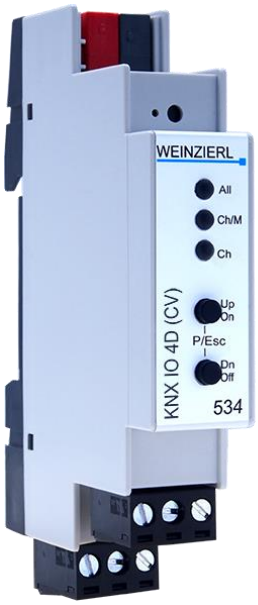
KNX LED dimming actuator 4-fold with constant voltage

KNX IO 534 CV (4D)

Operating and installation manual



(Art. # 5314)

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Content

1 Application

The KNX IO 534 CV (4D) is a compact RGB / RGBW / Tunable white dimming actuator with 4 PWM outputs.

The dimming actuator can be used e.g. for LED panels or strips with RGB / RGBW / Tunable white configuration or as 4 independent PWM dimmer channels. Every configuration allows to control the channel by switching, rel. dimming and dimming value.

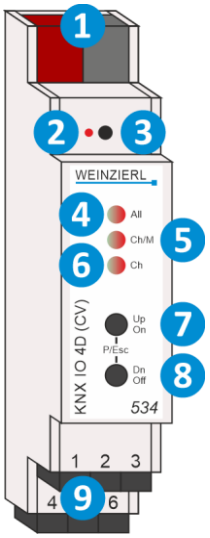
Several comfort functions are integrated as well, including scenes, slumber fading, staircase light and sequencer.

Two buttons and three LEDs allow a local operation and a visualization of the device state.

In addition to the output channels the device includes 16 independent functions for logic or timer control.

2 Installation and connection

The KNX IO 534 CV (4D) is designed for a DIN rail (35 mm) with a width of 1 unit (18 mm). An installation-friendly design with pluggable screw terminals helps to reduce costs of commissioning. The actuator has the following controls and displays:



1. KNX bus connection
2. Programming LED
3. Button for programming mode
4. LED All (multicolor)
5. LED Ch/M (multicolor)
6. LED Ch (multicolor)
7. Button Up/On
8. Button Dn/Off
9. Pluggable screw terminals

If the bus voltage is missing, the device is without function.

2.1 KNX programming mode

The KNX programming mode is activated/deactivated either by pressing the recessed KNX programming button 3 or by simultaneously pressing the buttons 7 and 8.

When the programming mode is active, the programming LED 2 and the LED Ch/M 5 light up red.

The operation/visualization of the programming mode on the front can be activated/deactivated in the ETS® on page general settings.

2.2 Manual operation and status display

The LED Ch/M 5 lights up or flashes when KNX bus voltage is present.

The channel for manual operation can be selected by briefly pressing the button Up/On 7 or the button Dn/Off 8. The selected channel is indicated by a continuous light or cyclical flashing of the LED Ch/M 5 in green. The number of flashes (per cycle) indicates the channel number. With continuous light, all channels are controlled simultaneously in manual operation.

Pressing and holding the button Up/On 7 or the button Dn/Off 8 switches to manual operation for the dimming actuator channel. This is indicated by continuous light or cyclical flashing of the LED Ch/M 5 in orange. The number of flashes (per cycle) again corresponds to the channel selection.

The respective channel can be switched on in manual operation by briefly pressing the button Up/On 7 and switched off by pressing the button Dn/Off 8. In addition, a long press on the button Up/On 7 brightens and a long press on the button Dn/Off 8 darkens the dimming.

Pressing both buttons (P/Esc) 7 and 8 at the same time exits manual operation.

Summary of the states of the LED Ch/M 5:

LED Status	Meaning
LED lights green	The device operates in normal operating mode. After activating the manual control, all channels can be operated.
LED flashes 1x green	After activating the manual control, channel 1 can be operated.
LED flashes 2x green	After activating the manual control, channel 2 can be operated.
LED flashes 3x green	After activating the manual control, channel 3 can be operated.
LED flashes 4x green	After activating the manual control, channel 4 can be operated.
LED lights orange	Manual operation is active. All channels can be switched or dimmed simultaneously.
LED flashes 1x orange	Manual operation is active. Channel 1 can be switched or dimmed.
LED flashes 2x orange	Manual operation is active. Channel 2 can be switched or dimmed.
LED flashes 3x orange	Manual operation is active. Channel 3 can be switched or dimmed.
LED flashes 4x orange	Manual operation is active. Channel 4 can be switched or dimmed.
LED lights red	The programming mode is active.
LED flashes red	The programming mode is not active. Manual operation is not active. The device is not loaded correctly e.g. after aborting a download.
LED flashes green	The device is currently loaded by the ETS.

The LED All 4 is used to display the status of all channels of the dimming actuator. It lights up green when at least one channel is switched on. Furthermore, this LED lights up or flashes red if an error occurs on the device.

Summary of the states of the LED All 4:

LED Status	Meaning
LED lights red	Error condition: No auxiliary voltage is connected to the device.
LED flashes red	Error condition: Overheating, Overload or Overcurrent.
LED lights green	No error condition is active. At least one channel is switched on.
LED is off	No error condition is active. All channels are switched off.

The LED Ch 6 is used to display the status of the individual channels. It lights up green when the corresponding channel is switched on.

Summary of the states of the LED Ch 6:

LED Status	Meaning
LED lights green	The corresponding channel is switched on.
LED is off	The corresponding channel is switched off.

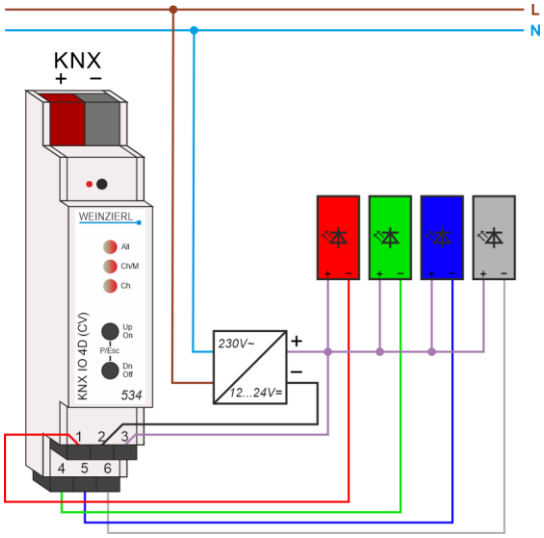
3 Reset to factory default settings

It is possible to reset the device to its factory default settings.

- Disconnect the KNX bus connector 1 from the device.
- Press the KNX programming button 3 and keep it pressed down.
- Reconnect the KNX bus connector 1 to the device.
- Keep the KNX programming button 3 pressed for at least another 6 seconds.
- A short flashing of all LEDs (2 4 5 6) visualizes the successful reset of the device to factory default settings.

In the factory default settings, the device has the physical address 15.15.255 and no group addresses are connected.

4 Wiring scheme



4.1 Pluggable screw terminals

The pluggable screw terminals (9) are used to control e.g. LED panels or strips.

The 12...24V⎓ + connection of the power supply unit is connected to the right terminal at the upper screw terminal (12..24V +), at the same time with the common anode of the consumers. The ground connection of the power supply is connected to the middle terminal (12..24V -). The remaining terminals are connected to the cathode of the desired channel. The device has the following labeling of the channels:

Ch 1 Out -	12..24V -	 +
Ch 2 Out -	Ch 3 Out -	Ch 4 Out -

In the basic setting of the individual operating modes, the assignment of the channels from the parameters corresponds to the following scheme, whereby the assignment of the channels can be freely changed in the ETS parameter dialog:

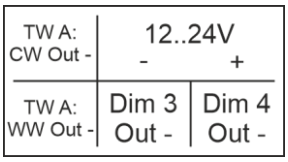
- 1 x RGB

R Out -	12..24V -	 +
G Out -	B Out -	Dim 4 Out -

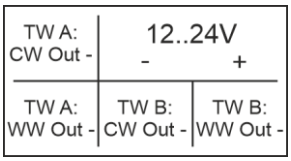
- 1 x RGBW

R Out -	12..24V -	 +
G Out -	B Out -	W Out -

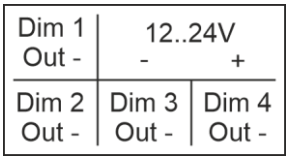
- 1 x Tunable white



- 2 x Tunable white



- 4 x Common dimmer



4.2 Pin assignment

Connection	Icon	Description
1	Ch 1 Out -	Cathode connection for channel 1
2	12..24V -	Ground connection for supply voltage
3	12..24V +	Positive connection for supply voltage 12 ... 24 V⎓
4	Ch 2 Out -	Cathode connection for channel 2
5	Ch 3 Out -	Cathode connection for channel 3
6	Ch 4 Out -	Cathode connection for channel 4
KNX	+	Positive connection for KNX bus
KNX	-	Ground connection for KNX bus

5 Operating parameters of the dimmer channels

5.1 Maximum connectable power

The maximum dimmable power of the dimming actuator is essentially limited by the power loss in the device. The maximum current of 6 A can be distributed as required to the four channels. With equal loads, 1.5 A per channel is therefore permitted.

In the Tunable white (TW) operating mode, two channels are used for one function. In the default setting, the total current of the two channels is 100 % of the maximum current of one channel. Thus, TW LEDs with double current can be connected here.

Examples:

1 x Tunable white, 2 x Common dimmer
Channel 1 – TW A: Cold white – 3 A (together with channel 2)
Channel 2 – TW A: Warm white – 3 A (together with channel 1)
Channel 3 – Dim 3 – 1.5 A
Channel 4 – Dim 4 – 1.5 A

2 x Tunable white
Channel 1 – TW A: Cold white – 3 A (together with channel 2)
Channel 2 – TW A: Warm white – 3 A (together with channel 1)
Channel 3 – TW B: Cold white – 3 A (together with channel 4)
Channel 4 – TW B: Warm white – 3 A (together with channel 3)

5.2 PWM phase position

The PWM signals of output channels 1 and 4 are in phase. Channels 2 and 3 are also in phase, but are 180 ° out of phase with 1 and 4.

5.3 Power dissipation

Dimming of luminaires is not possible without a certain power loss in the dimmer. This power dissipation leads to heating of the device and depends on several factors. In addition to the power of the connected lamps, the current dimming value is also taken into account. Thus, when the luminaire is switched off, the loss is almost zero except for the leakage current. Even at 100 %, the power loss is relatively low and is due to the contact resistance of the output.

Between 0 % and 100 %, the switching losses due to the PWM are added. Overall, this results in a maximum power loss in the upper dimming range.

The rated power of 144 W refers to the maximum permitted ambient temperature with free installation. If there are other devices next to the dimming actuator that emit heat, the connectable power is reduced. Alternatively, the devices can also be mounted with a small distance (approx. ½ TE = 9 mm). Suitable spacers for the DIN rail are commercially available for this purpose.

5.4 Safety shutdown

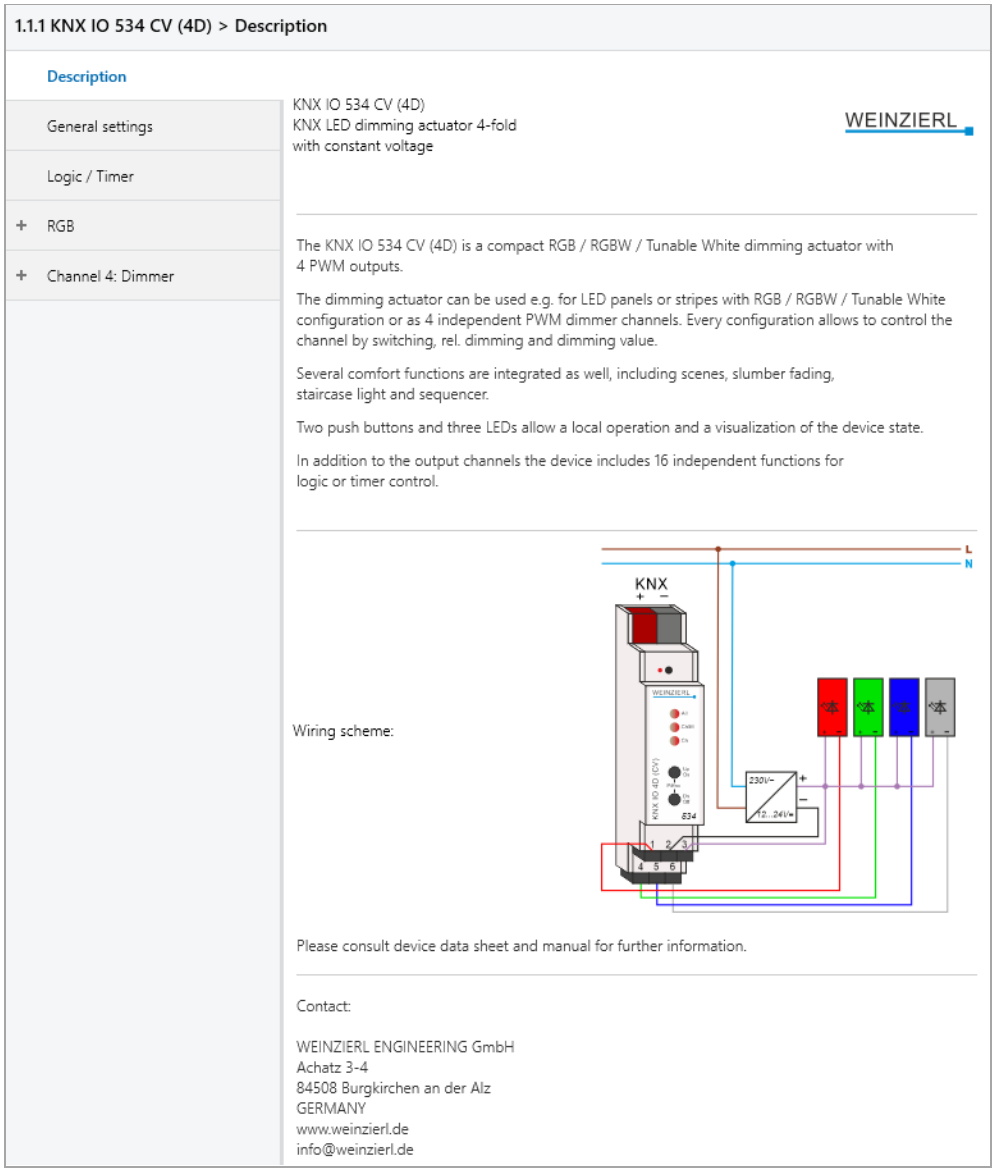
The dimming actuator has an electronic fuse for overcurrent and overtemperature. In both cases of error, the output is switched off and can be switched on again via a command when the error is no longer present.

In addition, the device is also equipped with fuses against overcurrent and overtemperature. This fuse level protects connected devices and surrounding materials against severe damage, but leads to failure of the dimming actuator and can no longer be reset.

6 ETS database

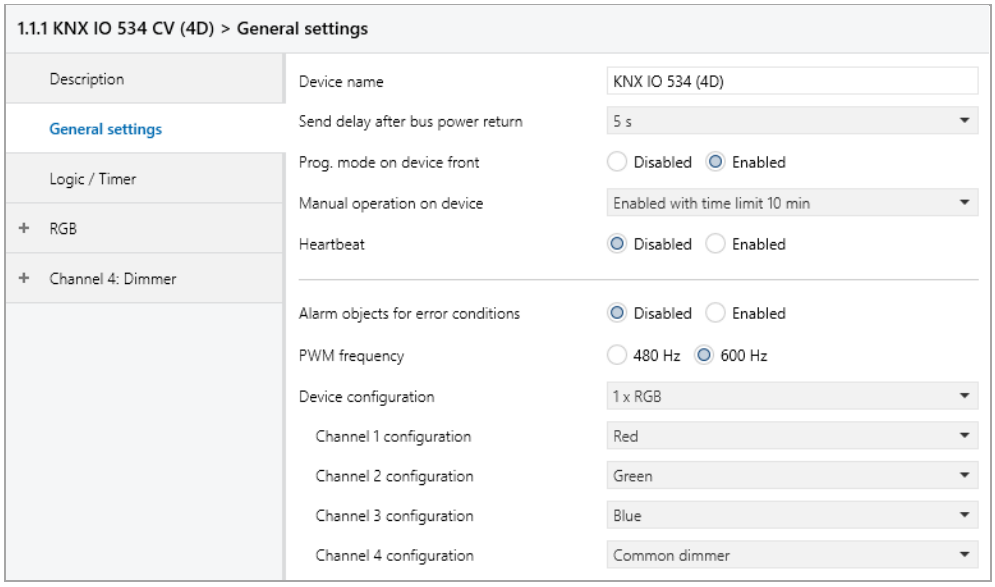
The ETS database (for ETS 4.2 or newer) can be downloaded from the product website of the KNX IO 534 CV (4D) (www.weinzierl.de) or from the ETS online catalogue.

6.1 Description



The first page shows general information about the device.

6.2 General settings



Device name *(30 characters)*

Any name can be assigned for the KNX IO 534 CV (4D). The device name should be meaningful, e.g. “Living room EG”. This helps the clarity in the ETS project.

Send delay after bus power return

The parameter Send delay after bus power return can be used to set a delay of telegrams after bus power return. Telegrams are sent from the device to the KNX bus with a delay of the set time. This has the effect of reducing the bus load on bus power return. Other functions such as telegram reception or switching operations of the actuator are not influenced by this parameter.

Prog. mode on device front

In addition to the normal programming button 3, the device allows you to activate the programming mode on the device front without opening the panel cover. Programming mode can be activated and deactivated by pressing keys 7 and 8 simultaneously.

This function can be switched on and off via the parameter Prog. Mode on the device front. The recessed programming button 3 (next to the programming LED 2) is always enabled and is not affected by this parameter.

Manual operation on the device

This parameter is used to configure manual operation on the device. Manual operation mode can be disabled or enabled (with or without time limit). The time limit defines the duration until the automatic return from manual operation back to normal operating mode.

The device is in normal operating mode when manual operation is not active. In manual operation mode, received switching telegrams are stored. When manual operation is terminated (after the time limit has expired or manually), the last switching telegram received is executed.

The following configuration options are available:

- Disabled
- Enabled with time limit 1 min
- Enabled with time limit 10 min
- Enabled with time limit 30 min
- Enabled without time limit

Heartbeat

Sends values cyclically to the KNX bus to indicate that the device is currently ready for operation. The cycle time can be selected between 1 minute and 24 hours.

Group object	Type KNX	Size	Direction
GO 1 Heartbeat – Trigger	1.001	1 bit	To KNX

Alarm objects for error conditions

This parameter makes the following objects visible for visualization of error states:

Group object	Type KNX	Size	Direction
GO 2 Alarm – Overload	1.001	1 bit	To KNX
GO 3 Alarm – Overtemperature	1.001	1 bit	To KNX
GO 4 Alarm – No supply voltage	1.001	1 bit	To KNX

When an error state is detected, all dimmer outputs switch off and an ON telegram is sent via the respective object. The outputs are disabled for the duration of the error state. Once this has been rectified, the respective object sends an OFF telegram and the dimmer can be operated normally again.

Overload is triggered from a load of 8 A, overtemperature from a measured temperature of 85 °C in the load section. If no value is received from the load section for longer than 3 seconds, this triggers the error state “No supply voltage”.

PWM frequency

Here you can switch between 480 Hz and 600 Hz PWM frequency. This parameter affects all dimmer outputs.

Device configuration

This allows the general operating mode of the device to be set; the following can be selected:

- 1 x RGB
  The device is operated as an RGB dimmer, 3 output channels are occupied for this purpose, 1 further output channel can be used as a common dimmer or remain deactivated.

- 1 x RGBW
  The device is operated as an RGBW dimmer, all 4 output channels are occupied for this purpose. In this mode the output value of white is set automatically, the value for white is calculated from the current RGB value with the formula:
  White = Brightness • (1 - Saturation)

- 1 x Tunable white
  The dimmer is used for one tunable white consumer, for cold and warm white 1 output channel each is occupied. 2 further output channels can be used as common dimmers or remain deactivated.

- 2 x Tunable white
  The dimmer is used for 2 independent tunable white loads, all 4 output channels are occupied.

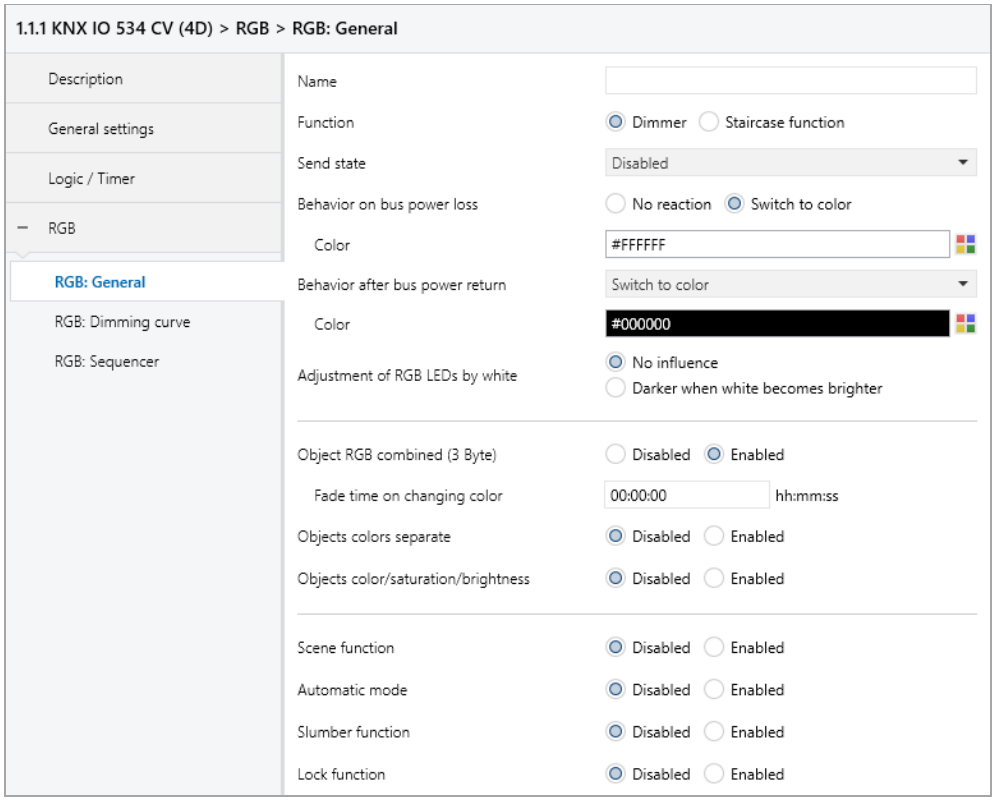
- 4 x Common dimmer
  Each output channel can be used as an independent dimmer.

Channel 1 – 4 configuration

Depending on the parameter **Device configuration**, these parameters can be used to assign the output channels to the internal functions. The assignment of the channels in the basic setting of the device is described in section “Wiring scheme”.

6.3 Device configuration “1 x RGB” and “1 x RGBW”

6.3.1 RGB: General



Name *(30 characters)*

Any name can be assigned to the channel. However, this should be unique and meaningful, this makes it easier to work with the associated group objects later, as the assigned name is displayed there as a designation. If no name is assigned, the group objects are designated with “RGB: ...”.

Function

This parameter defines the functionality of the actuator, the following options are available:

- Dimmer
  When this functionality is selected, scene function, automatic mode, slumber and lock function are available. In addition, objects for switching on/off, relative dimming and absolute value of the 3 individual colors, of color value, saturation and brightness, as well as for controlling the dimmer via RGB value can be configured.

- Staircase function
  If this functionality is selected, only the lock function is available. Furthermore, the parameter page “RGB: Staircase function” is also displayed.

Send state

This parameter defines the send behavior of the state objects:

- Disabled
  State objects are deactivated and hidden.
- Only on read
  Send state objects only for read requests.
- On change
  Send state objects only on value change.
- Cyclically and on change
  State objects send cyclically and on value change.

Time for cyclic state *(only for* "*Cyclic and on change*"*)*

If send state is configured with "Cyclic and on change", this parameter appears to set the cycle time for sending.

State objects for on/off/RGB color (3 byte)

Activates the following state objects:

Group object	Type KNX	Size	Direction
GO 31 RGB: RGB output – State on/off	1.001	1 bit	To KNX
GO 32 RGB: RGB output – State color	232.600	3 bytes	To KNX

If send on value change is activated and all 3 colors change to value 0, the state object On/Off sends an Off telegram, if at least one of the 3 colors changes to a value greater than 0, the object sends an On telegram.

If send on value change is activated and at least one of the 3 colors changes, the Color state object sends new RGB values with a time interval of at least 1 second.

State objects for single colors

Activates the following state objects:

Group object	Type KNX	Size	Direction
GO 33 RGB: Red output – State value	5.001	1 byte	To KNX
GO 34 RGB: Green output – State value	5.001	1 byte	To KNX
GO 35 RGB: Blue output – State value	5.001	1 byte	To KNX

In **Device configuration** "1 x RGBW"**,** the following object is also available:

Group object	Type KNX	Size	Direction
GO 36 RGB: White output – State value	5.001	1 byte	To KNX

If send on value change is activated, the state objects send with a time interval of at least 1 second if the color assigned to the object has changed by at least 1 % or if a dimming process has been completed.

