EAE KNX UNIVERSAL DIMMER

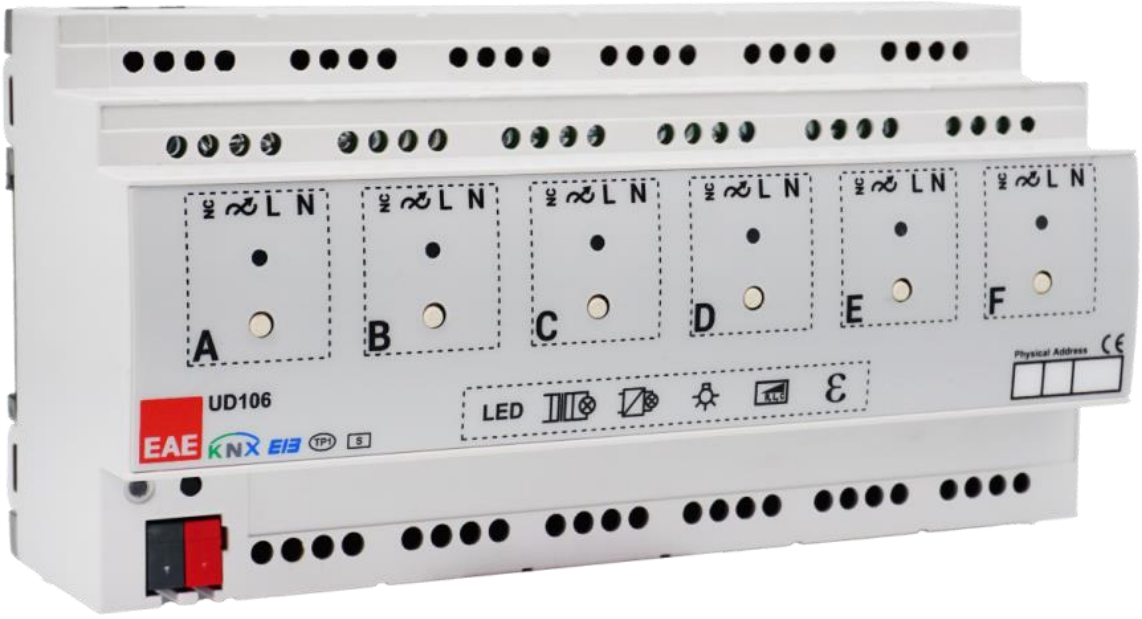


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1. General Features

EAE KNX Universal Dimmer Actuator has 6 independent outputs. Dimming functions can be used by phase dimming only. The device can be operated manually via push button on it. Each channel can be programmed via ETS5 or higher. UD106 has 6 independent channels and 3 channel grouping features. Separate phase input to each channel is supported.

Channel features of dimming actuator;

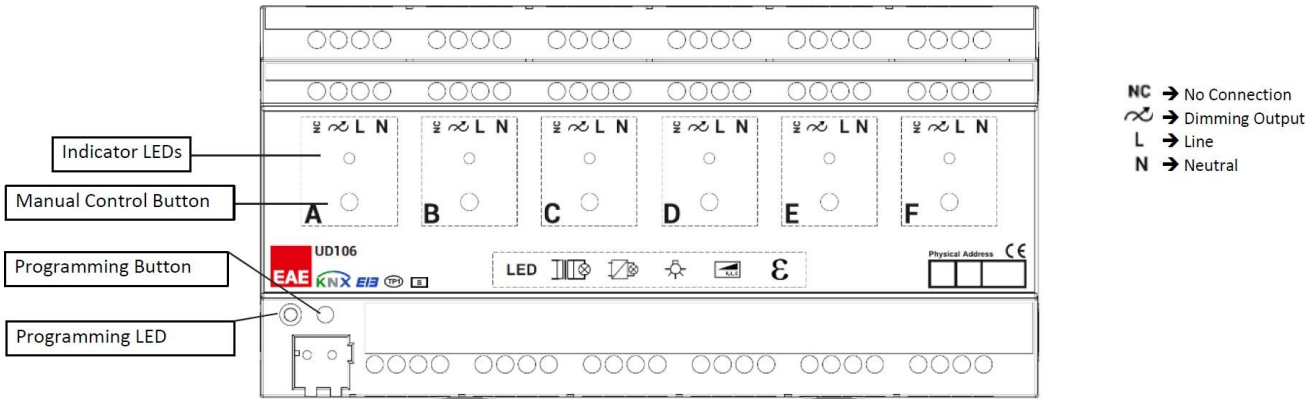
- Staircase lighting
- Forced Operation
- Channel Grouping (merging outputs for high power lamps)
- Scene Function
- Electrical Measurements (Voltage)
- Error Detection (Load Error, Short-Circuit, Over-current, Over-voltage, Under-voltage, Over-heating)

All features can be used separately or together. Please consider that those features will be processed depending on priority. Bus voltage fail/return behavior can be set via ETS configuration.

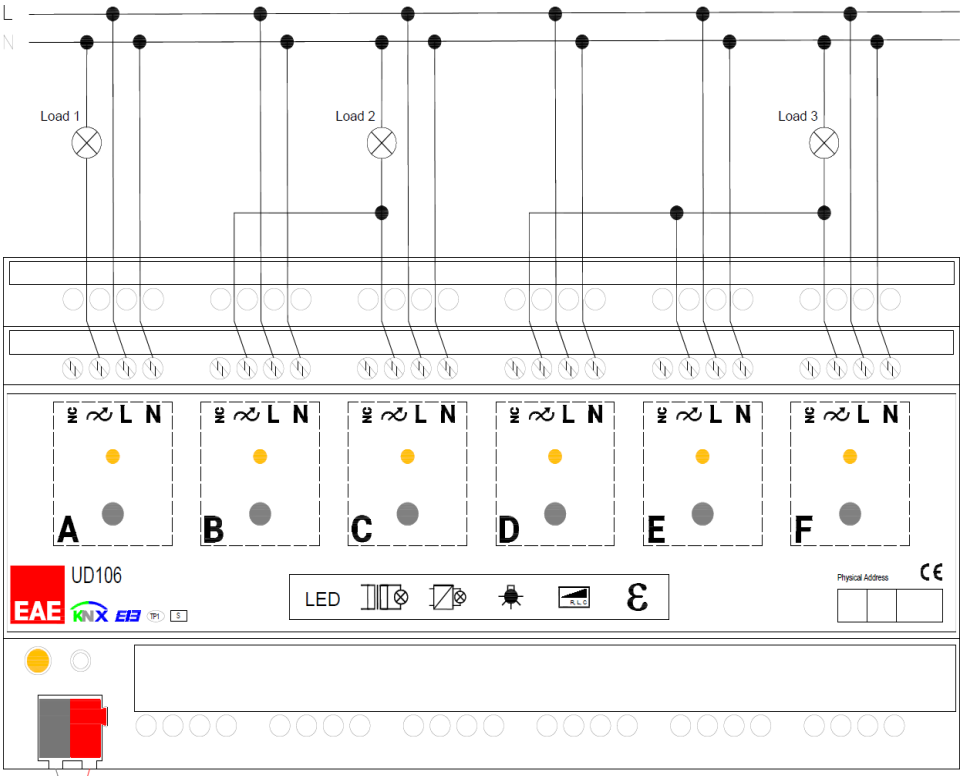
NOTE: LED drivers, constant current and constant voltage drivers are also supported.

