

EAE KNX UNIVERSAL DIMMER



Product Order Nr: 48038

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1. General Features

EAE KNX Universal Dimmer Actuator has 5 independent outputs. Maximum switching voltage is 250V and maximum current is 1 A for each channel. 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 ETS4 or above.



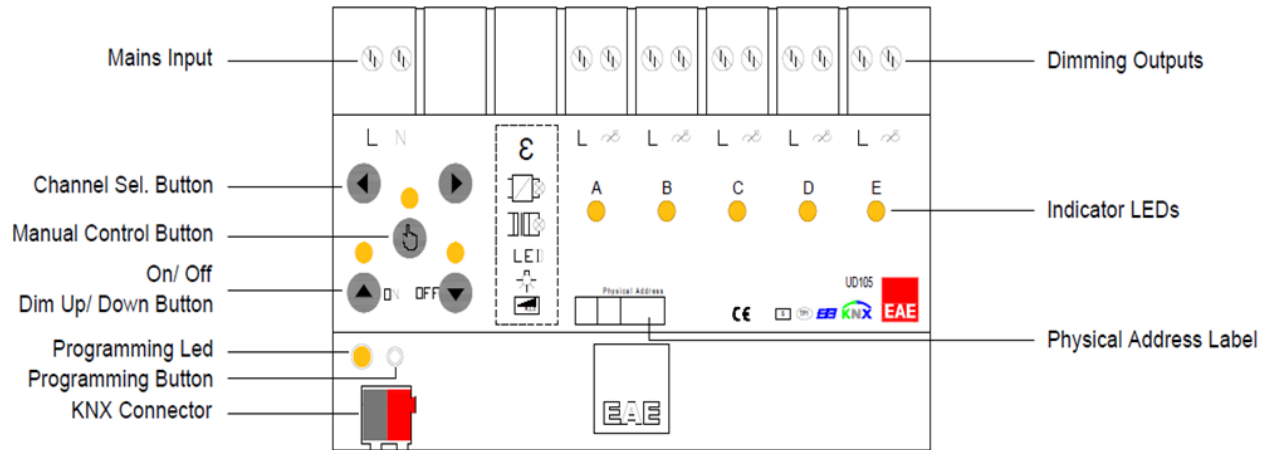
Channel features of dimming actuator;

- Staircase lighting
- Forced Operation
- Channel Grouping (merging outputs for high power lamps)

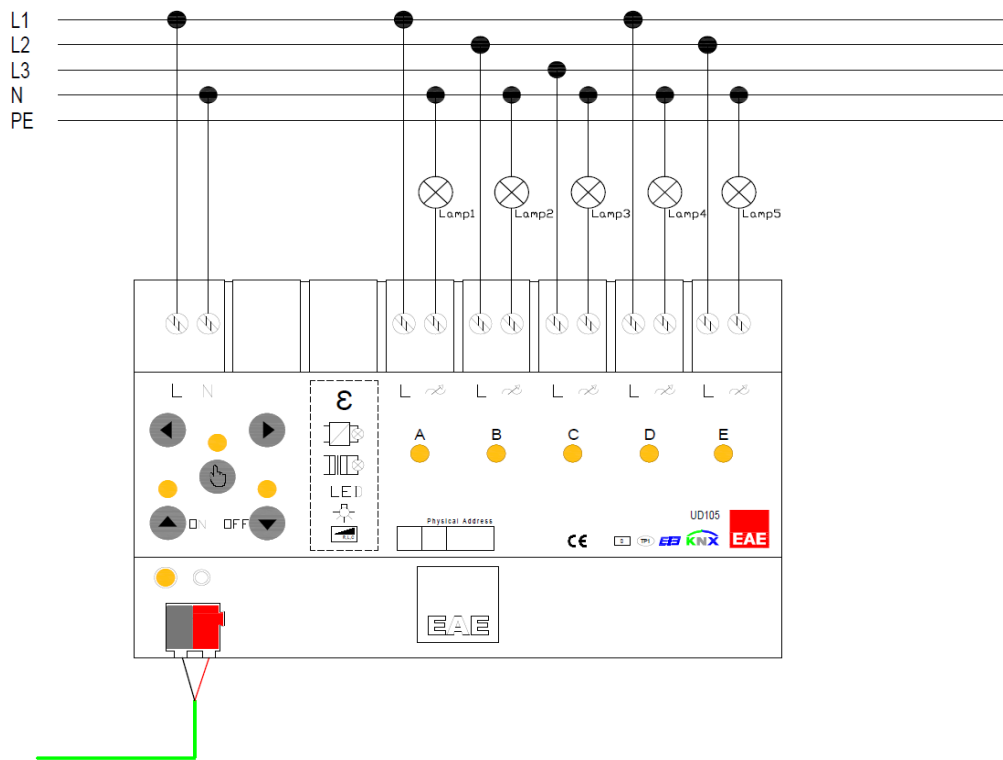
All features can be used separately or together. Please consider that those features will be processed depending on priority. Bus voltage fails and returns behavior can be set via ETS configuration.