State objects for HSV

Activates the following state objects:

Group object	Type KNX	Size	Direction
GO 37 RGB: HSV color angle – State angle	5.003	1 byte	To KNX
GO 38 RGB: HSV saturation – State value	5.001	1 byte	To KNX
GO 39 RGB: HSV brightness – State value	5.001	1 byte	To KNX

If send on value change is activated, the state objects send with a time interval of at least 1 second if the color property assigned to the object has changed by at least
1 % or when a dimming process has been completed.

Behavior on bus power loss

The behavior of the output on bus power failure can be configured here.

The choices are:

- No reaction
- Switch to color
  A parameter for setting the color appears.

Behavior after bus power return

The behavior of the output after bus power return can be configured here. This behavior is executed at every device restart (e.g. also at restart after an ETS download).

The choices are:

- No reaction
- Switch to color
  A parameter for setting the color appears.
- State like before bus power failure

Adjustment of RGB LEDs by white *(only with device configuration "1 x RGBW")*

This parameter can be used to determine whether the output values for red, green and blue should be scaled depending on the current white value:

- No influence
  White has no influence on RGB, e.g. with an RGB color value of white (#FFFFFF) all 4 outputs are at maximum.

- Darker when white becomes brighter
  In this setting, the output values of red, green and blue are scaled with the formula *1 - white value*, e.g. if the RGB color value of white is #FFFFFF, the outputs of red, green and blue are at minimum, the output of white is at maximum.

Object RGB combined (3 Byte) *(only with function "Dimmer")*

Enables the function block for controlling the dimmer via the following object:

Group object	Type KNX	Size	Direction
GO 11 RGB: RGB – Set value	232.600	3 bytes	From KNX

Fade time on changing color *(only with function "Dimmer")*

This parameter is visible if **Object RGB combined (3 Byte)** is activated. The time period is related to a complete dimming process from 0 – 100 %.

Objects colors separate *(only with function "Dimmer")*

Enables the function blocks for controlling the 3 individual colors red, green and blue. For this purpose, a parameter page is displayed for each color, which is described in the section "RGB: Red / Green / Blue".

Objects color/saturation/brightness *(only with function "Dimmer")*

Enables the function blocks for controlling the dimmer via the 3 properties Color, Saturation and Brightness. For this purpose, a parameter page is displayed for each property, which is described in the sections "RGB: Color", "RGB: Saturation" and "RGB: Brightness".

Scene function *(only with function "Dimmer")*

The scene function can be activated or deactivated here; it is only available in the "Dimmer" function. If this functionality is activated, a parameter page appears for further configuration of scenes 1 – 16. The further functionality is explained in section "RGB: Scene function".

Automatic mode *(only with function "Dimmer")*

Automatic mode is only available in the "Dimmer" function. If this function is selected, the following objects become visible:

Group object	Type KNX	Size	Direction
GO 41 RGB: Automatic mode – Activate	1.001	1 bit	From KNX To KNX
GO 42 RGB: Autom. RGB – Set value	232.600	3 bytes	From KNX

When using automatic mode, the dimmer can be controlled via object 42, e.g. for light control or daylight-dependent basic lighting.

In automatic mode, the dimmer can be manually overridden by the function blocks "Object RGB combined", "Objects colors single" and "Objects color/saturation/brightness", as well as by scene, slumber and sequencer. During manual override, values of object 42 are ignored, each manual override restarts the fallback time.

After the fallback time set in the parameter has elapsed, the RGB values received on object 42 are processed again.

Object 41 can be used to switch the automatic mode on or off at any time; it also serves as a state object for automatic mode.

After bus power return, automatic mode is switched off and must be activated via object 41.

Time out for manual mode
(only with “Dimmer” function and active “Automatic mode”)
This parameter defines the fallback time after manual mode.
Times from 1 min to 24 h can be set. The setting "Without timelimit" means that there is no automatic fallback from manual mode.

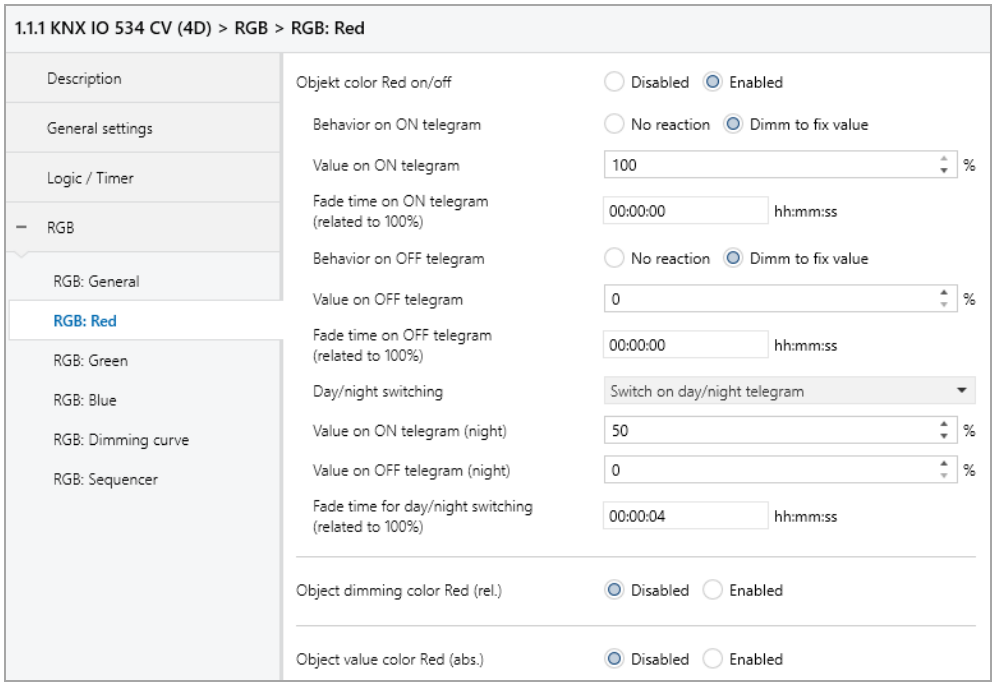
Slumber function *(only with function “Dimmer”)*
The slumber function is only available in the “Dimmer” function. The slumber function offers 2 different dimming times each for switching on and off via object. If this function is activated, a new parameter page appears, which is explained in section “RGB: Slumber function”.

Lock function
The disable function can be activated or deactivated here. This function is available in both functions “Dimmer” and “Staircase function”. If this functionality is activated, a new parameter page appears for further configuration, which is explained in more detail in section “RGB: Lock function” explains in more detail.

6.3.2 RGB: Red / Green / Blue

Each of the 3 individual colors red, green and blue can be controlled independently with on/off telegram, rel. dimming and dimming value. The following parameters and objects are available for each color:

Object color Red on/off
Object color Green on/off
Object color Blue on/off



The following objects are available for switching the individual colors if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 12 RGB: Red on/off – Switch	1.001	1 bit	From KNX
GO 15 RGB: Green on/off – Switch	1.001	1 bit	From KNX
GO 18 RGB: Blue on/off – Switch	1.001	1 bit	From KNX

Behavior on ON telegram

This parameter can be used to configure the behavior when switching on via the respective object.

The choices are:

- No reaction
- Dimm to fix value

Value on ON telegram *(only for* "*Dimm to fix value*"*)*

If the parameterisation is suitable, this value is activated via the respective object in the case of an ON telegram.

Fade time on ON telegram (related to 100%)

This fade time is active when an ON telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Behavior on OFF telegram

This parameter describes the behavior of the dimmer in the event of an OFF telegram via the respective object.

The choices are:

- No reaction
- Dimm to fix value

Value on OFF telegram *(only for* "*Dimm to fix value*"*)*

With suitable parameterisation, this value is activated via the respective object in the case of an OFF telegram.

Fade time on OFF telegram (related to 100%)

This fade time is active when an OFF telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Day/night switching

When using this function for at least one of the 3 colors, the following object is visible for switching day/night operation:

Group object	Type KNX	Size	Direction
GO 30 RGB: Day/Night – Switch	1.001	1 bit	From KNX

Day mode is triggered with an OFF telegram to the object, night mode with an ON telegram. The device is in day mode after restart.

Telegrams to object 30 affect all activated day/night switchovers of the RGB channel.

In addition, it can be determined when the values become active after telegram via the object are available for selection:

- Disabled

- Switch on day/night telegram
  Immediately after day/night switching is received, dimming to the active value takes place according to the last received switch-on/switch-off via object 12, 15 or 18.

- Switch on next on/off telegram
  The currently active value is not used until the next on/off switching via object 12, 15 or 18.

There is a separate switch-on and switch-off value in the parameters for night mode, in day mode the always visible values are used.

Value on ON telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an ON telegram via object 12, 15 or 18 and suitable parameterisation.

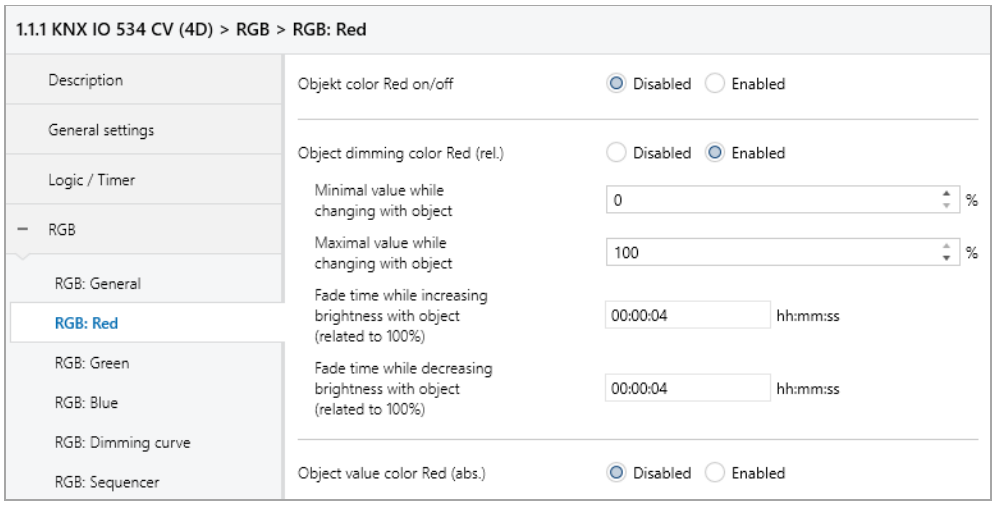
Value on OFF telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an OFF telegram via object 12, 15 or 18 and suitable parameterisation.

Fade time for day/night switching (related to 100%)
(only with active day/night switching)

This fade time is only active if switching is used with day/night switching. If switching is used with the next on/off telegram, the regular fade time of the respective on or off telegram is active. The time period is related to a complete dimming process from 0 – 100 %.

Object dimming color Red (rel.)
Object dimming color Green (rel.)
Object dimming color Blue (rel.)



The following objects are available for dimming the 3 colors via relative dimming commands, if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 13 RGB: Red dimming rel. – Brighter/Darker	3.007	4 bits	From KNX
GO 16 RGB: Green dimming rel. – Brighter/Darker	3.007	4 bits	From KNX
GO 19 RGB: Blue dimming rel. – Brighter/Darker	3.007	4 bits	From KNX

Minimal value while changing with object

This parameter can be used to set which minimum value can be reached via relative dimming. If the current value is below the minimum value, the brightness cannot be reduced via object 13, 16 or 19.

Maximal value while changing with object

This parameter can be used to set which maximum value can be reached via relative dimming. If the current value is above the maximum value, the brightness cannot be increased via object 13, 16 or 19.

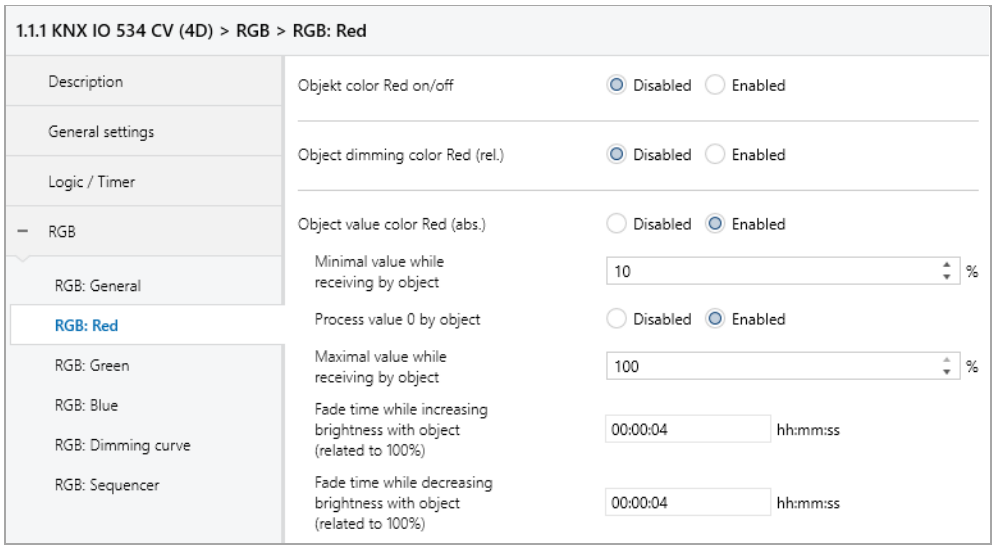
Fade time while increasing brightness with object (related to 100%)

This fade time is active when the brightness is increased via relative dimming with object 13, 16 or 19. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while decreasing brightness with object (related to 100%)

This fade time is active when the brightness is reduced via relative dimming with object 13, 16 or 19. The time period is related to a complete dimming process from 0 – 100 %.

Object value color Red (abs.)
Object value color Green (abs.)
Object value color Blue (abs.)



The following objects are used to control the 3 colors via dimming value, if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 14 RGB: Red dimming abs. – Set value	5.001	1 byte	From KNX
GO 17 RGB: Green dimming abs. – Set value	5.001	1 byte	From KNX
GO 20 RGB: Blue dimming abs. – Set value	5.001	1 byte	From KNX

Minimal value while receiving by object

This parameter can be used to configure which minimum value can be reached via object 14, 17 or 20. If a value below the minimum value is received, the color is controlled with the minimum value. If a value > 0 % is set here, the parameter **Process value 0 by object** is also visible.

Process value 0 by object *(only with "Minimal value while receiving by object" > 0 %)*

Here you can select whether the color is switched off when a value of 0% is received.

Maximal value while receiving by object

This parameter can be used to configure which maximum value can be reached via object 14, 17 or 20. If a value above the maximum value is received, the color is controlled with the maximum value.

Fade time while increasing brightness with object (related to 100%)

This fade time is active if the brightness is increased when values are received via object 14, 17 or 20. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while decreasing brightness with object (related to 100%)

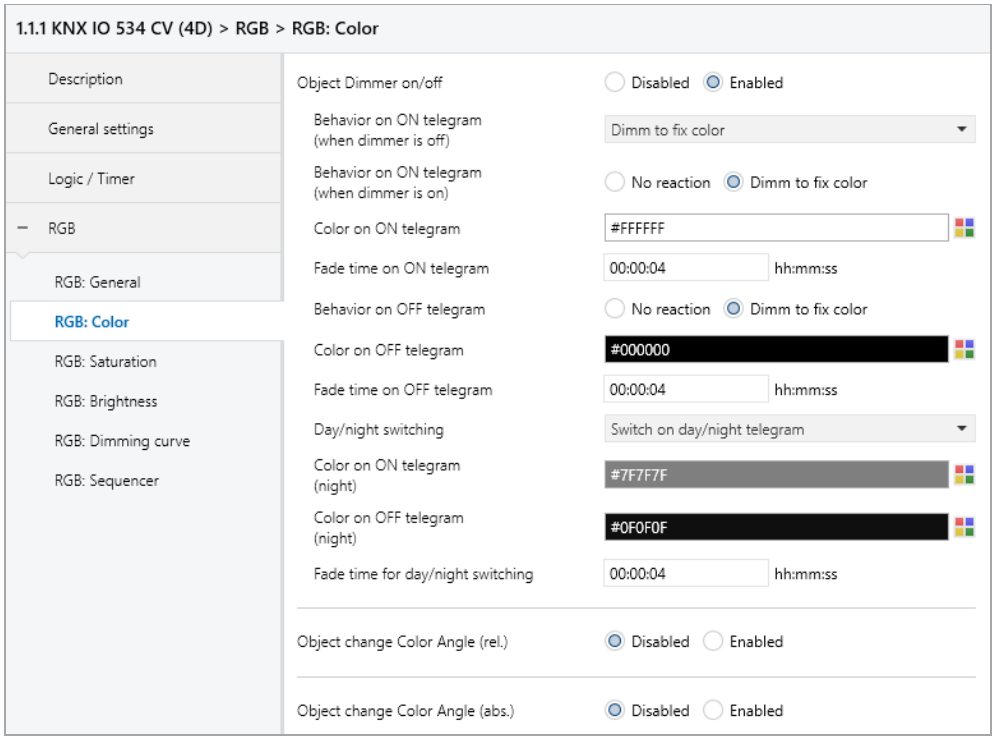
This fade time is active if the brightness is reduced when values are received via object 14, 17 or 20. The time period is related to a complete dimming process from 0 – 100 %.

6.3.3 RGB: Color

This function block can be used to activate different colors via on/off telegrams. In addition, there are objects for manipulating the color angle.

The color angle is a property of a color in HSV space and assigns an angle in a color wheel to each hue.

Object Dimmer on/off



The following object is available for switching the dimmer if it has been activated via parameters:

Group object	Type KNX	Size	Direction
GO 21 RGB: Color on/off – Switch	1.001	1 bit	From KNX

Behavior on ON telegram (when dimmer is off)

If the dimmer is switched off, this parameter can be used to configure the behavior when switching on via object 21.

The choices are:

- No reaction
- Dimm to fix color
- Dimm to last color before switching off

Behavior on ON telegram (when dimmer is on)

If the dimmer is already switched on, this parameter can be used to configure the behavior in the event of a renewed ON telegram via object 21.

The choices are:

- No reaction
- Dimm to fix color

Color on ON telegram

With suitable parameterisation, this color is activated with an ON telegram via object 21.

Fade time on ON telegram

This fade time is active when an ON telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Behavior on OFF telegram

This parameter describes the behavior of the dimmer in the event of an OFF telegram via object 21.

The choices are:

- No reaction
- Dimm to fix color

Color on OFF telegram

With suitable parameterisation, this color is activated with an OFF telegram via object 21.

Fade time on OFF telegram

This fade time is active when an OFF telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Day/night switching

When using this function, the following object is visible for switching from day/night mode:

Group object	Type KNX	Size	Direction
GO 30 RGB: Day/Night – Switch	1.001	1 bit	From KNX

Day mode is triggered with an OFF telegram to the object, night mode with an ON telegram. The device is in day mode after restart.

Telegrams to object 30 affect all activated day/night switchovers of the RGB channel.

In addition, it can be determined when the values become active after telegram via the object are available for selection:

- Disabled

- Switch on day/night telegram
  Immediately after reception day/night switching is dimmed to the active color, according to the last received switch on/off via object 21.

- Switch on next on/off telegram
  The currently active color is not used until the next on/off switching via object 21.

There is a separate switch-on and switch-off color in the parameters for night mode, in day mode the always visible colors are used.

Color on ON telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this color is activated with an ON telegram via object 21 and suitable parameterisation.

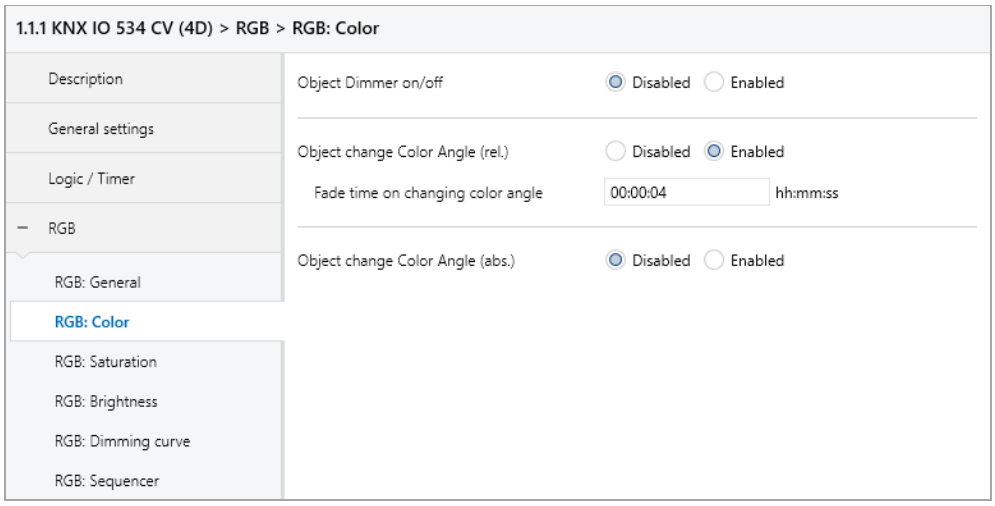
Color on OFF telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this color is activated with an OFF telegram via object 21 and suitable parameterisation.

Fade time for day/night switching *(only with active day/night switching)*

This fade time is only active if switching is used with day/night switching. If switching is used with the next on/off telegram, the regular fade time of the respective on or off telegram is active. The time period is related to a complete dimming process from 0 – 100 %.

Object change Color Angle (rel.)



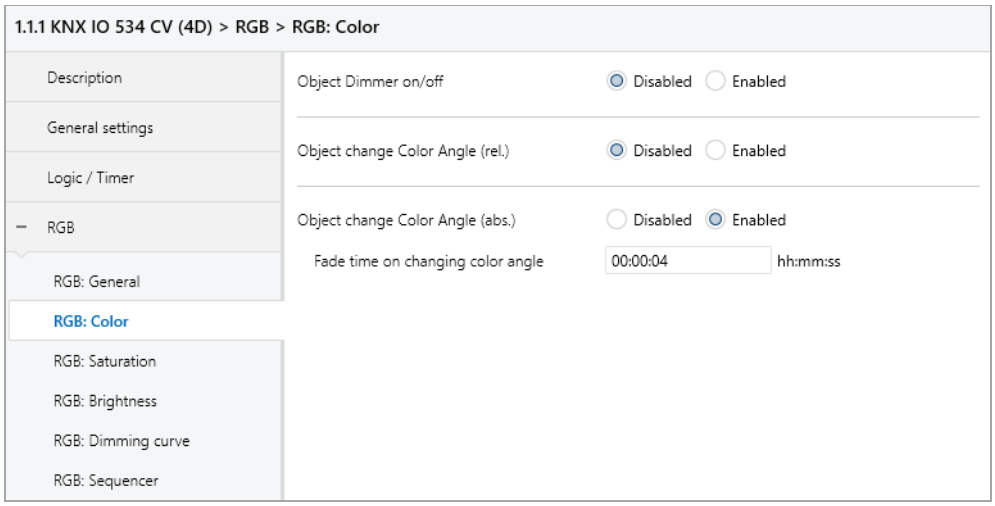
To change the color angle via relative dimming commands, there is the following object, if it has been activated via parameters:

Group object	Type KNX	Size	Direction
GO 22 RGB: Color angle adjusting rel. – Increase/Decrease	3.007	4 bits	From KNX

Fade time on changing color angle

The time period is related to a complete dimming process from 0 – 360 °.

Object change Color Angle (abs.)



To set the absolute value of the color angle, there is the following object, if it has been activated via parameters:

Group object	Type KNX	Size	Direction
GO 23 RGB: Color angle adjusting abs. – Set value	5.003	1 byte	From KNX

Fade time on changing color angle

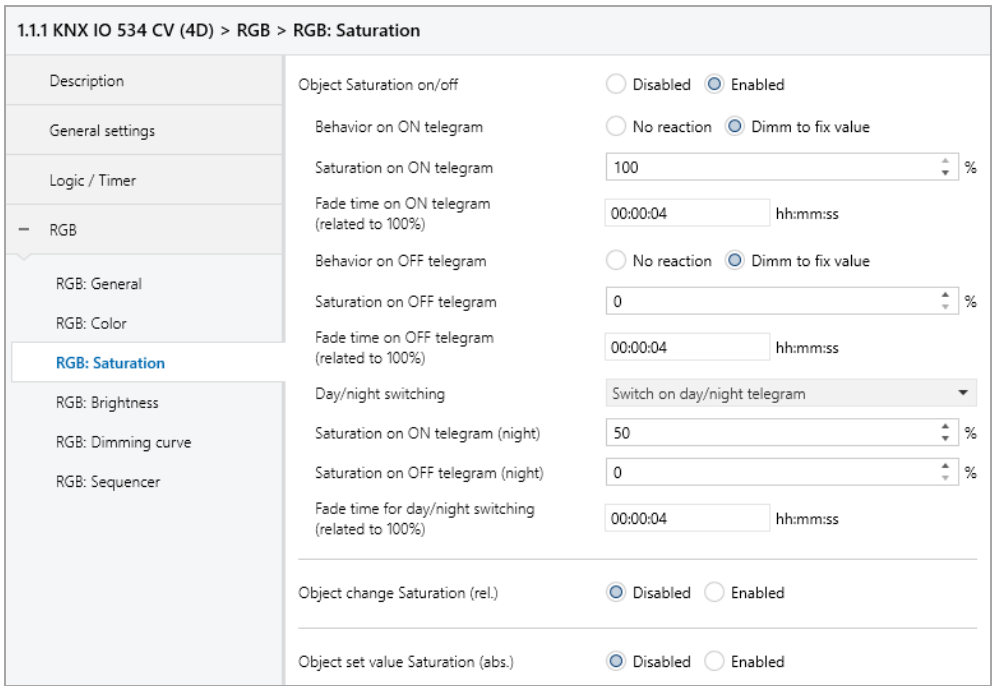
The time period is related to a complete dimming process from 0 – 360 °.