2. Device Technology

2.1 Device Peripherals



2.2 Connection Diagram



Mixed Channel Control

2.3 Technical Data

Protection Type	IP 20	EN 60 529
Safety class	II	EN 61 140
KNX Power supply	Voltage	21V… 30V DC, SELV
	Current consumption	< 10 mA
Mains Supply	Min…Max	185… 300V AC (50Hz)
Connections	Screw terminals Max. tightening torque KNX	0,5…3,31 mm² solid and stranded wire 0,5…3,31 mm² stranded wire with ferrule 0.5 Nm Bus connection terminal
Output	Switching & Dimming Cable length Max. switching power Min. switching power	6 outputs, Trailing and Leading-Edge Dimming Max. 200 meters 300 VA per channel 300 W halogen, incandescent lamps per channel 300 W Inductive transformers per channel 250 W Phase-cut dimmable LED lamps per channel 120 W Constant Voltage drivers* Multiplying the output power by parallel connection of channels. 9 W
Type of contact	Electronically controlled	
Installation	35mm mounting rail	EN 60 715
Operating elements	LED (red) and button On/Off Button	For physical address programming For Switching/Dimming lights
Temperature range	Ambient Storage	-5° C + 45° C -25° C + 55° C
Humidity	Max. air humidity	85 % no moisture condensation
Dimensions	L x W x H Width in units	66 x 180 x 90 mm 10 modules
Box	Plastic, polycarbonate, colour grey	
CE	In accordance with the EMC guideline and LV directives.	
Electrical Installations		EN 60 669-2-1
EMC requirements		EN 63 044-5-2

*: Constant voltage LED drivers draw more current while dimming. The 120 W maximum power value must be observed over the entire dimming range.

NOTE: Device default physical address is 15.15.255. In order to configure Universal Dimming Actuator, ETS application file ".knxprod" is needed. It's possible to download the file on EAE Technology website. ETS is required for programming the device. Parameter settings and related group addresses can be changed by ETS. Learn more by reading ETS help file.

3. Communication Object Table

No	Object Name	Function	DP Type	Length	Flags
0	General	In operation	1.002	1 bit	CRT
1	General	Scene Control Input	18.001	1 byte	CWU
2, 22, 42, 62, 82, 102	Output A...F	Switching	1.001	1 bit	CWU
3, 23, 43, 63, 83, 103	Output A...F	Switching Status	1.001	1 bit	CRT
4, 24, 44, 64, 84, 104	Output A...F	Absolute dimming	5.001	1 byte	CWU
5, 25, 45, 65, 85, 105	Output A...F	Relative dimming	3.007	4 bit	CRW TU
6, 26, 46, 66, 86, 106	Output A...F	Dimming Status	5.001	1 byte	CRT
7, 27, 47, 67, 87, 107	Output A...F	Forced operation (1-bit)	1.001	1bit	CWU
8, 28, 48, 68, 88, 108	Output A...F	Forced operation (2-bit)	2.001	2 bit	CWU
9, 29, 49, 69, 89, 109	Output A...F	Status Forced Operation	1.003	1 bit	CRT
10, 30, 50, 70, 90, 110	Output A...F	Staircase Trigger	1.003	1 bit	CWU
11, 31, 51, 71, 91, 111	Output A...F	Staircase Permanent	1.001	1 bit	CWU
12, 32, 52, 72, 92, 112	Output A...F	Voltage (rms)	14.027	4 byte	CRT
13, 33, 53, 73, 93, 113	Output A...F	Load Error	1.001	1 bit	CRT
14, 34, 54, 74, 94, 114	Output A...F	Mains Fault	1.001	1 bit	CRT
15, 35, 55, 75, 95, 115	Output A...F	Undervoltage Error	1.011	1 bit	CRT
16, 36, 56, 76, 96, 116	Output A...F	Overcurrent Error	1.011	1 bit	CRT
17, 37, 57, 77, 97, 117	Output A...F	Overvoltage Error	1.011	1 bit	CRT
18, 38, 58, 78, 98, 118	Output A...F	Overheating Error	1.011	1 bit	CRT
19, 39, 59, 79, 99, 119	Output A...F	Hardware Error	1.011	1 bit	CRT
20, 40, 60, 80, 100, 120	Output A...F	Short/Open Circuit Error	1.011	1 bit	CRT
21, 41, 61, 81, 101, 121	Output A...F	Channel Lock Status	1.011	1 bit	CRT

4. Priority Order

Each function has priority according to the other functions. The first has the highest priority.

1- Bus voltage return or failure
2- Forced Operation
3- Permanent ON
4- Staircase Function
5- Brightness, Switch or Scene Control

5. Parameters

5.1 General Parameters

5.1.1 Manual Operation

Manual Operation Button	*Disable* *Active only during KNX Bus failure* ***Active always**

This parameter can be used to determine Manual Operation operating type. When the manual operation is enabled, the connected load can be switched or dimmed via the corresponding channel key. Dimming function has fixed values shown below.

- Set the parameter to “disable”
  This selection is used to disable manual operation.

- Set the parameter to “Active only during KNX Bus failure”
  This selection is used to enable manual operation when KNX Bus failure only.

- Set the parameter to “Active always”
  This selection is used to enable manual operation whether KNX Bus is available or not.

NOTE: Each channel has its own Manual Control Button. Button functions are explained below.

Button Behavior
Short Press ON = Switching ON
Short Press OFF = Switching OFF
Long Press ON = Dimming BRIGHTER
Long Press OFF = Dimming DARKER

Dimming Behavior
Dimming transition time 1…%100 = 10 sec
Allow switching on/off via dimming = no
Dimming type = Start stop

5.1.2 In Operation

Enable sending In Operation	***no*** *yes*

This object can be used to report that device is still alive and connected the KNX bus line. Telegram value is selectable as “0” or “1”.

If the parameter selected yes;

In Operation sending period (hh:mm:ss)	*00:00:01…**00:00:10**…18:12:15*

This parameter determines the “In operation” info sending period. In operation telegram will be sent at the end of the period.

Bit value	*0* ***1***

This parameter defines the “In Operation” sending object value.

5.1.3 Channel Grouping

Channel A / B / C / D / E / F	***Individual*** *Group 1* *Group 2* *Group 3*

This parameter can be used to make the channels individual or grouped. Each channel can be configured independently.

If the load is higher than 300VA, the channels must be grouped.

e.g. If a high-power lamp (700VA) driven is needed, 3 channels must be grouped that device can handle the power. For this case, A, B and C channels can be grouped. Parallel connection is needed for these channels.

NOTE: Channels have alphabetical priority (A-F) for each group. The highest priority channel parameters will be shown on ETS parameters for each group. Additionally, this group parameters can be taken from *Master Channel Parameters or individually.*

e.g. If the *Channel A, C* and *D* is selected as **Group 1** and *Channel B* and *E* is selected as **Group 2.** *Channel A and B* parameters will be shown only. Rest of all channel parameters will be hidden on the ETS parameter screen.

As a result, Channel A parameters are valid for Channel C and D, as well. Group 1 will be controlled through using Channel A and Channel B parameters are valid for Channel E. Group 2 will be controlled through using Channel B.

Also, Channel A or/and B parameters can be taken from Master Channel Parameters or individually.

5.1.4 Telegram Limiting

Enable telegram limiting	*no* ***yes**

This parameter is used to limit the telegram sending in a period. If the parameter is selected “yes”; *Telegram limit count* and *Telegram limit period duration parameters* are visible.

Telegram limit count	*1…***10**…255*

Max number of telegrams per period, can be sent freely.

NOTE: If the value of the object cannot send in the time of period, the object value will be buffered for the next period time. The buffered object value can be updated when the object value is updated.

Telegram limit period	****50ms*** *100ms* *200ms* *500ms* *1s* *2s* *5s* *10s* *30s* *1min*

The limit period can be adjusted via this parameter.

