MW
MEAN WELL

KAA-4R4V
Dimming Actuator
Instruction Manual

Content

1.Overview

1.1 Overview devices

The manual refers to the following devices: (Order Code respectively printed in bold type):

· **KAA-4R4V-10** Dimming Actuator 4-fold, DC 0(1)-10V dimmer 4-fold, 230V AC, 10A .

◎ 4 Channels for LED drivers, lighting switching outputs or for ohmic loads up to 2300W per channel.

◎ Any supposable mixed form of switching outputs and dimming control possible.

· **KAA-4R4V** Dimming Actuator 4-fold, DC 0(1)-10V dimmer 4-fold, 230V AC, 16A.

◎ 4 Channels for LED drivers, lighting switching outputs or for ohmic loads up to 3680W per channel.

◎ Any supposable mixed form of switching outputs and lighting output possible.

Note: The dimming outputs of KAA-4R4V(-10) is a passive type.

1.2 Usage & possible applications

The KAA-4R4V can be used for lighting switches as well as for controlling LED drivers equipped with DC 0(1)-10V dimming function. There are a great number of options for adjusting the dimming process e.g. dimming speeds, transition time, On-/Off-Behavior…. Furthermore, the LED actuator contains of a large scene function and different automatic functions.

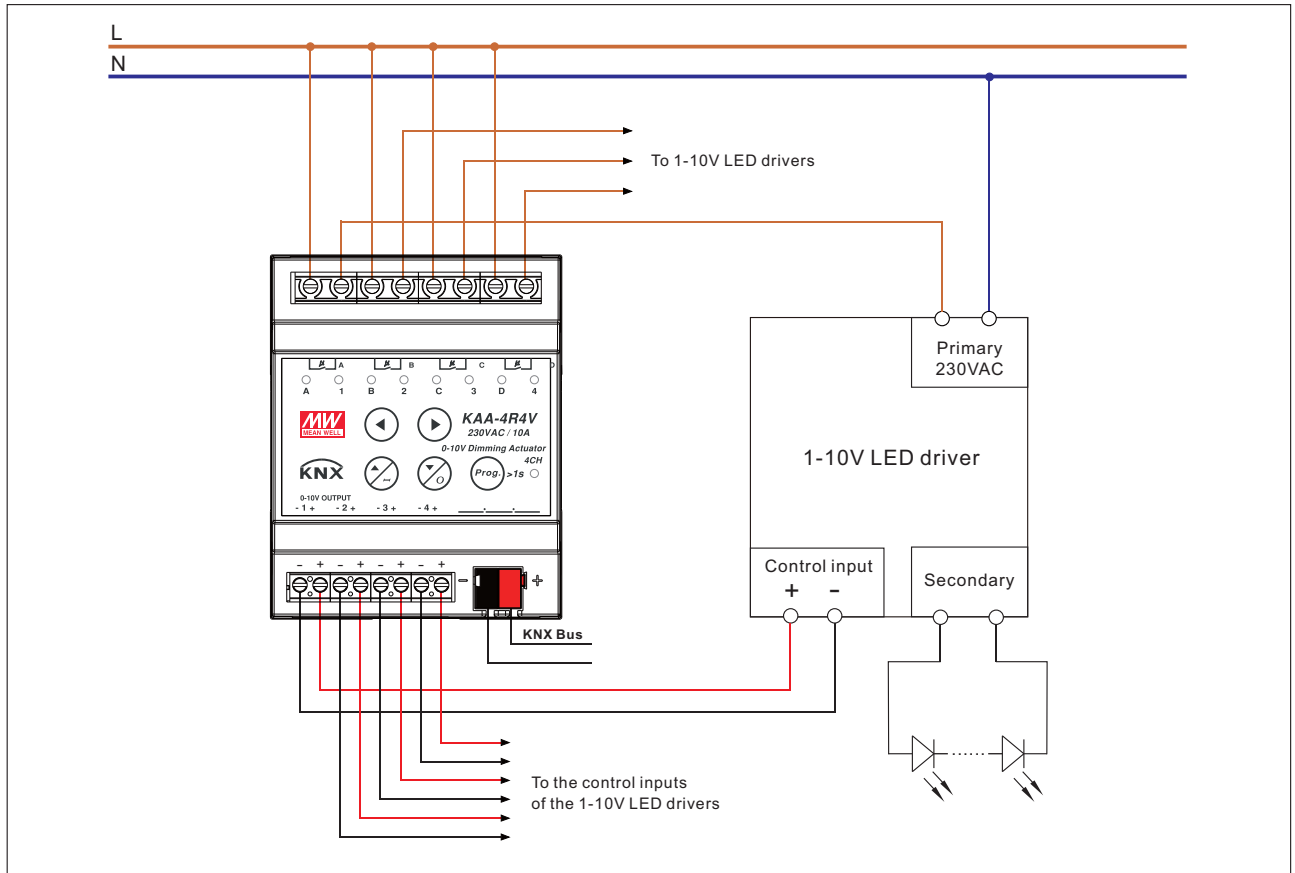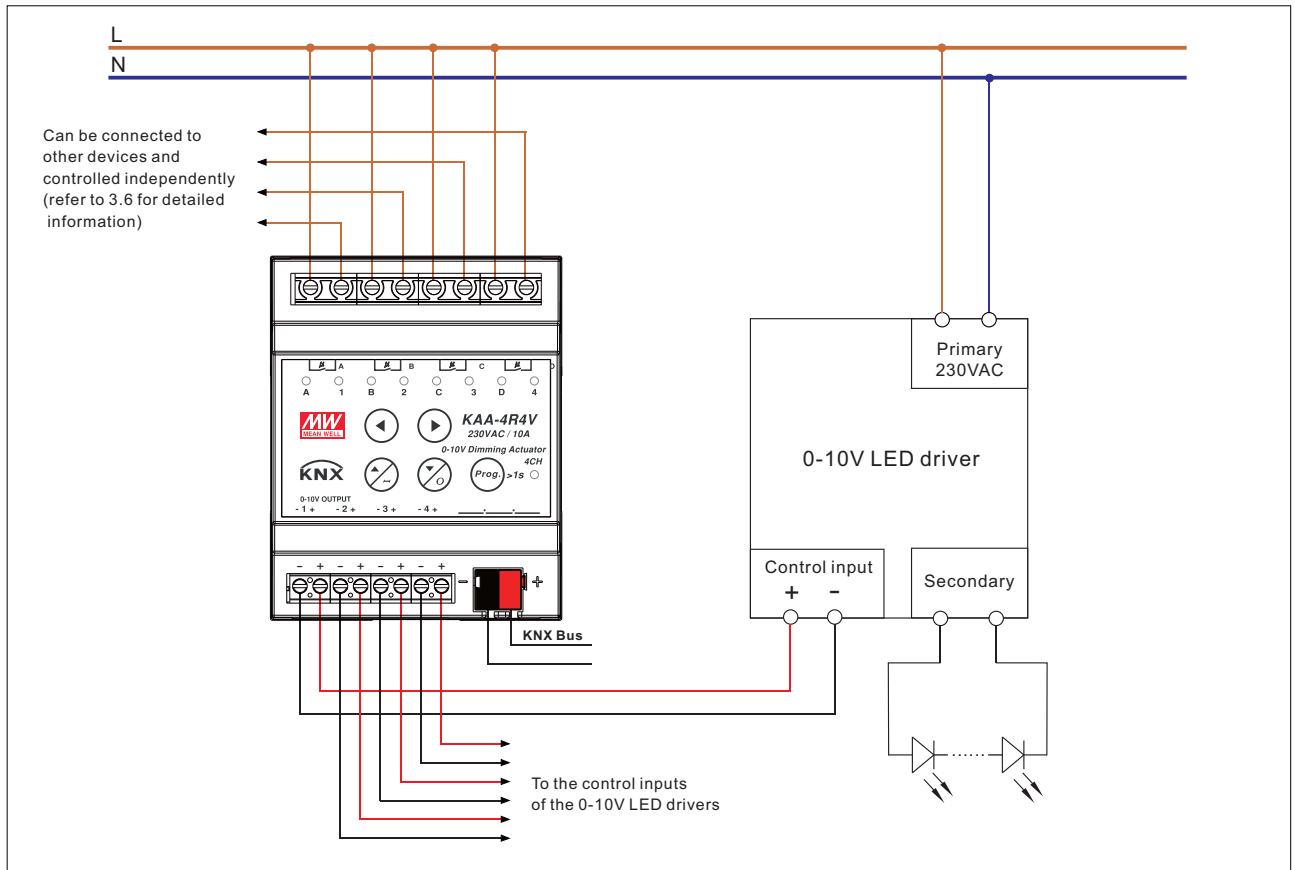### 1.3 Displays and operating elements
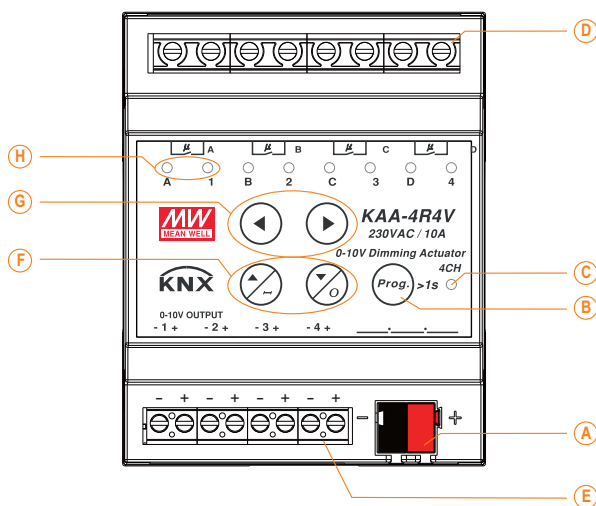
(A) : Bus connection terminal