6.3.4 RGB: Saturation

Saturation is a property of a color in HSV space and represents the amount of white in a color.

Pure colors without white content have a saturation of 100 %. The lower the saturation, the more the color is perceived as white.

Object Saturation on/off



The following object is available for switching the saturation if it has been activated via parameters:

Group object	Type KNX	Size	Direction
GO 24 RGB: Saturation on/off – Switch	1.001	1 bit	From KNX

Behavior on ON telegram

This parameter can be used to configure the behavior when switching on via the respective object.

The choices are:

- No reaction
- Dimm to fix value

Saturation on ON telegram

With suitable parameterisation, this saturation is activated with an ON telegram via object 24.

Fade time on ON telegram (related to 100%)

This fade time is active when an ON telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Behavior on OFF telegram

This parameter describes the behavior of the dimmer in the event of an OFF telegram via object 24.

The choices are:

- No reaction
- Dimm to fix value

Saturation on OFF telegram

With suitable parameterisation, this value is activated with an OFF telegram via object 24.

Fade time on OFF telegram (related to 100%)

This fade time is active when an OFF telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Day/night switching

When using this function, the following object is visible for switching from day/night mode:

Group object	Type KNX	Size	Direction
GO 30 RGB: Day/Night – Switch	1.001	1 bit	From KNX

Day mode is triggered with an OFF telegram to the object, night mode with an ON telegram. The device is in day mode after restart.

Telegrams to object 30 affect all activated day/night switchovers of the RGB channel.

In addition, it can be determined when the values become active after telegram via the object are available for selection:

- Disabled

- Switch on day/night telegram
  Immediately after day/night switching is received, dimming to the active value takes place according to the last received switch on/off via object 24.

- Switch on next on/off telegram
  The currently active value is only used with the next on/off switching via object 24.

There is a separate switch-on and switch-off value in the parameters for night mode, in day mode the always visible values are used.

Saturation on ON telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an ON telegram via object 24 and suitable parameterisation.

Saturation on OFF telegram (night) *(only with active day/night switching)*

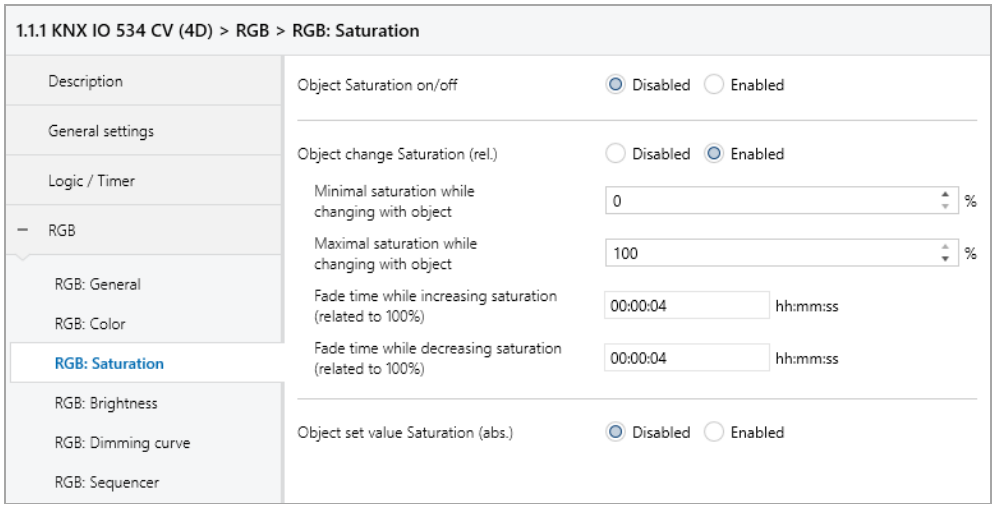
If the dimmer is in night mode, this value is activated with an OFF telegram via object 24 and suitable parameterisation.

Fade time for day/night switching (related to 100%)

(only with active day/night switching)

This fade time is only active if switching is used with day/night switching. If switching is used with the next on/off telegram, the regular fade time of the respective on or off telegram is active. The time period is related to a complete dimming process from 0 – 100 %.

Object change Saturation (rel.)



To change the saturation via relative dimming commands, there is the following object if it has been activated via parameters:

Group object	Type KNX	Size	Direction
GO 25 RGB: Saturation adjusting rel. – Increase/Decrease	3.007	4 bits	From KNX

Minimal saturation while changing with object

This parameter can be used to set which minimum saturation can be achieved via relative dimming. If the current saturation is below the minimum value, the saturation cannot be reduced via object 25.

Maximal saturation while changing with object

This parameter can be used to set which maximum saturation can be achieved via relative dimming. If the current saturation is above the maximum value, the saturation cannot be increased via object 25.

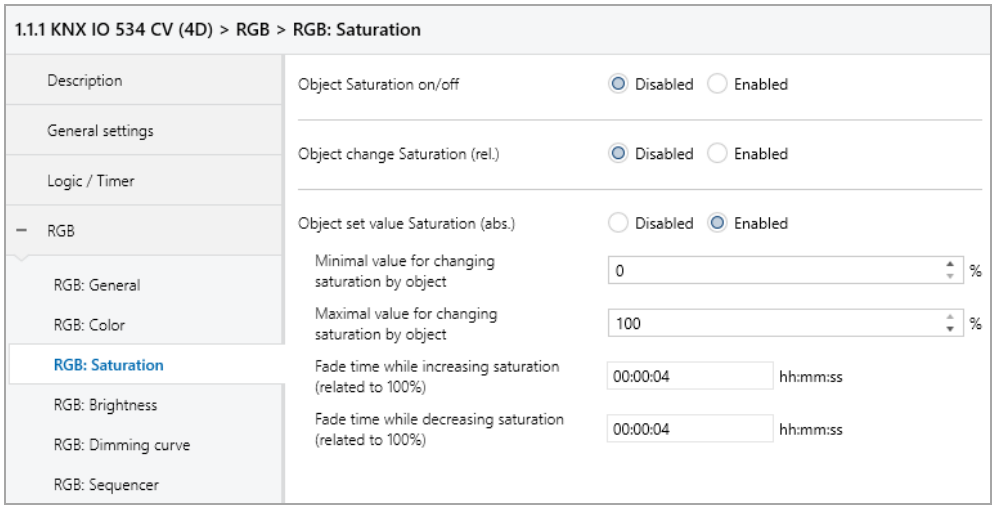
Fade time while increasing saturation (related to 100%)

This fade time is active when the saturation is increased via relative dimming with object 25. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while decreasing saturation (related to 100%)

This fade time is active when the saturation is reduced via relative dimming with object 25. The time period is related to a complete dimming process from 0 – 100 %.

Object set value Saturation (abs.)



The following object is used to control saturation via dimming value if it has been activated via parameters:

Group object	Type KNX	Size	Direction
GO 26 RGB: Saturation adjusting abs. – Set value	5.001	1 byte	From KNX

Minimal value for changing saturation by object

This parameter can be used to configure which minimum saturation can be reached via object 26. If a value below the minimum value is received, the dimmer is controlled with the minimum value.

Maximal value for changing saturation by object

This parameter can be used to configure which maximum saturation can be reached via object 26. If a value above the maximum value is received, the dimmer is controlled with the maximum value.

Fade time while increasing saturation (related to 100%)

This fade time is active if the saturation is increased when values are received via object 26. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while decreasing saturation (related to 100%)

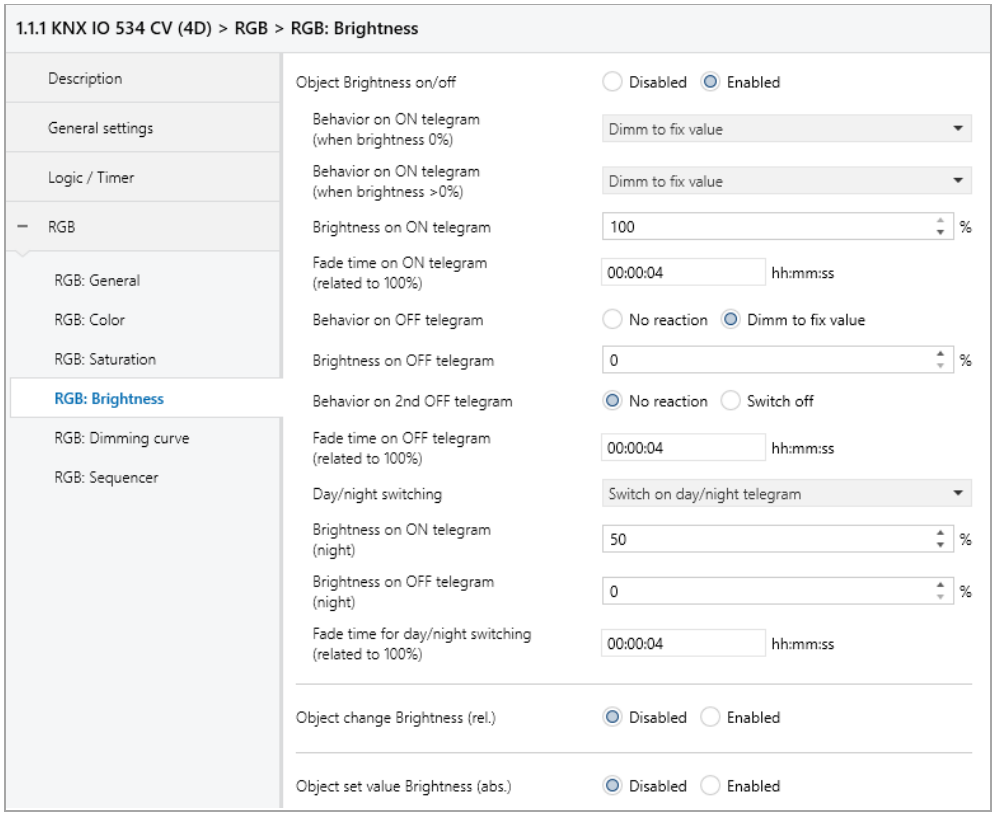
This fade time is active if the saturation is reduced when values are received via object 26. The time period is related to a complete dimming process from 0 – 100 %.

6.3.5 RGB: Brightness

Brightness is a property of a color in HSV space.

A brightness of 100% means that the color shines with maximum possible intensity, the lower the brightness, the less bright the color shines.

Object Brightness on/off



The following object is available for switching the brightness if it has been activated via parameters:

Group object	Type KNX	Size	Direction
GO 27 RGB: Brightness on/off – Switch	1.001	1 bit	From KNX

Behavior on ON telegram (when brightness 0%)

If the current brightness is 0 %, this parameter can be used to configure the behavior when switching on via object 27.

The choices are:

- No reaction
- Dimm to fix value
- Dimm to last value before switching off

Behavior on ON telegram (when brightness >0%)

If the current brightness is greater than 0 %, this parameter can be used to configure the behavior for a renewed ON telegram via object 27.

The choices are:

- No reaction
- Dimm to fix value
- Dimm to fix value if higher than actual

Brightness on ON telegram

With suitable parameterisation, this brightness is activated with an ON telegram via object 27.

Fade time on ON telegram (related to 100%)

This fade time is active when an ON telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Behavior on OFF telegram

This parameter describes the behavior of the dimmer in the event of an OFF telegram via object 27.

The choices are:

- No reaction
- Dimm to fix value

Brightness on OFF telegram

With suitable parameterisation, this value is activated with an OFF telegram via object 27.

Behavior on 2nd OFF telegram

This parameter describes the behavior of the dimmer when a 2nd OFF telegram is received via object 27.

The choices are:

- No reaction
- Switch off

The 2nd OFF telegram must follow the 1st OFF telegram within 1 second in order to be evaluated. If the current brightness is equal to or lower than the parameterised brightness on the OFF telegram, switching off already takes place with the 1st OFF telegram.

Fade time on OFF telegram (related to 100%)

This fade time is active when an OFF telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Day/night switching

When using this function, the following object is visible for switching from day/night mode:

Group object	Type KNX	Size	Direction
GO 30 RGB: Day/Night – Switch	1.001	1 bit	From KNX

Day mode is triggered with an OFF telegram on object 30, night mode with an ON telegram. The device is in day mode after restart.

Telegrams to object 30 affect all activated day/night switchovers of the RGB channel.

In addition, it is possible to determine when the brightness values become active after a telegram via object 30:

- Disabled
- Switch on day/night telegram
  Immediately after day/night switching is received, dimming to the active brightness takes place according to the last received switch on/off via object 27.
- Switch on next on/off telegram
  The currently active brightness is only used with the next ON/OFF switching via object 27.

There is a separate switch-on and switch-off value in the parameters for night mode, in day mode the always visible brightness values are used.

Brightness on ON telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an ON telegram via object 27 and suitable parameterisation.

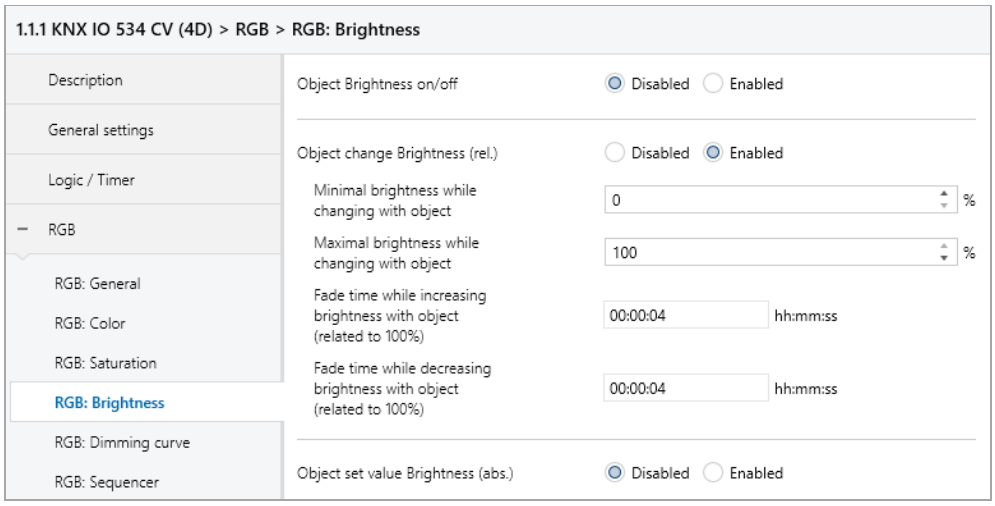
Brightness on OFF telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an OFF telegram via object 27 and suitable parameterisation.

Fade time for day/night switching (related to 100%)
(only with active day/night switching)

This fade time is only active if switching is used with day/night switching. If switching is used with the next on/off telegram, the regular fade time of the respective on or off telegram is active. The time period is related to a complete dimming process from 0 – 100 %.

Object change Brightness (rel.)



To change the brightness via relative dimming commands, there is the following object if it has been activated via parameters:

Group object	Type KNX	Size	Direction
GO 28 RGB: Brightness dimming rel. – Brighter/Darker	3.007	4 bits	From KNX

Minimal brightness while changing with object

This parameter can be used to set which minimum brightness can be achieved via relative dimming. If the current brightness is below the minimum value, the brightness cannot be reduced via object 28.

Maximal brightness while changing with object

This parameter can be used to set the maximum brightness that can be achieved via relative dimming. If the current brightness is above the maximum value, the brightness cannot be increased via object 28.

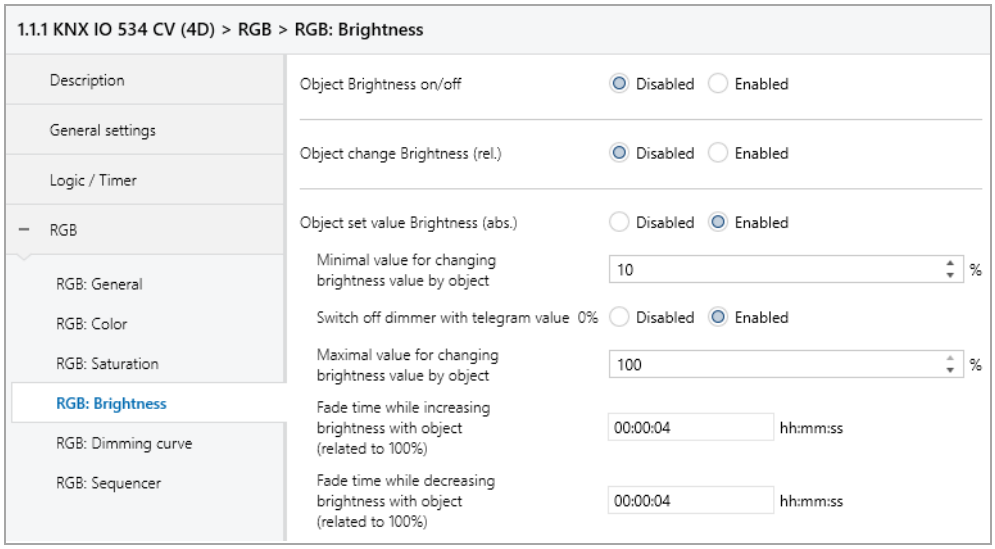
Fade time while increasing brightness with object (related to 100%)

This fade time is active when the brightness is increased via relative dimming with object 28. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while decreasing brightness with object (related to 100%)

This fade time is active when the brightness is reduced via relative dimming with object 28. The time period is related to a complete dimming process from 0 – 100 %.

Object set value Brightness (abs.)



The following object is used to control the brightness via dimming value if it has been activated via parameters:

Group object	Type KNX	Size	Direction
GO 29 RGB: Brightness dimming abs. – Set value	5.001	1 byte	From KNX

Minimal value for changing brightness value by object

This parameter can be used to configure which minimum brightness can be reached via object 29. If a value below the minimum value is received, the dimmer is controlled with the minimum value. If a value > 0 % is set here, the parameter **Switch off dimmer with telegram value 0%** is also visible.

Switch off dimmer with telegram value 0%

(only with "Minimal value for changing brightness value by object" > 0 %)

Here you can select whether the dimmer is switched off when a brightness of 0 % is received.

Maximal value for changing brightness value by object

This parameter can be used to configure which maximum brightness can be reached via object 29. If a value above the maximum value is received, the dimmer is controlled with the maximum value.

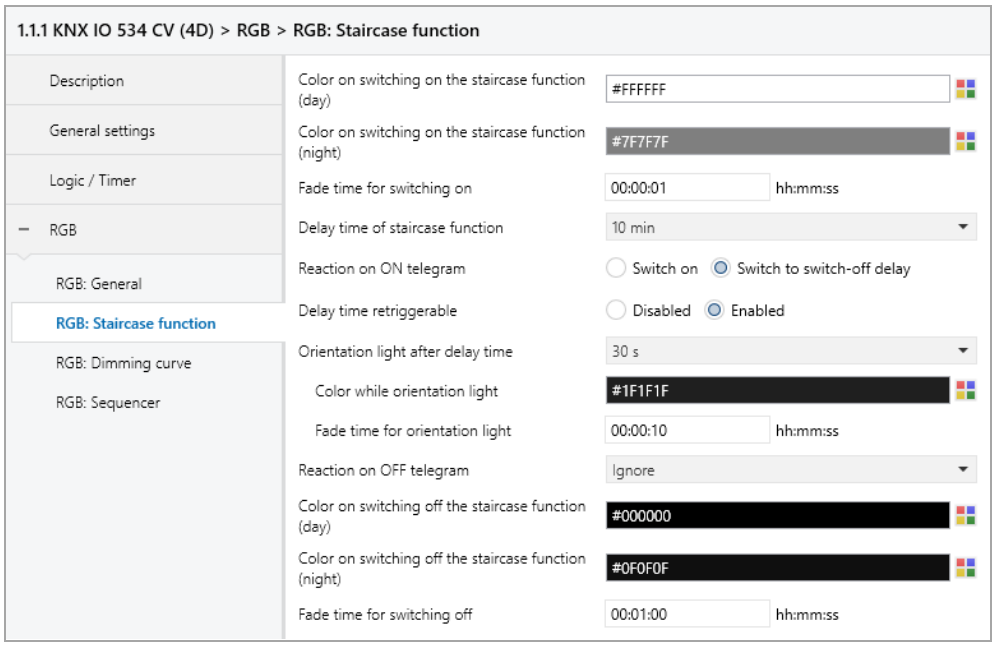
Fade time while increasing brightness with object (related to 100%)

This fade time is active if the brightness is increased when values are received via object 29. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while decreasing brightness with object (related to 100%)

This fade time is active if the brightness is reduced when values are received via object 29. The time period is related to a complete dimming process from 0 – 100 %.

6.3.6 RGB: Staircase function



A staircase function with optional orientation light can be implemented via this parameter page. The staircase function can be overridden by the disable function. It has the following objects:

Group object	Type KNX	Size	Direction
GO 11 RGB: Staircase function – Trigger	1.010	1 bit	From KNX
GO 30 RGB: Day/Night – Switch	1.001	1 bit	From KNX

Day mode is triggered with an OFF telegram on object 30, night mode with an ON telegram. The device is in day mode after restart.

Color on switching the staircase function (day)

This color is used in day mode when the staircase function is switched on via an ON telegram to object 11.

Color on switching the staircase function (night)

This color is used in night mode when the staircase function is switched on via an ON telegram to object 11.

Fade time for switching on

This fading time is active when the staircase function is switched on via ON telegram to object 11. The time period is related to a complete dimming process from 0 – 100 %.

Delay time of staircase function

After the delay time has elapsed, the dimmer is dimmed to the switch-off or orientation light value, depending on the parameter setting.

Reaction on ON telegram

This parameter determines the behavior after switching on the staircase function via ON telegram to object 11: In the setting “Switch on”, the channel remains switched on after ON telegram until the delay time is started via OFF telegram. In the setting “Switch to switch-off delay”, the channel immediately switches to the delay time after the ON telegram.

Delay time retriggerable

If it is set that the delay time is started with an ON telegram, this parameter determines whether only the 1st ON telegram to object 11 restarts the delay time, or also each subsequent ON telegram.

If it is set that the overrun time is started with an OFF telegram, this parameter determines whether only the 1st OFF telegram on object 11 restarts the overrun time, or also every further one if the staircase function is already in the overrun time.

Orientation light after delay time

This parameter can be used to set whether the dimmer dims to the switch-off value or to the orientation light after the end of the delay time, as well as the duration of the orientation light.

To choose from:

- Disabled
- 1 s
- 2 s
- 5 s
- 10 s
- 30 s
- 1 min
- 2 min
- 5 min
- 10 min
- 20 min
- 30 min
- 1 h
- 2 h
- Without timelimit

Color while orientation light

This color is dimmed to at the end of the follow-up time if orientation light is used.

Fade time for orientation light

This fading time is active when the staircase function dims to orientation light. The time period is related to a complete dimming process from 0 – 100 %.

Reaction on OFF telegram

Here you can set how the staircase function behaves in the event of an Off telegram. The following options are available:

- Ignore
  No reaction of the channel on off telegram
- Switch off
  Switches to switch-off value from the parameters
- Switch to switch-off delay
  The delay time is started with an OFF telegram.
- Switch to orientation light
  The orientation light phase is started with an OFF telegram.
- Switch to orientation light/switch off
  With the 1st OFF telegram the orientation light phase is started, with the 2nd OFF telegram it is dimmed to the switch-off value.

Color on switching off the staircase function (day)

This color is dimmed in day mode if the staircase function is switched off after the delay time or via Off telegram to object 11.

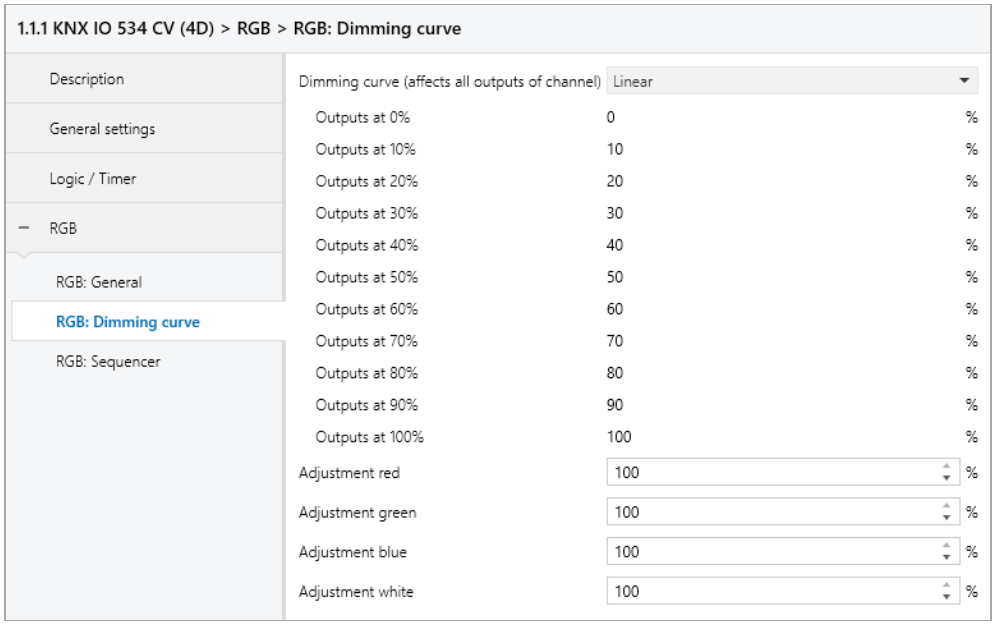
Color on switching off the staircase function (night)

This color is dimmed in night mode if the staircase function is switched off after the delay time or via Off telegram to object 11.

