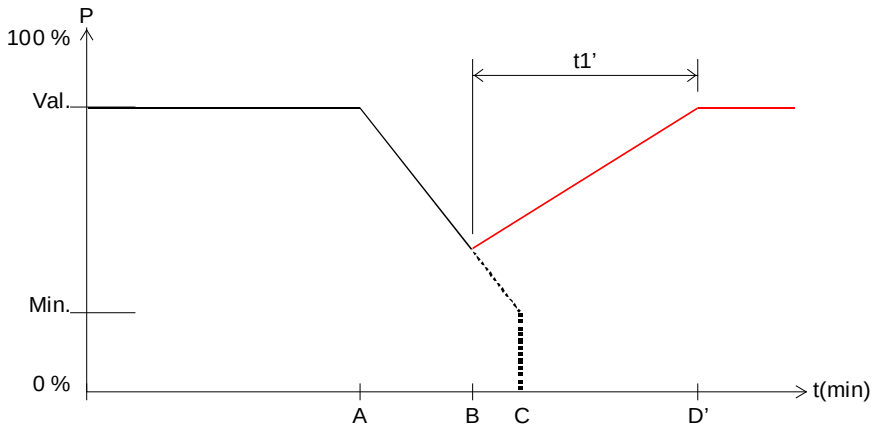
A	A Soft ON process is started
B	A Soft OFF telegram is received: The Soft ON phase is interrupted and a Soft OFF phase starts.
t3'	Duration of the Soft OFF phase = configured Soft OFF time
D'	End of the Soft OFF phase

4.1.7 Soft ON telegram during a Soft OFF process

The duration of the Soft ON phase (t1') is always equivalent to the configured time regardless of the current dimming value.



Example 3: Soft ON at the start of the Soft OFF phase.



Example 4: Soft ON at the end of the Soft OFF phase.

Sequence:

A	A Soft OFF process is started
B	A Soft OFF telegram is received: The Soft OFF phase is interrupted and a Soft ON phase starts.
t1'	Duration of the Soft ON phase = configured Soft ON time
D'	End of the Soft ON phase

4.2 Use of the force function

Example: Lighting with brightness control during the daytime and minimum lighting during the night.

The brightness controller continuously measures the brightness of the room and actuates the dimmer as required to keep the brightness constant.
A dimming value of 20% is parameterized for forced operation.

In the evening at the close of work, the time switch activates forced operation, which dims down the brightness to 20%.
During the night, the lighting is switched on for a certain period of time by the night-watchmen via the central permanent ON function.
In the morning at the start of work, the time switch cancels the forced operation again and the dimmer is actuated via the brightness control.