2. Device Technology

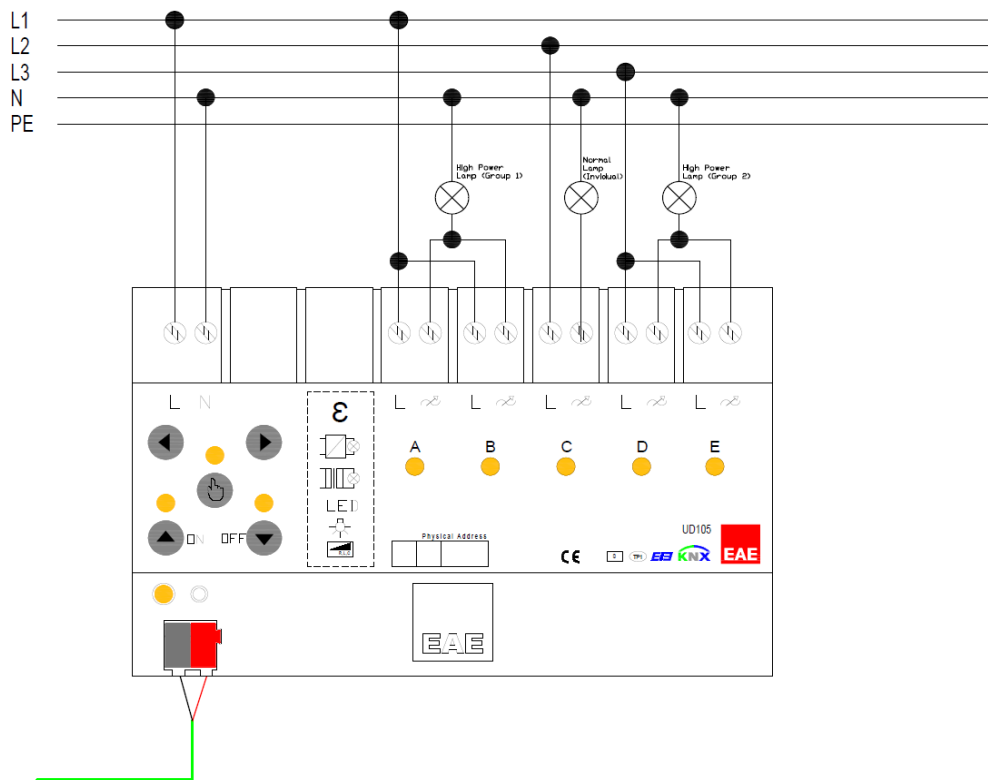
2.1 Device Peripherals



2.2 Connection Diagram



Single Channel Control



Grouped Channel Control

2.3 Technical Data

Type of protection	IP 20	EN 60 529	
Safety class	II	EN 61 140	
Power supply	- Voltage	21V... 30V DC, SELV	
	- Current consumption	< 10 mA	
External supply	---		
Connections	- Screw terminals	0,5...3,31 mm ² solid and stranded wire 0,5...3,31 mm ² stranded wire with ferrule 0.5 Nm	
	- Max. tightening torque	Bus connection terminal	
	- KNX		
Output	- Switching & Dimming	5 outputs, Triac output	
	- Cable length	Max. 200 meters	
	- Max. switching power	400 VA per channel	
	- Mechanical life	Lifetime	
Type of contact	- Triac, phase dimming		
Installation	- 35mm mounting rail	EN 60 715	
Operating elements	- LED (red) and button	For physical address programming	
Temperature range	- Ambient	-5° C + 45° C	
	- Storage	-25° C + 55° C	
	- Transport	-25° C + 70° C	
Humidity	- Max. air humidity	85 % no moisture condensation	
Dimensions		66 x W x 90 mm	
	Width W in mm	180 mm	
	Width W in units (18 mm modules)	10 modules	
Weight	0.45 kg		
Box	Plastic, polycarbonate, color grey		
CE	In accordance with the EMC guideline and low voltage		
Application program	Communication objects	Number of addresses(max)	Number of assignments(max)
		151	255

NOTE: Device default physical address is 15.15.255. In order to configure switch actuator, ETS application file “.knxprod” is needed. It’s possible to download the file on EAE 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	DTP Type	Number of bits	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	Output A...E	Switching	1.001	1 bit	CWU
3, 23, 43, 63, 83	Output A...E	Switching Status	1.001	1 bit	CRT
4, 24, 44, 64, 84	Output A...E	Absolute dimming	5.001	1 byte	CWU
5, 25, 45, 65, 85	Output A...E	Relative dimming	3.007	4 bit	CRWTU
6, 26, 46, 66, 86	Output A...E	Dimming Status	5.001	1 byte	CRT
7, 27, 47, 67, 87	Output A...E	Forced operation (1-bit)	1.001	1bit	CWU
8, 28, 48, 68, 88	Output A...E	Forced operation (2-bit)	2.001	2 bit	CWU
9, 29, 49, 69, 89	Output A...E	Status Forced Operation	1.003	1 bit	CRT
10, 30, 50, 70, 90	Output A...E	Staircase Trigger	1.003	1 bit	CWU
11, 31, 51, 71, 91	Output A...E	Staircase Permanent	1.001	1 bit	CWU
12, 32, 52, 72, 92	Output A...E	Current (rms)	14.019	4 byte	CRT
13, 33, 53, 73, 93	Output A...E	Voltage (rms)	14.027	4 byte	CRT
14, 34, 54, 74, 94	Output A...E	Mean Active Power	14.056	4 byte	CRT
15, 35, 55, 75, 95	Output A...E	Power Factor	14.057	4 byte	CRT
16, 36, 56, 76, 96	Output A...E	Overcurrent Error	1.011	1 bit	CRT
17, 37, 57, 77, 97	Output A...E	Overvoltage Error	1.011	1 bit	CRT
18, 38, 58, 78, 98	Output A...E	Overheating Error	1.011	1 bit	CRT
19, 39, 59, 79, 99	Output A...E	Hardware Error	1.011	1 bit	CRT
20, 40, 60, 80, 100	Output A...E	Short Circuit Error	1.011	4 byte	CRT

4. Priority Order List

Each function has priority between of them. 1 is highest priority of all.