Fade time for switching off

This fade time is active when the staircase function dims to the OFF value. The time period is related to a complete dimming process from 0 – 100 %.

6.3.7 RGB: Dimming curve



This parameter page is used for fine adjustment of the dimmer to different lamps.

All parameters on this page only affect the PWM value of the output, not the dimming or output state value.

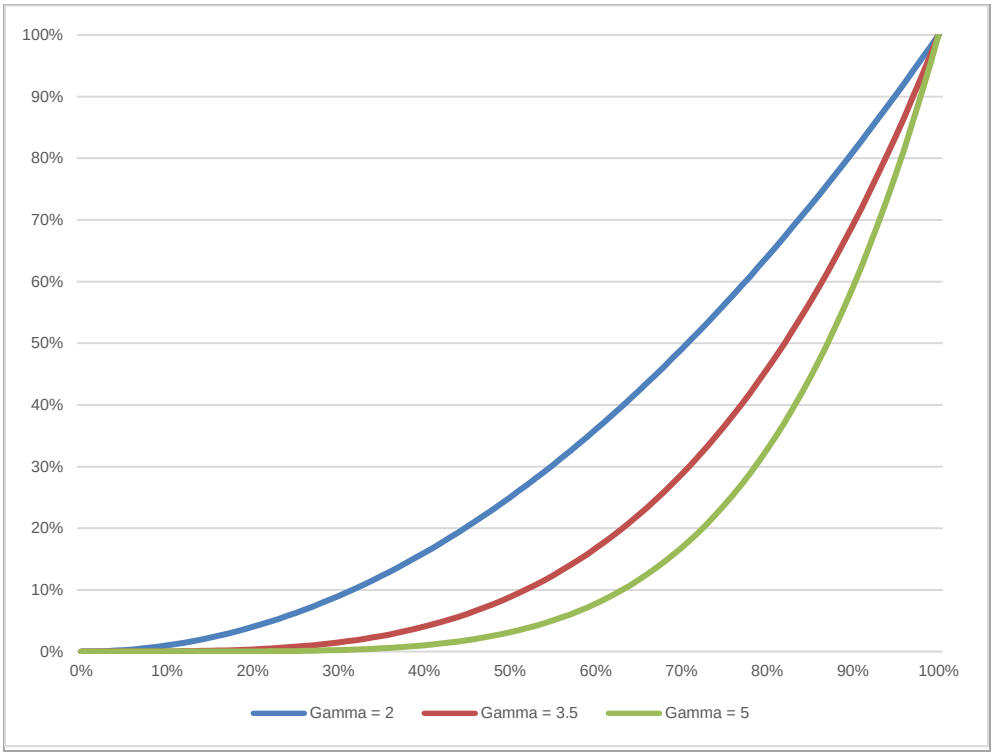
Dimming curve (affects all outputs of channel)

Here you can define which PWM values are output by the dimming outputs when the dimming channel has reached a certain color. The curve affects all outputs of the channel.

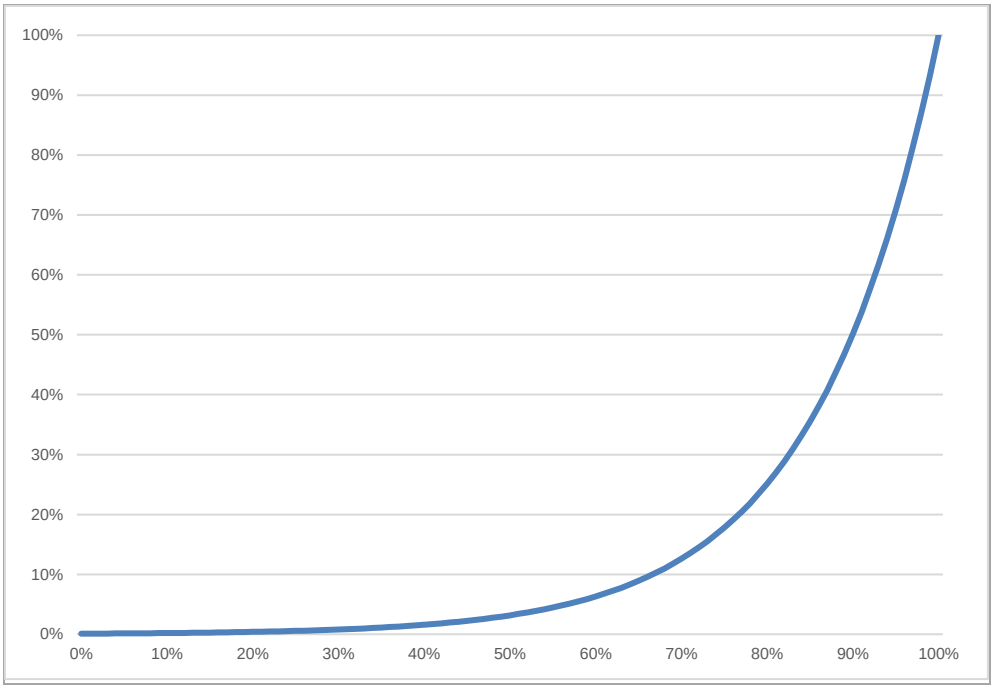
The choices are:

- Linear
- Logarithmic
- User defined

- Gamma
  Gamma correction according to the formula: *PWM value = Dimming value* ^{Gamma}
  Gamma can be set via parameter from 1.00 ... 5.00.

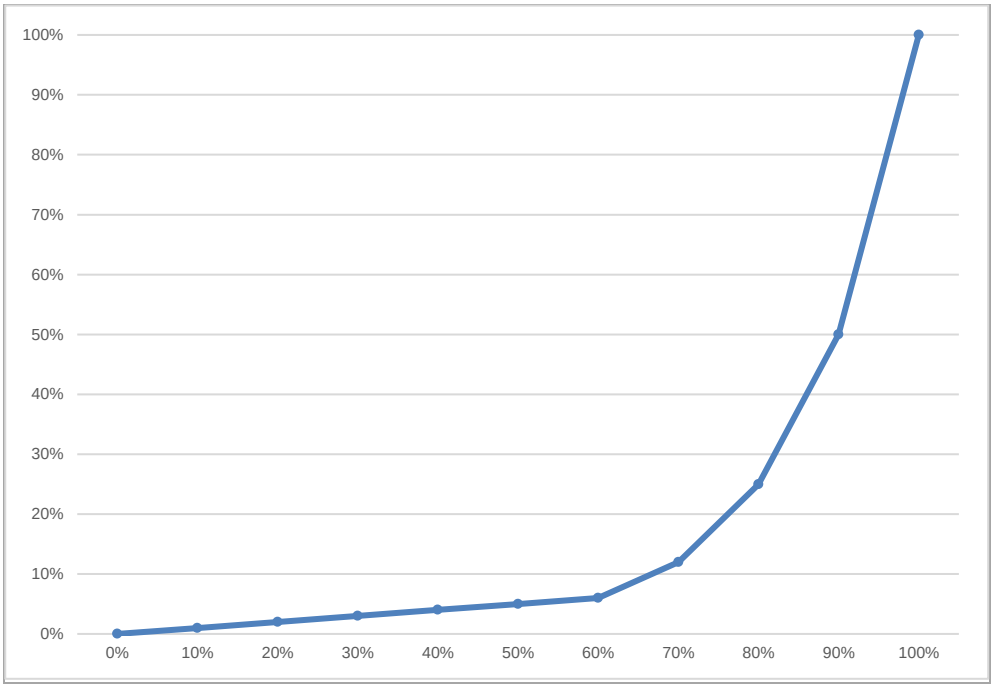


- DALI
  An DALI based function with the formula: *PWM value = 10* $^{3 - (Dimming\ value - 1)}$



Outputs at 0% – 100%

For the dimming curves “Linear”, “Logarithmic” and “User defined”, these values determine the PWM values of a dimming output at the specified dimming value. Values between the specified points are calculated and output linearly. As an example, a dimming output with dimming curve “Logarithmic” behaves according to the following graph:



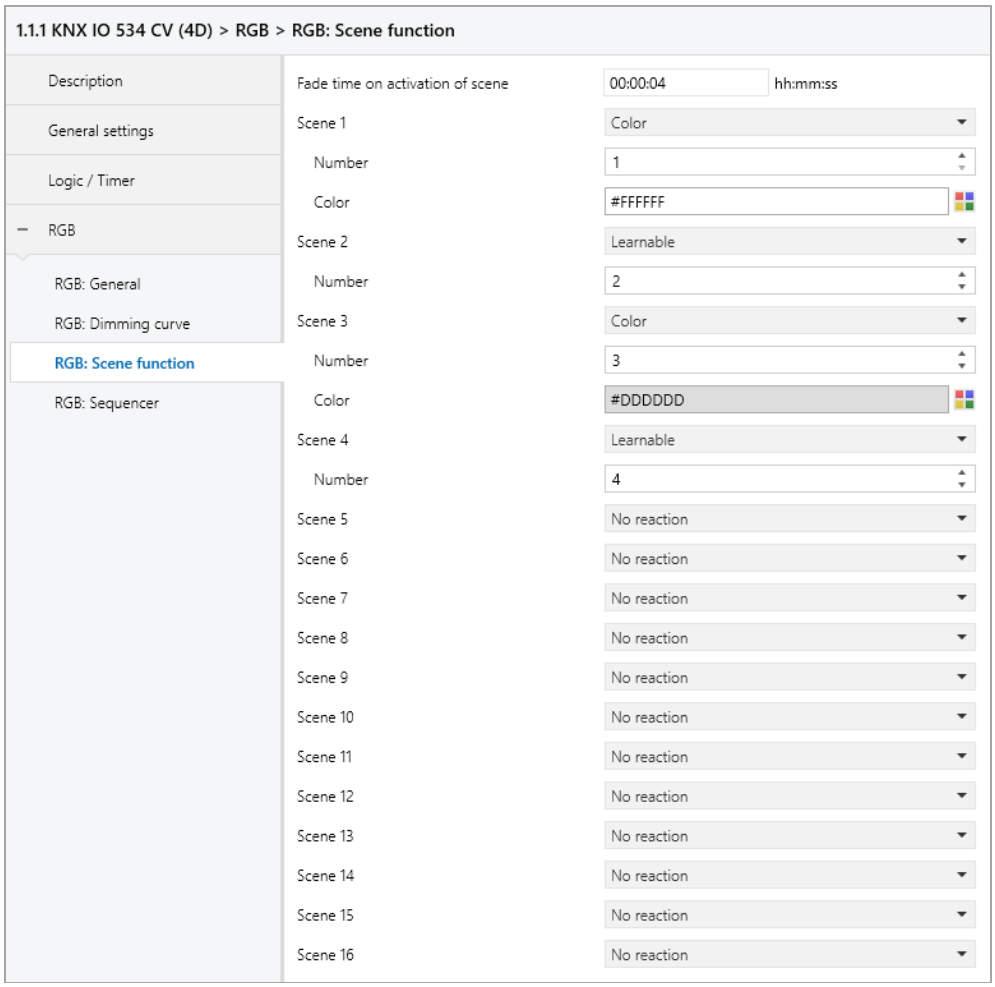
For the dimming curves “Linear” and “Logarithmic” the output values are fixed, for “User defined” they can be freely configured.

If a dimming value of 0 % is reached, the channel is always switched off.

Adjustment red
Adjustment green
Adjustment blue
Adjustment white *(only with device configuration “1 x RGBW”)*

The PWM value of the color calculated by the dimming curve is additionally scaled with this value.
Adjustment white is only available for **Device configuration** “1 x RGBW”.

6.3.8 RGB: Scene function



If the scene function is activated, the following group object appears:

Group object	Type KNX	Size	Direction
GO 40 RGB: Scene – Activ./Lrn.	18.001	1 byte	From KNX

Fade time on activation of scene

The time period in which the received scene is dimmed is set here. The time period is related to a complete dimming process from 0 – 100 %.

Scene 1 – 16

These parameters can be used to configure the reaction of the channel when the respective scene is received.

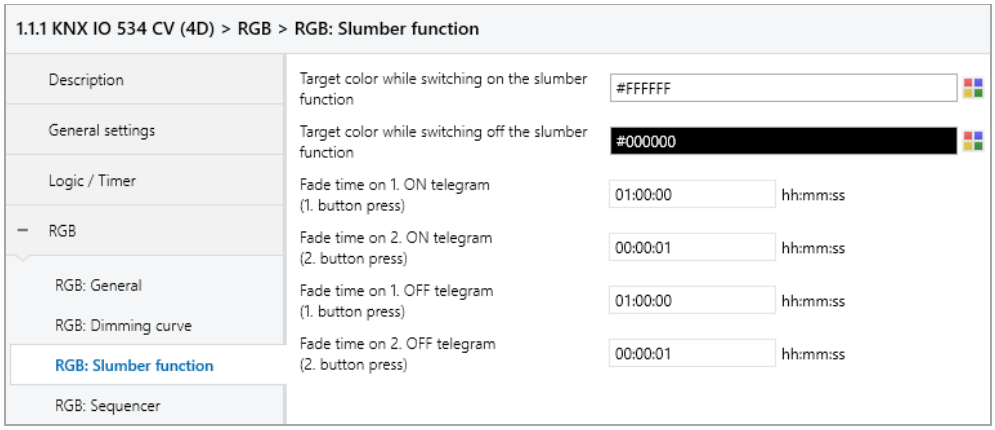
The choices are:

- No reaction
- Color
  The output is switched to the set color value if the scene of the corresponding number was received.
- Learnable
  Here, the current state at the output for the respective scene can be saved with the help of a scene control telegram. Thus, the scene can be adapted by the user without ETS download.

Number

This parameter can be used to assign any scene number between 1 and 64 to the scene. No scene numbers may be assigned twice.

6.3.9 RGB: Slumber function



If the slumber function is selected, the following object is visible:

Group object	Type KNX	Size	Direction
GO 43 RGB: Slumber function – Trigger	1.001	1 bit	From KNX

Target color while switching on the slumber function

This color is reached after receiving an ON telegram via object 43 at the output of the dimmer after completion of the dimming process.

Target color while switching off the slumber function

This color is reached after receiving an off telegram via object 43 at the output of the dimmer after completion of the dimming process.

Fade time on 1. ON telegram (1. button press)

This dimming time is used to dim to the final value for switching on after pressing the 1st button. The time period is related to a complete dimming process from 0 – 100 %.

Fade time on 2. ON telegram (2. button press)

This dimming time is used to dim to the final value for switching on after the 2nd button is pressed. The time period is related to a complete dimming process from 0 – 100 %.

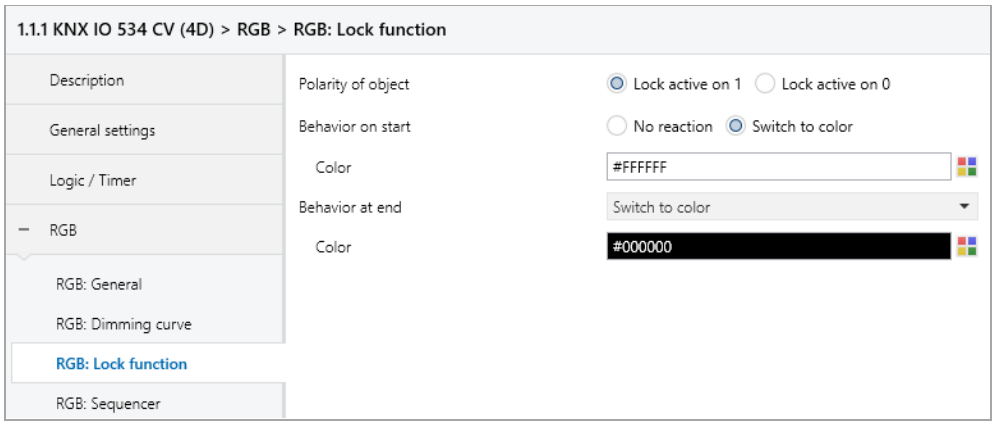
Fade time on 1. OFF telegram (1. button press)

This dimming time is used to dim to the final value for switching off after the 1st key is pressed. The time period is related to a complete dimming process from 0 – 100 %.

Fade time on 2. OFF telegram (2. button press)

This dimming time is used to dim to the final value for switching off after the 2nd button is pressed. The time period is related to a complete dimming process from 0 – 100 %.

6.3.10 RGB: Lock function



If the lock function is activated, the following objects are active:

Group object	Type KNX	Size	Direction
GO 44 RGB: Lock – Activate	1.001	1 bit	From KNX
GO 45 RGB: Prior. RGB on/off – Switch	1.001	1 bit	From KNX
GO 46 RGB: Prior. RGB – Set value	232.200	3 bytes	From KNX

If the lock has been activated via group object 44, other received telegrams for dimmer, automatic mode, slumber, scene function and sequencer are not executed.

In addition to the disable object, 2 priority objects are also visible when the disable function is activated, with which the dimmer can be controlled independently of the disable. In this way, it is possible to set an initial state without influencing other functions.

Example of priority objects:

At events in public buildings or in restaurants, the buttons can be disabled after regular operation by means of the disable object. This makes it possible to block buttons that are accessible to unauthorised persons during the lecture or concert in order to prevent unintentional switching. Nevertheless, the organiser can, if necessary, control the individual lamps with the help of the priority object without lifting the lock.

Polarity of object

The object's mode of action can be used to set how the lock is to be activated – either by receiving a 1 or by receiving a 0.

The choices are:

- Lock active on 1
- Lock active on 0

Behavior on start

Here you can configure the state that is set when the lock is activated at the output.

The choices are:

- No reaction
- Switch to colorParameter
  for setting the color appears.

The state of the output can be further changed by the priority objects.

Behavior at end

Here you can configure the state that is set when the lock is deactivated at the output.

The choices are:

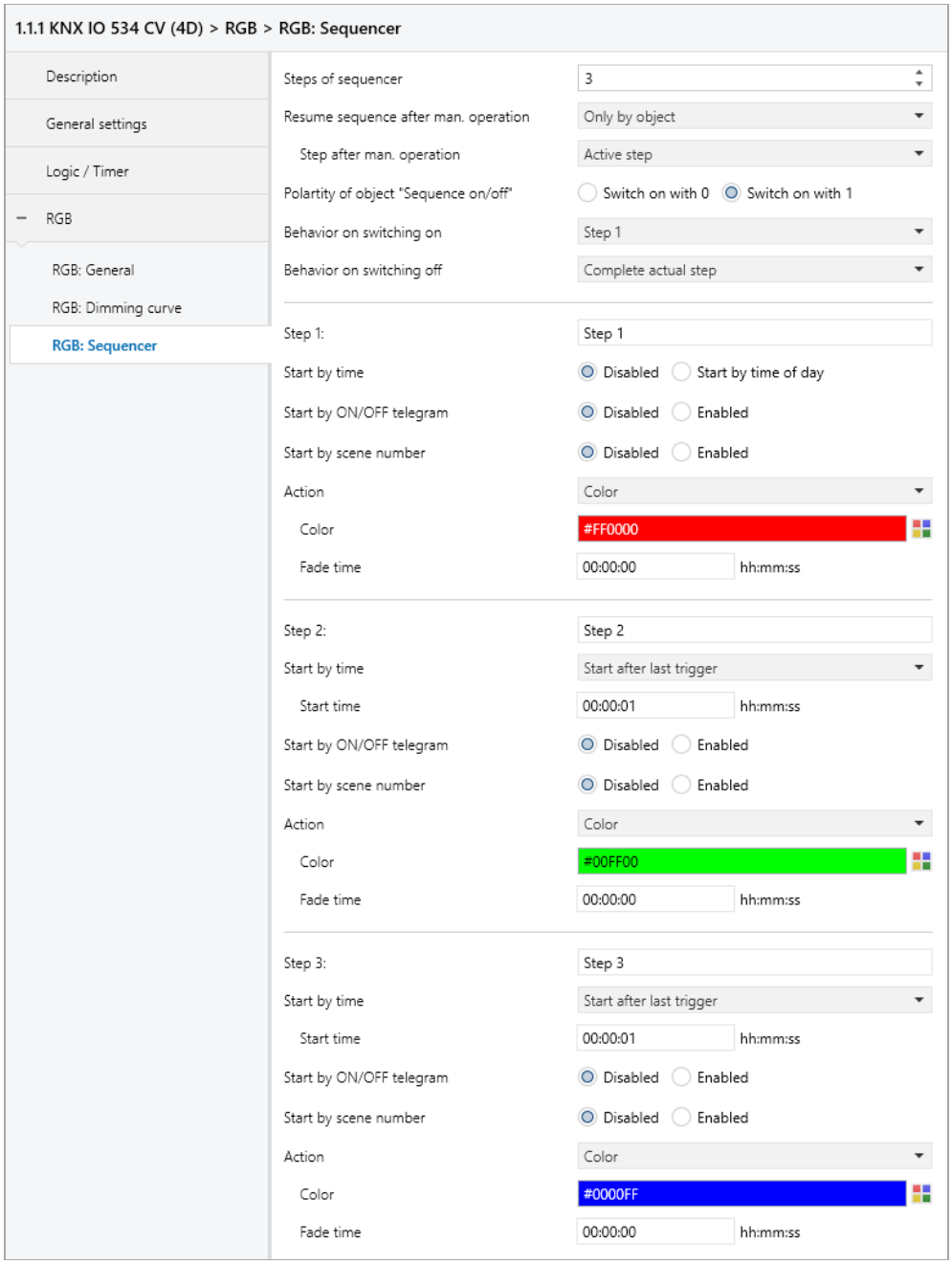
- No reaction

- Switch to colorParameter
  for setting the color appears.

- State before lock
  Here the original state before activation of the lock is restored. Telegrams received during the lock are ignored.

- State without lock
  Here the state of the last received telegram is restored. This means that the received telegrams are taken into account during the lock. Thus, when the lock is deactivated, the state of the last received telegram is set.

6.3.11 RGB: Sequencer



The sequencer can be used to create complex sequence programs consisting of up to 32 individual steps for the dimmer channel. The activation of the individual steps is possible at the following start conditions:

- At a fixed time
- After a waiting time to a previous step
- Via on/off telegram
- On receipt of a parameterized scene number

When a step is activated, a color can be dimmed or a scene number can be sent. In addition, a step or an entire sequence of steps can be repeated cyclically.

The following objects are available for general control of the sequencer:

Group object	Type KNX	Size	Direction
GO 53 RGB: Sequence suspend – Suspend/Resume	1.001	1 bit	From KNX
GO 54 RGB: Sequence on/off – Switch	1.001	1 bit	From KNX

Polarity of object 53:
1 = Suspend / 0 = Resume

The following parameters determine the general behavior of the sequencer:

Steps of sequencer

Number of steps (0 ... 32) to be used.

Resume sequence after man. operation

A sequence that is switched on can always be interrupted or continued via object 53; an ON telegram interrupts the sequence, an OFF telegram continues it.

A sequence is also interrupted after manual operation, i.e. after commands for dimmer, automatic mode, slumber or scene function.

In addition, this parameter determines how an interrupted sequence can still be continued, is available for selection:

- Only by object
  The sequence can only be continued via object 53.

- After off-time
  The sequence is continued after the set blocking time.

- On next activated step
  The sequence is continued at the next activated step. The next step can be activated via object or time-controlled.

Off-time

Only visible if the sequence is to be continued after off-time, this blocking time can be configured with this.

Step after man. operation

This step is executed when resuming after manual operation, the function of the set step is always executed, regardless of its other set start conditions.

Polarity of object “Sequence on/off”

This parameter can be used to set the telegram value with which the sequence can be switched on and off via object 54. If the sequence is switched off, any further activation of a step is disabled.

Behavior on switching on

This determines how the sequencer behaves when switched on via object 54, available for selection:

- No reaction
  No function is executed, the sequencer is waiting for steps to be activated.

- Step 1 – 32
  The function of the step is executed (regardless of the other set start conditions of the step), the sequence is then continued according to its configuration from this step.

Switching on also reactivates a sequence interrupted by manual operation.

Behavior on switching off

This determines how the sequencer behaves when switched off via object 54, available for selection:

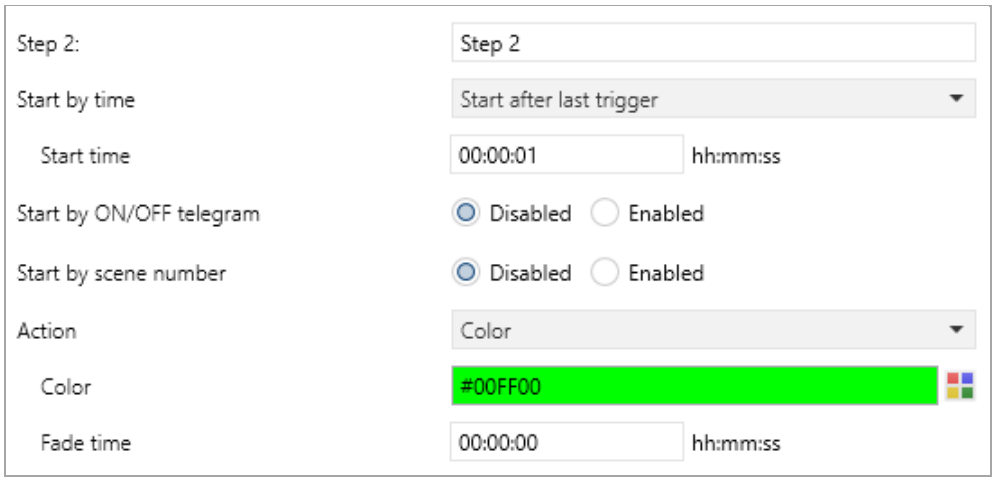
- Complete actual step
  If the sequencer is in a dimming process, this is still being completed.