(B) : Programming button

(C) : Programming LED

(D) : Connections for the relay outputs

(E) : Output for the 0(1)-10V control voltages

(F) : Buttons for the manual on/off/dimming of the selected channel

(G) : Buttons for channel selection and manual control

(H) : Indicators for relay (left) and dimming (right) output of channels

1.4 Circuit diagrams

Configuration 1:Work with DC 1-10V LED driver

To 1-10V LED drivers

KAA-4R4V
230VAC / 10A
0-10V Dimming Actuator
4CH
Prog. >1s

0-10V OUTPUT
- 1 +   - 2 +   - 3 +   - 4 +

KNX Bus

Primary
230VAC

1-10V LED driver

Control input
+   -

Secondary

To the control inputs
of the 1-10V LED drivers

Configuration 2:Work with DC 0-10V LED driver

Can be connected to
other devices and
controlled independently
(refer to 3.6 for detailed
 information)

KAA-4R4V
230VAC / 10A
0-10V Dimming Actuator
4CH
Prog. >1s

0-10V OUTPUT
- 1 +   - 2 +   - 3 +   - 4 +

KNX Bus

Primary
230VAC

0-10V LED driver

Control input
+   -

Secondary

To the control inputs
of the 0-10V LED drivers

Configuration 3:Work with non-dimmable driver
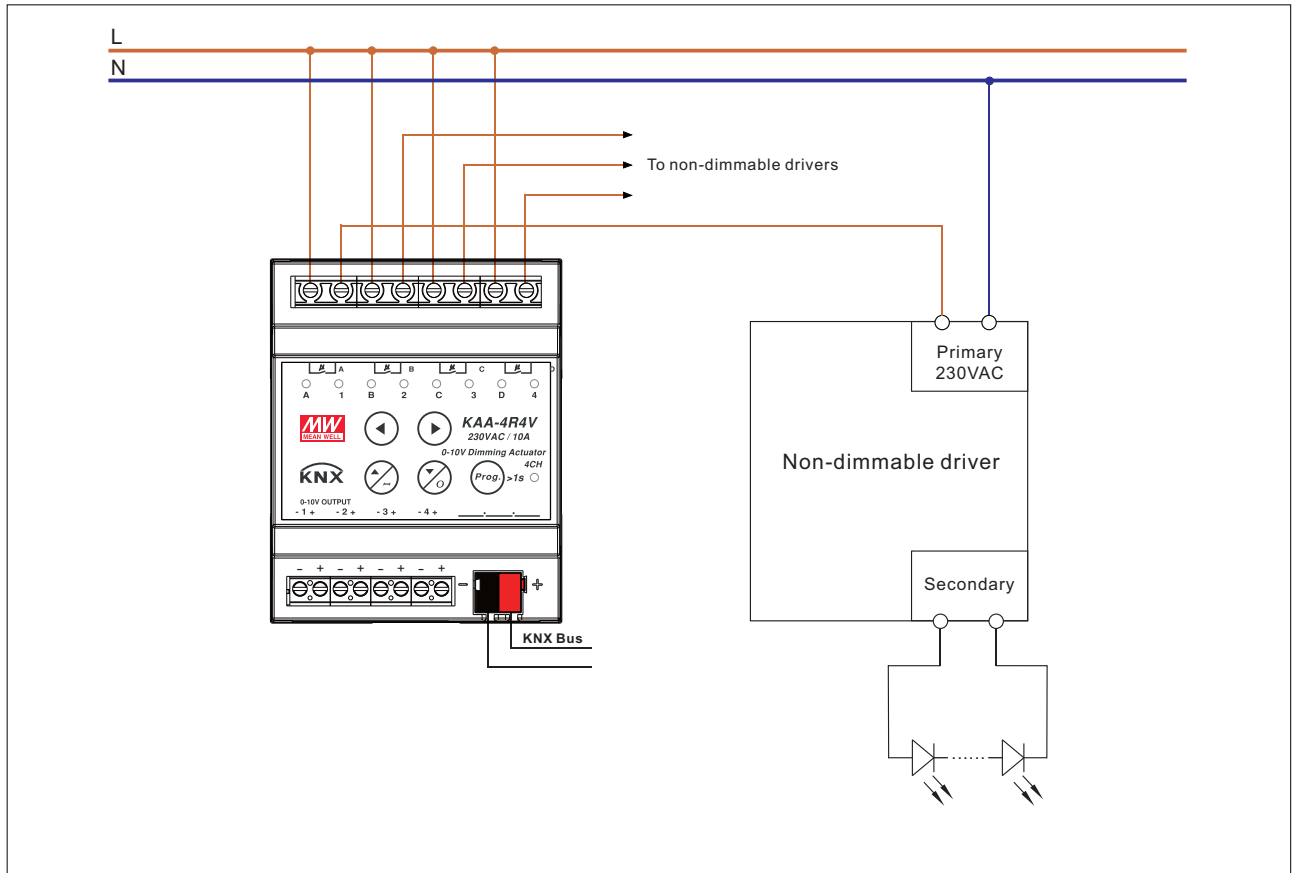
1.5 Structure & Handling