- 1- Bus voltage return or failure
- 2- Forced Operation
- 3- Permanent ON
- 4- Staircase Function
- 5- Brightness or Switch 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 for programming whether manual control is to be enabled always, enabled when KNX Bus failure or disabled via the button on the device. 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.

Dimming Behavior

Dimming transition time 1...%100 = 10 sec

Allow switching on/off via dimming = no

Dimming type = Start stop

Button Behavior

Short Press ON = Switching ON

Short Press OFF = Switching OFF

Long Press ON = Dimming BRIGHTER

Long Press OFF = Dimming DARKER

- 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.

<i>Button activates Manual Operation</i>	<i>On Single Press</i> <i>*On 1s, 1.5s, 2s, 2.5s, 3s Long Press</i>
--	---

This parameter can be used for selecting Manual Operation activation method of manual button.

- Set the parameter to “On Single Press”
This selection is used to activate Manual Operation via pressing the Manual button for a short time.
- Set the parameter to “On 1s, 1.5s, 2s, 2.5s, 3s Long Press”
This selection is used to activate Manual Operation via pressing and holding the Manual button for a selected time.

<i>Long operation time of On-Off buttons (x 100ms)</i>	5... *10 ...255
--	------------------------

This parameter can be used for dimming activation via using Manual On – Off buttons.

NOTE: Device must be in the manual mode.

<i>Auto disable Manual Operation after inactivity</i>	<i>No</i> <i>*Yes</i>
---	---------------------------------

This parameter can be used to select the Manual Operation disabling method.

- Set the parameter to “No”
This selection is prevents the disabling manual operation automatically.
- Set the parameter to “Yes”
This selection is used to disabling Manual Operation automatically at end of the timeout time.

<i>Timeout time (hh:mm:ss)</i>	<i>*00:00:10...00:04:15</i>
--------------------------------	------------------------------------

This parameter will be displayed if “Auto disable Manual Operation after inactivity” selected “Yes”. Automatic disabling of Manual Operation time can be selected as desired.

<i>Auto enable Manual Operation on KNX Bus failure</i>	<i>No</i> <i>*Yes</i>
--	---------------------------------

This parameter can be used to enable Manual Operation automatically when KNX Bus failure.

<i>Auto disable Manual Operation after KNX Bus recovery</i>	<i>No</i> <i>*Yes</i>
---	---------------------------------

This parameter can be used to disable Manual Operation automatically when KNX Bus recovery.

5.1.2 In Operation

<i>Enable sending In operation</i>	*no yes
------------------------------------	--------------------------

This object is using to report device still alive and connected the KNX bus line. Telegram value is selectable like "0" or "1". If telegram is not received, device may be defective or KNX cable will be interrupted.

If the parameter selected yes;

<i>In Operation sending period (hh:mm:ss)</i>	00:00:01... *00:00:10 ...18:12:15
---	--

This parameter is using for "In operation" communication object to sends to KNX line cyclically.

<i>Bit value</i>	0 *1
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This parameter is used to select "In Operation" telegram value.

5.1.3 Channel Grouping

<i>Channel A, B, C, D, E</i>	*Individual Group 1 Group 2
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This parameter can be used to make the channels individual or grouped. Each channel can be configured independently.

As known as, each channel output power is 250VA. If the load higher than that, the channels must be grouped.

For an e.g. If a huge power lamp(700VA) driven is needed, 3 channels must be grouped that can handle the power. For this case, A, B and C can be grouped. Cable wiring of dimming outputs of these channels must be paralleled.

NOTE: Channels have alphabetical priority (A-E) 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*.

For ex.: 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 and 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, too. 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.

Lastly, Channel A or/and Channel B parameters can be taken from Master Channel Parameters for this case.

5.1.4 Telegram Limiting

<i>Enable telegram limiting</i>	no *yes
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If parameter selected "yes"; *Telegram limit count* and *Telegram limit period duration parameters* are visible.

<i>Telegram limit count</i>	1... *10 ...255
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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.

NOTE: The buffered object value can be updated when the object value is updated.

<i>Telegram limit period</i>	*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

<i>Dimming Method</i>	*Trailing Edge Dimming <i>Leading Edge Dimming</i> <i>Auto detect based on the load type</i>
-----------------------	---

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.

<i>Dimming Characteristic</i>	*Linear <i>Logarithmic (LED)</i> <i>Incandescent Lamps</i> <i>Halogen Lamps</i> <i>Custom Dimming Curve</i>
-------------------------------	--

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.

<i>Maximum dimming percentage</i>	0... *100
-----------------------------------	------------------

This parameter is used to select maximum dimming level.

<i>Minimum dimming percentage</i>	*0... 100
-----------------------------------	------------------

This parameter is used to select minimum dimming level.

5.2.2 Master - Switching

<i>Switching On dimming value</i>	<i>0... *100...Last Value</i>
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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.

<i>Dimming time to Switch On value (0%...100%)</i>	<i>00:00:00:0... *00:00:02:0...01:49:13:5</i>
<i>(hh:mm:ss:f) (00:00:00:0 = Instant)</i>	

This parameter is used to determine the transition timing for Switching On action.

<i>Dimming time to Switch Off value (100%...0%)</i>	<i>00:00:00:0... *00:00:02:0...01:49:13:5</i>
<i>(hh:mm:ss:f) (00:00:00:0 = Instant)</i>	

This parameter is used to determine the transition timing for Switching Off action.