- Step 1 – 32
  The function of the step is executed (regardless of the other start conditions set for the step).

- Stop immediately
  If the sequencer is in a dimming process, this is stopped.

Apart from the set behavior when switching off, any further activation of a step after switching off is blocked until the sequencer is switched on again via object 54.

Step 1 – 32



When a step is activated, its parameters appear for configuration.

You can enter your own name for the step in the text field at the top right with the content “Step x”. This designation is used for better orientation of the user and has no influence on the functionality of the step.

Start by time

This parameter is used to configure a time start condition of the step, available for selection:

- Disabled
  Start condition is not used.

- Start by time of day
  The time at which the step is to start can be entered here. When using this start condition, the current time must have been received via the following object:

Group object	Type KNX	Size	Direction
GO 5 Time of Day – Set	10.001	3 bytes	From KNX

If no valid time has been specified via object 5, all start conditions at fixed times are not active.

The time is continuously updated by the device through its internal timer, but due to component tolerances there is always a deviation from the actual time. Therefore, the current time should be sent to the device at least twice a day by a precise timer in order to keep the deviation as small as possible.

- Start after last trigger
  Here you can specify the time interval to wait after the previous activation before executing the step. This start condition is not available for step 1.

Start time

Here either the time or the waiting time can be specified for the execution of the current step, if a timed start condition is used.

Start by ON/OFF telegram

When using this start condition, a separate object is available for each step:

Group object	Type KNX	Size	Direction
GO 55 – 86 RGB: Sequence Step 1 – 32 on/off – Switch	1.001	1 bit	From KNX

An ON telegram to one of these objects activates the respective step, the sequence is then continued from this step according to its configuration.

An Off telegram also activates this step, but resets the sequence at the same time.

Start by scene number

When this start condition is used, the following object becomes visible:

Group object	Type KNX	Size	Direction
GO 51 RGB: Sequence scene – Activate step	18.001	1 byte	From KNX

A telegram with the set scene to this object activates the respective step, the sequence is then continued according to its configuration from this step.

All steps with this start condition are controlled via this object.

Action

When the step is activated, the configured function is executed:

- None
  No function is executed. This can be used, for example, to implement a switch-on delay of a sequence.

- Start loop
  The sequence is continued at the selected step. Parameters for the start step of the loop and number of loops become visible.

- Send scene number
  When using this function, the following object becomes visible:

Group object	Type KNX	Size	Direction
GO 52 RGB: Sequence scene – Send scene	18.001	1 byte	To KNX

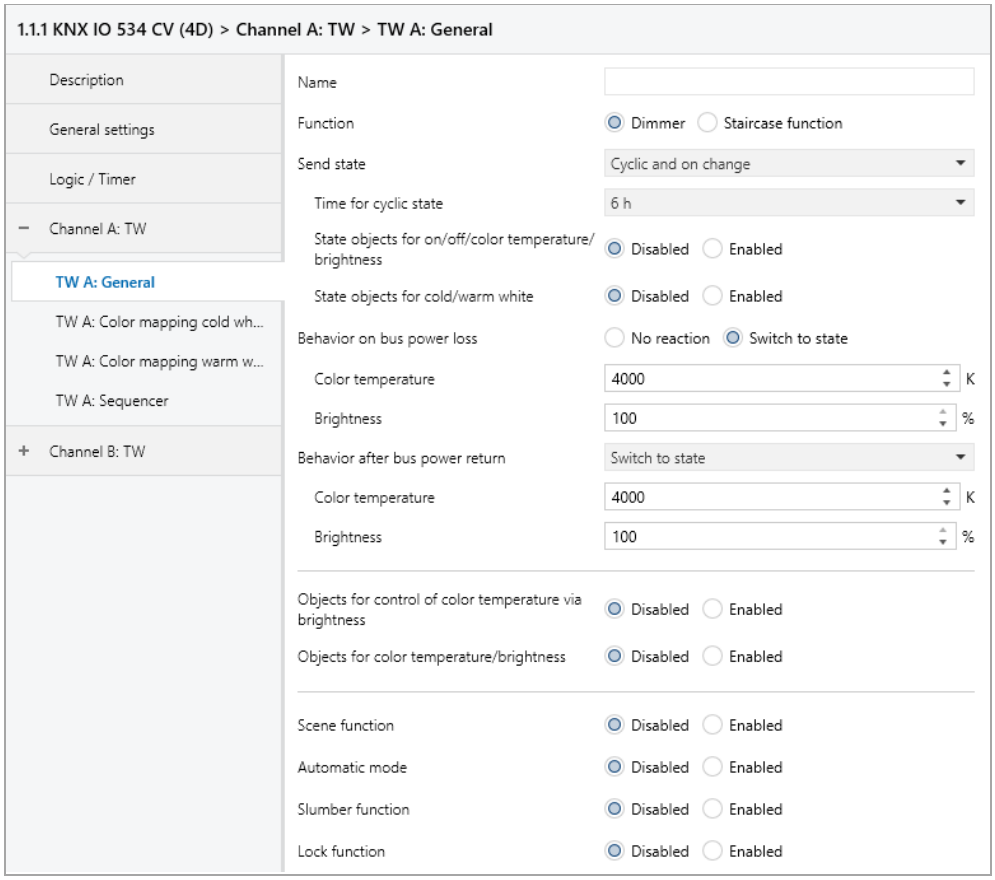
  A parameter for the sent scene number becomes visible; when the step is activated, this scene number is sent via the object.
  All steps send the scene number via this object if this function is used for the respective step.

- Color
  Parameters for color and fade time become visible. When the step is activated, the dimmer dims from the current color value to the specified color with the parameterised fade time. This time is related to a complete dimming process from 0 – 100 %.

  *The fade time must be shorter than or equal to the **Start time** or waiting time of the next step in order to achieve the set color.*

6.4 Device configuration “1 x Tunable white” and “2 x Tunable white”

6.4.1 TW A / TW B: General



Name *(30 characters)*

Any name can be assigned to the channel. However, this should be unique and meaningful, this facilitates later work with the associated group objects, since the assigned name is displayed there as a designation. If no name is assigned, the group objects are designated with “TW A: ... ” or “TW B: ... ”.

Function

This parameter defines the functionality of the actuator. The following options are available:

- Dimmer
  Scene function, automatic mode, slumber and lock function are available when this functionality is selected. Objects for switching on/off, relative dimming and absolute value can be configured.

- Staircase function
  When this function is selected, the parameter pages "TW A: Staircase function" or "TW B: Staircase function" are displayed. Only the lock function is available.

Send state

This parameter defines the send behavior of the state objects:

- Disabled
  State objects are deactivated and hidden.
- Only on read
  Send state objects only for read requests.
- On change
  Send state objects only on value change.
- Cyclically and on change
  State objects send cyclically and on value change.

Time for cyclic state *(only for "Cyclic and on change")*

If send state is configured with "Cyclic and on change", this parameter appears to set the cycle time for sending.

State objects for on/off/color temperature/brightness

Activates the following state objects:

Group object	Type KNX	Size	Direction
GO 22 TW A: TW output – State on/off	1.001	1 bit	To KNX
GO 23 TW A: TW output – State temperature	7.600	2 bytes	To KNX
GO 24 TW A: TW output – State brightness	5.001	1 byte	To KNX

Group object	Type KNX	Size	Direction
GO 102 TW B: TW output – State on/off	1.001	1 bit	To KNX
GO 103 TW B: TW output – State temperature	7.600	2 bytes	To KNX
GO 104 TW B: TW output – State brightness	5.001	1 byte	To KNX

If send on value change is activated, the On/Off state object sends an Off telegram when the brightness changes to value 0 %. If the brightness changes from 0 % to a value greater than 0 %, the object sends an ON telegram.

If send on value change is activated, the Temperature and Brightness state objects send new values with a time interval of at least 1 second if the value has changed by at least 1 % in each case.

State objects for cold/warm white

Activates the following state objects:

Group object	Type KNX	Size	Direction
GO 25 TW A: Cold white output – State brightness	5.001	1 byte	To KNX
GO 26 TW A: Warm white output – State brightness	5.001	1 byte	To KNX

Group object	Type KNX	Size	Direction
GO 105 TW B: Cold white output – State brightness	5.001	1 byte	To KNX
GO 106 TW B: Warm white output – State brightness	5.001	1 byte	To KNX

If send on value change is activated, the state objects send with a time interval of at least 1 second if the color assigned to the object has changed by at least 1 % or if a dimming process has been completed.

Behavior on bus power loss

The behavior of the output in the event of bus voltage failure can be configured here.

The choices are:

- No reaction
- Switch to state
  Parameters for setting color temperature and brightness appear.

Behavior after bus power return

The behavior of the output after bus power return can be configured here. This behavior is executed at every device restart (e.g. also at restart after an ETS download).

The choices are:

- No reaction
- Switch to state
  Parameters for setting color temperature and brightness appear.
- State like before bus power failure

Objects for control of color temperature via brightness *(only with the "Dimmer" function)*

Enables the function block for controlling the color temperature via brightness. If this functionality is activated, a parameter page appears for further configuration, which is explained in section "TW A / TW B: Color temperature via brightness".

Objects for color temperature/brightness *(only with "Dimmer" function)*

Enables the function blocks for separate control of color temperature and brightness. If this functionality is activated, parameter pages appear for further configuration, which are explained in the sections "TW A / TW B: Color temperature" and "TW A / TW B: Brightness".

Scene function *(only with "Dimmer" function)*

The scene function can be activated or deactivated here; it is only available in the "Dimmer" function. If this functionality is activated, a parameter page appears for further configuration of scenes 1 – 16. The further functionality is explained in section "TW A / TW B: Scene function".

Automatic mode *(only with "Dimmer" function)*

Automatic mode is only available in the "Dimmer" function. If this function is selected, the following objects become visible:

Group object	Type KNX	Size	Direction
GO 30 TW A: Automatic mode – Activate	1.001	1 bit	From KNX To KNX
GO 31 TW A: Autom. dimming abs. – Set brightness value	5.001	1 byte	From KNX
GO 32 TW A: Autom. dimming abs. – Set color temperature together via brightness	5.001	1 byte	From KNX
GO 33 TW A: Autom. dimming abs. – Set color temperature via scaling	5.001	1 byte	From KNX
GO 34 TW A: Autom. dimming abs. – Set color temperature	7.600	2 bytes	From KNX

Group object	Type KNX	Size	Direction
GO 110 TW B: Automatic mode – Activate	1.001	1 bit	From KNX To KNX
GO 111 TW B: Autom. dimming abs. – Set brightness value	5.001	1 byte	From KNX
GO 112 TW B: Autom. dimming abs. – Set color temperature together via brightness	5.001	1 byte	From KNX
GO 113 TW B: Autom. dimming abs. – Set color temperature via scaling	5.001	1 byte	From KNX
GO 114 TW B: Autom. dimming abs. – Set color temperature	7.600	2 bytes	From KNX

When using automatic mode, the dimmer can be controlled by the objects for automatic dimming, e.g. for light control or daylight-dependent basic lighting.

In automatic mode, the dimmer can be manually overridden by the function blocks "Objects for controlling color temperature via brightness" and "Objects for color temperature/brightness", as well as by scene, slumber function and sequencer. During manual override, values from the objects for automatic dimming are ignored, each manual override restarts the fallback time.

After the fallback time set in the parameter has elapsed, the values received on the object for automatic dimming are processed again.

The automatic mode can be switched on or off at any time via object 30 or 110; it also serves as a state object for the automatic mode.

After bus power return, automatic mode is switched off and must be activated via object 30 or 110.

Time out for manual mode
(only with “*Dimmer*” *function and active* “*Automatic mode*”*)*

This parameter defines the fallback time after manual mode.
Times from 1 min to 24 h can be set. The setting "Without timelimit" means that there is no automatic fallback from manual mode.

Slumber function *(only with* “*Dimmer*” *function)*

The slumber function is only available in the “Dimmer” function. The slumber function offers 2 different dimming times each for switching on and off via object. If this function is activated, a new parameter page appears, which is explained in section “TW A / TW B: Slumber function”.

Lock function

The disable function can be activated or deactivated here. This function is available in both functions “Dimmer” and “Staircase function”. If this functionality is activated, a new parameter page appears for further configuration, which is explained in more detail in section “TW A / TW B: Lock function”.

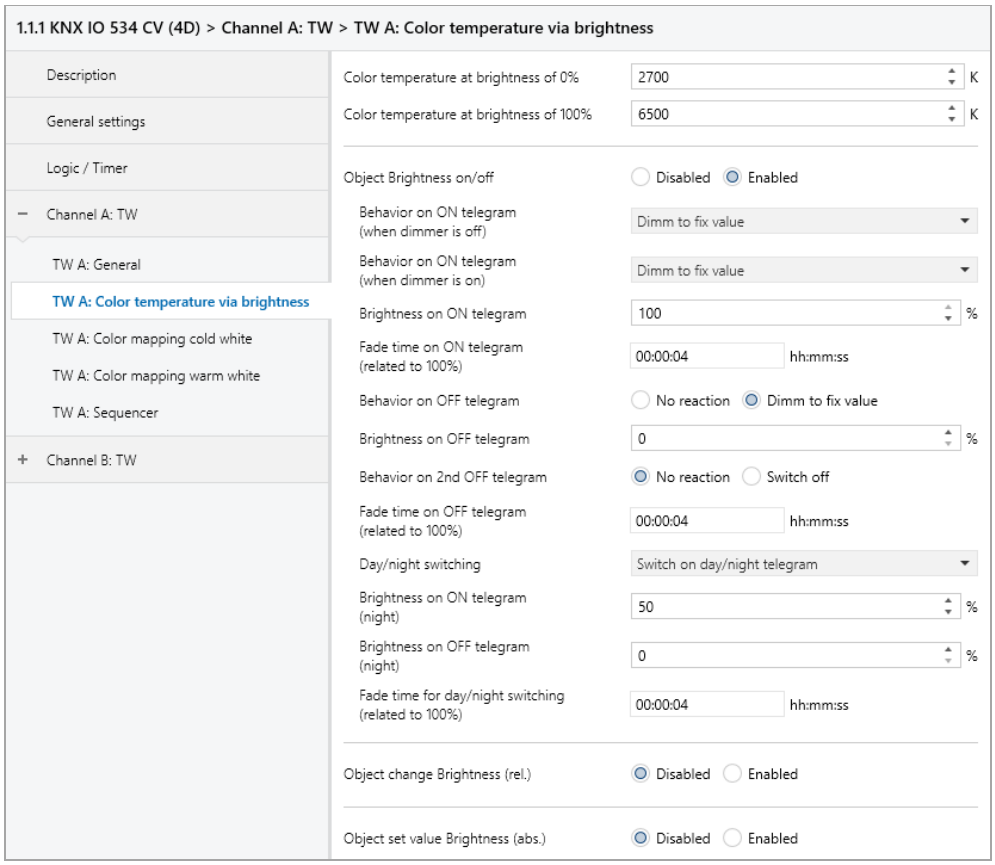
6.4.2 TW A / TW B: Color temperature via brightness

In this mode, the dimmer is controlled by brightness, the color temperature is automatically adjusted according to the current brightness and the 2 following parameters:

Color temperature at brightness of 0%
Color temperature at brightness of 100%

These two color temperatures are assigned to the two brightness limit values. In the range between 0 % and 100 % is calculated and output linearly.

Object Brightness on/off



The following objects are available for switching the brightness if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 11 TW A: Color temperature via brightness on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 91 TW B: Color temperature via brightness on/off – Switch	1.001	1 bit	From KNX

Behavior on ON telegram (when dimmer is off)

If the dimmer is switched off, this parameter can be used to configure the behavior when switching on via the respective object.

The choices are:

- No reaction
- Dimm to fix value
- Dimm to last value before switching off

Behavior on ON telegram (when dimmer is on)

If the dimmer is already switched on, this parameter can be used to configure the behavior in the event of a renewed ON telegram via the respective object.

The choices are:

- No reaction
- Dimm to fix value
- Dimm to fix value if higher than actual

Brightness on ON telegram

With suitable parameterisation, this value is activated with an ON telegram via the respective object.

Fade time on ON telegram (related to 100%)

This fade time is active when an ON telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Behavior on OFF telegram

This parameter describes the behavior of the dimmer in the event of an OFF telegram via the respective object.

The choices are:

- No reaction
- Dimm to fix value

Brightness on OFF telegram

With suitable parameterisation, this value is activated with an OFF telegram via the respective object.

Behavior on 2nd OFF telegram

This parameter describes the behavior of the dimmer when a 2nd OFF telegram is received via the respective object.

The choices are:

- No reaction
- Switch off

The 2nd OFF telegram must follow the 1st OFF telegram within 1 second in order to be evaluated. If the current dimming value is equal to or lower than the parameterised dimming value for the OFF telegram, switching off takes place with the 1st OFF telegram.

Fade time on OFF telegram (related to 100%)

This fade time is active when an OFF telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Day/night switching

When using this function, the following objects are visible for switching from day/night mode:

Group object	Type KNX	Size	Direction
GO 21 TW A: Day/Night – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 101 TW B: Day/Night – Switch	1.001	1 bit	From KNX

Day mode is triggered with an OFF telegram to the respective object, night mode with an ON telegram. The device is in day mode after restart.

Telegrams to these objects affect all activated day/night changeovers of the TW channel.

In addition, it can be determined when the values become active after telegrams via these objects are available for selection:

- Disabled
- Switch on day/night telegram
  Immediately after day/night switching is received, dimming to the active value takes place according to the last received switch on/off via object 11 or 91.
- Switch on next on/off telegram
  The currently active value is only used with the next on/off switching via object 11 or 91.

There is a separate switch-on and switch-off value in the parameters for night mode, in day mode the always visible values are used.

Brightness on ON telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an ON telegram via object 11 or 91 and suitable parameterisation.

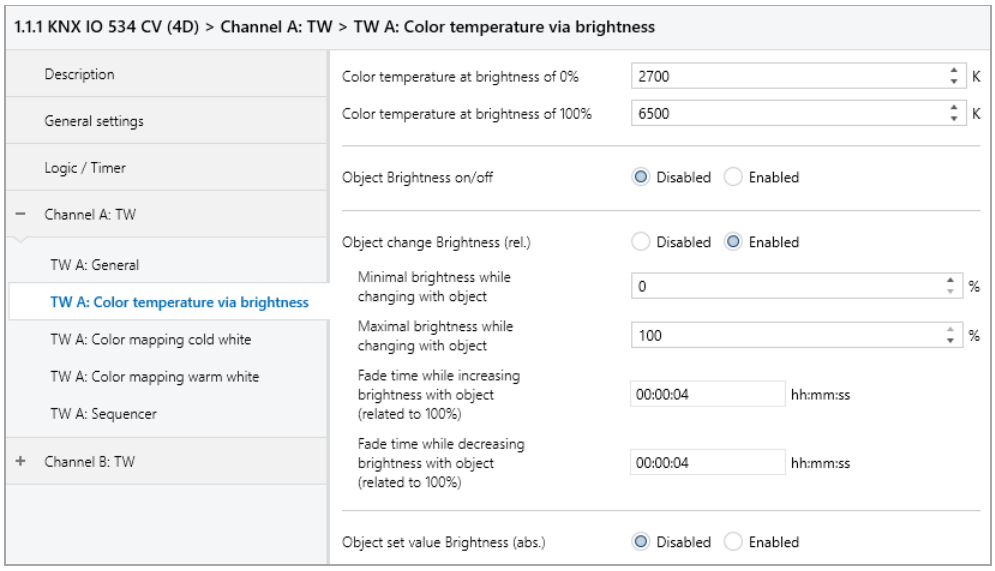
Brightness on OFF telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an OFF telegram via object 11 or 91 and suitable parameterisation.

Fade time for day/night switching (related to 100%)
(only with active day/night switching)

This fade time is only active if switching is used with day/night switching. If switching is used with the next on/off telegram, the regular fade time of the respective on or off telegram is active. The time period is related to a complete dimming process from 0 – 100 %.

Object change Brightness (rel.)



The following objects are available for dimming the brightness via relative dimming commands, if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 12 TW A: Color temperature via brightness dimming rel. – Brighter/Darker	3.007	4 bits	From KNX

Group object	Type KNX	Size	Direction
GO 92 TW B: Color temperature via brightness dimming rel. – Brighter/Darker	3.007	4 bits	From KNX

Minimal brightness while changing with object

This parameter can be used to set which minimum value can be reached via relative dimming. If the current value is below the minimum value, the brightness cannot be reduced via object 12 or 92.

Maximal brightness while changing with object

This parameter can be used to set which maximum value can be reached via relative dimming. If the current value is above the maximum value, the brightness cannot be increased via object 12 or 92.

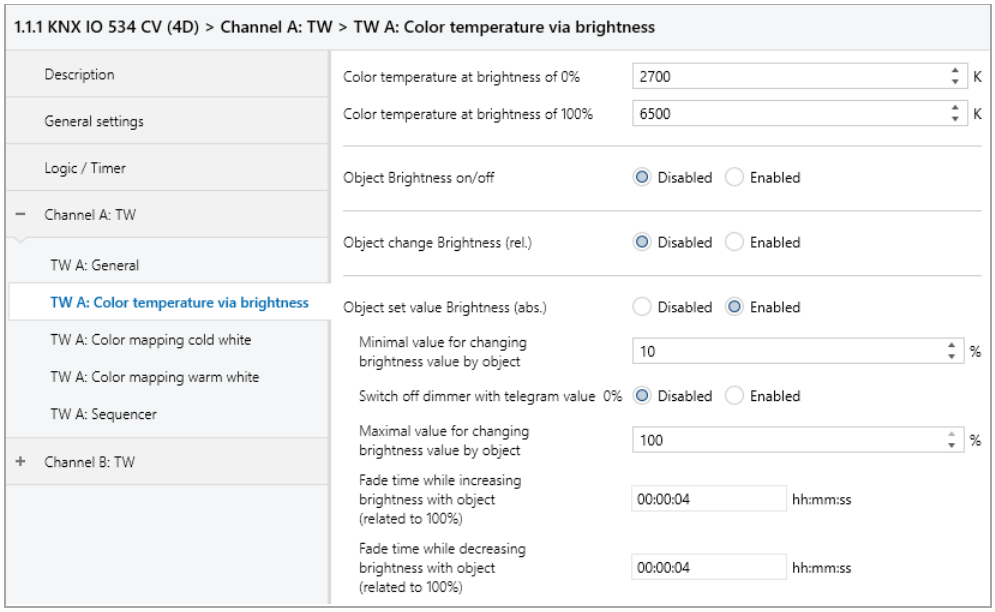
Fade time while increasing brightness with object (related to 100%)

This fade time is active when the brightness is increased via relative dimming with object 12 or 92. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while decreasing brightness with object (related to 100%)

This fade time is active when the brightness is reduced via relative dimming with object 12 or 92. The time period is related to a complete dimming process from 0 – 100 %.

Object set value Brightness (abs.)



The following objects are used to control brightness via dimming value if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 13 TW A: Color temperature via brightness dimming abs. – Set value	5.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 93 TW B: Color temperature via brightness dimming abs. – Set value	5.001	1 byte	From KNX

Minimal value for changing brightness value by object

This parameter can be used to configure which minimum value can be reached via object 13 or 93. If a value below the minimum value is received, the brightness is controlled with the minimum value. If a value > 0 % is set here, the parameter **Switch off dimmer with telegram value 0%** is also visible.

Switch off dimmer with telegram value 0%
(only with "Minimal value for changing brightness value by object" > 0 %)

Here you can select whether the dimmer is switched off when a brightness of 0 % is received.

Maximal value for changing brightness value by object

This parameter can be used to configure which maximum value can be reached via object 13 or 93. If a value above the maximum value is received, the brightness is controlled with the maximum value.