5.2 Master Channel Parameters

5.2.1 Master - Dimming Settings

Dimming Method	*Trailing Edge Dimming* *Leading Edge Dimming* ***Auto detect based on the load type**

This parameter is used to select the dimming method based on light load.

- Set the parameter to “Trailing Edge Dimming”
  This selection is compatible with Trailing Edge driving loads.

- Set the parameter to “Leading Edge Dimming”
  This selection is compatible with Leading Edge driving loads.

- Set the parameter to “Auto detect based on the load type”
  This selection enables automatic load type detection. Loads will be driven after load test procedure.

NOTE: When the “Dimming Method” parameter is set to “Auto detect based on the load type”, the dimmer first runs a load test. It identifies the load type and starts driving the load with the matching dimming method. No further adjustment is needed. If the load type cannot be detected, an error is reported via the “Load Error” communication object.
When “Trailing Edge Dimming” or “Leading Edge Dimming” is selected, no load type detection is performed. The dimmer drives the load directly with the selected method, regardless of the load type. Therefore, make sure the selected method matches the characteristics of your load.
Some loads support both Leading Edge and Trailing Edge dimming. However, driving a non-inductive load with Leading Edge may cause permanent damage to the load or the dimmer in the long run. Select “Leading Edge” for inductive loads and “Trailing Edge” for all other loads.

Dimming Characteristic	***Linear*** *Logarithmic (LED)* *Incandescent Lamps* *Halogen Lamps* *Custom Dimming Curve*

This parameter is used to select dimming characteristic type.

- Set the parameter to “Linear”
  This selection allows dimming with linear line.

- Set the parameter to “Logarithmic (LED)”
  This selection allows dimming with a logarithmic curve that is suitable for LEDs.

- Set the parameter to “Incandescent Lamps”
  This selection allows dimming with a predefined curve most suitable for incandescent lamps.

- Set the parameter to “Halogen Lamps”
  This selection allows dimming with a predefined curve most suitable for halogen lamps.

- Set the parameter to “Custom Dimming Curve”
  This selection allows dimming with desired curve for any other specific light loads.

Maximum dimming percentage	*0… ***100***

This parameter is used to limit maximum dimming level for channel.

Minimum dimming percentage	****0**… 100*

This parameter is used to limit minimum dimming level for channel.

5.2.2 Master – Switching

Switching On dimming value	*1… ***100**…Last Value*

This parameter is used to select the dimming level when the relevant output is activated via Switching object.

- Set the parameter to “Last value”
  This selection is used to dim the relevant output through using the saved light level before switched OFF.

Dimming time to Switch On value (0%...100%) (hh:mm:ss.f) (00:00:00.0 = Instant)	*00:00:00.0…***00:00:02.0**…01:49:13.5*

This parameter is used to determine the fade time for Switching On action.

Dimming time to Switch Off value (100%...0%) (hh:mm:ss.f) (00:00:00.0 = Instant)	*00:00:00.0…***00:00:02.0**…01:49:13.5*

This parameter is used to determine the fade time for Switching Off action.

5.2.3 Master - Dimming Control

Dimming time for absolute dimming value input (0%...100%) (hh:mm:ss.f) (00:00:00.0 = Instant)	*00:00:00.0…***00:00:03.0**…01:49:13.5*

This parameter is used to determine the fade time for absolute dimming action.

Allow switching on via absolute dimming value	*No* ****Yes***

This parameter is used to allow switching ON the relevant output via absolute dimming object or not.

Allow switching off via absolute dimming value	*No* ****Yes***

This parameter is used to allow switching OFF the relevant output via absolute dimming object or not.

Dimming time for relative dimming control (0%...100%) (hh:mm:ss.f) (00:00:00.0 = Instant)	*00:00:00.0…***00:00:03.0**…01:49:13.5*

This parameter is used to determine the fade time for relative dimming control.

Allow switching on via relative dimming control	*No* ****Yes***

This parameter is used to allow switching ON the relevant output via relative dimming control or not.

Allow switching off via relative dimming control	*No* ****Yes***

This parameter is used to allow whether switching OFF the relevant output via relative dimming control or not.

5.2.4 Master – Feedback

Status Objects

Enable switching status object	*No* ***Yes**

This parameter is used to show switching status objects. Switching status objects will be visible, If selected "*Yes*".

Switching status sending mode	*Don't transmit* ***Transmit on change*** *Transmit always*

This parameter is used to select transmit type for switching status.

- Set the parameter to "*Transmit on change"*: The switching status will be transmitted when switching status changed.
- Set the parameter to "*Transmit always"*: The switching status will be transmitted regardless of switching state.
- Set the parameter to "*Don't transmit"*: The switching status will never be transmitted.

Enable dimming status object	*No* ***Yes**

This parameter is used to show dimming status objects. Dimming status objects will be visible, if selected "*Yes*".

Dimming status sending mode	*Don't transmit* ***Transmit on change*** *Transmit always*

This parameter is used to select transmit type for dimming status.

- Set the parameter to "*Transmit on change"*: The dimming status will be transmitted when dimming level changed.
- Set the parameter to "*Transmit always"*: The dimming status will be transmitted regardless of dimming level.
- Set the parameter to "*Don't transmit"*: The dimming status will never be transmitted.

Error Objects

Enable comm. object "Overvoltage Error" ****checked** / unchecked*

This parameter used to show Error Object in case of maximum voltage limit reaching.

Enable comm. object "Undervoltage Error" ****checked** / unchecked*

This parameter used to show Error Object in case of minimum voltage limit reaching.

Enable comm. object "Channel Lock State" ****checked** /unchecked*

This parameter used to show whether the channel is locked in the continuous Overvoltage condition.

Enable comm. object "Overcurrent Error" ****checked** / unchecked*

This parameter used to show Error Object in case of maximum current limit reaching.

Enable comm. object "Overheating Error" ****checked** / unchecked*

This parameter used to show Error Object in case of overheat of device.

Enable comm. object "Short/Open Circuit Error" ****checked** / unchecked*

This parameter used to show Error Object in case of short/open circuit on dimming outputs.

Enable comm. object "Load Error" ****checked** / unchecked*

This parameter used to show the load error status.

Enable comm. object "Mains Failure Error" ****checked** / unchecked*

This parameter used to show Error Object in case of no mains voltage in the channel.

Enable comm. object "Hardware Error" ****checked** / unchecked*

This parameter used to show Error Object in case of switch-dim controller malfunction.

Measurement Objects

Enable comm. object "Voltage (rms) Measurement" *no / ***yes***

This parameter is used to transmit measured voltage for each channel. Measured voltage value unitis Volt. (V)

Enable cyclic sending of Voltage (rms) ****no** / yes*

This parameter is used for transmitting the measured voltage cyclically If selected "yes".

Voltage (rms) sending period (hh:mm:ss) ****00:00:02**…18:12:15*

This parameter will be shown If cyclic sending of load voltage selected "yes".

5.2.5 Master - Forced Operation

Forced Operation Function	***1-bit format*** *2-bit format*

This parameter is used to select forced operation activation type. When Forced Operation is activated, any switching, dimming, staircase or scene commands will not affect to the relevant channel.

Dimming time for Forced Operation function (from 0% to 100%) (hh:mm:ss.f)	*00:00:00.0…***00:00:03.0…**01:49:13.5*

This parameter is used to determine transition time to reach Forced Dimming value.

Dimming value during Forced Operation	*0…***100%...**Force Current Value*

This parameter appears when *"Forced Operation Function = **1-bit format"*** is selected. It is used to select dimming value when Forced Operation is enabled.