5.2.3 Master - Dimming Control

<i>Dimming time for absolute dimming value input</i>	<i>00:00:00:0... *00:00:03:0...01:49:13:5</i>
<i>(0%...100%) (hh:mm:ss:f) (00:00:00:0 = Instant)</i>	

This parameter is used to determine the transition timing for absolute dimming action.

<i>Allow switching on via absolute dimming value</i>	<i>No</i>
	<i>*Yes</i>

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

<i>Allow switching off via absolute dimming value</i>	<i>No</i>
	<i>*Yes</i>

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

<i>Dimming time for relative dimming control</i>	<i>00:00:00:0... *00:00:03:0...01:49:13:5</i>
<i>(0%...100%) (hh:mm:ss:f) (00:00:00:0 = Instant)</i>	

This parameter is used to determine the transition timing for relative dimming control.

<i>Allow switching on via relative dimming control</i>	<i>No</i>
	<i>*Yes</i>

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

<i>Allow switching off via relative dimming control</i>	<i>No</i>
	<i>*Yes</i>

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.

If "Transmit on change" selected, switching status will be transmitted when switching status changed.

If "Transmit always" selected, switching status will be transmitted regardless of switching state.

If "Don't transmit" selected, 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.

If "Transmit on change" selected, dimming status will be transmitted when dimming level changed.

If "Transmit always" selected, dimming status will be transmitted regardless of dimming level.

If "Don't transmit" selected, dimming status will never be transmitted.

Error Objects

<i>Enable comm. object "Overcurrent Error"</i>	*checked <i>unchecked</i>
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This parameter used to show Error Object in case of maximum current limit reaching.

<i>Enable comm. object "Overvoltage Error"</i>	*checked <i>unchecked</i>
--	-------------------------------------

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

<i>Enable comm. object "Overheating Error"</i>	*checked <i>unchecked</i>
--	-------------------------------------

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

<i>Enable comm. object "Short Circuit Error"</i>	*checked <i>unchecked</i>
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This parameter used to show Error Object in case of short circuit on loads.

<i>Enable comm. object "Hardware Error"</i>	*checked <i>unchecked</i>
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This parameter used to show Error Object in case of switch-dim controller malfunction.

Measurement Objects

<i>Enable comm. object "Current (rms) Measurement"</i>	<i>no</i>
	<i>*yes</i>

This parameter is used to show the load Current in use for each channel. Load Current value unit is showing as Ampere. (A)

<i>Enable cyclic sending of Current (rms)</i>	<i>*no</i>
	<i>yes</i>

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

<i>Current (rms) sending period(hh:mm:ss)</i>	<i>*00:00:02...18:12:15</i>
---	------------------------------------

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

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

This parameter is used to show the Voltage in use for each channel. Load Voltage value unit is showing as Volts. (V)

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

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

<i>Voltage (rms) sending period(hh:mm:ss)</i>	<i>*00:00:02...18:12:15</i>
---	------------------------------------

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

<i>Enable comm. object "Mean Active Power Measurement"</i>	<i>no</i>
	<i>*yes</i>

This parameter is used to show the load Power in use for each channel. Load Power value unit is showing as Watts. (W)

<i>Enable cyclic sending of Mean Active Power</i>	<i>*no</i>
	<i>yes</i>

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

<i>Mean Active Power sending period(hh:mm:ss)</i>	<i>*00:00:02...18:12:15</i>
---	------------------------------------

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

<i>Enable comm. object "Power Factor Measurement"</i>	<i>no</i>
	<i>*yes</i>

This parameter is used to show the Power Factor in use for each channel. Load Power value unit is showing as cosine theta. (cos θ)

5.2.5 Master - Forced Operation

<i>Forced Operation Function</i>	*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.

<i>Dimming time for Forced Operation function (from 0% to 100%) (hh:mm:ss.f)</i>	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.

<i>Dimming value during Forced Operation</i>	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. If “Force Current Value” option is selected, device will block the current dimming value on the relevant channel until Forced Operation disabling.

<i>Dimming value during Forced Operation On</i>	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. If “Force Current Value” option is selected, device will block the current dimming value on the relevant channel until Forced Operation disabling.

<i>Dimming value during Forced Operation Off</i>	*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

<i>Dimming value during Staircase On</i>	0... *100%
--	------------

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

<i>Dimming time for Staircase On dimming value (from 0% to 100%) (hh:mm:ss.f)</i>	00:00:00.0... *00:00:01.5...01:49:13.5
---	--

This parameter is used to determine transition time to reach Staircase Dimming Value when Staircase Function is activated.

<i>Dimming time for Staircase Switch Off dimming value (from 0% to 100%) (hh:mm:ss.f)</i>	00:00:00.0... *00:00:03.0...01:49:13.5
---	--

This parameter is used to determine transition time to reach Staircase Dimming Value when Staircase Function is activated.

<i>Staircase On time (hh:mm:ss)</i>	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.

<i>Enable Staircase Warning</i>	*no
	<i>yes</i>

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

<i>Dimming value during Staircase Warning</i>	<i>0... *50%...100%</i>
---	-------------------------

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.

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

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.

<i>Staircase Warning time (hh:mm:ss)</i>	<i>00:00:02... *00:00:05...18:12:15</i>
--	---

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.

<i>Enable communication object “Staircase Permanent”</i>	*no
	<i>yes</i>

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.

<i>Dimming value during Permanent ON</i>	<i>0... *100%</i>
--	-------------------

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 in Staircase Warning mode.

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

This parameter is shown when “*Enable communication object “Staircase Permanent”: 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.