Fade time while increasing brightness with object (related to 100%)

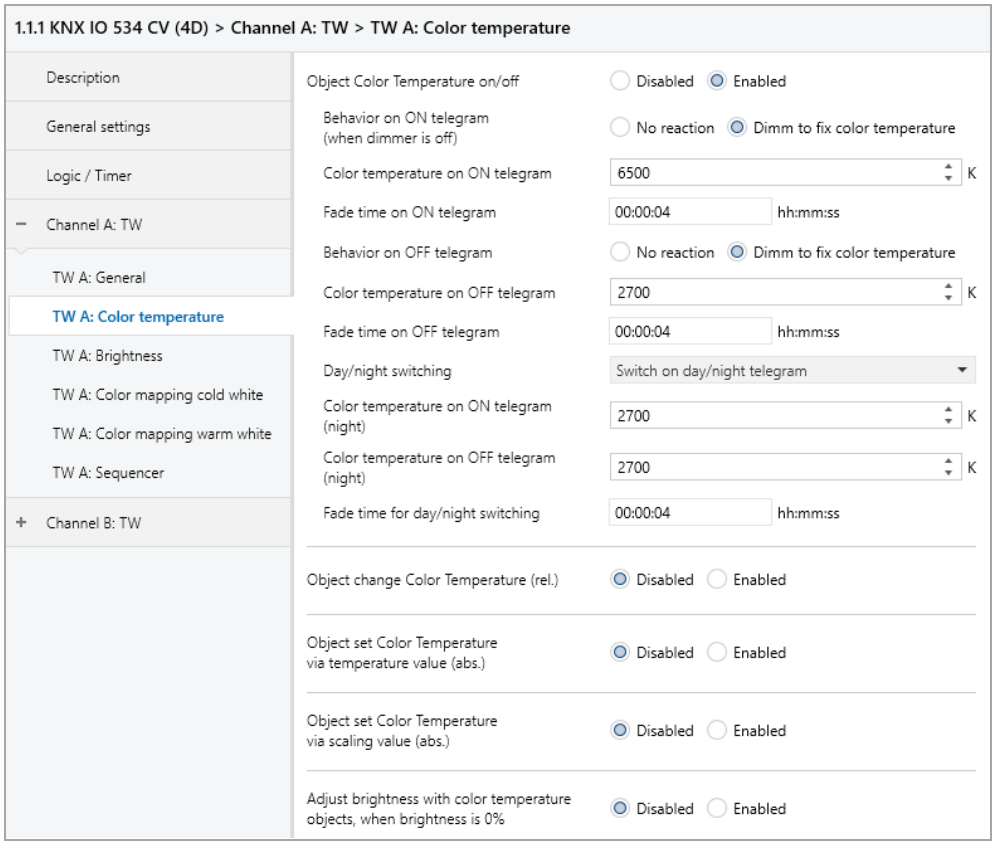
This fade time is active if the brightness is increased when values are received via object 13 or 93. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while decreasing brightness with object (related to 100%)

This fade time is active if the brightness is reduced when values are received via object 13 or 93. The time period is related to a complete dimming process from 0 – 100 %.

6.4.3 TW A / TW B: Color temperature

Object Color Temperature on/off



The following objects are available for switching the color temperature if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 14 TW A: Color temperature on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 94 TW B: Color temperature on/off – Switch	1.001	1 bit	From KNX

Behavior on ON telegram (when dimmer is off)

This parameter can be used to configure the behavior when switching on via the respective object.

The choices are:

- No reaction
- Dimm to fix color temperature

Color temperature on ON telegram

With suitable parameterisation, this color temperature is activated with an ON telegram via object 14 or 94.

Fade time on ON telegram

This fade time is active when an ON telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Behavior on OFF telegram

This parameter describes the behavior of the dimmer in the event of an OFF telegram via object 14 or 94.

The choices are:

- No reaction
- Dimm to fix color temperature

Color temperature on OFF telegram

With suitable parameterisation, this value is activated with an OFF telegram via object 24.

Fade time on OFF telegram

This fade time is active when an OFF telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Day/night switching

When using this function, the following object is visible for switching from day/night mode:

Group object	Type KNX	Size	Direction
GO 21 TW A: Day/Night – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 101 TW B: Day/Night – Switch	1.001	1 bit	From KNX

Day mode is triggered with an OFF telegram to the object, night mode with an ON telegram. The device is in day mode after restart.

Telegrams to the object 21 or 101 have an effect on all activated day/night Day/night changeover of a TW channel.

In addition, it can be determined when the values become active after telegram via the object are available for selection:

- Disabled
- Switch on day/night telegram
  Immediately after day/night switching is received, dimming to the active value takes place according to the last received switch on/off via object 14 or 94.
- Switch on next on/off telegram
  The currently active value is only used with the next on/off switching via object 14 or 94.

There is a separate switch-on and switch-off value in the parameters for night mode, in day mode the always visible values are used.

Color temperature on ON telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an ON telegram via object 14 or 94 and suitable parameterisation.

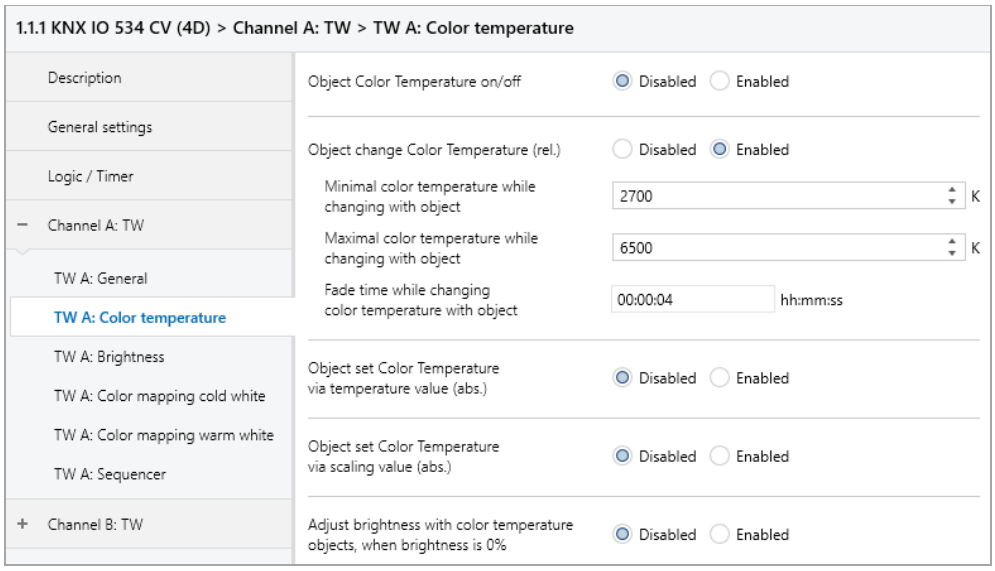
Color temperature on OFF telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an OFF telegram via object 14 or 94 and suitable parameterisation.

Fade time for day/night switching *(only with active day/night switching)*

This fade time is only active if switching is used with day/night switching. If switching is used with the next on/off telegram, the regular fade time of the respective on or off telegram is active. The time period is related to a complete dimming process from 0 – 100 %.

Object change Color Temperature (rel.)



To change the color temperature via relative dimming commands, the following objects are available, if activated via parameters:

Group object	Type KNX	Size	Direction
GO 15 TW A: Color temperature dimming rel. – Increase/Decrease	3.007	4 bits	From KNX

Group object	Type KNX	Size	Direction
GO 95 TW B: Color temperature dimming rel. – Increase/Decrease	3.007	4 bits	From KNX

Minimal color temperature while changing with object

This parameter can be used to set which minimum color temperature can be achieved via relative dimming. If the current color temperature is below the minimum value, the color temperature cannot be reduced via object 15 or 95.

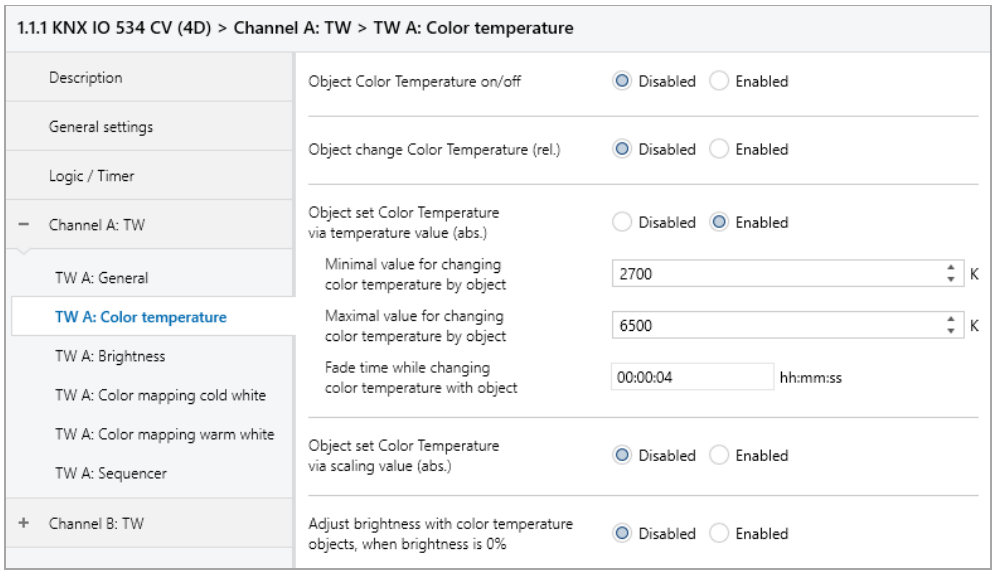
Maximal color temperature while changing with object

This parameter can be used to set which maximum color temperature can be achieved via relative dimming. If the current saturation is above the maximum value, the color temperature cannot be increased via object 15 or 95.

Fade time while changing color temperature with object

This fade time is active when the color temperature is changed via relative dimming with object 15 or 95. The time period is related to a complete dimming process from 0 – 100 %.

Object set Color Temperature via temperature value (abs.)



The following objects are used to control the color temperature via temperature value, if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 16 TW A: Color temperature value abs. – Set value	7.600	2 bytes	From KNX

Group object	Type KNX	Size	Direction
GO 96 TW B: Color temperature value abs. – Set value	7.600	2 bytes	From KNX

Minimal value for changing color temperature by object

This parameter can be used to configure which minimum color temperature can be reached via object 16 and 96. If a value below the minimum value is received, the dimmer is controlled with the minimum value.

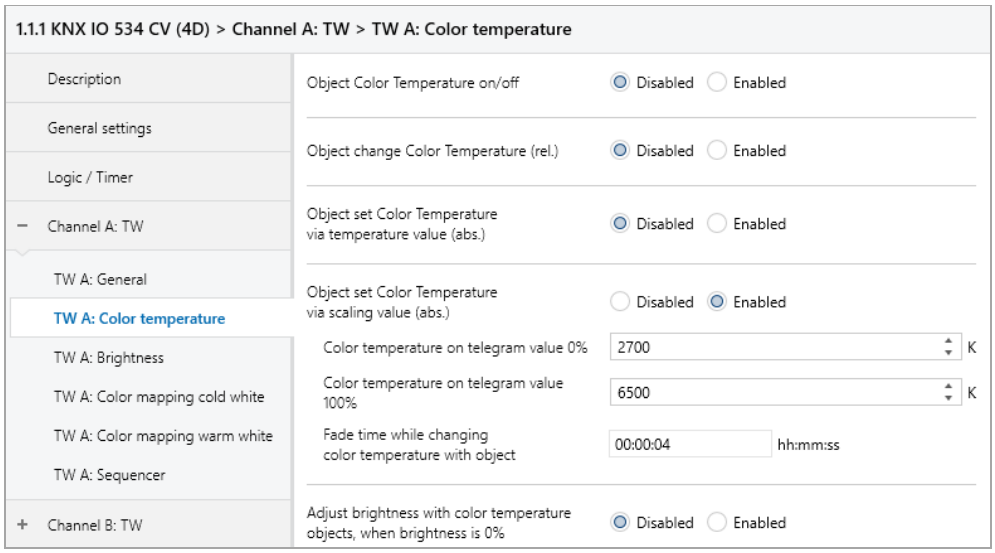
Maximal value for changing color temperature by object

This parameter can be used to configure which maximum color temperature can be reached via object 16 and 96. If a value above the maximum value is received, the dimmer is controlled with the maximum value.

Fade time while changing color temperature with object

This fade time is active if the color temperature is changed when values are received via objects 16 and 96. The time period is related to a complete dimming process from 0 – 100 %.

Object set Color Temperature via scaling value (abs.)



The following objects are used to control the color temperature via percentage value, if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 17 TW A: Color temperature dimming abs. – Set value	5.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 97 TW B: Color temperature dimming abs. – Set value	5.001	1 byte	From KNX

Color temperature on telegram value 0%

This parameter can be used to configure which color temperature is set when 0% is received via object 17 and 97.

Color temperature on telegram value 100%

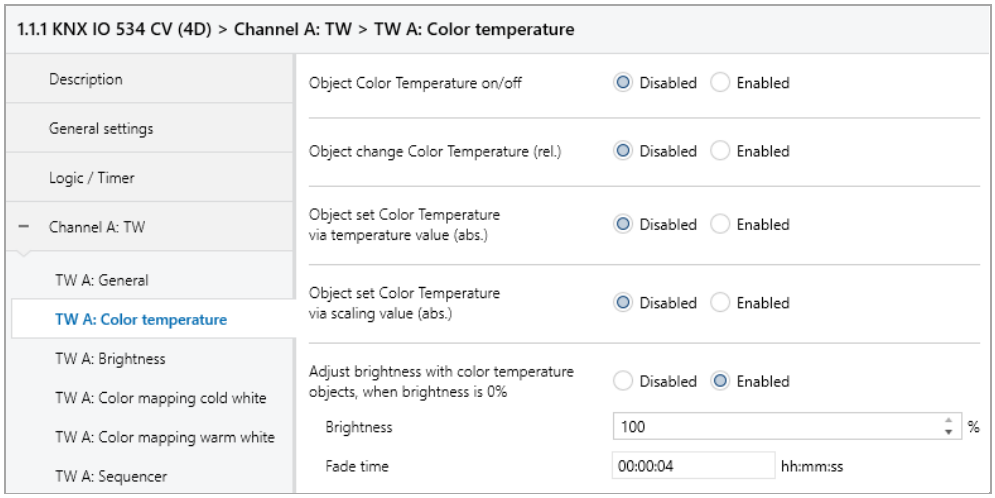
This parameter can be used to configure which color temperature is set when 100% is received via object 17 and 97.

When a value between 0 – 100 % is received, the color temperature is calculated linearly based on the set limit values and output.

Fade time while changing color temperature with object

This fade time is active if the color temperature is changed when values are received via objects 17 and 97. The time period is related to a complete dimming process from 0 – 100 %.

Adjust brightness with color temperature objects, when brightness is 0%



If the current brightness is 0 % and the color temperature is changed via one of the objects in the Color temperature parameter block, the brightness is dimmed to the set brightness at the same time. If the current brightness is > 0 %, this parameter has no effect on the brightness.

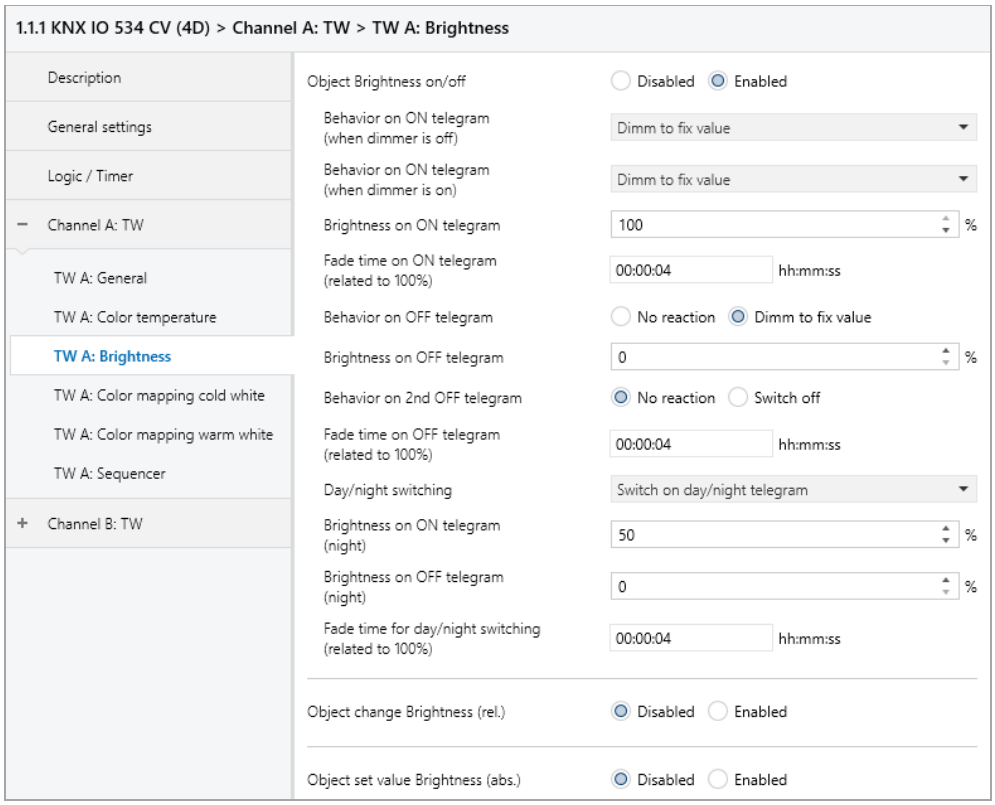
If this parameter is not used, a change in color temperature has no visible effect if the current brightness is 0 %.

Fade time

This fade time is active if the current brightness is 0 % and the color temperature is changed via one of the objects in the parameter block. The time period is related to a complete dimming process from 0 – 100 %.

6.4.4 TW A / TW B: Brightness

Object Brightness on/off



The following objects are available for switching the brightness if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 18 TW A: Brightness on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 98 TW B: Brightness on/off – Switch	1.001	1 bit	From KNX

Behavior on ON telegram (when dimmer is off)

If the current brightness is 0 %, this parameter can be used to configure the behavior when switching on via object 18 or 98.

The choices are:

- No reaction
- Dimm to fix value
- Dimm to last value before switching off

Behavior on ON telegram (when dimmer is on)

If the current brightness is greater than 0 %, this parameter can be used to configure the behavior for a renewed ON telegram via object 18 or 98.

The choices are:

- No reaction
- Dimm to fix value
- Dimm to fix value if higher than actual

Brightness on ON telegram

With suitable parameterisation, this brightness is activated with an ON telegram via object 18 or 98.

Fade time on ON telegram (related to 100%)

This fade time is active when an ON telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Behavior on OFF telegram

This parameter describes the behavior of the dimmer in the event of an OFF telegram via object 18 or 98.

The choices are:

- No reaction
- Dimm to fix value

Brightness on OFF telegram

With suitable parameterisation, this value is activated with an OFF telegram via object 18 or 98.

Behavior on 2nd OFF telegram

This parameter describes the behavior of the dimmer when a 2nd OFF telegram is received via object 18 or 98.

The choices are:

- No reaction
- Switch off

The 2nd OFF telegram must follow the 1st OFF telegram within 1 second in order to be evaluated. If the current brightness is equal to or lower than the parameterised brightness with the OFF telegram, switching off already takes place with the 1st OFF telegram.

Fade time on OFF telegram (related to 100%)

This fade time is active when an OFF telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Day/night switching

When using this function, the following object is visible for switching from day/night mode:

Group object	Type KNX	Size	Direction
GO 21 TW A: Day/Night – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 101 TW B: Day/Night – Switch	1.001	1 bit	From KNX

Day mode is triggered with an OFF telegram to the object, night mode with an ON telegram. The device is in day mode after restart.

Telegrams to the object 21 or 101 have an effect on all activated day/night Day/night changeover of a TW channel.

In addition, it can be determined when the values become active after telegram via the object are available for selection:

- Disabled
- Switch on day/night telegram
  Immediately after day/night switching is received, dimming to the active value takes place according to the last received switch on/off via object 18 or 98.
- Switch on next on/off telegram
  The currently active value is only used with the next on/off switching via object 18 or 98.

There is a separate switch-on and switch-off value in the parameters for night operation. In daytime operation, the values that are always visible are used.

Brightness on ON telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an ON telegram via object 18 or 98 and suitable parameterisation.

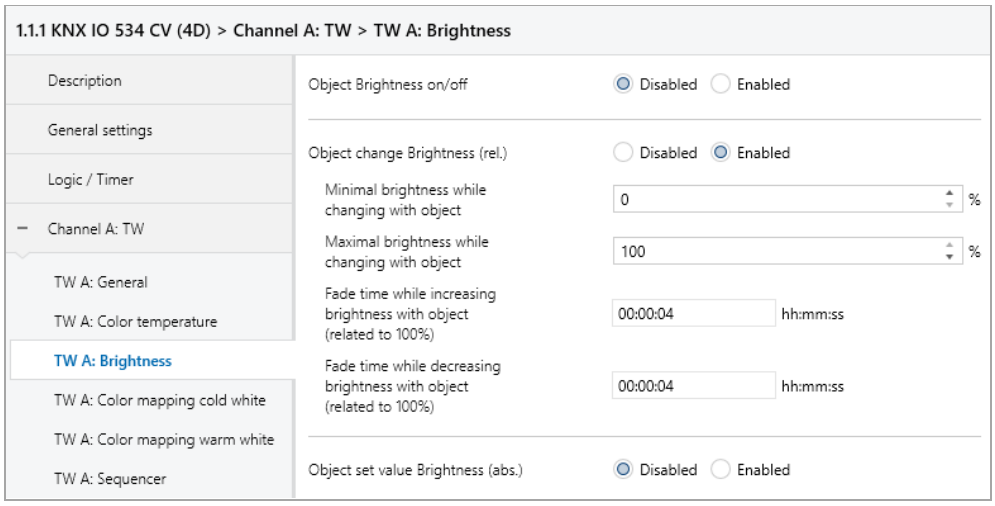
Brightness on OFF telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an OFF telegram via object 18 or 98 and suitable parameterisation.

Fade time for day/night switching (related to 100%)
(only with active day/night switching)

This fade time is only active if switching is used with day/night switching. If switching is used with the next on/off telegram, the regular fade time of the respective on or off telegram is active. The time period is related to a complete dimming process from 0 – 100 %.

Object change Brightness (rel.)



The following objects are available for changing the brightness via relative dimming commands, if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 19 TW A: Brightness dimming rel. – Brighter/Darker	3.007	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 99 TW B: Brightness dimming rel. – Brighter/Darker	3.007	1 bit	From KNX

Minimal brightness while changing with object

This parameter can be used to set which minimum brightness can be achieved via relative dimming. If the current brightness is below the minimum value, the brightness cannot be reduced via object 19 or 99.

Maximal brightness while changing with object

This parameter can be used to set the maximum brightness that can be achieved via relative dimming. If the current brightness is above the maximum value, the brightness cannot be increased via object 19 or 99.

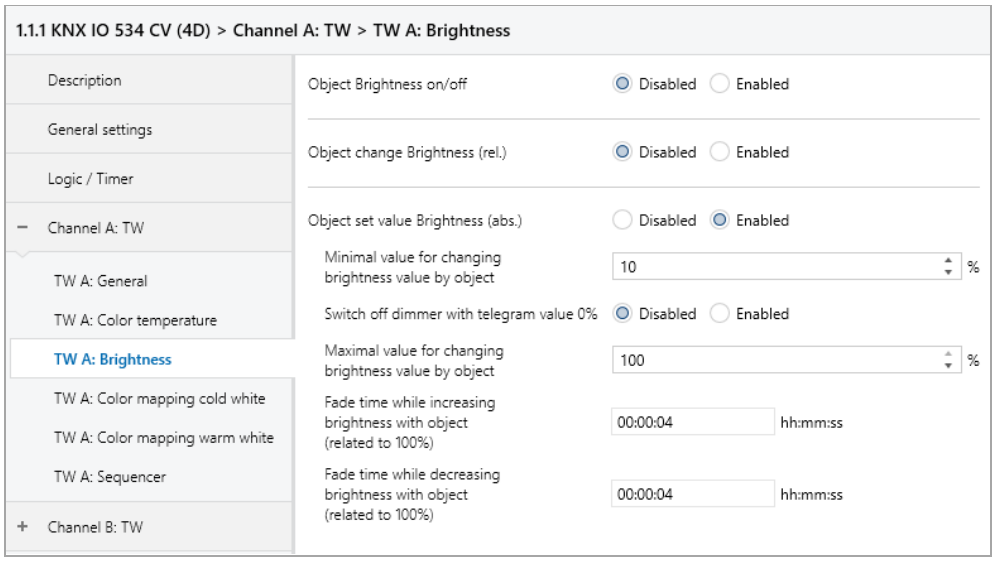
Fade time while increasing brightness with object (related to 100%)

This fade time is active when the brightness is increased via relative dimming with object 19 or 99. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while decreasing brightness with object (related to 100%)

This fade time is active when the brightness is reduced via relative dimming with object 19 or 99. The time period is related to a complete dimming process from 0 – 100 %.

Object set value Brightness (abs.)



The following objects are used to control brightness via dimming value if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 20 TW A: Brightness dimming abs. – Set value	5.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 100 TW B: Brightness dimming abs. – Set value	5.001	1 bit	From KNX

Minimal value for changing brightness value by object

This parameter can be used to configure which minimum brightness can be reached via object 20 or 100. If a value below the minimum value is received, the dimmer is controlled with the minimum value. If a value > 0 % is set here, the parameter **Switch off dimmer with telegram value 0%** is also visible.

Switch off dimmer with telegram value 0%

(only with "Minimal value for changing brightness value by object" > 0 %)

Here you can select whether the dimmer is switched off when a brightness of 0 % is received.

Maximal value for changing brightness value by object

This parameter can be used to configure which maximum brightness can be reached via object 20 or 100. If a value above the maximum value is received, the dimmer is controlled with the maximum value.