- Set the parameter to *"Force Current Value"*: The device will block the current dimming value on the relevant channel until Forced Operation disabled.

Dimming value during Forced Position On	*0…***100%...**Force Current Value*

This parameter appears when *"Forced Operation Function = **2-bit format"*** is selected. It is used to select dimming value when Forced Operation is enabled.

- Set the parameter to *"Force Current Value"*: The device will block the current dimming value on the relevant channel until Forced Operation disabled.

Dimming value during Forced Operation Off	****0…**100%*

This parameter appears when *"Forced Operation Function = **2-bit format"*** is selected. It is used to select dimming value when Forced Operation is disabled.

5.2.6 Master - Staircase Function

Dimming value during Staircase On	*0…***100%***

This parameter is used to select dimming value for the relevant channel when Staircase function is triggered.

Dimming time for Staircase ON dimming value (from 0% to 100%) (hh:mm:ss.f)	*00:00:00.0…***00:00:01.5…**01:49:13.5*

This parameter determines the transition time to reach to dimming value when Staircase Function is activated.

Dimming time for Staircase Switch OFF dimming value (from 0% to 100%) (hh:mm:ss.f)	*00:00:00.0…***00:00:03.0…**01:49:13.5*

This parameter determines the transition time to reach to dimming value when Staircase Function is ended.

Staircase On time (hh:mm:ss)	*00:00:05…***00:00:10…**18:12:15*

This parameter determines the Staircase on time duration. Staircase lighting will be deactivated at the end of the time.

Enable Staircase Warning	****no*** *yes*

This parameter is used to enable/disable warning after end of the Staircase ON time.

Dimming value during Staircase Warning	*0…***50%…**100%*

This parameter is shown when "*Enable Staircase Warning: **yes**" selected. It is* used to select dimming value for the relevant channel when device is in Staircase Warning mode.

Dimming time to Staircase Warning dimming value (from 0% to 100%) (hh:mm:ss.f)	*00:00:00.0…***00:00:04.0…**01:49:13.5*

This parameter is shown when "*Enable Staircase Warning: **yes**" selected. It* is used to determine transition time to reach Staircase Warning Dimming Value when Staircase Function is disabled after end of the *Staircase On* time.

Staircase Warning time (hh:mm:ss)	*00:00:02…***00:00:05…**18:12:15*

This parameter is shown when "*Enable Staircase Warning: **yes**" selected. It* determines the Staircase Warning time duration. Staircase Warning will be deactivated at the end of the time.

Enable communication object "Staircase Permanent"	***no** *yes*

This parameter is used to enable/disable Permanent lighting while Staircase is in process. "Staircase Permanent" group object will be appeared when it is selected "yes". When the Staircase Permanent is activated by the group object, the desired Permanent Dimming Level will be applied. Switching, dimming and staircase trigger object values will be ignored but, Scene and Forced Operation can be activated while Staircase Permanent is ON.

Dimming value during Permanent ON	*0…***100%***

This parameter is shown when "*Enable communication object "Staircase Permanent: **yes**"* selected. It is used to select dimming value for the relevant channel when device is Permanent ON mode.

Dimming time to Permanent ON value (from 0% to 100%) (hh:mm:ss.f)	*00:00:00.0…***00:00:01.5…**01:49:13.5*

This parameter is shown when "*Enable communication object "Staircase Permanent: **yes**"* selected. It is used to determine transition time to reach to Permanent ON dimming value if triggered.

Re-trigger Staircase after Permanent ON disabling	*no* ****yes***

This parameter is shown when "*Enable communication object "Staircase Permanent: **yes**"* selected. It is used to select behavior of Staircase re-triggering after Permanent ON disabling.

5.2.7 Master - Faults

Mains Power Recovery

Dimming value after mains power recovery	***Status as prior to failure*** *0…100%*

This parameter is used to determine the dimming value when the mains power is recovered.

- *Status as prior to failure:* Channel dimming value will be set as before Mains Power Failure.

Forced Operation Status after mains power recovery	**** Status as prior to failure*** *Forced Operation disabled* *Forced Operation activated – Position On* *Forced Operation activated – Position Off*

This parameter is used to determine the Forced Operation status when the mains power is recovered.

- *Status as prior to failure:* Forced Operation status will be set as before Mains Power Failure on Mains Power Recovery.
- *Forced Operation disabled:* Forced Operation status will be de-activated after Mains Power Recovery.
- *Forced Operation activated – Position On:* Forced Operation status will be activated and the related channel output will be switched ON after Mains Power Recovery.
- *Forced Operation activated – Position Off:* Forced Operation status will be activated and the related channel output will be switched OFF after Mains Power Recovery

KNX Bus Failure

Dimming value after KNX bus failure	***Don't change*** *0…100%*

This parameter is used to determine the dimming value when KNX Bus Failure.

- ***Don't change*:** Channel dimming value will NOT be changed after KNX Bus Failure.

Dimming value after KNX bus recovery	***Don't change*** *Status as prior to failure* *0…100%*

This parameter is used to determine the dimming value when the KNX Bus recovered.

- *Don't change*: Channel dimming value will NOT be changed after KNX Bus Failure.
- *Status as prior to failure*: Channel dimming value will be set as before KNX bus Failure.

Forced Operation Status after KNX bus recovery	**** Status as prior to failure*** *Forced Operation disabled* *Forced Operation activated – Position On* *Forced Operation activated – Position Off*

This parameter is used to determine the Forced Operation status when the KNX bus recovered.

- *Status as prior to failure*: Forced Operation status will be set as before KNX bus Failure.
- *Forced Operation disabled:* Forced Operation status will be de-activated after KNX Bus Recovery.
- *Forced Operation activated – Position On:* Forced Operation status will be activated and the related channel output will be switched ON after KNX Bus Failure after KNX Bus Recovery.
- *Forced Operation activated – Position Off:* Forced Operation status will be activated and the related channel output will be switched OFF after KNX Bus Failure after KNX Bus Recovery.

5.2.8 Master - Dimming Curve

This function is used to create the dimming curves as desired. The dimming section time calculation is shown below.

$$[Dimming\ Section\ x\ Time] = [x\ Dimming\ Time] \times \frac{[Dimming\ Section\ 1\ \ldots\ 4\ Time\ Factor]}{[Total\ SUM\ of\ Dimming\ Section\ Time\ Factors]}$$

"x Dimming Time" may vary depends on dimming control type.

e.g. 1= if it is desired to know the **"Dimming Section 3 Time"** while switching ON

Dimming time to Switch On value (From 0% to 100%) = 60 seconds

Dimming Section 1 Time Factor= 10

Dimming Section 2 Time Factor= 20
Dimming Section 2 Threshold (th2) = 25%

Dimming Section 3 Time Factor= 30
Dimming Section 3 Threshold (th3) =50%

Dimming Section 4 Time Factor= 40
Dimming Section 4 Threshold (th4) = 75%

Total SUM of Dimming Section Time Factors = 10 + 20 + 30 + 40

Total SUM of Dimming Section Time Factors = 100

$$[Dimming\ Section\ 3\ Time] = [60] \times \frac{[30]}{[100]}$$
$$[Dimming\ Section\ 3\ Time] = 60 \times 0{,}3 = 18$$
$$[Dimming\ Section\ 3\ Time] = 18\ seconds$$

In this case, 18 seconds will be spent during dimming from 50% to 75% (via Switch ON command)

e.g. 2= if it is desired to know the **"Dimming Section 1 Time"** while dimming from 0 to 100%.

Calculation will be processed with the same values in the previous example except "Dimming time for absolute dimming".