<i>Re-trigger Staircase after Permanent ON disabling</i>	<i>no</i>
	*yes

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

5.2.7 Master - Faults

Mains Power Recovery

<i>Dimming value after mains power recovery</i>	*Status as prior to failure <i>0...100%</i>
---	---

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 well as before Mains Power Failure.

<i>Forced Operation Status after mains power recovery</i>	* Status as prior to failure <i>Forced Operation disabled</i> <i>Forced Operation activated – Position On</i> <i>Forced Operation activated – Position Off</i>
---	--

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 well as before Mains Power Failure.

KNX Bus Failure

<i>Dimming value after KNX bus failure</i>	*Don't change <i>0...100%</i>
--	---

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.

<i>Forced Operation Status after KNX bus failure</i>	* Keep current status <i>Forced Operation disabled</i> <i>Forced Operation activated – Position On</i> <i>Forced Operation activated – Position Off</i>
--	---

This parameter is used to determine the Forced Operation status when KNX Bus Failure.

- **Keep current status:** Forced Operation status will not be changed after KNX Bus Failure.

KNX Bus Recovery

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 well 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 well as before KNX bus Failure.

5.2.8 Master - Dimming Curve

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

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

“x Dimming Time” may vary depends on dimming control type.

For an 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

$$[\text{Dimming Section 3 Time}] = [60] \times \frac{[30]}{[100]} =$$

$$[\text{Dimming Section 3 Time}] = 60 \times 0,3 = 18$$

$$[\text{Dimming Section 3 Time}] = 18 \text{ seconds}$$

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

For an e.g. 2= if it is desired to know the “**Dimming Section 3 Time**” while absolute dimming from 0 to 100%.

Calculation will be processed with the same parameters in the previous example except “Dimming time for absolute dimming”.

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

$$[\text{Dimming Section 3 Time}] = [10] \times \frac{[30]}{[100]} =$$

$$[\text{Dimming Section 3 Time}] = 10 \times 0,3 = 3$$

$$[\text{Dimming Section 3 Time}] = 3 \text{ seconds}$$

In this case, 3 seconds will be spent during dimming from 50% to 75% (via absolute brightness control command)

Dimming Section 1 [0% - th2%]

<i>Dimming Section 1 Time Factor</i>	<i>*1...255</i>
--------------------------------------	-----------------

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

“th2” is selected as 25% default.

Dimming Section 2 [th2% - th3%]

<i>Dimming Section 2 Threshold (th2)</i>	<i>0... *25...100 %</i>
--	-------------------------

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

<i>Dimming Section 2 Time Factor</i>	<i>*1...255</i>
--------------------------------------	-----------------

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%]

<i>Dimming Section 3 Threshold (th3)</i>	<i>0... *50...100 %</i>
--	-------------------------

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

<i>Dimming Section 3 Time Factor</i>	<i>*1...255</i>
--------------------------------------	-----------------

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%]

<i>Dimming Section 4 Threshold (th4)</i>	<i>0... *75...100 %</i>
--	-------------------------

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

<i>Dimming Section 4 Time Factor</i>	<i>*1...255</i>
--------------------------------------	-----------------

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

“th4” is selected as 75% default.

5.3 Channel A...E

5.3.1 Channel A...E - Dimming Settings

<i>Parameter setting</i>	*Take over from master <i>Individual</i>
--------------------------	--

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

<i>Dimming Method</i>	*Trailing Edge Dimming <i>Leading Edge Dimming</i> <i>Auto detect based on the load type</i>
-----------------------	---

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.

<i>Dimming Characteristic</i>	*Linear <i>Logarithmic (LED)</i> <i>Incandescent Lamps</i> <i>Halogen Lamps</i> <i>Custom Dimming Curve</i>
-------------------------------	--

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 also, Dimming Curve parameter tab will be appeared.

<i>Maximum dimming percentage</i>	<i>0... *100</i>
-----------------------------------	------------------

This parameter is used to select maximum dimming level.

<i>Minimum dimming percentage</i>	<i>*0... 100</i>
-----------------------------------	------------------

This parameter is used to select minimum dimming level.

5.3.2 Channel A...E - Switching

<i>Parameter setting</i>	<i>*Take over from master Individual</i>
--------------------------	--

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

<i>Switching On dimming value</i>	<i>0... *100...Last Value</i>
-----------------------------------	-------------------------------

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.

<i>Dimming time to Switch On value (0%...100%) (hh:mm:ss:f) (00:00:00:0 = Instant)</i>	<i>00:00:00:0... *00:00:02:0...01:49:13:5</i>
--	---

This parameter is used to determine the transition timing for Switching On action.

<i>Dimming time to Switch Off value (100%...0%) (hh:mm:ss:f) (00:00:00:0 = Instant)</i>	<i>00:00:00:0... *00:00:02:0...01:49:13:5</i>
---	---

This parameter is used to determine the transition timing for Switching Off action.

5.3.3 Channel A...E - Dimming Control

<i>Parameter setting</i>	*Take over from master <i>Individual</i>
This parameter is used to apply parameter settings from master or individually.	
<i>Dimming time for absolute dimming value input</i> <i>(0%...100%) (hh:mm:ss:f) (00:00:00:0 = Instant)</i>	00:00:00:0... *00:00:03:0 ...01:49:13:5
This parameter is used to determine the transition timing for absolute dimming action.	
<i>Allow switching on via absolute dimming value</i>	No *Yes
This parameter is used to allow whether switching ON the relevant output via absolute dimming object or not.	
<i>Allow switching off via absolute dimming value</i>	No *Yes
This parameter is used to allow whether switching OFF the relevant output via absolute dimming object or not.	
<i>Dimming time for relative dimming control</i> <i>(0%...100%) (hh:mm:ss:f) (00:00:00:0 = Instant)</i>	00:00:00:0... *00:00:03:0 ...01:49:13:5
This parameter is used to determine the transition timing for relative dimming control.	
<i>Allow switching on via relative dimming control</i>	No *Yes
This parameter is used to allow whether switching ON the relevant output via relative dimming control or not.	
<i>Allow switching off via relative dimming control</i>	No *Yes
This parameter is used to allow whether switching OFF the relevant output via relative dimming control or not.	