The KAA-4R4V dimming actuator is a 4 channel device with high quality independent latching relays, suitable for all kinds of MEANWELL LED drivers. There is, in addition, a DC 0(1)-10V signal output to perform the dimming on the connected drivers at each channel at the bottom terminal. The dimming curve can be adjusted to linear or logarithmic mode so as to provide an excellent dimming experience for the end users. It also can be used with motion sensors in buildings to save energy. The actuator is powered via the EIB/KNX bus and do not require any additional power supply. The KAA-4R4V is featuring both reliability and multi-functionality to meet various needs in a modern building.

1.6 LEDs and manual control

Every single channel can be switched on or off as well as being dimmed up or down via the manual control.
The buttons left/right are used for selection of the channels. A chosen channel is indicated by its status LED. These LEDs can show the following conditions:

LED behavior	Stage of the channel
LED lights permanently	Channel is in use or dimming value > 0%
LED is permanent OFF	Channel is swtiched off or dimming value = 0%
LED flashes with fast speed	Channel is swtiched on and chosen by the manual control or dimming output is at a value and chosen by the manual control
LED flashes with low speed	Channel is swtiched off and chosen by the manual control or dimming output is at 0V and chosen by the manual control

By the keys up/down, the channels can be switched and dimmed. A short keystroke at the button "up" switches the channel on, a short keystroke at the button "down" switches the channel off. With a long keystroke, the chosen channel can be dimmed. As long as the "up button" is pressed, the channel is dimmed brighter. By a long keystroke at the button "down", the channel is dimmed darker. The dimming process is stopped, when the channel reaches 100%, the lowest value or the button is released.

Relay and dimming output channels can be used independently to create a more flexible application by setting the parameter of "Relay switch mode" in each channel, refer to 3.5 Relay behavior for detailed information.

Output mode	◉ 0-10V Output ◯ 1-10V Output
Relay switch mode	◯ Dimming with relay control ◉ Dimming without relay control

1.7 Information at the ETS-Software
Selection at the product database:
Manufacturer: MEANWELL Enterprises Co.Ltd.
Product family: Output.
Product type: Switch, Dimming Actuator.
Product name: addicted to the used type, e.g.: KAA-4R4V-10 Switch, Dimming Actuator, 4-fold, 10A, MDRC.
Order number: addicted to the used type, e.g.: KAA-4R4V-10.

1.8 Starting up
After wiring, the allocation of the physical address and the parameterization of every channel follow:
(1) Connect the interface with the bus, e.g. MEANWELL USB interface KSI-01U.
(2) Switching the power supply.
(3) Set bus power up.
(4) Press the programming button at the device (red programming LED lights).
(5) Loading of the physical address out of the ETS-Software by using the interface (red LED goes out, as well this process was completed successful).
(6) Loading of the application, with requested parameterization.
(7) If the device is enabled you can test the requested functions (also possible by using the ETS-Software).

2.Communication Objects
2.1 Summary and Usage

Num	Name	Object Function	Length	DPT	Flag	Function Area	Description
Central Objects:							
1	Central Function	Manual control	1 bit	Enable (DPT 1.003)	CW	Central Function	This Communication is shown permanently and can be used to set manual control function in action or no by telegram signal when "Manual Operation" is "lockable over object".
2	Central Function	Switch On/Off	1 bit	Switch (DPT 1.001)	CW	Central Function	This Communication Object is for controlling the main function Switch On/Off and normally connected to all desired control keys.
3	Central Function	Dim absolutely	1 byte	Percentage (DPT 5.001)	CW	Central Function	This Communication is shown permanently and allows the controlling of the main function Dim Absolutely for all channels with activated central function.
4	Central Function	Operation	1 bit	state (DPT 1.011)	CRT	Central Function	This Communication is shown permanently and can be used to send status of the device to the system at regular intervals when active.
Objects per Channel:							
5	Channel 1	Switch On/Off	1 bit	Switch (DPT 1.001)	CW	Normal dimmer	This Communication Object is for controlling Switch On/Off for this channel, which is normally connected to all desired control keys.
6	Channel 1	Switch State	1 bit	State (DPT 1.011)	CRT	Normal dimmer/ Staircase light	This Communication Object is shown when the channel is active and can be used for showing the switching state On/Off of this channel.
7	Channel A	Additional Switch On/Off	1 bit	Switch (DPT 1.001)	CW	"0-10V output" Mode & Relay switch mode= "dimming without relay control"	This Communication Object is shown when the channel's output mode="0-10V Output" and Relay switch mode="dimming without relay control" and can be used to switch the relay on of this channel
8	Channel A	Additional Switch state	1 bit	State (DPT 1.011)	CRT	"0-10V output" Mode & Relay switch mode= "dimming without relay control"	This Communication Object is shown when the channel's output mode="0-10V Output" and Relay switch mode="dimming without relay control" and can be used for showing the relay state of this channel.
9	Channel 1	Dim relatively	4 bit	Dimming control (DPT 3.007)	CW	Normal dimmer	This Communication Object is for controlling the main function Dim Up/Down for this channel, which is normally connected to all desired control keys.
10	Channel 1	Dim absolutely	1 byte	Percentage (DPT 5.001)	CW	Normal dimmer	This Communication Object is for controlling the main function Dim absolutely for this channel, which is normally connected to all desired control keys.
11	Channel 1	State Dimm Value	1 byte	Percentage (DPT 5.001)	CRT	Normal dimmer/ Staircase light	This Communication Object is for showing dimming value of this channel .
12	Channel 1	Scene	1byte	Scene number (DPT 17.001)	CW	Normal dimmer	This Communication Object is only shown after activating in the parameter settings and can be used for calling scenes. (= Additional function if desired)
				Scene control (DPT 18.001)			This Communication Object is only shown after activating in the parameter settings and can be used for calling scenes and learning a new scene. (= Additional function if desired)