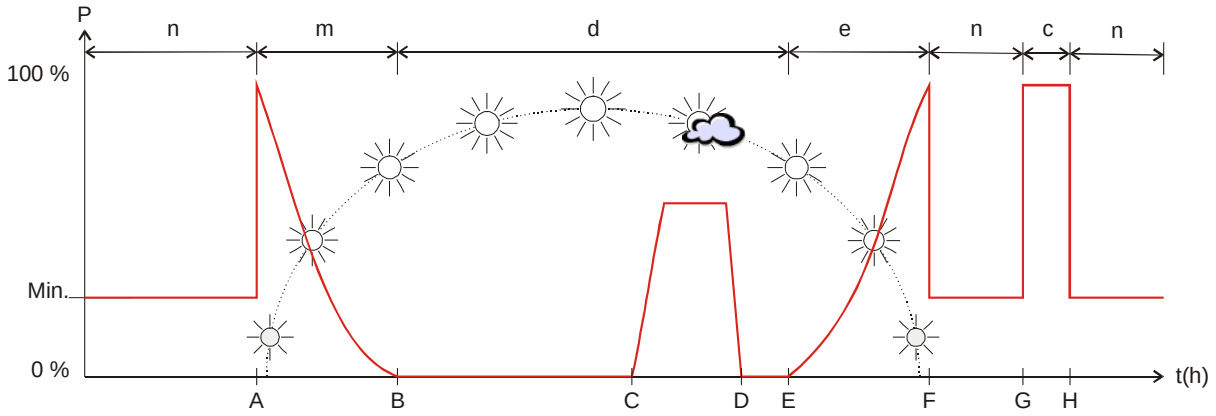


Table 22

A	Forced operation is cancelled by the time switch. As the daylight is not yet bright enough, the brightness control actuates the dimmer
B	The daylight is now bright enough to illuminate the room and the dimmer is switched off
C	Heavy cloud cover, the dimmer compensates for the lack of bright daylight
S	Clear sunshine, the dimmer is turned back down
E	Late afternoon, the dimmer gradually replaces the receding daylight
F	Forced operation is activated by the time switch The dimmer reduces the light to 20%
G	Central permanent On = 1
N	Central permanent On = 0
n	During the night time, the parameterized value for forced operation applies
c	Night round of security guards: The lighting is switched on via central permanent On
m	Morning: Daylight increases and the brightness control slowly reduces the dimming value
e	Evening: Daylight decreases and the brightness control slowly increases the dimming value
d	During the daytime, the dimmer is actuated by the lighting control according to the brightness of the sunlight

4.3 Dimming energy-saving lamps (ESL)

4.3.1 General

Standard energy-saving lamps are not dimmable unless specifically denoted as dimmable.
There are also manufacturer- and type-related differences.
In particular with cold lamps, there are variations in switch-on brightness and performance.

Although the ESL mode of the dimmer takes account of the characteristic features of dimmable energy-saving lamps, attention should be paid to the following points.

- ESL can generally be connected in parallel, but it is recommended to only use the same type of lamp on each channel.
- The maximum output per device in trailing edge operation (RC mode) is 2 x 200 W or 1 x 400 W. In leading edge operation (L mode) it is 2 x 40 W or 1 x 80 W.
- The minimum output per channel is 2 W
- When dimming down rapidly (e.g. jumping configured, dimming value from 100% to 20%), there may be a brief flickering even with "warm" lamps.
- Brightness values that are too low (below 20%, sometimes even below 35%) can lead to flickering. Flickering can have a negative effect on the lifespan of the lamp similar to being switched on and off.
- When used with automatic switches (motion/presence detectors) the minimum switch-on time of an ESL should not be < 5 minutes indoors or < 10 minutes outdoors. This prevents frequent switching on and off and extends the service life of the light.

To avoid dimmable ESLs flickering or not coming on at all, it is always switched on with a high dimming value and then reduced to the desired brightness within a minute.
This has a compensating effect, as cold ESLs normally have a reduced switch-on brightness:
It can take up to 5 mins to reach full brightness, depending on manufacturer, type and ambient temperature.

To be able to dim dimmable ESL without problems, dimmer
GDA-4K KNX / GDA-8K KNX offers two special modes for dimmable energy saving lamps with RC or L response.
These modes also take account of the varying characteristic curve in comparison with the incandescent lamp, i.e. the relationship of the set percentage value to the emitted brightness in relation to maximum brightness.

IMPORTANT:
Certain LED lamps can no longer be dimmed down if they are controlled with a dimming value of > 90%.
With the GDA-4K KNX / GDA-8K KNX, even these lamps can be dimmed.
For this, the load selection *LEDs (RC, 0-90%)* is used.

4.3.2 Selection of RC or L response:

Alongside the recommendations of the ESL manufacturer, the following applies:

- **RC mode (trailing edge control):** Generally recommended for ESL, especially for high loads (advantage: less heat generated in the dimmer).
- **L mode (leading edge control):**
  With ESL, only use if a disruptive flickering is noted during dimming up or down.