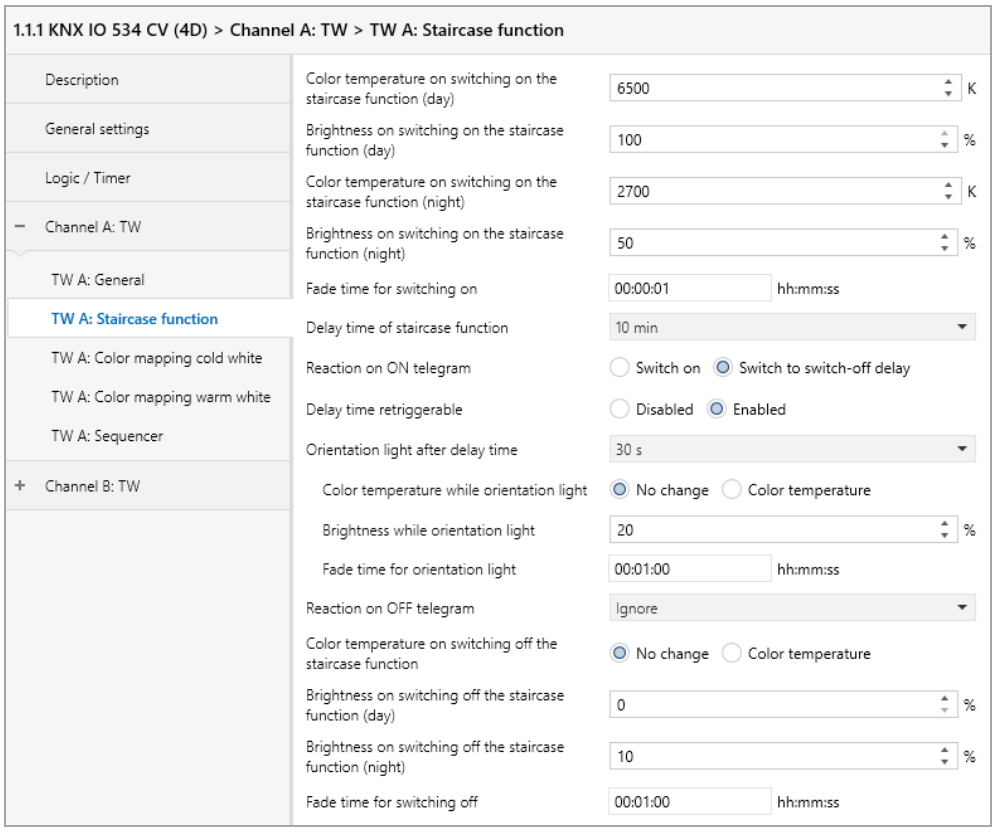
Fade time while increasing brightness with object (related to 100%)

This fade time is active if the brightness is increased when values are received via object 20 or 100. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while decreasing brightness with object (related to 100%)

This fade time is active if the brightness is reduced when values are received via object 20 or 100. The time period is related to a complete dimming process from 0 – 100 %.

6.4.5 TW A / TW B: Staircase function



A staircase function with optional orientation light can be implemented via this parameter page. The staircase function can be overridden by the disable function. It has the following objects:

Group object	Type KNX	Size	Direction
GO 11 TW A: Staircase function – Trigger	1.010	1 bit	From KNX
GO 21 TW A: Day/Night – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 91 TW B: Staircase function – Trigger	1.010	1 bit	From KNX
GO 101 TW B: Day/Night – Switch	1.001	1 bit	From KNX

Day mode is triggered with an OFF telegram to object 21 or 101, night mode with an ON telegram. The device is in day mode after restart.

Color temperature on switching on the staircase function (day)

This color temperature is used in day mode if the staircase function is switched on via an ON telegram to object 21 or 101.

Brightness on switching on the staircase function (day)

This brightness is used in day mode if the staircase function is switched on via an ON telegram to object 21 or 101.

Color temperature on switching on the staircase function (night)

This color is used in night mode when the staircase function is switched on via an ON telegram to object 21 or 101.

Brightness on switching on the staircase function (night)

This brightness is used in night mode if the staircase function is switched on via an ON telegram to object 21 or 101.

Fade time for switching on

This fading time is active when the staircase function is switched on via ON telegram to object 21 or 101. The time period is related to a complete dimming process from 0 – 100 %.

Delay time of staircase function

After the delay time has elapsed, the dimmer is dimmed to the switch-off or orientation light value, depending on the parameter setting.

Reaction on ON telegram

This parameter determines the behavior after switching on the staircase function via ON telegram to object 21 or 101: In the setting “Switch on”, the channel remains switched on after ON telegram until the delay time is started via OFF telegram. In the setting “Switch to switch-off delay”, the channel goes immediately into the delay time after the ON telegram.

Delay time retriggerable

If it is set that the delay time is started with an ON telegram, this parameter determines whether only the 1st ON telegram to object 21 or 101 restarts the delay time, or also each subsequent ON telegram.

If it is set that the overrun time is started with an OFF telegram, this parameter determines whether only the 1st OFF telegram on object 21 or 101 restarts the overrun time, or also every further one if the staircase function is already in the overrun time.

Orientation light after delay time

This parameter can be used to set whether the dimmer dims to the switch-off value or to the orientation light after the end of the delay time, as well as the duration of the orientation light.

To choose from:

- Disabled
- 1 s
- 2 s
- 5 s
- 10 s
- 30 s
- 1 min
- 2 min
- 5 min
- 10 min
- 20 min
- 30 min
- 1 h
- 2 h
- Without timelimit

Color temperature while orientation light

Here you can determine the behavior of the color temperature during the transition to the orientation light. If “No change” is set, the current color temperature is retained.

Color temperature

If the orientation light is to be dimmed to a color temperature at the end of the delay time, the value can be specified here.

Brightness while orientation light

This brightness is dimmed to at the end of the delay time if orientation light is used.

Fade time for orientation light

This fading time is active when the staircase function dims to orientation light. The time period is related to a complete dimming process from 0 – 100 %.

Reaction on OFF telegram

Here you can set how the staircase function behaves in the event of an Off telegram.

The choices are:

- Ignore
  No reaction of the channel in case of off telegram.

- Switch off
  Switches to switch-off value from the parameters.

- Switch to switch-off delay
  The delay time is started with an OFF telegram.

- Switch to orientation light
  The orientation light phase is started with an OFF telegram.

- Switch to orientation light/switch off
  With the 1st OFF telegram the orientation light phase is started, with the 2nd OFF telegram it is dimmed to the switch-off value.

Color temperature on switching off the staircase function

Here the behavior of the color temperature can be determined when switching off. If “No change” is set, the current color temperature is retained.

Color temperature (day)

If a color temperature is to be dimmed when switching off, the value for daytime operation can be specified here.

Color temperature (night)

If a color temperature is to be dimmed when switching off, the value for night mode can be specified here.

Brightness on switching off the staircase function (day)

This brightness is used in daytime operation on switching off the staircase function.

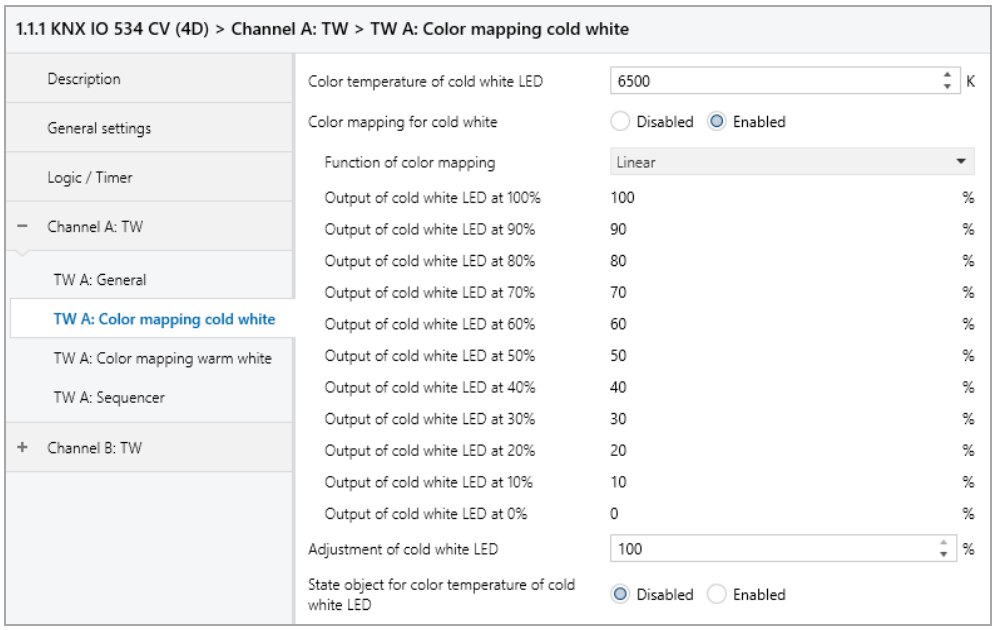
Brightness on switching off the staircase function (night)

This brightness is used in night mode on switching off the staircase function.

Fade time for switching off

This fade time is active when the staircase function dims to the OFF value. The time period is related to a complete dimming process from 0 – 100 %.

6.4.6 TW A / TW B: Color mapping cold white / warm white



These parameter pages are used for fine adjustment of the dimmer to different lamps.

All parameters on this page only affect the PWM value of the output, not the dimming or output state value.

Color temperature of cold white LED
Color temperature of warm white LED

The specified color temperature of the respective LED must be entered here.

Color mapping for cold white
Color mapping for warm white

Enables the color matching of the respective LED.

*In **device configuration** "1 xTunable white" and "2 x Tunable white" the LEDs for cold and warm white are coupled, therefore when using the color mapping it must be ensured that the maximum power of a channel or of the entire device is not exceeded at any time.*

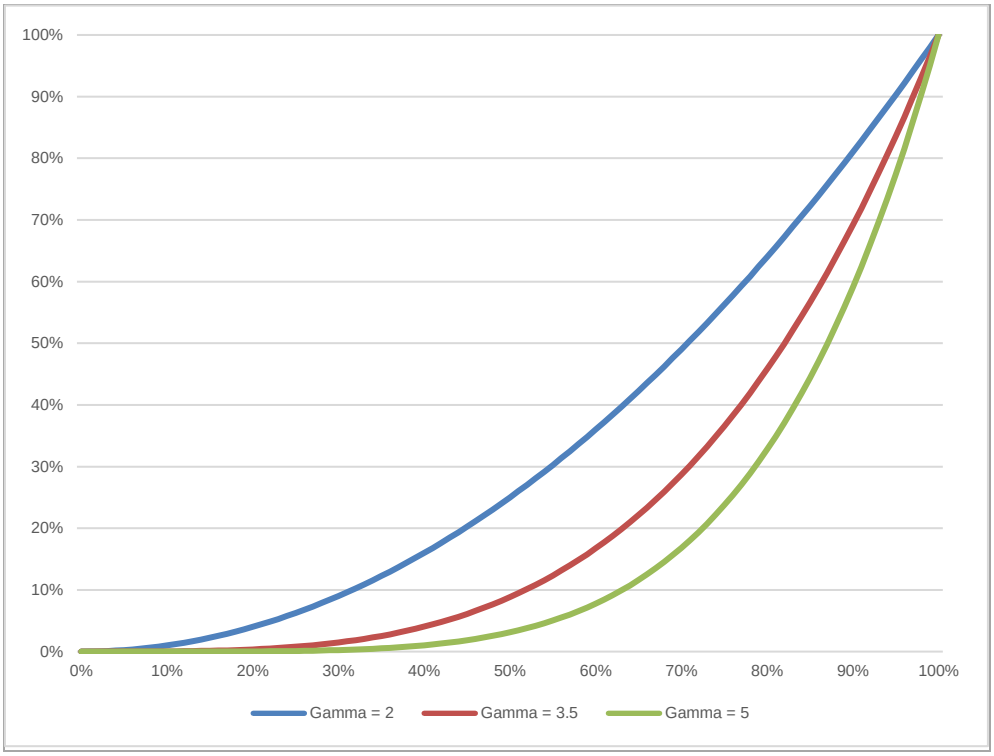
Function of color mapping

Here you can specify which PWM values the outputs for cold or warm white should assume when the output has reached a certain dimming value.

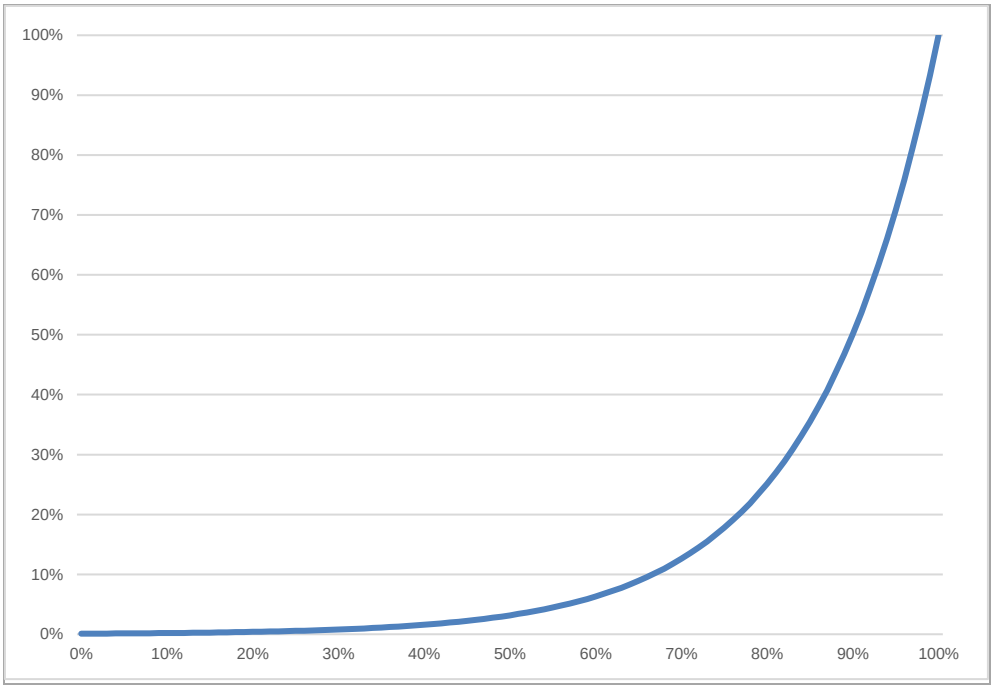
The choices are:

- Linear
- Logarithmic
- User defined

- Gamma
  Gamma correction according to the formula: *PWM value = Dimming value* ^{Gamma}
  Gamma can be set via parameter from 1.00 ... 5.00.

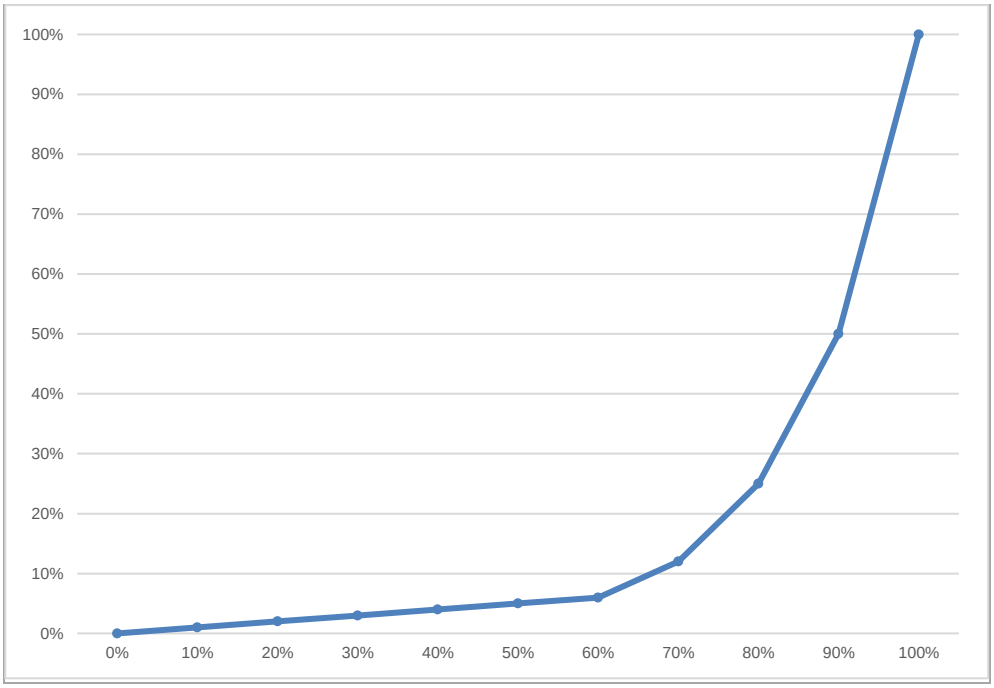


- DALI
  An DALI based function with the formula: *PWM value = 10* $^{3 - (Dimming\ value\ -\ 1)}$



Output of cold white LED at 0% – 100%
Output of warm white LED at 0% – 100%

For the dimming curves “Linear”, “Logarithmic” and “User defined”, these values determine the PWM values of a dimming output at the specified dimming value. Values between the specified points are calculated and output linearly. As an example, a dimming output with dimming curve “Logarithmic” behaves according to the following graph:



For the dimming curves “Linear” and “Logarithmic” the output values are fixed, for “User defined” they can be freely configured.

If a dimming value of 0 % is reached, the channel is always switched off.

Adjustment cold white LED
Adjustment warm white LED

The PWM value of the output calculated by the dimming curve is additionally scaled with this value.

State object for color temperature of cold white LED
State object for color temperature of warm white LED

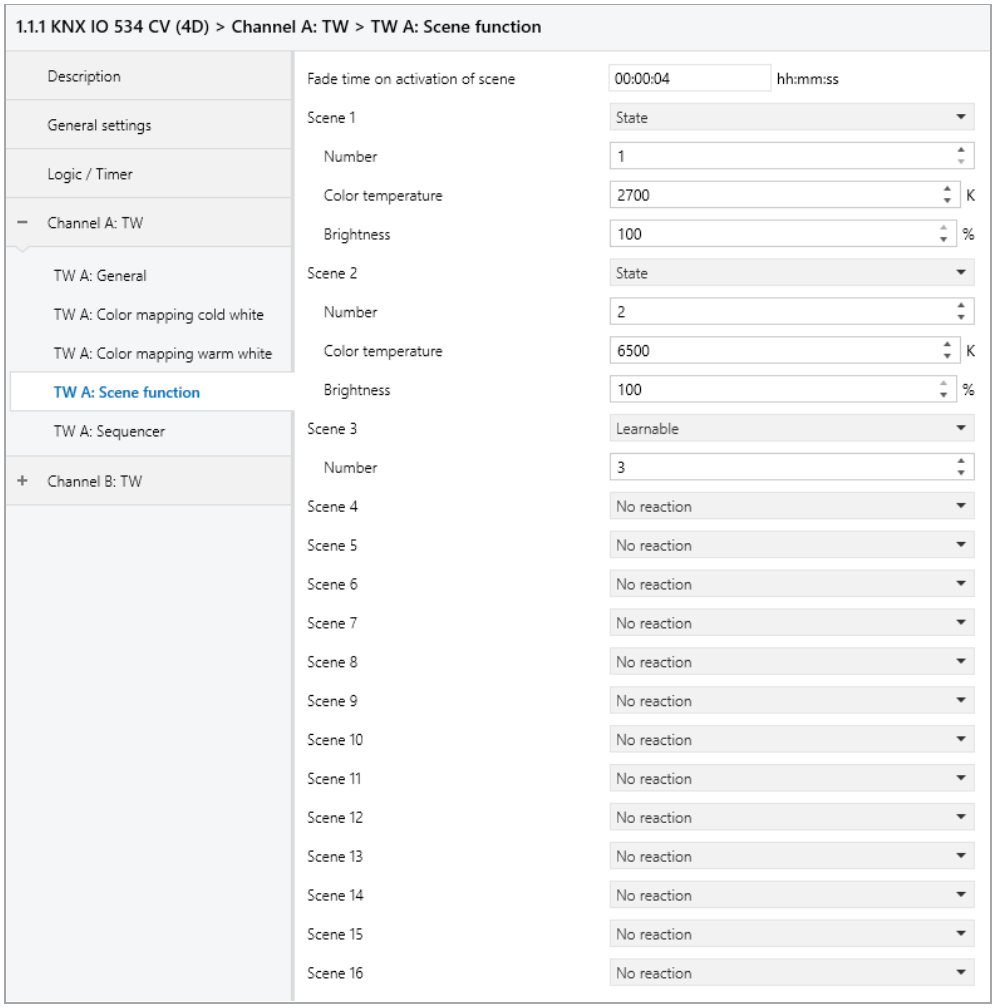
When activated, the following objects become visible:

Group object	Type KNX	Size	Direction
GO 27 TW A: State cold white LED – Color temperature	7.600	2 bytes	To KNX
GO 28 TW A: State warm white LED – Color temperature	7.600	2 bytes	To KNX

Group object	Type KNX	Size	Direction
GO 107 TW B: State cold white LED – Color temperature	7.600	2 bytes	To KNX
GO 108 TW B: State warm white LED – Color temperature	7.600	2 bytes	To KNX

These objects send the parameterized color temperatures of the cold and warm white LEDs 1x when the device is started. The values are also available for read requests.

6.4.7 TW A / TW B: Scene function



If the scene function is activated, the following group objects appear:

Group object	Type KNX	Size	Direction
GO 29 TW A: Scene – Activ./Lrn.	18.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 109 TW B: Scene – Activ./Lrn.	18.001	1 byte	From KNX

Fade time on activation of scene

The time period in which the received scene is dimmed is set here. The time period is related to a complete dimming process from 0 – 100 %.

Scene 1 – 16

These parameters can be used to configure the reaction of the channel when the respective scene is received.

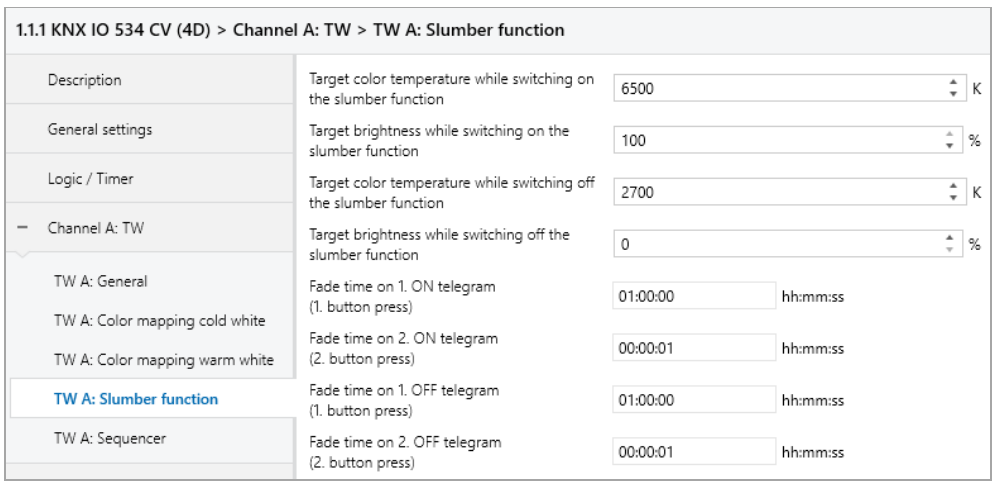
The choices are:

- No reaction
- State
  The output is dimmed to the set color temperature and brightness if the scene of the corresponding number has been received.
- Learnable
  Here, the current state at the output for the respective scene can be saved with the help of a scene control telegram. Thus, the scene can be adapted by the user without ETS download.

Number

This parameter can be used to assign any scene number between 1 and 64 to the scene. No scene numbers may be assigned twice.

6.4.8 TW A / TW B: Slumber function



If the slumber function is selected, the following object is visible:

Group object	Type KNX	Size	Direction
GO 35 TW A: Slumber function – Trigger	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 115 TW B: Slumber function – Trigger	1.001	1 bit	From KNX

Target color temperature while switching on the slumber function

This color temperature is reached after receipt of an ON telegram via object 35 or 115 at the output of the dimmer after completion of the dimming process.

Target brightness while switching on the slumber function

This brightness is reached after receipt of an ON telegram via object 35 or 115 at the output of the dimmer after completion of the dimming process.

Target color temperature while switching off the slumber function

This color temperature is reached after receiving an Off telegram via object 35 or 115 at the output of the dimmer after completion of the dimming process.

Target brightness while switching off the slumber function

This brightness is reached after receipt of an OFF telegram via object 35 or 115 at the output of the dimmer after completion of the dimming process.

Fade time on 1. ON telegram (1. button press)

This fade time is used to dim to the end values for switching on after pressing the 1st button. The time period is related to a complete dimming process from 0 – 100 %.

Fade time on 2. ON telegram (2. button press)

This fade time is used to dim to the end values for switching on after the 2nd button is pressed. The time period is related to a complete dimming process from 0 – 100 %.