13	Channel 1	Automatic 1	1bit	Switch (DPT 1.001)	CW	Normal dimmer	This Communication Object is only shown after activating in the parameter settings and can be used for calling of absolute brightness values with a 1 Bit command. (= Additional function if desired)
14	Channel 1	Automatic 2	1bit	Switch (DPT 1.001)	CW	Normal dimmer	This Communication Object is only shown after activating in the parameter settings and can be used for calling of absolute brightness values with a 1 Bit command. (= Additional function if desired)
15	Channel 1	Automatic 3	1bit	Switch (DPT 1.001)	CW	Normal dimmer	This Communication Object is only shown after activating in the parameter settings and can be used for calling of absolute brightness values with a 1 Bit command. (= Additional function if desired)
16	Channel 1	Automatic 4	1bit	Switch (DPT 1.001)	CW	Normal dimmer	This Communication Object is only shown after activating in the parameter settings and can be used for calling of absolute brightness values with a 1 Bit command. (= Additional function if desired)
17	Channel 1	Block I	1bit	Enable (DPT 1.003)	CW	Normal dimmer/ Staircase light	This Communication Object is shown when the channel is active and can be used for blocking this channel. (= Additional function if desired)
18	Channel 1	Block II	1bit	Enable (DPT 1.003)	CW	Normal dimmer/ Staircase light	This Communication Object is shown when the channel is active and can be used for an extended blocking function. (= Additional function if desired)
19	Channel 1	Staircase light	1bit	Switch (DPT 1.001)	CW	Staircase light	This Communication Object is only shown when Staircase light is active and can be used to switch the staircase function on .
20	Channel 1	Staircase light with time	2byte	time(0-65535)s (DPT 7.005)	CW	Staircase light	This Communication Object is only shown when Staircase light is active and can be used to switch the staircase function on with a certain delay.
21	Channel 1	Prewarning	1bit	Alarm (DPT 1.005)	CRT	Staircase light	This Communication Object is only shown when Staircase light is active and can be used to show status of Prewarning. The object will send a signal when Staircase light enters the period of prewaning and it will send out a signal again when prewarning finished.
22	Channel 1	Permanent ON	1bit	Switch (DPT 1.001)	CW	Staircase light	This Communication Object is only shown when Staircase light is active and can be used to switch the staircase light permanently on.
23	Channel 2						

41	Channel 3						

59	Channel 4						
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3. Reference ETS-Parameter

3.1 General setting

General setting is permanently displayed at the first menu and provides some useful functions for users. Eco mode can be parameterized here, to switch off LEDs on the panels to reduce further power consumption for the actuator.

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Startup timeout	2 -60s [2]	All functions run after startup timeout finished. NOTE: The timeout starts counting when power-on initialization is done. So it always takes longer than you expected
Manual operation	· **active** · disable · lockable over object	Activates the manual control.
Eco Mode, switch LED's off after	30S, 1min, 2min, 5min, 10min, 20min, 30min, 40min, 50min, 60min, not active **not active**	Used to set a timer for switching off the LED indicators to save energy
Send "Operation" cyclic (0=not active)	0 - 30,000min [0s]	Sends status signals from the object Operation at intervals you desire

The following chart shows the objects that belong to general setting:

Number	Name	Length	Usage
1	Manual control	1 bit	Sets manual control in action or not when lockable over object in Manual operation is selected
4	Operation	1 bit	Sends status of the device to the system at regular intervals when active

3.2 Channel selection

Every channel can be activated or deactivated individually. This setting can be done at the submenu "Channel selection":

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Channel 1 [4]	· **not active** · active	Activation of the depending channel

When a channel is activated, a new submenu is shown at the left selection menu. By choosing the submenu for this channel, the further parameterization can be done. Furthermore, a new submenu, with additional functions according the channel, is shown and the depending communication objects are shown.

A channel, which is chosen as "not active", cannot be parameterized. There are no communication objects shown for deactivated channels.

3.3 Handling/ basic functions

The basic functions of the dimming actuator are divided in three sections: Switching, dimming relatively and dimming absolutely. As soon as a channel is activated, the communication functions for the basic functions are standardly shown.

3.3.1 Switching

A channel can be switched on or off by the switching command. In addition, there is a state object, which shows the actual switching state of the output. This object, State On/Off, can be used for visualization. When the actuator shall be switched by a binary input or a push button, this object must be connected with the state object of the binary input or the push button for toggling.

Number	Name	Length	Usage
5	Switch On/Off	1 bit	Switches 1 Bit switches the channel on or off
6	State On/Off	1 bit	Shows the switching state of the channel

3.3.2 Dim relatively

The relative dimming allows continuous dimming. So the lights can be dimmed evenly form 0%(10%) to 100% or from 100% to minimum light. The relative dimming process can be stopped at every state. The behavior of the dimming process can be adjusted via additional parameters, Increase:1%/3%/6%/12%/25%/50%/100%/break ; Derease: 1%/3%/6%/12%/25%/50%/100%/break

Number	Name	Length	Usage
9	Dim relatively	4 bit	Dims the channel continuous up and down

3.3.3 Dim absolutely

A discrete brightness level can be set by the absolute dimming process. By sending an absolute percent value to the 1 Byte object "Dim absolutely", the output assumes a certain brightness level.

Number	Name	Length	Usage
10	Dim absolutely	1 byte	Adjusts a certain brightness level

3.4 Time functions

The dimming actuator has the opportunities of connecting different time functions. Besides the normal on/off delay, an additional staircase function with different sub functions is available.