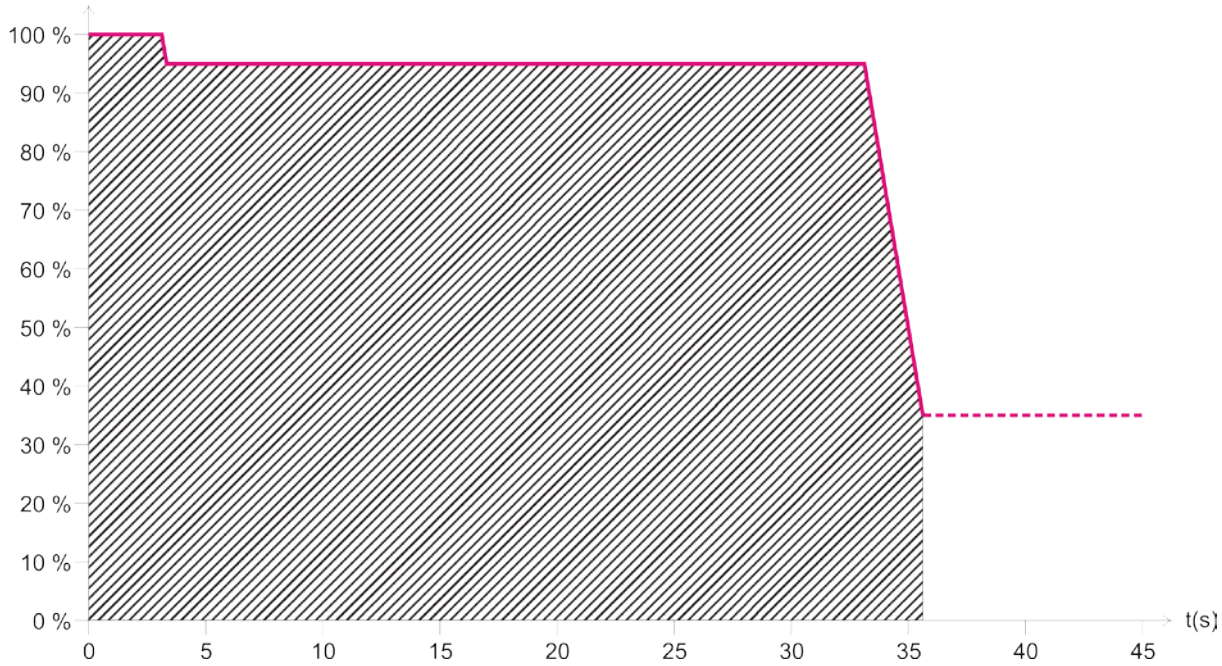
4.3.3 Dimmable energy-saving lamps with RC response (trailing edge)

This setting allows dimmable energy-saving lamps with RC response to be dimmed.

The energy-saving lamp always starts with 100% output and then, if applicable, automatically dims down to 95% after 3 seconds. After another 30 s the ESL is warm enough and can be dimmed down to the minimum brightness.

- Minimum configurable minimum brightness = 1%. With energy-saving lamps, depending on type, a minimum brightness of 20%...35% is sensible (below that the lamps flicker or go out completely).
- If the ESL is switched off in the warm state for less than 30 s, after being switched on again the heating phase will be shorter.
  In this case, the duration of the warm-up phase corresponds to the previous turn-off time.
- This configuration is optimal, for example, for MEGAMAN lamps.

This produces the following relation between the time elapsed since switching on and the minimum possible dimming value:



No values are permitted in the hatched area independent of the requested dimming value.