5.3.4 Channel A...E - Feedback

<i>Parameter setting</i>	*Take over from master <i>Individual</i>
--------------------------	--

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

Status Objects

<i>Enable switching status object</i>	<i>No</i> *Yes
---------------------------------------	--------------------------

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

<i>Switching status sending mode</i>	<i>Don't transmit</i> *Transmit on change <i>Transmit always</i>
--------------------------------------	---

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

If "Transmit on change" selected, switching status will be transmitted when switching status changed.

If "Transmit always" selected, switching status will be transmitted regardless of switching state.

If "Don't transmit" selected, switching status will never be transmitted.

<i>Enable dimming status object</i>	<i>No</i> *Yes
-------------------------------------	--------------------------

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

<i>Dimming status sending mode</i>	<i>Don't transmit</i> *Transmit on change <i>Transmit always</i>
------------------------------------	---

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

If "Transmit on change" selected, dimming status will be transmitted when dimming level changed.

If "Transmit always" selected, dimming status will be transmitted regardless of dimming level.

If "Don't transmit" selected, dimming status will never be transmitted.

Error Objects

<i>Enable comm. object "Overcurrent Error"</i>	*checked <i>unchecked</i>
--	-------------------------------------

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

<i>Enable comm. object "Overvoltage Error"</i>	*checked <i>unchecked</i>
--	-------------------------------------

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

<i>Enable comm. object "Overheating Error"</i>	*checked <i>unchecked</i>
--	-------------------------------------

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

<i>Enable comm. object "Short Circuit Error"</i>	*checked <i>unchecked</i>
--	-------------------------------------

This parameter used to show Error Object in case of short circuit on loads.

<i>Enable comm. object "Hardware Error"</i>	*checked <i>unchecked</i>
---	-------------------------------------

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

Measurement Objects

<i>Enable comm. object "Current (rms) Measurement"</i>	<i>no</i> <i>*yes</i>
This parameter is used to show the load Current in use for each channel. Load Current value unit is showing as Ampere. (A)	
<i>Enable cyclic sending of Current (rms)</i>	<i>*no</i> <i>yes</i>
This parameter is used for transmitting the load Current cyclically If selected "yes".	
<i>Current (rms) sending period(hh:mm:ss)</i>	<i>*00:00:02...18:12:15</i>
This parameter will be shown If cyclic sending of load Current selected "yes".	
<i>Enable comm. object "Voltage (rms) Measurement"</i>	<i>no</i> <i>*yes</i>
This parameter is used to show the Voltage in use for each channel. Load Voltage value unit is showing as Volts. (V)	
<i>Enable cyclic sending of Voltage (rms)</i>	<i>*no</i> <i>yes</i>
This parameter is used for transmitting the load Voltage cyclically If selected "yes".	
<i>Voltage (rms) sending period(hh:mm:ss)</i>	<i>*00:00:02...18:12:15</i>
This parameter will be shown If cyclic sending of load Voltage selected "yes".	
<i>Enable comm. object "Mean Active Power Measurement"</i>	<i>no</i> <i>*yes</i>
This parameter is used to show the load Power in use for each channel. Load Power value unit is showing as Watts. (W)	
<i>Enable cyclic sending of Mean Active Power</i>	<i>*no</i> <i>yes</i>
This parameter is used for transmitting the load Power cyclically If selected "yes".	
<i>Mean Active Power sending period(hh:mm:ss)</i>	<i>*00:00:02...18:12:15</i>
This parameter will be shown If cyclic sending of load Power selected "yes".	
<i>Enable comm. object "Power Factor Measurement"</i>	<i>no</i> <i>*yes</i>
This parameter is used to show the Power Factor in use for each channel. Load Power value unit is showing as cosine theta. (cos θ)	

5.3.5 Channel A...E - 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. If “Force Current Value” option is selected, device will block the current dimming value on the relevant channel until Forced Operation disabling.

Dimming value during Forced Operation 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. If “Force Current Value” option is selected, device will block the current dimming value on the relevant channel until Forced Operation disabling.

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...E - Staircase Function

<i>Staircase function</i>	*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.

<i>Dimming value during Staircase On</i>	0... *100%
--	-------------------

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

<i>Dimming time for Staircase On dimming value (from 0% to 100%) (hh:mm:ss.f)</i>	00:00:00.0... *00:00:01.5 ...01:49:13.5
---	--

This parameter is used to determine transition time to reach Staircase Dimming Value when Staircase Function is activated.

<i>Dimming time for Staircase Switch Off dimming value (from 0% to 100%) (hh:mm:ss.f)</i>	00:00:00.0... *00:00:03.0 ...01:49:13.5
---	--

This parameter is used to determine transition time to reach Staircase Dimming Value when Staircase Function is activated.

<i>Staircase On time (hh:mm:ss)</i>	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.

<i>Enable Staircase Warning</i>	*no yes
---------------------------------	-------------------

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

<i>Dimming value during Staircase Warning</i>	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.

<i>Dimming time for Staircase Warning dimming value (from 0% to 100%) (hh:mm:ss.f)</i>	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.