Dimming time for absolute dimming value (from 0 to 100%)= 10 seconds

$$[Dimming\ Section\ 1\ Time] = [10] \times \frac{[10]}{[100]}$$
$$[Dimming\ Section\ 1\ Time] = 10 \times 0{,}1 = 1$$
$$[Dimming\ Section\ 1\ Time] = 1\ second$$

In this case, 1 second will be spent during dimming from 0% to 25% while dimming from 0 to 100%.

Dimming Section 1 [0% - th2%]

Dimming Section 1 Time Factor	***1**...255*

This parameter defines the dimming section time factor between 0% and th2.

“th2” is selected as 25% default.

Dimming Section 2 [th2% - th3%]

Dimming Section 2 Threshold (th2)	*0...**25**...100 %*

This parameter is used to select threshold value for th2%.

Dimming Section 2 Time Factor	***1**...255*

This parameter defines the dimming time between th2 and th3.

“th2” is selected as 25% default.

“th3” is selected as 50% default.

Dimming Section 3 [th3% - th4%]

Dimming Section 3 Threshold (th3)	*0...**50**...100 %*

This parameter is used to select threshold value for th3%.

Dimming Section 3 Time Factor	***1**...255*

This parameter defines the dimming time between th3 and th4.

“th3” is selected as 50% default.

“th4” is selected as 75% default.

Dimming Section 4 [th4% - 100%]

Dimming Section 4 Threshold (th4)	*0...**75**...100 %*

This parameter is used to select threshold value for th4%.

Dimming Section 4 Time Factor	***1**...255*

This parameter defines the dimming time between th4 and 100%.

“th4” is selected as 75% default.

5.3 Channel A...F

5.3.1 Channel A...F - Dimming Settings

Parameter setting	***Take over from master*** *Individual*
This parameter is used to apply parameter settings from master or individually.	
Dimming Method	*Trailing Edge Dimming* *Leading Edge Dimming* ***Auto detect based on the load type***
This parameter is used to select the dimming method based on light load.	

- Set the parameter to “Trailing Edge Dimming”
  This selection is compatible with Trailing Edge driving loads.
- Set the parameter to “Leading Edge Dimming”
  This selection is compatible with Leading Edge driving loads.
- Set the parameter to “Auto detect based on the load type”
  This selection is enables automatic load type detection. Loads will be driven depending on load type.

NOTE: When the “Dimming Method” parameter is set to “Auto detect based on the load type”, the dimmer first runs a load test. It identifies the load type and starts driving the load with the matching dimming method. No further adjustment is needed. If the load type cannot be detected, an error is reported via the “Load Error” communication object.
When “Trailing Edge Dimming” or “Leading Edge Dimming” is selected, no load type detection is performed. The dimmer drives the load directly with the selected method, regardless of the load type. Therefore, make sure the selected method matches the characteristics of your load.
Some loads support both Leading Edge and Trailing Edge dimming. However, driving a non-inductive load with Leading Edge may cause permanent damage to the load or the dimmer in the long run. Select “Leading Edge” for inductive loads and “Trailing Edge” for all other loads.

Dimming Characteristic	***Linear*** *Logarithmic (LED)* *Incandescent Lamps* *Halogen Lamps* *Custom Dimming Curve*
This parameter is used to select dimming characteristic type.	

- Set the parameter to “Linear”
  This selection allows the dimming proportionally.
- Set the parameter to “Logarithmic (LED)”
  This selection allows the dimming for LEDs. (small load)
- Set the parameter to “Incandescent Lamps”
  This selection allows the dimming for Incandescent lamps.
- Set the parameter to “Halogen Lamps”
  This selection allows the dimming for Halogen lamps.
- Set the parameter to “Custom Dimming Curve”
  This selection allows the dimming for desired curve for any other specific light loads. And, Dimming Curve parameter tab will be appeared.

Maximum dimming percentage	*0… ***100***

This parameter is used to select maximum dimming level.

Minimum dimming percentage	****0**… 100*

This parameter is used to select minimum dimming level.

5.3.2 Channel A…F – Switching

Parameter setting	****Take over from master*** *Individual*

This parameter is used to apply parameter settings from master or individually.

Switching On dimming value	*0… ***100**…Last Value*

This parameter is used to select the dimming level when the relevant output is activated through using Switching object.

- Set the parameter to “Last value”
  This selection is used to dim the relevant output through using the saved light level before switched OFF.

Dimming time to Switch On value (0%...100%) (hh:mm:ss.f) (00:00:00.0 = Instant)	*00:00:00.0…***00:00:02.0**…01:49:13.5*

This parameter is used to determine the fade time for Switching On action.

Dimming time to Switch Off value (100%...0%) (hh:mm:ss.f) (00:00:00.0 = Instant)	*00:00:00.0…***00:00:02.0**…01:49:13.5*

This parameter is used to determine the fade time for Switching Off action.

5.3.3 Channel A…F - Dimming Control

Parameter setting	***Take over from master*** *Individual*

This parameter is used to apply parameter settings from master or individually.

Dimming time for absolute dimming value input (0%...100%) (hh:mm:ss.f) (00:00:00.0 = Instant)	*00:00:00.0…**00:00:03.0**…01:49:13.5*

This parameter is used to determine the fade time for absolute dimming action.

Allow switching on via absolute dimming value	*No* ***Yes***

This parameter is used to allow switching ON the relevant output via absolute dimming object or not.

Allow switching off via absolute dimming value	*No* ***Yes***

This parameter is used to allow switching OFF the relevant output via absolute dimming object or not.

Dimming time for relative dimming control (0%...100%) (hh:mm:ss.f) (00:00:00.0 = Instant)	*00:00:00.0…**00:00:03.0**…01:49:13.5*

This parameter is used to determine the fade time for relative dimming control.

Allow switching on via relative dimming control	*No* ***Yes***

This parameter is used to allow switching ON the relevant output via relative dimming control or not.

Allow switching off via relative dimming control	*No* ***Yes***

This parameter is used to allow switching OFF the relevant output via relative dimming control or not.

5.3.4 Channel A…F - Feedback

Parameter setting	***Take over from master*** *Individual*

This parameter is used to apply parameter settings from master or individually.

Status Objects

Enable switching status object	*No* ***Yes***

This parameter is used to show switching status objects. Switching status objects will be visible, If selected "*Yes*".

Switching status sending mode	*Don't transmit* ***Transmit on change*** *Transmit always*

This parameter is used to select transmit type for switching status.

- Set the parameter to "*Transmit on change"*: The switching status will be transmitted when switching status changed.
- Set the parameter to "*Transmit always"*: The switching status will be transmitted regardless of switching state.
- Set the parameter to "*Don't transmit"*: The switching status will never be transmitted.

Enable dimming status object	*No* ***Yes***

This parameter is used to show dimming status objects. Dimming status objects will be visible, If selected "*Yes*".

Dimming status sending mode	*Don't transmit* ***Transmit on change*** *Transmit always*

This parameter is used to select transmit type for dimming status.

- Set the parameter to "*Transmit on change"*: The dimming status will be transmitted when dimming level changed.
- Set the parameter to "*Transmit always"*: The dimming status will be transmitted regardless of dimming level.
- Set the parameter to "*Don't transmit"*: The dimming status will never be transmitted.

Error Objects

Enable comm. object "Overcurrent Error"	***checked** *unchecked*

This parameter used to show Error Object in case of maximum current limit reaching.

Enable comm. object "Overvoltage Error"	***checked** *unchecked*

This parameter used to show Error Object in case of maximum voltage limit reaching.