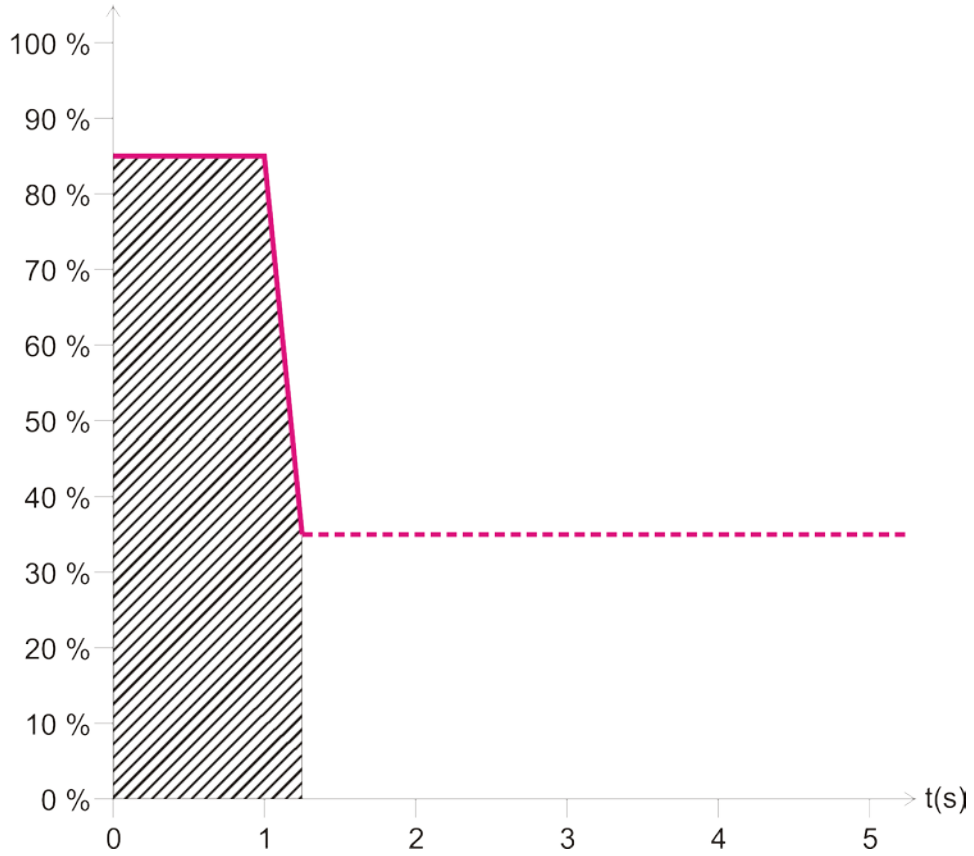
Note:
As connecting an L-load in RC mode could lead to functional problems with the dimmer, load detection will always be performed as a precaution.
The RC mode will only actually be used when no L-load is detected.

4.3.4 Dimmable energy-saving lamps with L response (leading edge)

This setting allows dimmable energy-saving lamps with L response to be dimmed. No load detection is performed; dimming is carried out with leading edge instead.

- The energy-saving lamp always starts with at least 85% output and then, if applicable, automatically dims down to the minimum brightness after 1 second.
- Minimum configurable minimum brightness = 1%. With energy-saving lamps, depending on type, a minimum brightness of 20%...35% is sensible (below that the lamps flicker or go out completely).
- This configuration is optimal, for example, for OSRAM lamps.

This produces the following relation between the time elapsed since switching on and the minimum possible dimming value:



No values are permitted in the hatched area independent of the requested dimming value.

Notes:

- Many types of lamps can cause an overload in L mode, which automatically leads to the dimming down of the load.
- Because of impermissible radio interference, some ESLs must not be operated in L mode.

In both cases, automatic load detection must be selected (i.e. RC mode).

4.4 Dimming LED lamps

4.4.1 General

The dimmer may only operate LED lamps for 230V mains operation (so-called retrofit lamps), which are exclusively identified as dimmable.

In dimming response, there are also manufacturer- and type-related differences. For that reason we recommend only operating lights of the same type in parallel on one channel.

- The maximum output per device in trailing edge operation (RC mode) is 2 x 200 W or 1 x 400 W. In leading edge operation (L mode) it is 2 x 22 W or 1 x 44 W.
- The minimum output per channel is 2 W

It may be necessary to adjust the "minimum dimming value" for each parameter.

4.4.2 Selection of RC or L response:

Alongside the recommendations of the LED manufacturer, the following applies:
LEDs are typically operated in RC mode in order to reduce the activation currents of the lamps, which can lead to disruptions in the power network.
RC mode is therefore especially to be recommended at high outputs.
Another advantage: Less heat is generated in the dimmer.