<i>Staircase Warning time (hh:mm:ss)</i>	<i>00:00:02...*00:00:05...18:12:15</i>
--	--

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.

<i>Enable communication object “Staircase Permanent”</i>	<i>*no yes</i>
--	--------------------

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.

<i>Dimming value during Permanent ON</i>	<i>0...*100%</i>
--	------------------

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 in Staircase Warning mode.

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

This parameter is shown when “*Enable communication object “Staircase Permanent”: **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.

<i>Re-trigger Staircase after Permanent ON disabling</i>	<i>no *yes</i>
--	--------------------

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

5.3.7 Channel A...E – Faults

Parameter setting

***Take over from master**
Individual

This parameter is used to apply 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 well 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 well as before Mains Power Failure.

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.

Forced Operation Status after KNX bus failure

*** Keep current status**
Forced Operation disabled
Forced Operation activated – Position On
Forced Operation activated – Position Off

This parameter is used to determine the Forced Operation status when KNX Bus Failure.

- **Keep current status:** Forced Operation status will not be changed after KNX Bus Failure.

KNX Bus Recovery

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 well 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 well as before KNX bus Failure.

5.3.8 Channel A...E - 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.

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

“x Dimming Time” may vary depends on dimming control type.

For an 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

$$[\text{Dimming Section 3 Time}] = [60] \times \frac{[30]}{[100]} =$$

$$[\text{Dimming Section 3 Time}] = 60 \times 0,3 = 18$$

$$[\text{Dimming Section 3 Time}] = 18 \text{ seconds}$$

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

For an e.g. 2= if it is desired to know the “**Dimming Section 3 Time**” while absolute dimming from 0 to 100%.

Calculation will be processed with the same parameters in the previous example except “Dimming time for absolute dimming”.

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

$$[\text{Dimming Section 3 Time}] = [10] \times \frac{[30]}{[100]} =$$

$$[\text{Dimming Section 3 Time}] = 10 \times 0,3 = 3$$

$$[\text{Dimming Section 3 Time}] = 3 \text{ seconds}$$

In this case, 3 seconds will be spent during dimming between 50% and 75% (via absolute brightness control command)

Dimming Section 1 [0% - th2%]

<i>Dimming Section 1 Time Factor</i>	<i>*1...255</i>
--------------------------------------	-----------------

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

“th2” is selected as 25% default.

Dimming Section 2 [th2% - th3%]

<i>Dimming Section 2 Threshold (th2)</i>	<i>0... *25...100 %</i>
--	-------------------------

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

<i>Dimming Section 2 Time Factor</i>	<i>*1...255</i>
--------------------------------------	-----------------

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%]

<i>Dimming Section 3 Threshold (th3)</i>	<i>0... *50...100 %</i>
--	-------------------------

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

<i>Dimming Section 3 Time Factor</i>	<i>*1...255</i>
--------------------------------------	-----------------

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%]

<i>Dimming Section 4 Threshold (th4)</i>	<i>0...*75...100 %</i>
--	------------------------

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

<i>Dimming Section 4 Time Factor</i>	<i>*1...255</i>
--------------------------------------	-----------------

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. You can define for each 64 scenes with parameter window. Scene can be specified like brightness value and transition time to new brightness.

When the actuator receives a telegram that retrieves a scene address, device will set the channels desired brightness level in desired transition time to new brightness.

A scene is activated when it receives its scene number at the scene object. The storing of the current channel values is carried out using the 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...64

***Not used**
1...64

This parameter is used to following parameter belongs to which scene. "Not used" meaning following parameters are not belong to any scene.

Scene 1...64

Dimming time to scene values (From 0% to 100%) *00:00:00.0...01:49:13.5
(hh:mm:ss.f)

This time is defined the transition time of dimming speed. 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

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

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

=0,03 x | -35 |

=0,03 x 35

=1,05 sec

Channel A...E 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.

6. Object Descriptions

6.1 General Object Description

No	Object name	Name	DTP Type	Length	Flags
0	In operation	General	DPT 1.002	1 bit	CRT

You use this object to report device still alive and contacted the KNX line. Telegram value is select ON/OFF. If a telegram is not received, device may be defective or KNX cable will be interrupted. This communication object sends to the line cyclically.

6.2 Input - Output Object Description

No	Object name	Name	DTP 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 scenes are available on the Switch & Dim Actuator.

C	R	Scene- Number
B	r	U U U U U U U U

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

The object to recall and store the scene (1...64) is sent via the group address. 8-bit scenes are stored in the Switch & Dim Actuator.