Enable comm. object "Undervoltage Error"	***checked** *unchecked*

This parameter used to show Error Object in case of minimum voltage limit reaching.

Enable comm. object "Load Error"	***checked** *unchecked*

This parameter used to show the load error status.

Enable comm. object "Overheating Error"	***checked** *unchecked*

This parameter used to show Error Object in case of overheat of device.

Enable comm. object "Short/Open Circuit Error"	***checked** *unchecked*

This parameter used to show Error Object in case of short/open circuit on dimming outputs.

Enable comm. object "Hardware Error"	***checked** *unchecked*

This parameter used to show Error Object in case of switch-dim controller malfunction.

Enable comm. object "Channel Locked"	***checked** *unchecked*

This parameter used to show whether the channel is locked for the continuous Overvoltage condition

Enable comm. object "Voltage (rms) Measurement"	*no* ***yes***

This parameter is used to transmit the measured Voltage for each channel. Load Voltage value unit is Volt. (V)

Enable cyclic sending of Voltage (rms)	***no*** *yes*

This parameter is used for transmitting the load Voltage cyclically If selected "yes".

Voltage (rms) sending period(hh:mm:ss)	***00:00:02**…18:12:15*

This parameter will be shown If cyclic sending of load Voltage selected "yes".

5.3.5 Channel A…F - Forced Operation

Forced Operation function	***Disabled*** *Active (1-bit format)* *Active (2-bit format)* *Active (Use master parameters)*

This parameter is used to enable/disable the Forced Operation via getting settings from master parameter or individually.

Dimming time for Forced Operation function (from 0% to 100%) (hh:mm:ss.f)	*00:00:00.0…**00:00:03.0…**01:49:13.5*

This parameter is used to determine transition time to reach Forced Dimming value.

Dimming value during Forced Operation	*0…**100%…**Force Current Value*

This parameter appears when *"Forced Operation Function = **1-bit format"*** is selected. It is used to select dimming value when Forced Operation is enabled.

- Set the parameter to *"Force Current Value"*: The device will block the current dimming value on the relevant channel until Forced Operation disabled.

Dimming value during Forced Position On	*0…**100%…**Force Current Value*

This parameter appears when *"Forced Operation Function = **2-bit format"*** is selected. It is used to select dimming value when Forced Operation is enabled.

- Set the parameter to *"Force Current Value"*: The device will block the current dimming value on the relevant channel until Forced Operation disabled.

Dimming value during Forced Operation Off	***0…**100%*

This parameter appears when *"Forced Operation Function = **2-bit format"*** is selected. It is used to select dimming value when Forced Operation is disabled.

5.3.6 Channel A…F - Staircase Function

Staircase function	***Disabled*** *Enabled (Individual parameters)* *Enabled (Use master parameters)*

This parameter is used to enable/disable the Staircase function via getting settings from master parameter or individually.

If the "*Enabled (Use master parameters)"* is selected, Master Channel Parameters > Staircase Function parameters will be processed.

If the "*Enabled (Individual parameters)"* is selected, related parameters will be shown below.

Dimming value during Staircase On	*0…**100%***

This parameter is used to select dimming value for the relevant channel when Staircase function is triggered.

Dimming time for Staircase ON dimming value (from 0% to 100%) (hh:mm:ss.f)	*00:00:00.0…***00:00:01.5…***01:49:13.5*

This parameter determines the transition time to reach to dimming value when Staircase Function is ended.

Dimming time for Staircase Switch OFF dimming value (from 0% to 100%) (hh:mm:ss.f)	*00:00:00.0…***00:00:03.0…***01:49:13.5*

This parameter determines the transition time to reach to dimming value when Staircase Function is ended.

Staircase On time (hh:mm:ss)	*00:00:05…***00:00:10…***18:12:15*

This parameter determines the Staircase on time duration. Staircase lighting will be deactivated at the end of the time.

Enable Staircase Warning	***no*** *yes*

This parameter is used to enable/disable warning after end of the staircase function.

Dimming value during Staircase Warning	*0…**50%…**100%*

This parameter is shown when "*Enable Staircase Warning: **yes**" selected. It is* used to select dimming value for the relevant channel when device is in Staircase Warning mode.

Dimming time for Staircase Warning dimming value (from 0% to 100%) (hh:mm:ss.f)	*00:00:00.0…***00:00:04.0…**01:49:13.5*

This parameter is shown when "*Enable Staircase Warning: **yes**" selected. It* is used to determine transition time to reach Staircase Warning Dimming Value when Staircase Function is disabled after end of the *Staircase On* time.

Staircase Warning time (hh:mm:ss)	*00:00:02…***00:00:05…**18:12:15*

This parameter is shown when "*Enable Staircase Warning: **yes**" selected. It* determines the Staircase Warning time duration. Staircase Warning will be deactivated at the end of the time.

Enable communication object "Staircase Permanent"	****no*** *yes*

This parameter is used to enable/disable Permanent lighting while Staircase is in process. "Staircase Permanent" group object will be appeared when it selected "yes". When the Staircase Permanent is activated by the group object, the desired Permanent Dimming Level will be applied. Switching, dimming and staircase trigger object values will be ignored but, Scene and Forced Operation can be activated while Staircase Permanent is ON.

Dimming value during Permanent ON	*0…***100%***

This parameter is shown when "*Enable communication object "Staircase Permanent: **yes**"* selected. It is used to select dimming value for the relevant channel when device is Permanent ON mode.

Dimming time for Permanent ON value (from 0% to 100%) (hh:mm:ss.f)	*00:00:00.0…***00:00:01.5…**01:49:13.5*

This parameter is shown when "*Enable communication object "Staircase Permanent: **yes**"* selected. It is used to determine transition time to reach to Permanent ON dimming value if triggered.

Re-trigger Staircase after Permanent ON disabling	*no* ****yes***

This parameter is shown when "*Enable communication object "Staircase Permanent: **yes**"* selected. It is used to select behavior of Staircase re-triggering after Permanent ON disabling.

5.3.7 Channel A…F – Faults

Parameter setting	***Take over from master*** *Individual*

This parameter is used to select the channel parameter settings from master or individually.

Mains Power Recovery

Dimming value after mains power recovery	***Status as prior to failure*** *0…100%*

This parameter is used to determine the dimming value when the mains power is recovered.

- *Status as prior to failure*: Channel dimming value will be set as before Mains Power Failure in case of Mains Power Recovery.

Forced Operation Status after mains power recovery	***Status as prior to failure*** *Forced Operation disabled* *Forced Operation activated*

This parameter will be shown, if the **Forced Operation** is activated as **1 bit** in the "Channel A/B/C/D" parameters. It is used to determine the Forced Operation status when the mains power is recovered.

- *Status as prior to failure:* Forced Operation status will be set as before Mains Power Failure on Mains Power Recovery.
- *Forced Operation disabled:* Forced Operation status will be de-activated after Mains Power Recovery.
- *Forced Operation activated:* Forced Operation status will be activated after Mains Power Recovery.

Forced Operation Status after mains power recovery	***Status as prior to failure*** *Forced Operation disabled* *Forced Operation activated – Position On* *Forced Operation activated – Position Off*

This parameter will be shown, if the **Forced Operation** is activated as **2 bits** in the "Channel A/B/C/D" parameters. It is used to determine the Forced Operation status when the mains power is recovered.