L mode:
Only use LED if a disruptive flickering is noted when dimming up or down.

Note:
Some types of lamps can cause an overload in L mode, which automatically leads to the dimming down of the load.
In this case, automatic load detection must be selected (i.e. RC mode).

4.5 4-bit telegrams (brighter/darker)

4.5.1 Telegram format 4-bit EIS 2 relative dimming:

Table 23

Bit 3	Bit 2	Bit 1	Bit 0
Direction	Dimming range divided into increments		
	Code		Increments
Dim up: dim down: 1	000		**Stop**
0	001		1
	010		2
	011		4
	100		8
	101		16
	110		32
	111		64*

*typical application

Examples: 1111 = to make 64 levels brighter
0111 = decrease brightness by 64 levels
1101 = make 16 levels brighter

4.5.2 Parameter: "Switching on/off with a 4-bit telegram"

In general, the setting "Yes" is required.
The setting "No" is available for use with special customer requests, e.g. in conference rooms.
The situation is described below.
A whole group of dimmer channels is operated from a button (4-bit).
A certain lighting situation has been adjusted by a scene or through other means – e.g. channel 1 OFF, channel 2 40%, channel 3 50%. The requirement is to now dim up and increase the brightness of the entire scene, but the channels which are switched off should remain off.
The parameter "Switch on/off with a 4-bit telegram" blocks the usual
switch on/off function of the 4-bit telegram.

Table 24

Parameter: "Switching on/off with a 4-bit telegram"	4 bit Telegram	Dimmer output status	Response
yes	brighter/darker	Switched on (1%...100%)	Channel is normally dimmed (to 0%* or 100% if applicable).
	brighter	Off	Channel is switched on and dimmed
no	brighter / darker	Off	Dimmer stays switched off
	brighter / darker	Switched on (1%...100%)	Channel is dimmed in range from min. to 100 %

* With the 4-bit telegram "Darker", the channel is switched off if the button is kept depressed for longer than approximately 2 s when the minimum brightness is reached.

4.6 The scenes

4.6.1 Principle

The current status of a channel, or a complete
device can be stored and retrieved later via the scene function.

Each channel can participate simultaneously in up to 8 scenes.
All scene numbers from 1 to 63 are permitted.

This requires permission to access scenes for the relevant channel via parameter.
See Activate scenes parameter and Scenes parameter page.

The current status is allocated to the appropriate scene number when a scene is saved.
The previously saved status is restored when a scene number is called up.

This allows the device to be easily associated to each chosen user scene.

The scenes are permanently stored and remain intact even after the application has been downloaded again.
See *All channel scene statuses* parameter on the *Scenes* parameter page.

4.6.2 Calling up or saving scenes:

In order to call up or save a scene, the relevant code is sent to the scene object (*Channel Cx call up/save scenes* or obj. 234 *Central scenes*).

Table 25

Scene	Call up		Save	
	Hex.	Dec.	Hex.	Dec.
1	$00	0	$80	128
2	$01	1	$81	129
3	$02	2	$82	130
4	$03	3	$83	131
5	$04	4	$84	132
6	$05	5	$85	133
7	$06	6	$86	134
8	$07	7	$87	135
9	$08	8	$88	136
10	$09	9	$89	137
11	$0A	10	$8A	138
12	$0B	11	$8B	139
13	$0C	12	$8C	140
14	$0D	13	$8D	141
15	$0E	14	$8E	142
16	$0F	15	$8F	143
17	$10	16	$90	144
18	$11	17	$91	145
19	$12	18	$92	146
20	$13	19	$93	147
21	$14	20	$94	148
22	$15	21	$95	149
23	$16	22	$96	150
24	$17	23	$97	151
25	$18	24	$98	152
26	$19	25	$99	153
27	$1A	26	$9A	154
28	$1B	27	$9B	155
29	$1C	28	$9C	156
30	$1D	29	$9D	157
31	$1E	30	$9E	158
32	$1F	31	$9F	159