3.4.1 On/ Off delay

The on and off delay allows a delayed switching. The following chart shows this parameter:

On delay	0	s
Off delay	0	s

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
On delay/ Off delay	0s – 30,000s **[0s]**	Adjustment of the time at which the switch on/switch off process shall be delayed

By using the On delay and Off delay, switching commands can be delayed. The delay can affect only to the rising edge (switch on delay) or the falling edge (switch off delay). Furthermore, both functions can be combined. The following diagram shows the functional principle of both functions, which are activated in this example:
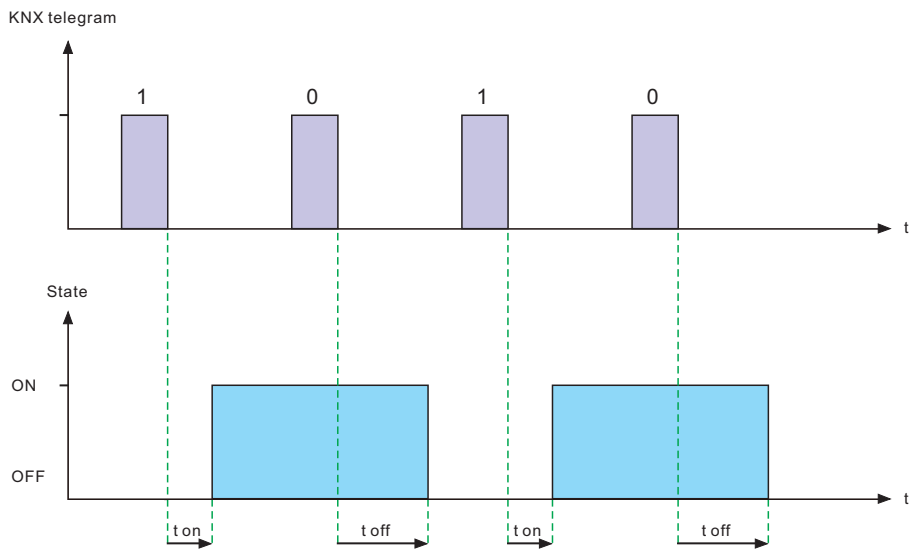
3.5 Staircase light

Staircase light allows an automatic off switching of the channel, when the adjusted time runs out. To parameterize this function, the staircase light must be activated at the corresponding channel:

Staircase light	◉ not active ◯ active

If the staircase light is activated, the corresponding functions are shown at the same menu and the further parameterization can be done.

Duration for staircase light	90	s
Prewarning	◉ not active ◯ active	
Extension	◉ not active ◯ active	
Manual switching off	◉ not active ◯ active	
Brightness value during permanent ON	50% ▼	
When permanent OFF	◉ Dimm down off ◯ Start time of staircase light	

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Duration of staircase light	1s -30,000s [90s]	Duration of the switching process.
Prewarning	• active • **not active**	Activates the prewarning.
Prewarning duration in [s]	1-30,000 [10s]	Is only shown, when the prewarning is activated.
Value of dimming down	1-100% [20%]	Is only shown, when the prewarning is activated Value of which the channel shall be dimmed down, when the staircase time ran out .
Extension	• active • **not active**	Activation of a possible extension of the staircase light .
Manual switching off	• active • **not active**	Activation of Deactivation of the staircase light, before the whole time ran out .
Brightness value during permanent ON	0%(OFF)-100% [50%]	Dimming value at "Permanent ON" mode. Triggered when the object Permanent ON is "1".
When permanent OFF	• **Dim down off** • Start time of staircase light	Tirggered after the the object Permanent ON is "0". The channel turns off when the parameter is Dim down off; the channel continues a new staircase light when set at Start time of staircase light.

The duration of the staircase light indicates how long the channel shall be switched on after an ON-signal.
After lapse of time, the channel is switched off automatically. Via the parameter "Extension"/ "Manual switching off", the staircase function can be modified. The "Manual switching off" allows switching off the channel before the time ran out. The "Extension" allows an extension of the staircase time, by sending another on telegram, so the time is restarted.
The prewarning function creates a dimming down of the lights after expiration of the staircase time. So the lights are still switched on, but with another value. The lights stay at this position for the duration of the prewarning. If the staircase function is activated, the communication object "Switch" is replaced by the communication object "Staircaselight":

Number	Name	Length	Usage
19	Staircaselight	1 bit	switches the staircase function on

The staircase function has no influence to the relative or absolute dimming.
At the following diagram, the staircase function is shown, with an activated deactivation and extension.
The prewarning is activated with a dim down value of 20%:
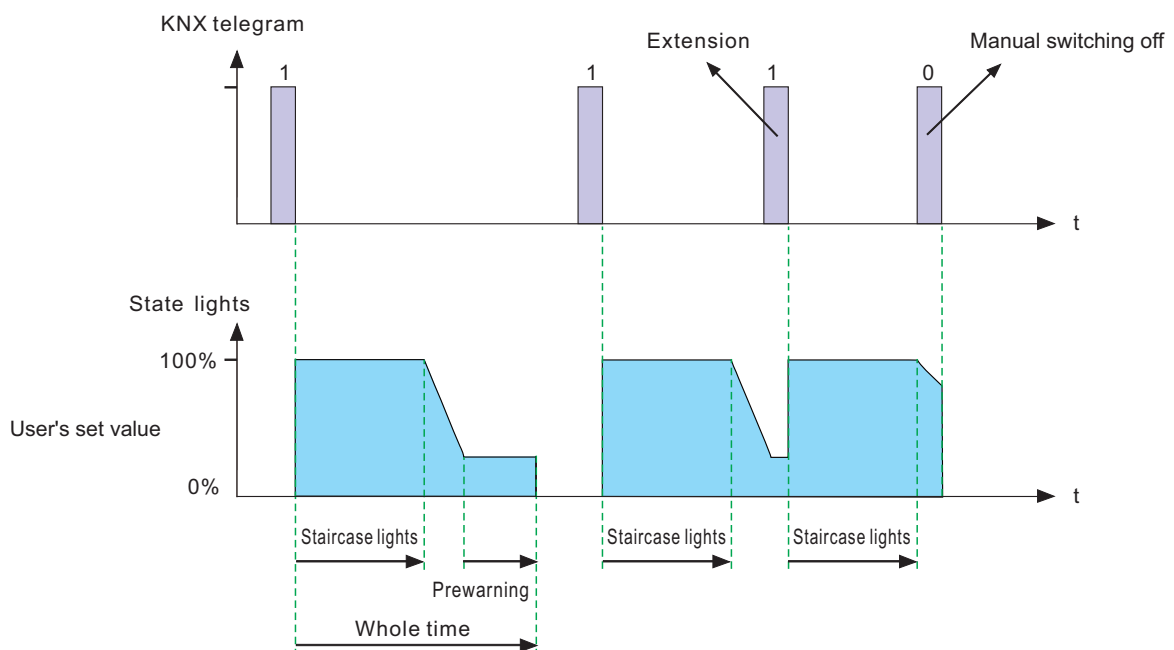
3.6 Relay behavior

Operation mode of the programmable relays can be parameterized, such as normally closed after power off, which gives the actuator the ability to work with all kinds of LED drivers.