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

No	Object name	Name	DTP Type	Length	Flags																
2	Switch	Output A...E	DPT 1.001	1 bit	CWU																
<p>This object is used for switching a triac output ON/OFF.</p> <p>0: Deactivate the transmission 1: Activate the transmission</p>																					
3	Status switch	Output A...E	DPT 1.001	1 bit	CRT																
<p>This object is used to send current transmission of triac. This object can be sent with changed or all updated.</p> <p>0: Triac is NOT in transmission 1: Triac is in transmission</p>																					
4	Absolute Dimming	Output A...E	5.001	1 byte	CWU																
<p>The brightness value is received via this object for relevant channel. The transition time is configured in "Value" 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.</p> <p>0 : OFF, or min brightness value 255 : 100 %</p>																					
5	Relative dimming	Output A...E	DPT 3.007	4 bit	CRWTU																
<p>4 bit: B₁U₃</p> <p>1</p> <table border="1" style="margin: auto;"> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td>c</td> <td>Step-</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td>B</td> <td>UUUU</td> </tr> </table> <p>c = {0,1} StepCode = [000b...111b]</p>												c	Step-							B	UUUU
						c	Step-														
						B	UUUU														
<table border="0"> <tr> <td style="width: 50px;">c</td> <td style="width: 400px;">Increase or decrease the brightness</td> <td>0 = Decrease 1 = Increase</td> </tr> <tr> <td>StepCode</td> <td>The number of intervals into which the range of 0 % ... 100 % is subdivided or the break indication.</td> <td>- 001b ... 111b: Step Number of intervals = $(2)^{(\text{stepcode}-1)}$ - 000b : Break</td> </tr> </table> <p>The dimming telegrams are received via the group address linked with this object. The dimming parameterized speed and the limits are configured in "Dimming" window. While in transition operation, a stop command received the brightness value is retained. This object is always visible.</p>						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 = $(2)^{(\text{stepcode}-1)}$ - 000b : Break										
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6	Dimming Status	Output A...E	5.001	1 byte	CRT																
<p>This object is released if the parameter status of brightness value. This object can be sent with changed or all updated.</p> <p>0 : OFF, or min brightness value 255 : 100 %</p>																					

No	Object name	Name	DTP Type	Length	Flags						
7	Forced operation	Output A...E	1.003	1bit	CWU						
			2.001	2 bit	CWU						
<p>This object is used to the switching state of the output is directly determined by this object. The first bit is switching state and the second bit is activated or deactivated the forced control. The brightness value is set to parameterized position in “Function” window. Forced operation is a highest priority.</p> <table border="1"> <thead> <tr> <th>Bit Field</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Bit 0</td> <td>: Switching state “0”: switching off “1”: switching on</td> </tr> <tr> <td>Bit 1</td> <td>: Forced control “0”: inactive “1”: active</td> </tr> </tbody> </table>						Bit Field	Description	Bit 0	: Switching state “0”: switching off “1”: switching on	Bit 1	: Forced control “0”: inactive “1”: active
Bit Field	Description										
Bit 0	: Switching state “0”: switching off “1”: switching on										
Bit 1	: Forced control “0”: inactive “1”: active										
8	Forced Operation Status	Output A...E	1.003	1 bit	CRT						
<p>This object is used to show status of Forced Operation.</p> <p>0 : Forced Operation is Disabled 1 : Forced Operation is Enabled</p>											
9	Staircase Trigger	Output A...E	1.001	1 bit	CWU						
<p>This object is used to activation of the staircase function. This object is enabled, the staircase function is activated.</p> <p>The object is; 0 = disable 1 = enable</p>											
10	Staircase Permanent On	Output A...E	1.001	1 bit	CWU						
<p>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. Otherwise, Staircase function will be either retrIGGERED or queued function will be processed.</p> <p>NOTE: “Re-trigger Staircase after Permanent On disabled” function must be selected “Yes” on Staircase Function parameter page. (see 5.2.6)</p> <p>After bus voltage return, the object is deactivated. This object feature is useful for cleaning person.</p> <p>The object is; 0 = deactivate 1 = permanent ON active</p>											

6.3 Error Objects

No	Object name	Name	DTP Type	Length	Flags
11	Overcurrent Error	Error Output A...E	DPT 1.011	1 bit	CRT
<p>This object sends the “1” value when the current limit(max 1.8 A) is passed in the related dimming output. Device also will shut down the output immediately. When the line current is decreased, the device will start working automatically and device will send “0” value from this object.</p> <p>0: No Error 1: Error</p>					
12	Overvoltage Error	Error Output A...E	DPT 1.011	1 bit	CRT
<p>This object sends the “1” value when the voltage limit(max 265V AC) is passed in the related dimming output. Device also will shut down the output immediately. When the line voltage is decreased, the device will start working automatically and device will send “0” value from this object.</p> <p>0: No Error 1: Error</p>					
13	Overheating Error	Error Output A...E	DPT 1.011	1 bit	CRT
<p>This object sends the “1” value while device getting heat due to lamp driving. Device also will shut down the output immediately. When the device gets cooled down, the device will start working automatically and device will send “0” value from this object.</p> <p>0: No Error 1: Error</p>					
14	Hardware Error	Error Output A...E	DPT 1.011	1 bit	CRT
<p>This object sends the “1” value in case of dimming failure (malfunction on semiconductor like Triac) Device also will shut down the output immediately. Device needs to be rebooted to work properly again. If reboot does not work on it, the device may be broken. Also, it won’t send “0” value.</p> <p>0: No Error 1: Error</p>					
15	Short Circuit Error	Error Output A...E	DPT 1.011	1 bit	CRT
<p>This object sends the “1” value If dimming output get short-circuit. Device also will shut down the output immediately. Device needs to be rebooted to work properly again. Also, it won’t send “0” value.</p> <p>0: No Error 1: Error</p>					

6.4 Measurement Objects

No	Object name	Name	DTP Type	Length	Flags
16	Current (rms)	Error Output A...E	DPT 14.019	4 bytes	CRT
This object is sending the line current for the related output. Value is showing in Amps (A)					
17	Voltage (rms)	Error Output A...E	DPT 14.027	4 bytes	CRT
This object is sending the line voltage for the related output. Value is showing in Volts (V)					
18	Mean Active Power	Error Output A...E	DPT 14.056	4 bytes	CRT
This object is sending the line consuming power for the related output. Value is showing in Watts (W)					
19	Power Factor	Error Output A...E	DPT 14.057	4 bytes	CRT
This object is sending the line power factor for the related output. Value is showing in Cosine theta ($\cos \theta$)					