Continuation:

Scene	Call up		Save	
	Hex	Dec.	Hex	Dec.
33	$20	32	$A0	160
34	$21	33	$A1	161
35	$22	34	$A2	162
36	$23	35	$A3	163
37	$24	36	$A4	164
38	$25	37	$A5	165
39	$26	38	$A6	166
40	$27	39	$A7	167
41	$28	40	$A8	168
42	$29	41	$A9	169
43	$2A	42	$AA	170
44	$2B	43	$AB	171
45	$2C	44	$AC	172
46	$2D	45	$AD	173
47	$2E	46	$AE	174
48	$2F	47	$AF	175
49	$30	48	$B0	176
50	$31	49	$B1	177
51	$32	50	$B2	178
52	$33	51	$B3	179
53	$34	52	$B4	180
54	$35	53	$B5	181
55	$36	54	$B6	182
56	$37	55	$B7	183
57	$38	56	$B8	184
58	$39	57	$B9	185
59	$3A	58	$BA	186
60	$3B	59	$BB	187
61	$3C	60	$BC	188
62	$3D	61	$BD	189
63	$3E	62	$BE	190

Examples (central or channel-related)**:**

Select status of scene 5:
→ Send $04 to the relevant scene object.

Save current status with scene 5:
→ Send $84 to the relevant scene object.

4.6.3 Entering scenes without telegrams

Instead of defining scenes individually by telegram, this can be done in advance in the ETS.
This merely requires the setting of the *All channel scene statuses* parameter (*Scenes* parameter page) to *overwrite at download*.

Accordingly, the required status can be selected for each of the 8 possible scene numbers in a channel (= *Status after download* parameter).
The scenes are programmed into the device after the download has been completed.

Later changes via teach in telegrams are possible if required and they can be permitted or blocked via parameter.

4.7 Storing light scenes in a button

Scenes are normally stored in the GDA-4K KNX / GDA-8K KNX.
Object 5 (call up/save scenes) is used for this purpose.

However, if the light scenes are to be stored **externally**, for example with a scene-capable button, the following steps can be taken:
The GDA-4K KNX / GDA-8K KNX has one dimming object (dimming value) and one feedback object (feedback in %) per channel.
Thus, 2 group addresses are used, hereafter called “Gr.adr.1” and “Gr.adr.2”.

4.7.1 Allocation of group addresses and setting of object flags

	Object	Connect with	set to sending	Flags[15]			
				C	R	W	T
BUTTON	Brightness value telegrams	Gr.addr.1	yes	✓	-	✓	✓
		Gr.addr.2	no				
DIMMER	Dimming value	Gr.addr.1	x	✓	-	✓	x
	Feedback in %	Gr.addr.1	no	✓	✓	-	x
		Gr.addr.2	yes				

Feedback to the dimmer should **not** be configured for *cyclical sending*.

[15] Object flags: Communication, read, write, transfer, update.
x = user-defined

4.7.2 Function description

Saving a scene:
The touch sensor sends a read request to Gr.adr.1 which is only answered by the "Feedback in %" object and with Gr.adr.2.
Gr.adr.2 is not processed by the object "dimming value".
In contrast, the touch sensor receives the value and saves it for the appropriate scene.

Calling up a scene:
The touch sensor sends the value saved for the scene to the % object with the sending address Gr.adr.1.
The value of the object “dimming value” is further processed to set the output brightness.
Once the dimmer has set the requested value, it sends feedback to the object “Feedback in %” depending on the configuration.

4.8 Conversion of percentages to hexadecimal and decimal values

Table 26

Percentage value	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Hexadecimal	00	1a	33	4D	66	80	99	B3	CC	E6	FF
Decimal	00	26	51	77	102	128	153	179	204	230	255

All values from 00 to FF hex. (0 to 255 dec.) are valid.

4.9 Function diagram