Output mode	⦿ 0-10V Output ◯ 1-10V Output
Relay switch mode	⦿ Dimming with relay control ◯ Dimming without relay control
Behavior after bus power up	Light value ▾
Light value	50% light ▾
Switch status when bus power off	⦿ Contact opened ◯ Contact closed

The chart shows the dynamic range for this parameter:

ETS- text	Dynamic range [default value]	Comment
Output mode	· **0-10V Output** · 1-10V Output	Chooses which dimming type of LED drivers to work with.
Relay switch mode	· **Dimming with relay control** · Dimming without relay control	Is only shown, when 0-10V Output is chosen. Used to set whether relay and dimming outputs work independently or not.
Additional relay switch on delay ★	0-3,000s **[0s]**	Adjustment of the time at which the switch-on process shall be delayed
Additional relay switch off delay ★	0-3,000s **[0s]**	Adjustment of the time at which the switch-off process shall be delayed
Behavior of relay after bus power up ★	Off, On, no change **[no change]**	Defines the relay behavior when bus power on
Behavior of relay when bus power off ★	Off, On, no change **[no change]**	Defines the relay behavior at a bus power breakdown
Behavior after bus power up	Off, On, Last value, Light value **[Last value]**	Defines the action after bus power up. Note: Last value is the light level before bus power up, meaning that light level will be kept the same after bus power up.
Light value	10%, 20%, 30%..., 100% light **[50%]**	Is only shown, when Last value in Behavior after bus power up is chosen.
Switch status when bus power off	· **Contact opened** · Contact closed	Defines the action when bus power off. There is no this option when Dimming without relay control is activated.

★: Only appears when "Dimming without relay control" is selected

Relays and dimming outputs of the actuator are able to be controlled separately when Relay switch mode is Dimming without relay control. The relays can be used to switch on/off those devices connected, e.g. a heater, meanwhile, the 0-10V outputs provide signals for diming-up 0-10V LED drivers or even diming-off the drivers.

The following chart shows the objects for the additional relay.

Number	Name	Length	Usage
7	Additional Switch ON/Off	1 bit	Switches the relay on or off
8	Additional Switch state	1 bit	shows the switching state of the relay

3.7 Absolute Values

The dimming area of the dimming actuator can be restricted by absolute values. Furthermore absolute or saved values can be called, when the actuator is switched on.

3.7.1 Starting behavior

The function "Starting behavior" defines the turn on behavior of the channel. The function can be parameterized for every channel individually.

Starting behavior	⦿ On-value setting
	◯ Last light value (Memory)
Value of start up	50% ▼

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
On value setting	Sub-function: Value of start up 1-100% [50%]	If this sub function is chosen, a new sub function is shown, at which an absolute value for switching on can be chosen
Last light value (Memory)		The channel starts with the last value before switching off

Via the parameter "Value of start up", an absolute value for switching on can be assigned to the channel. The value for startup contains the whole technical possible area, so form 1-100%. But if the dimming area is restricted, the dimming actuator will be at least switched on with the lowest allowed value and maximum with the highest allowed value; independent from the chosen Value of startup.

The parameter "Last light value", also called memory function, causes a switching on of the actuator with the value before the last switching off. So the actuator saves the last value. If, for example, the channel is dimmed to 50% and switched off by switch object afterwards, the channel will be switched on with 50% again.

3.7.2 Dimming area

Via the parameters "maximum light" and "minimum light", the dimming area can be restricted.

| Maximum light | 100% ▼ |
| Minimum light | 1% ▼ |

The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Maximum light	2-100% [100%]	Highest, maximum allowed light value
Minimum light	1-99% [1%]	Lowest, minimum allowed light value

If the technical possible dimming area (1-100%) shall be restricted to a lower area, you have to set values for the minimum light above 1% and for the maximum light under 100%. This restriction of the dimming area is possible for every channel. If the dimming area is restricted, the channel will only move in the adjusted restriction. This setting has also effects to the other parameter: If, for example, the channel is restricted to a maximum of 85% and the value of startup is chosen as 100%, the channel will switch on with the maximum of 85%. An excess of the maximum value is no longer possible. The restriction of a dimming area is useful when certain values must not be reached, because of technical reasons, for example preservation of the life span or the avoidance of flickering at lower dim values (especially at Energy saver).
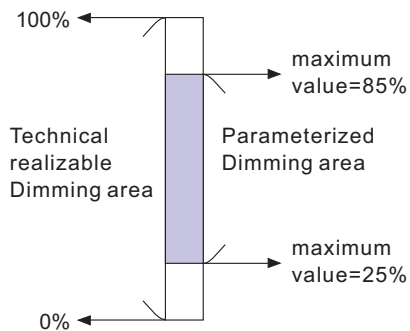
Example: Minimum light = 25%, maximum light = 85%, Value for startup= 100%

- On telegram   →   adjusted light value 85%
- 50% telegram   →   adjusted light value 50%
- 95% telegram   →   adjusted light value 85%
- 15% telegram   →   adjusted light value 25%
- Off telegram   →   adjusted light value 0% (Off)

3.8 Specific Dimming settings

The dimming behavior and Soft Start/Stop can be adapted individually via the functions below.

Dim speed for relative dimming	5	s
Dim speed for absolute dimming(0=Jump)	5	s
On speed	2 s	
Off speed	2 s	

3.8.1 Dimming speed

The dimming speed allows parameterizing the duration of the dimming process individually.
The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Dimming speed for relative dimming	1-120s [5s]	Defines the time for all relative dim processes related to relative dimming process of 100%. If a time of 10s is adjusted, the relative dimming from 0% to 100% and vice versa would last 10s. So the relative dimming from 0% to 50% would last 5s.
Dimming speed for absolute dimming (0=Jump)	0-120s [5s]	Defines the time for all absolute dimming processes related to an absolute dimming process of 100%. If a time of 10s is adjusted, the absolute dimming from 0% to 100% and vice versa would last 10s. So the absolute dimming from 0% to 50% would last 5s.
On speed	1-240s [2s]	The On Speed realizes a Soft Start function. At an On Speed of 2s, the LED drivers will be dimmed up to 100% in 2s when switching on.
Off speed	1-240s [2s]	The Off Speed realizes a Soft Stop function. Speed of 2s, the LED drivers will be dimmed down to 0% in 2s when switching off.