- *Status as prior to failure:* Forced Operation status will be set as before Mains Power Failure in case of Mains Power Recovery.
- *Forced Operation disabled:* Forced Operation status will be de-activated after Mains Power Recovery.
- *Forced Operation activated – Position On:* Forced Operation status will be activated and the related channel output will be switched ON after Mains Power Recovery.
- *Forced Operation activated – Position Off:* Forced Operation status will be activated and the related channel output will be switched OFF after Mains Power Recovery

KNX Bus Failure

Dimming value after KNX bus failure	***Don't change*** *0…100%*

This parameter is used to determine the dimming value when KNX Bus Failure.

- *Don't change*: Channel dimming value will NOT be changed after KNX Bus Failure.

Dimming value after KNX bus recovery	***Don't change*** *Status as prior to failure* *0…100%*

This parameter is used to determine the dimming value when the KNX Bus recovered.

- ***Don't change*:** Channel dimming value will NOT be changed after KNX Bus Failure.
- ***Status as prior to failure*:** Channel dimming value will be set as before KNX bus Failure.

Forced Operation Status after KNX bus recovery	**** Status as prior to failure*** *Forced Operation disabled* *Forced Operation activated – Position On* *Forced Operation activated – Position Off*

This parameter is used to determine the Forced Operation status when the KNX bus recovered.

- ***Status as prior to failure*:** Forced Operation status will be set as before KNX bus Failure.

5.3.8 Channel A…F - Dimming Curve

This parameter tab will be shown, If the Dimming characteristic is selected as "Custom Dimming Curve" in "Dimming Settings". (see 5.3.1)

Parameter setting	***Take over from master*** *Individual*

This parameter is used to apply parameter settings from master or individually.

Dimming Curve is used for creating the customizable dimming curves. Dimming Section time calculation is shown below.

$$[Dimming\ Section\ x\ Time] = [x\ Dimming\ Time] \times \frac{[Dimming\ Section\ 1\ \ldots\ 4\ Time\ Factor]}{[Total\ SUM\ of\ Dimming\ Section\ Time\ Factors]}$$

"x Dimming Time" may vary depends on dimming control type.

e.g. 1= if it is desired to know the **"Dimming Section 3 Time"** while switching ON

Dimming time to Switch On value (From 0% to 100%) = 60 seconds

Dimming Section 1 Time Factor= 10

Dimming Section 2 Time Factor= 20
Dimming Section 2 Threshold (th2) = 25%

Dimming Section 3 Time Factor= 30
Dimming Section 3 Threshold (th3) =50%

Dimming Section 4 Time Factor= 40
Dimming Section 4 Threshold (th4) = 75%

Total SUM of Dimming Section Time Factors = 10 + 20 + 30 + 40

Total SUM of Dimming Section Time Factors = 100

$$[Dimming\ Section\ 3\ Time] = [60] \times \frac{[30]}{[100]}$$
$$[Dimming\ Section\ 3\ Time] = 60 \times 0{,}3 = 18$$
$$[Dimming\ Section\ 3\ Time] = 18\ seconds$$

In this case, 18 seconds will be spent during dimming from 50% to 75% (via Switch ON command)

e.g. 2= if it is desired to know the **"Dimming Section 1 Time"** while dimming from 0 to 100%.

Calculation will be processed with the same values in the previous example except "Dimming time for absolute dimming".

Dimming time for absolute dimming value (from 0 to 100%)= 10 seconds

$$[Dimming\ Section\ 1\ Time] = [10] \times \frac{[10]}{[100]}$$
$$[Dimming\ Section\ 1\ Time] = 10 \times 0{,}1 = 1$$
$$[Dimming\ Section\ 1\ Time] = 1\ second$$

In this case, 1 second will be spent during dimming from 0% to 25% while dimming from 0 to 100%.

Dimming Section 1 [0% - th2%]

Dimming Section 1 Time Factor	***1**...255*

This parameter defines the dimming section time factor between 0% and th2.

“th2” is selected as 25% default.

Dimming Section 2 [th2% - th3%]

Dimming Section 2 Threshold (th2)	*0...**25**...100 %*

This parameter is used to select threshold value for th2%.

Dimming Section 2 Time Factor	***1**...255*

This parameter defines the dimming time between th2 and th3.

“th2” is selected as 25% default.

“th3” is selected as 50% default.

Dimming Section 3 [th3% - th4%]

Dimming Section 3 Threshold (th3)	*0...**50**...100 %*

This parameter is used to select threshold value for th3%.

Dimming Section 3 Time Factor	***1**...255*

This parameter defines the dimming time between th3 and th4.

“th3” is selected as 50% default.

“th4” is selected as 75% default.

Dimming Section 4 [th4% - 100%]

Dimming Section 4 Threshold (th4)	*0...**75**...100 %*

This parameter is used to select threshold value for th4%.

Dimming Section 4 Time Factor	***1**...255*

This parameter defines the dimming time between th4 and 100%.

“th4” is selected as 75% default.

5.4 Scenes

The scene function of the switch & dim actuator has an 8-bit scene object (DPT 18.001 scene control). You can define 64 scenes on parameter window. A scene can be specified with brightness value and transition time to new brightness.

A scene is activated when object receives a scene number. Saving current channel values as a scene is carried out using the same scene object.

For example;

Scene	recall		save	
	Hex.	Des.	Hex.	Des.
1	0x00	0	0x80	128
2	0x01	1	0x81	129
3	0x02	2	0x82	130
4	0x03	3	0x83	131
5	0x04	4	0x84	132
6	0x05	5	0x85	133
7	0x06	6	0x86	134
8	0x07	7	0x87	135
9	0x08	8	0x88	136
10	0x09	9	0x89	137
11	0x0A	10	0x8A	138
…	…	…	…	…
63	0x3E	62	0xE2	190
64	0x3F	63	0xE3	191

Scene configuration

Scene 1…32	***Not used** *1….64*

This parameter is used to select following parameters belongs to which scene. "*Not used*" meaning following parameters do not belong to any scene.
Device can store scene up to 32. But each scene number can be between 1 and 64.

Scene 1…32

Dimming time to scene values (From 0% to 100%) (hh:mm:ss.f)	*00:00:00…**00:00:03.0**…01:49:13.5*

This parameter defines the transition time of dimming. This parameter defines the dimming time between 0% to 100%. Scene dimming time calculating example shown below;

e.g. Transition time to new brightness= 3 sec
Scene Brightness value= % 25
Current Brightness value= % 60

$$Scene\ Dimming\ Time = \left(\frac{Transition\ time\ to\ new\ brightness}{100}\right) \times |Scene\ Brightness\ Value - Current\ Brightness\ value|$$

The result is = (3/100) x l 25-60 l

=0,03 x l-35l

=0,03 x 35

=1,05 sec

Overwrite scene values on download	***checked** *unchecked*

This parameter is used to select overwriting scenes values via ETS Download.

Channel A…F scene value	***Don't change (Not a part of this scene)** *0…100%*

This parameter is used to select dim value or availability for each channel in related scene.

6. Object Descriptions

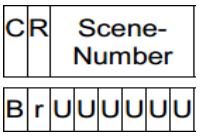
6.1 General Object Description

No	Object name	Name	DP Type	Length	Flags
0	In operation	General	DPT 1.002	1 bit	CRT
This object will be used to report that device still alive and contacted the KNX line. Telegram value can be selected as ON or OFF. If a telegram is not received in a period time, device may be defective or KNX cable interrupted. The object value will be sent to the line, cyclically.					

6.2 Input - Output Object Description

No	Object name	Name	DP Type	Length	Flags
1	Scene Control Input	General	DPT 18.001	1 byte	CWU

This object is used to recall or store scenes up to 64. Device has 32.
8-bit scenes are stored in the device persistent memory.