3.8.2 Send dimming value after change

To visualize the dimming value, for example via a display, the following communication object must be activated:

Send dim value after change	⦿ not active	◯ at dim end

ETS-text	Dynamic range [default value]	Comment
Send dim value after change	• **not active** • active	Activates the status object for the dimming process

The communication object for the actual dimming value is shown continuous, but sends only the actual dimming value, when the parameter "Send dimming value after change" is activated.

Number	Name	Length	Usage
11	State dim value	1 byte	Sends the actual dimming value in %

3.8.3 Dimming curve

The actuator provides both linear and logarithmic dimming curves for selection. In a linear dimming curve, the signal sent to the drivers is linear, increasing in a steady rate. In contrast to logarithmic - the signal to the drivers changes slower at deeper dimming levels and faster at the brighter end. Although linear and logarithmic curves behave in different form, they will reach the dimming target at the same time.
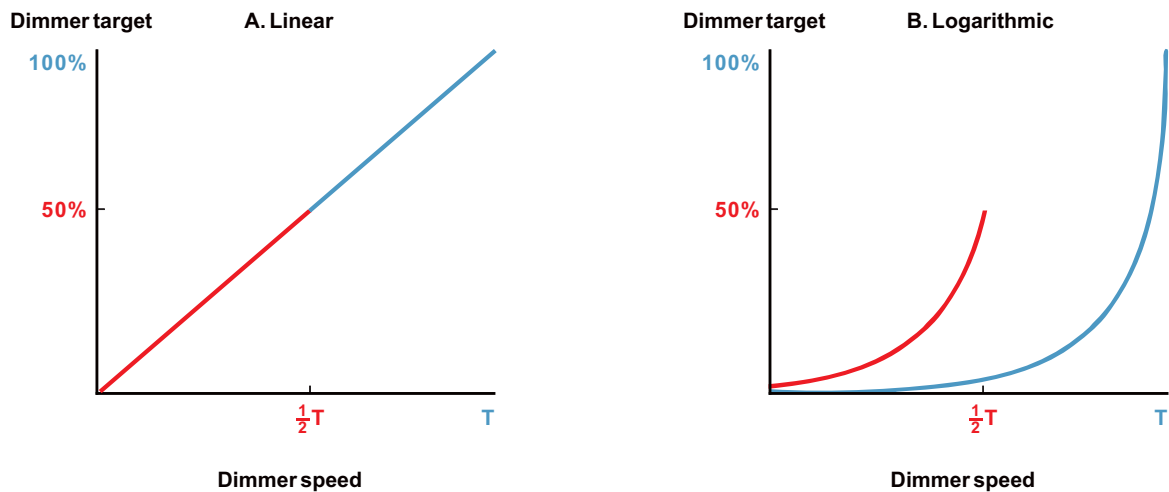
ETS-text	Dynamic range [default value]	Comment
Dimming curve	• **Linear** • Log	Selection of linear or logarithmic dimming signal

3.9 Central objects

For each channel can be chosen whether it should react to the central objects or not. The activation of the central objects can be done at the following parameter:

If the central function is activated for a channel, the channel will react to the central objects with its individual parameterization. The chart shows the dynamic range for this parameter:

ETS-text	Dynamic range [default value]	Comment
Central objects	• **not active** • active	Sets whether a channel shall react to the central objects or not

There are two central objects for the handling of the activated channels. At the one hand the 1 Bit switching object, which switches the channels with activated central function on or off and to the other hand the 1 Byte object "Dim absolutely". This object assigns absolute light values to the relevant channels.

To watch at the central objects is, that every channel is called with its individually parameter settings.

If, for example, a channel with activated staircase light function is called by the central objects, the channel will be switched on for the adjusted staircase time and will be switched off afterwards.

Number	Name	Object function	Length	Usage
2	Central	Switch On/Off	1 bit	Switches all channels with activated central function
3	Central	Dim absolutely	1 byte	Dims all channels with activated central function

3.10 Scene function

When functions of different groups (e.g. light, heating and shutter) shall be changed simultaneously with only one keystroke, it is practical to use the scene function. By calling a scene, you can switch the lights to a specific value, drive the shutter to an absolute position, switch the heating to the day mode and switch the power supply of the sockets on. The telegrams of these functions can have as well different formats as different values with different meaning (e.g. "1" for switch the lights off and open the shutters). If there were no scene function, you would have to send a single telegram for every actuator to get the same function.

The scene function of the switch actuator enables you to connect the channels of the switch actuator to a scene control. For that, you have to assign the value to the appropriated space (scene A-H). It is possible to program up to 8 scenes per switching output. When you activate the scene function at the switching output, a new sub menu for the scenes appears at the left selection menu. There are settings to activate single scenes, set values and scene numbers and switch the learn scene function on/off at this sub menu.

Scenes are activated by receiving their scene numbers at the communication object for the scenes. If the "Learn scene" function of the scenes is activated, the current value of the channel will be saved at the called scene number.

The communication objects of the scenes have always the length of 1 byte.

The following illustration shows the setting options at the ETS Software for activating the scene function:

Scenes	⦿ not active ◯ active

The scene function can only be activated for the normal switching mode. If the staircase light function is activated, the scene function cannot be activated for this channel.

The following chart shows the communication object for calling a scene:

Number	Name	Length	Usage
12	Scene	1 byte	Call of the scene

For calling a certain scene, you have to send the value for the scene to the communication object.

The value of the scene number is always one number less than the adjusted scene number. For calling scene 1, you have to send a "0". So the scene numbers have the numbers from 1 to 64, but the values for the scenes only from 0 to 63.

If you want to call scenes by a binary input or another KNX device, you have to set the same number at the calling device as at the receiving device. The calling device, e.g. a binary input, sends automatically the right value for calling the scene.

3.10.1 Submenu scene

If a scene is activated, a new submenu will appear at the left selection menu. At this submenu, the further parameterization can be done. For every channel are up to 8 storage options available. These 8 presets have numbers A-H. One of the 64 scene numbers can be assigned to each scene. The following illustration shows the setting options at the submenu for the scenes (Channel X: Scene) for the scenes A-H:

The following chart shows the dynamic range for an activated scene function:

ETS-text	Dynamic range [default value]	Comment
Learn scene	· **not active** · active	Adjusts whether the learning/saving function shall be enabled for the scenes of this channel or not. For instance: Light value of the Scene A is 20%, this Light value can be adjusted according to user's preference afterwards, say 35%, and the new value is able to be saved via DPT 18.001 scene control by other KNX devices, such as a smart home control panel. not active: learn scene function is disabled and object value follows DPT 17.001 scene number. active: learn scene function is enabled and object value follows DPT 18.001 scene control.
Scene A [H]	· **not active** · active	Activation of the depending scene
Scene Nr. A [H]	1-64 **[A:1; B:2; … H:8]**	Adjusts the number for calling a scene
Light value scene A [H]	Off, 10%, 20%, 30%, 40%, 50%, 60%,70%, 80%, 90%, 100% light **[Off]**	Adjusts the light value for a scene call
Transition time to new brightness	1-240s **[10]**	The time taken from the privuous setting to this new scene

At the submenu for the scenes, a reaction can be assigned for the call of each scene. This reaction includes an absolute light value (0-100%) for this channel. Every channel can react to 8 different scenes. By sending of the pick up value of the relevant scene, the scene is called and the channel adjusts its parameterized values. The individual parameterization is also watched at calling the scene.

If the channel shall dim to 50% at the call of the scene A and the channel has a parameterized switch on delay of 5s, the channel will be switched on after this 5s and be dimmed to the 50% in compliance to the adjusted dimming speed.

To watch at the programming is that if two or more channels shall react to the same scene number, the communication objects for the scenes of these channels have to be connected to the same group address. By sending of the pick up value for the scenes, all channels will be called. It is practical to divide the group addresses by scenes at the programming. If a channel shall react now to 8 scenes, the communication object has to be connected to 8 different group addresses.

3.11 Automatic function

An automatic function can be activated for every channel. The automatic function allows calling up to 4 absolute exposure values for every channel. Calling can be done via a 1 bit commands.

For further setting options, the automatic function of a channel must be activated.

By activation the automatic function a submenu for further parameterization is shown. Furthermore, the following communication objects are shown:

Number	Name	Length	Usage
13	Automatic 1	1 bit	Calling of the automatic value 1
14	Automatic 2	1 bit	Calling of the automatic value 2
15	Automatic 3	1 bit	Calling of the automatic value 3
16	Automatic 4	1 bit	Calling of the automatic value 4

3.11.1 Submenu automatic function

The further parameterization can be done at the submenu of the automatic function.
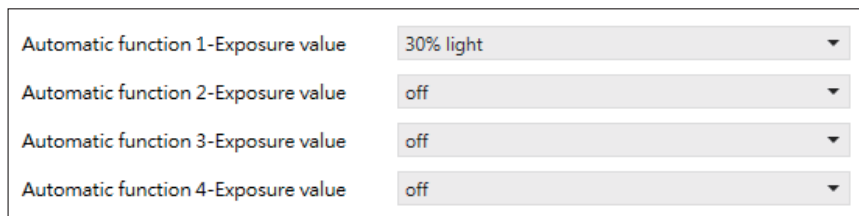
ETS-text	Dynamic range [default value]	Comment
Automatic function 1 [4] – Exposure value	Off, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100% light [Off]	Defines the exposure value for an automatic call. Setting only activates when the corresponding object is 1

Every automatic function can be assigned an absolute exposure value (in 10% steps). The call of the automatic function is done by an 1 bit object.

3.12 Block function

Block function can be parameterized for every channel. Via the Block function, the behavior of the channel for calling the blocking objects can be assigned.

Behavior at Block I=value "1"	Light value ▼
Light value	100% light ▼
Behavior at Block I=value "0"	Light value ▼
Light value	10% light ▼
Invert Block I input	◉ not active ○ active
Release time for Block I (value "1" to "0") (0 min = not active)	0 ▲▼ min
Behavior at Block II=value "1"	Light value ▼
Light value	100% light ▼
Behavior at Block II=value "0"	Light value ▼
Light value	10% light ▼
Invert BlockII input	◉ not active ○ active
Release time for Block II (value "1" to "0") (0 min = not active)	0 ▲▼ min

3.12.1 Blocking objects

For both blocking objects an action for activation as well as deactivation can be defined

ETS-text	Dynamic range [default value]	Comment
Behavior at Block I = Value 1	Off, no change, Light value (10%,20%,30%,..,100%) **[Light value]**	Defines the action for activation of the first blocking object
Behavior at Block I = Value 0	Off, no change, Light value (10%,20%,30%,..,100%) **[Light value]**	Defines the action for deactivation of the first blocking object
InvertBlock I input	• **not active** • active	If active, inverter singals recived from the Block I Object, that is 1→0; 0→1
Release time for Block I (value "1" to "0") (0 min = not active)	0-600min **[0min]**	Release the channel from "Behavior at Block I = Value 1" after countdown and enter "Block I = Value 0"
Behavior at Block II = Value 1	Off, no change, Light value (10%,20%,30%,..,100% **[Light value]**	Defines the action for activation of the second blocking object
Behavior at Block II = Value 0	Off, no change, Light value (10%,20%,30%,.., 100% **[Light value]**	Defines the action for activation of the second blocking object
InvertBlock II input	• not active • active	If active, inverter singals recived from the Block II Object, that is 1→0; 0→1
Release time for Block II (value "1" to "0") (0 min = not active)	0-600min **[0min]**	Release the channel from "Behavior at Block II = Value 1"after countdown and enter "Block II =Value 0"

By using the blocking objects, the channel can be blocked for further usage. Additional, the channel can perform an adjusted function, as dimming to a certain value, switch the channel of or stay in its current state, when it is blocked. The same actions can be performed by the channel, when it is unblocked.

It is important to be aware that the channel cannot be operated when it is blocked. Furthermore the manual usage is blocked during a blocking process. All telegrams, which are sent to the corresponding channel during a blocking process, have no effect for the channel.

If both blocking processes are activated, the first one is of prime importance. But if you activate the second blocking process during the first blocking process, the second blocking process will get active when the first one is deactivated. The action for the deactivation of the first blocking process will not be performed, but the channel calls the adjusted settings for the second blocking process.

Number	Name	Length	Usage
17	Block I	1 bit	Activation/Deactivation of the first blocking process
18	Block II	1 bit	Activation/Deactivation of the second blocking process

Priority from the highest to the lowest is Block I > Block II > Manual Operation > Permanent ON > On/Off & Dimming output.

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