C: 0 – recall scene
1 – store scene
R: Reserved

Scene	recall		save	
	Hex.	Des.	Hex.	Des.
1	0x00	0	0x80	128
3	0x02	2	0x82	130
5	0x04	4	0x84	132
7	0x06	6	0x86	134
9	0x08	8	0x88	136
11	0x0A	10	0x8A	138
63	0x3E	62	0xE2	190

2	Switch	Output A...F	DPT 1.001	1 bit	CWU

This object is used for switching an output ON/OFF.

0: Switch OFF
1: Switch ON

3	Status switch	Output A...F	DPT 1.001	1 bit	CRT

This object is used to transmit the current switch position of the related output.

0: Channel Switched OFF
1: Channel Switched ON

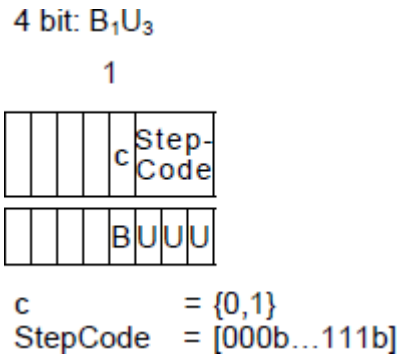
No	Object name	Name	DP Type	Length	Flags
4	Absolute Dimming	Output A...F	DPT 5.001	1 byte	CWU

The brightness value is received via this object for relevant channel. The transition time is configured in "Value" parameter window. Brightness value is following the parameterized value with the limitation. Brightness value status can be sent via "Status brightness value" and "Status switch" objects.

0 : OFF, or min brightness value
255 : 100 %

No	Object name	Name	DP Type	Length	Flags
5	Relative dimming	Output A...F	DPT 3.007	4 bit	CRWTU

The dimming telegrams are received via the group address linked with this object. The dimming parameterized speed and the limits are configured in "Dimming" parameter window. A stop command will stop dimming transition on current brightness value. This object is always visible.



c	Increase or decrease the brightness	0 = Decrease 1 = Increase
StepCode	The number of intervals into which the range of 0 % ... 100 % is subdivided or the break indication.	- 001b ... 111b: Step Number of intervals = $(2)^{(-1)}$ - 000b : Break

No	Object name	Name	DP Type	Length	Flags
6	Dimming Status	Output A...F	DPT 5.001	1 byte	CRT

This object is used to transmit the current dimming level of the related output.

0 : OFF, or min brightness value
255 : 100 %

No	Object name	Name	DP Type	Length	Flags
7	Forced operation	Output A...F	DPT 1.003	1bit	CWU
			DPT 2.001	2 bit	CWU

This object is used to set the brightness value of the output which is directly determined by this object and also blocks the channel for any other control. The brightness value is set to parameterized position in "Function" window. Forced operation has the highest priority.

Bit Field		Description
Bit 0	:	Switching state "0": switching off "1": switching on
Bit 1	:	Forced control "0": inactive "1": active

No	Object name	Name	DP Type	Length	Flags
8	Forced Operation Status	Output A...F	DPT 1.003	1 bit	CRT
This object is used to show status of Forced Operation. 0 : Forced Operation is Disabled 1 : Forced Operation is Enabled					
9	Staircase Trigger	Output A...F	DPT 1.001	1 bit	CWU
This object is used to activate / de-activate the staircase function. 0 = Staircase Switch OFF 1 = Staircase Switch ON					
10	Staircase Permanent On	Output A...F	DPT 1.003	1 bit	CWU
This object is used to mask the Staircase function. If the Permanent ON object is set to Enable, the staircase function will be stopped and Permanent ON dimming value will be applied. If the Permanent ON object is disabled, Staircase function will be re-triggered or queued function will be processed. NOTE: “Re-trigger Staircase after Permanent On disabled” function must be selected “Yes” on Staircase Function parameter page. (see 5.2.6) After bus voltage return, the object will be deactivated. 0 = Permanent ON Disable 1 = Permanent ON Enable					

6.3 Error Objects

No	Object name	Name	DP Type	Length	Flags
11	Overcurrent Error	Error Output A…F	DPT 1.011	1 bit	CRT
This object sends the “1” value when the current limit(max 1.5 A) is exceeded on the related dimming output. Device also will shut down the output immediately. Channel closed the load with a overcurrent error. The load is tried to be driven again by pressing the button or giving a new control command. If there is an error, it will error again. NOTE: The device won’t send “0” value automatically while it is working properly. Read request only. 0: No Error 1: Error					
12	Overvoltage Error	Error Output A…F	DPT 1.011	1 bit	CRT
This object sends the “1” value when the voltage limit(max 265V AC) is exceeded on the related dimming output. Device will switch OFF the output, immediately. When the line voltage is decreased from max voltage limit, the device will start working automatically and device will send “0” value from this object. If more than 3 overvoltages occur within 2 minutes, the channel is closed. Control is not allowed for 3 minutes. When the time is up, it sets the channel brightness to "0". In case of instantaneous overvoltage, it immediately closes the channel. When the line voltage returns to normal (below 240V), it brings the load to the last brightness value. 0: No Error 1: Error					
13	Overheating Error	Error Output A…F	DPT 1.011	1 bit	CRT
The upper limit for Over-Heating is 75°C. Control is not allowed until the temperature drops below 55 °C. The channel is left closed. NOTE: The device won’t send “0” value automatically while it is working properly. Read request only. 0: No Error 1: Error					
14	Hardware Error	Error Output A…F	DPT 1.011	1 bit	CRT
It is an error condition related to the calibration of the device. The channel needs to be recalibrated. NOTE: The device won’t send “0” value automatically while it is working properly. Read request only. 0: No Error 1: Error					

15	Short/Open Circuit Error	Error Output A…F	DPT 1.011	1 bit	CRT

This object sends the “1” value and the device also will shut down the output immediately, if dimming output get short or open circuit. Channel closed the load with a Short/Open circuit error. The load is tried to be driven again by pressing the button or giving a new control command. If there is an error, it will error again.

NOTE: If the dimming output power consuming is lower than 2 Watt, the device will consider this as Open-Circuit.

NOTE: The device won’t send “0” value automatically while it is working properly. Read request only.

0: No Error
1: Error

16	Undervoltage Error	Error Output A…F	DPT 1.011	1 bit	CRT

When the line voltage drops below 85V, the load is turned off. Control is not allowed until the

voltage rises above 110V. When the mains voltage exceeds 110V, it returns to the old brightness

value.

NOTE: The device won’t send “0” value automatically while it is working properly. Read request only.

0: No Error
1: Error

17	Load Error	Error Output A…F	DPT 1.011	1 bit	CRT

Channel closed the load with a load error. The load is tried to be driven again by pressing the button

or giving a new control command. If there is an error, it will error again.

This error is reported only when “Dimming Method” is set to “Auto detect based on the load type” and the connected load is not suitable.

NOTE: The device won’t send “0” value automatically while it is working properly. Read request only.

0: No Error
1: Error

18	Channel Lock	Error Output A…F	DPT 1.011	1 bit	CRT

If the channel overvoltage error occurs 3 times in 2 minutes, the channel is not allowed to operate

for 3 minutes. This com object takes the value 1 while it is locked.

NOTE: The device won’t send “0” value automatically while it is working properly. Read request only.

0: Unlocked
1: Locked

19	Mains Power Failure	Error Output A...F	DPT 1.011	1 bit	CRT
If the mains voltage not connected to relevant channel, an information will be transmitted via this object.					

6.4 Measurement Objects

No	Object name	Name	DP Type	Length	Flags
20	Voltage (rms)	Error Output A...F	DPT 14.027	4 bytes	CRT
This object sends the measured load voltage for the related output. Value unit is Volt (V)					