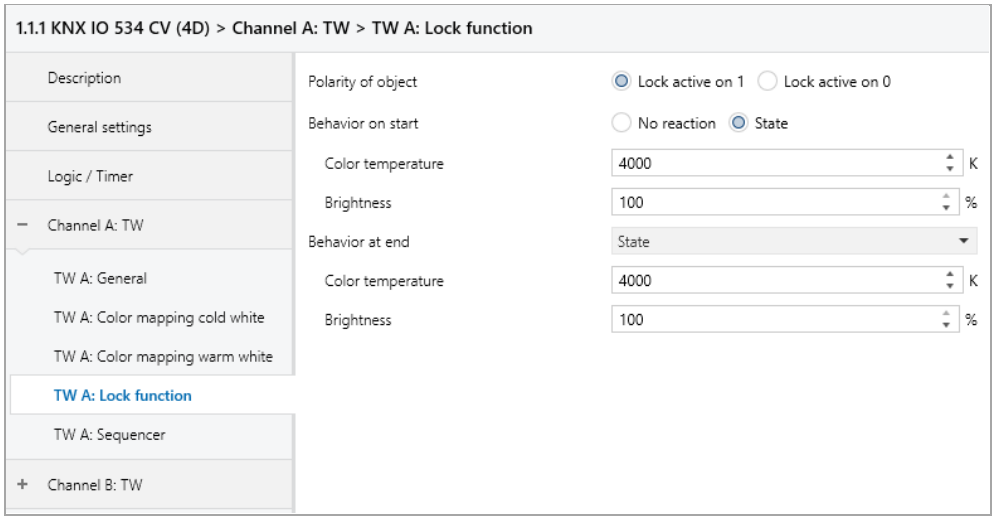
Fade time on 1. OFF telegram (1. button press)

This fade time is used to dim to the end values for switching off after pressing the 1st button. The time period is related to a complete dimming process from 0 – 100 %.

Fade time on 2. OFF telegram (2. button press)

This fade time is used to dim to the end values for switching off after the 2nd button is pressed. The time period is related to a complete dimming process from 0 – 100 %.

6.4.9 TW A / TW B: Lock function



If the lock function is activated, the following objects are active:

Group object	Type KNX	Size	Direction
GO 36 TW A: Lock – Activate	1.001	1 bit	From KNX
GO 37 TW A: Prior. on/off – Switch	1.001	1 bit	From KNX
GO 38 TW A: Prior. dimming rel. – Brighter/Darker	3.007	4 bits	From KNX
GO 39 TW A: Prior. dimming abs. – Set brightness	5.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 116 TW B: Lock – Activate	1.001	1 bit	From KNX
GO 117 TW B: Prior. on/off – Switch	1.001	1 bit	From KNX
GO 118 TW B: Prior. dimming rel. – Brighter/Darker	3.007	4 bits	From KNX
GO 119 TW B: Prior. dimming abs. – Set brightness	5.001	1 byte	From KNX

If the lock has been activated via group object 36 or 116, other received telegrams for dimmer, automatic mode, slumber, scene function and sequencer are not executed.

In addition to the disable object, 3 priority objects become visible when the disable function is activated, with which the dimmer can be controlled independently of the disable. In this way, it is possible to set an initial state without influencing other functions.

Example of priority objects:

At events in public buildings or in restaurants, the buttons can be disabled after regular operation by means of the disable object. This makes it possible to block buttons that are accessible to unauthorised persons during the lecture or concert in order to prevent unintentional switching. Nevertheless, the organiser can, if necessary, control the individual lamps with the help of the priority object without lifting the lock.

Polarity of object

The object's mode of action can be used to set how the lock is to be activated – either by receiving a 1 or by receiving a 0.

The choices are:

- Lock active on 1
- Lock active on 0

Behavior on start

Here you can configure the state that is set when the lock is activated at the output.

The choices are:

- No reaction
- State
  Parameters for setting color temperature and brightness appear.

The state of the output can be further changed by the priority objects.

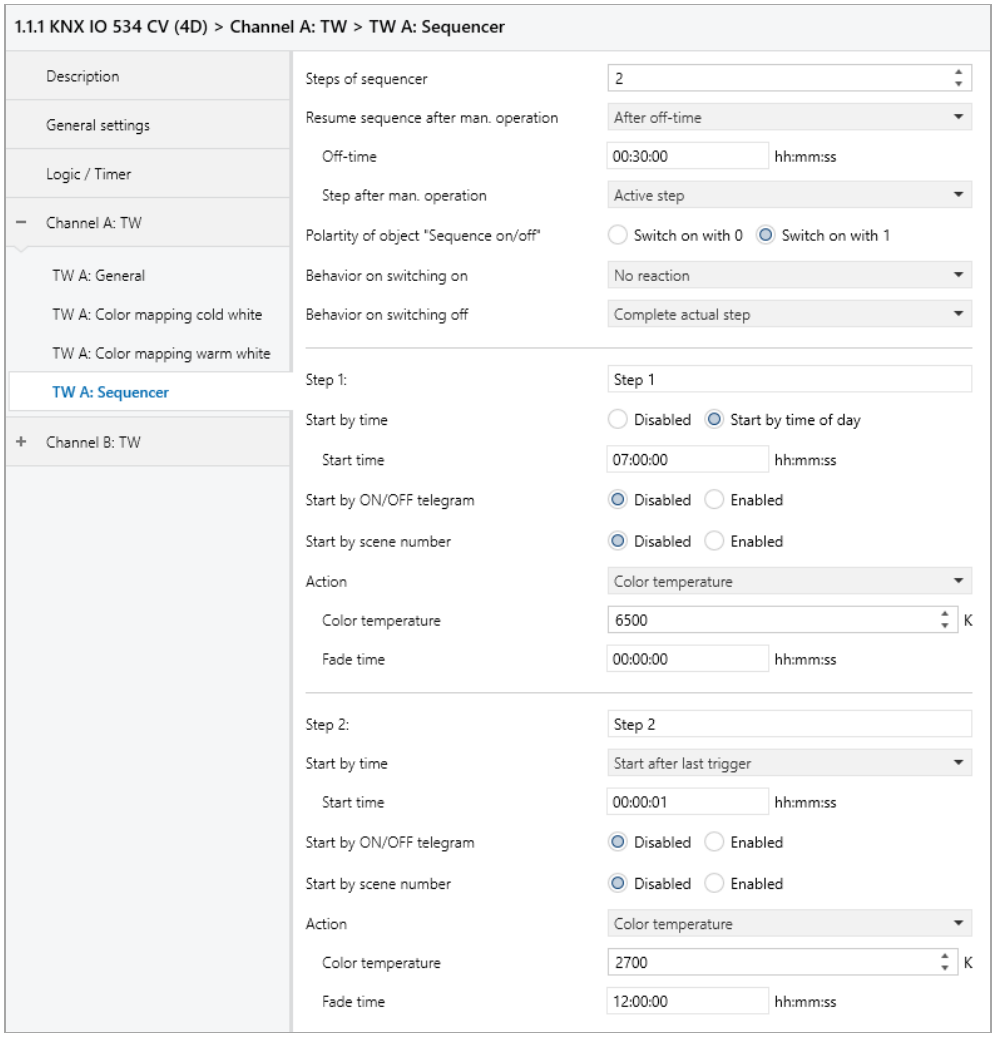
Behavior at end

Here you can configure the state that is set when the lock is deactivated at the output.

The choices are:

- No reaction
- State
  Parameters for setting color temperature and brightness appear.
- State before lock
  Here the original state before activation of the lock is restored. Telegrams received during the lock are ignored.
- State without lock
  Here the state of the last received telegram is restored. This means that the received telegrams are taken into account during the lock. Thus, when the lock is deactivated, the state of the last received telegram is set.

6.4.10 TW A / TW B: Sequencer



The sequencer can be used to create complex sequence programs consisting of up to 32 individual steps for the dimmer channel. The activation of the individual steps is possible at the following start conditions:

- At a fixed time
- After a waiting time to a previous step
- Via on/off telegram
- On receipt of a parameterized scene number

When a step is activated, a color temperature and/or brightness can be dimmed or a scene number can be sent, and a step or even an entire sequence of steps can be repeated cyclically.

The following objects are available for general control of the sequencer:

Group object	Type KNX	Size	Direction
GO 53 TW A: Sequence suspend – Suspend/Resume	1.001	1 bit	From KNX
GO 54 TW A: Sequence on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 133 TW B: Sequence suspend – Suspend/Resume	1.001	1 bit	From KNX
GO 134 TW B: Sequence on/off – Switch	1.001	1 bit	From KNX

Polarity of objects 53 and 133:
1 = Suspend / 0 = Resume

The following parameters determine the general behavior of the sequencer:

Steps of sequencer

Number of steps (0 ... 32) to be used.

Resume sequence after man. operation

A sequence that is switched on can always be interrupted or continued via object 53 or 133; an ON telegram interrupts the sequence, an OFF telegram continues it.

A sequence is also interrupted after manual operation, i.e. after commands for dimmer, automatic mode, slumber or scene function.

In addition, this parameter determines how an interrupted sequence can still be continued, is available for selection:

- Only by object
  The sequence can only be continued via object 53 or 133.

- After off-time
  The sequence is continued after the set blocking time.

- On next activated step
  The sequence is continued at the next activated step. The next step can be activated via object or time-controlled.

Off-time

Only visible if the sequence is to be continued after off-time, this blocking time can be configured with this.

Step after man. operation

This step is executed when resuming after manual operation, the function of the set step is always executed, regardless of its other set start conditions.

Polarity of object “Sequence on/off”

This parameter can be used to set the telegram value with which the sequence can be switched on and off via object 54 or 134. If the sequence is switched off, any further activation of a step is disabled.

Behavior on switching on

This determines how the sequencer behaves when switched on via object 54 or 134 is available for selection:

- No reaction
  No function is executed, the sequencer is waiting for steps to be activated.

- Step 1 – 32
  The function of the step is executed (regardless of the other set start conditions of the step), the sequence is then continued according to its configuration from this step.

Switching on also reactivates a sequence interrupted by manual operation.

Behavior on switching off

This determines how the sequencer behaves when switched off via object 54 or 134 is available for selection:

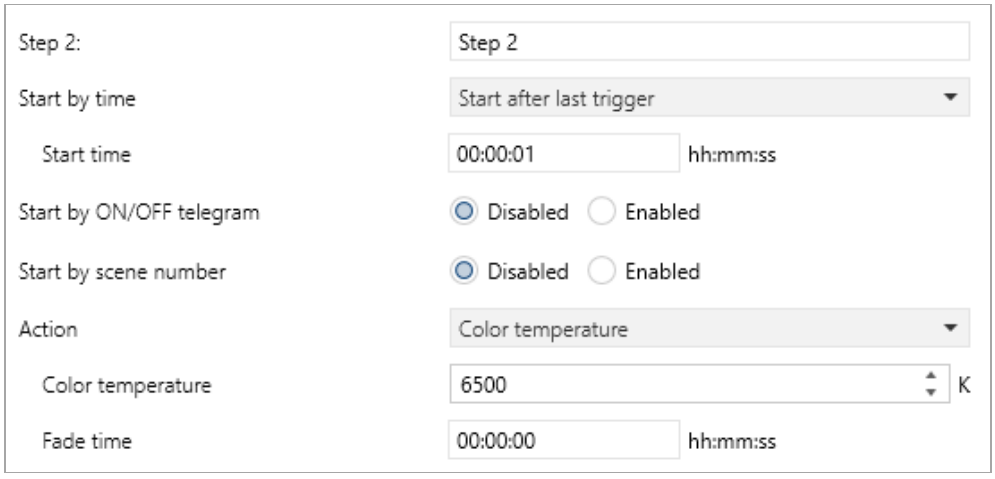
- Complete actual step
  If the sequencer is in a dimming process, this is still being completed.

- Step 1 – 32
  The function of the step is executed (regardless of the other start conditions set for the step).

- Stop immediately
  If the sequencer is in a dimming process, this is stopped.

Apart from the set behavior when switching off, any further activation of a step after switching off is blocked until the sequencer is switched on again via object 54 or 134.

Step 1 – 32



When a step is activated, its parameters appear for configuration.

You can enter your own name for the step in the text field at the top right with the content “Step x”. This designation is used for better orientation of the user and has no influence on the functionality of the step.

Start by time

This parameter is used to configure a time start condition of the step, available for selection:

- Disabled
  Start condition not used.

- Start by time of day
  The time at which the step is to start can be entered here. When using this start condition, the current time must have been received via the following object:

Group object	Type KNX	Size	Direction
GO 5 Time of Day – Set	10.001	3 bytes	From KNX

If no valid time has been specified via object 5, all start conditions at fixed times are not active.

The time is continuously updated by the device through its internal timer, but due to component tolerances there is always a deviation from the actual time. Therefore, the current time should be sent to the device at least twice a day by a precise timer in order to keep the deviation as small as possible.

- Start after last trigger
  Here you can specify the time interval to wait after the previous activation before executing the step. This start condition is not available for step 1.

Start time

Here either the time or the waiting time can be specified for the execution of the current step, if a timed start condition is used.

Start by ON/OFF telegram

When using this start condition, a separate object is available for each step:

Group object	Type KNX	Size	Direction
GO 55 – 86 TW A: Sequence Step 1 – 32 on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 135 – 166 TW B: Sequence Step 1 – 32 on/off – Switch	1.001	1 bit	From KNX

An ON telegram to one of these objects activates the respective step, the sequence is then continued from this step according to its configuration.

An Off telegram also activates this step, but resets the sequence at the same time.

Start by scene number

When this start condition is used, the following objects become visible:

Group object	Type KNX	Size	Direction
GO 51 TW A: Sequence scene – Activate step	18.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 131 TW B: Sequence scene – Activate step	18.001	1 byte	From KNX

A telegram with the set scene on these objects activates the respective step, the sequence is then continued according to its configuration from this step.

All steps with this start condition are controlled via this object.

Action

When the step is activated, the configured function is executed:

- None
  No function is executed. This can be used, for example, to implement a switch-on delay of a sequence.

- Start loop
  The sequence is continued at the selected step. Parameters for the start step of the loop and number of loops become visible.

- Send scene number
  When using this function, the following objects become visible:

Group object	Type KNX	Size	Direction
GO 52 TW A: Sequence scene – Send scene	18.001	1 byte	To KNX

Group object	Type KNX	Size	Direction
GO 132 TW B: Sequence scene – Send scene	18.001	1 byte	To KNX

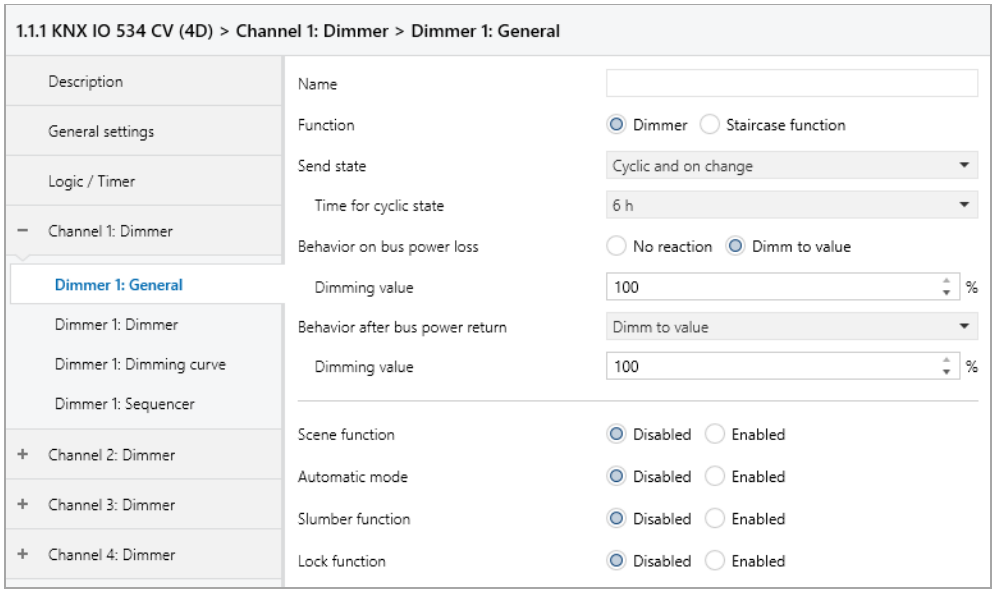
  A parameter for the sent scene number becomes visible; when the step is activated, this scene number is sent via the object.
  All steps send the scene number via this object if this function is used for the respective step.

- Brightness
- Color temperature
- Color temperature/brightness
  Parameters for brightness and/or color temperature and fade time become visible. When the step is activated, the dimmer dims from the current state to the specified brightness and/or color temperature with the parameterised fade time. This time is related to a complete dimming process from 0 – 100 %.

*The fade time must be shorter than or equal to the **start time** or waiting time of the next step in order to achieve the set brightness and/or color temperature.*

6.5 Device configuration “4 x Common dimmer”

6.5.1 Dimmer 1 – 4: General



Name *(30 characters)*

Any name can be assigned to the channel. However, this should be unique and meaningful, this makes it easier to work with the associated group objects later, as the assigned name is displayed there as a designation. If no name is assigned, the group objects are labelled “Dimmer 1: ... ” – “Dimmer 4: ... ”, depending on the channel.

Function

This parameter defines the functionality of the actuator. The following options are available:

- Dimmer
  In this operating mode, scene function, automatic mode, slumber and lock function are available. In the “Dimmer” operating mode, objects can be configured for switching on/off, relative dimming, control of the dimmer via dimming and RGB value. The “Dimmer 1 – 4: Dimmer” parameter page is displayed for this purpose.

- Staircase function
  A parameter page “Dimmer 1 – 4: Staircase function” is displayed. Only the lock function is available in this operating mode.

Send state

This parameter defines the send behavior of the state objects:

- Disabled
  State objects are disabled and hidden.

- Only on read
  State objects send only for read requests.

- On change
  The switch object sends an off telegram when the output value changes to 0 %, an on telegram when the output value changes from 0 % to a value greater than 0 %. The value object sends with a time interval of at least 1 second when the value at the output has changed by at least 1 %, or when a dimming operation has been completed.

- Cyclically and on change
  State objects send cyclically and on value change.

Group object	Type KNX	Size	Direction
GO 176 Dimmer 1: Dimming output – State on/off	1.001	1 bit	To KNX
GO 177 Dimmer 1: Dimming output – State value	5.001	1 byte	To KNX

Group object	Type KNX	Size	Direction
GO 236 Dimmer 2: Dimming output – State on/off	1.001	1 bit	To KNX
GO 237 Dimmer 2: Dimming output – State value	5.001	1 byte	To KNX

Group object	Type KNX	Size	Direction
GO 296 Dimmer 3: Dimming output – State on/off	1.001	1 bit	To KNX
GO 297 Dimmer 3: Dimming output – State value	5.001	1 byte	To KNX

Group object	Type KNX	Size	Direction
GO 356 Dimmer 4: Dimming output – State on/off	1.001	1 bit	To KNX
GO 357 Dimmer 4: Dimming output – State value	5.001	1 byte	To KNX

Time for cyclic state *(only for* "*Cyclic and on change*"*)*

If send state is configured with "Cyclic and on change", this parameter appears to set the cycle time for sending.

Behavior on bus power loss

The behavior of the output in the event of bus voltage failure can be configured here.

The choices are:

- No reaction
- Dimm to value

Behavior after bus power return

The behavior of the output after bus power return can be configured here. This behavior is executed at every device restart (e.g. also at restart after an ETS download).

The choices are:

- No reaction
- Dimm to value
- State like before bus power failure

Scene function *(only with* "*Dimmer*" *function)*

The scene function can be activated or deactivated here. It is only available in the "Dimmer" function. If this functionality is activated, a parameter page appears for further configuration of scenes 1 – 16. The further functionality is explained in section "Dimmer 1 – 4: Scene function".

Automatic mode *(only with* "*Dimmer*" *function)*

Automatic mode is only available in the "Dimmer" function. If this function is selected, the following objects become visible:

Group object	Type KNX	Size	Direction
GO 179 Dimmer 1: Automatic mode – Activate	1.001	1 bit	From KNX To KNX
GO 180 Dimmer 1: Autom. dimming abs. – Set value	5.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 239 Dimmer 2: Automatic mode – Activate	1.001	1 bit	From KNX To KNX
GO 240 Dimmer 2: Autom. dimming abs. – Set value	5.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 299 Dimmer 3: Automatic mode – Activate	1.001	1 bit	From KNX To KNX
GO 300 Dimmer 3: Autom. dimming abs. – Set value	5.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 359 Dimmer 4: Automatic mode – Activate	1.001	1 bit	From KNX To KNX
GO 360 Dimmer 4: Autom. dimming abs. – Set value	5.001	1 byte	From KNX

When using automatic mode, the dimmer can be controlled via object 180, 240, 300 or 360, e.g. for light control or daylight-dependent basic lighting.

In automatic mode, the dimmer can be manually overridden by dimming on/off, dimming rel., dimming value, scene, slumber function or sequencer. During manual override, values of object 180, 240, 300 or 360 are ignored, each further manual override restarts the fallback time.

After the fallback time set in the parameter has elapsed, the values received on object 180, 240, 300 or 360 are processed again.

The automatic mode can be switched on or off at any time via object 179, 239, 299 or 359; it also serves as a state object for automatic mode.

After bus power return, automatic mode is switched off and must be activated via object 179, 239, 299 or 359.

Time out for manual mode
(only with “Dimmer” function and active “Automatic mode”)

This parameter defines the fallback time after manual mode.
Times from 1 min to 24 h can be set. The setting "Without timelimit" means that there is no automatic fallback from manual mode.

Slumber function *(only with “Dimmer” function)*

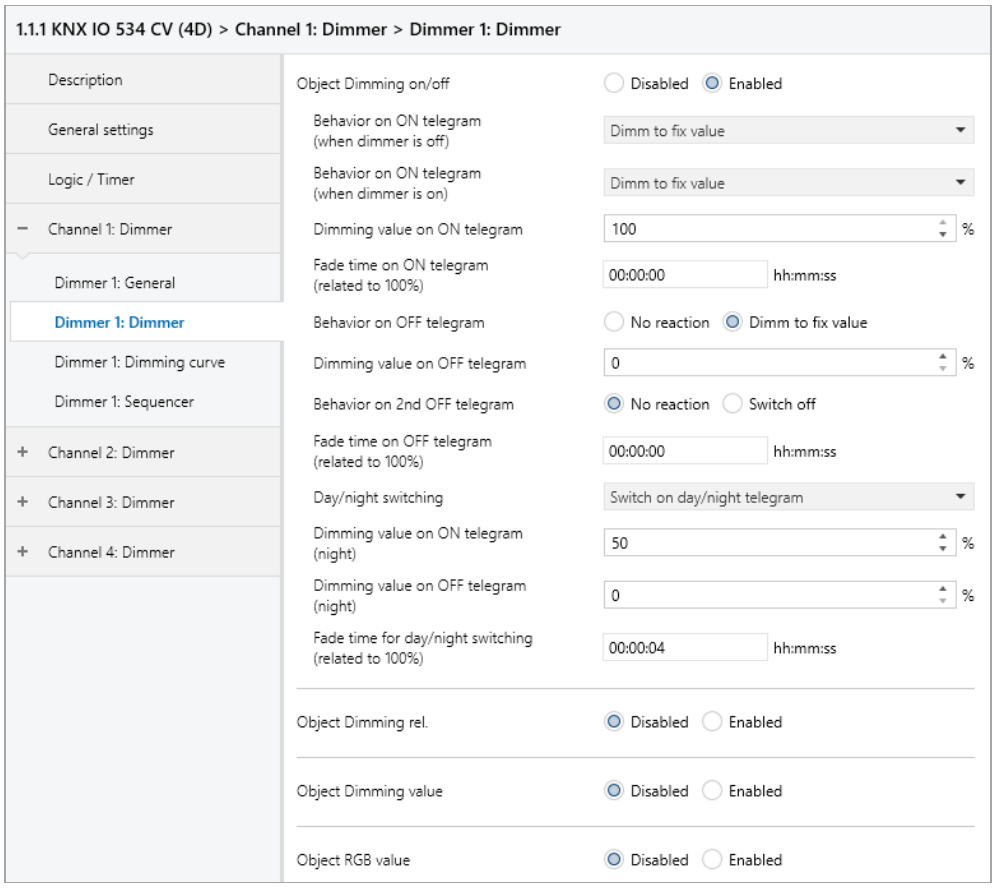
The slumber function is only available in the “Dimmer” function. The slumber function offers 2 different dimming times each for switching on and off via object. If this function is activated, a new parameter page appears, which is explained in section “Dimmer 1 – 4: Slumber function”.

Lock function

The disable function can be activated or deactivated here. This function is available in both functions “Dimmer” and “Staircase function”. If this functionality is activated, a new parameter page appears for further configuration, which is explained in more detail in section “Dimmer 1 – 4: Lock function”.

6.5.2 Dimmer 1 – 4: Dimmer

Object Dimming on/off



The following objects are available for switching the dimmers if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 171 Dimmer 1: Dimming on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 231 Dimmer 2: Dimming on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 291 Dimmer 3: Dimming on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 351 Dimmer 4: Dimming on/off – Switch	1.001	1 bit	From KNX

Behavior on ON telegram (when dimmer is off)

If the dimmer is switched off, this parameter can be used to configure the behavior when switching on via object 171, 231, 291 or 351.

The choices are:

- No reaction
- Dimm to fix value
- Dimm to last value before switching off

Behavior on ON telegram (when dimmer is on)

If the dimmer is already switched on, this parameter can be used to configure the behavior in the event of a renewed ON telegram via object 171, 231, 291 or 351.

The choices are:

- No reaction
- Dimm to fix value
- Dimm to fix value if higher than actual

Dimming value on ON telegram

With suitable parameterisation, this value is activated with an ON telegram via object 171, 231, 291 or 351.

Fade time on ON telegram (related to 100%)

This dimming time is active when an ON telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Behavior on OFF telegram

This parameter describes the behavior of the dimmer in the event of an OFF telegram via object 171, 231, 291 or 351.

The choices are:

- No reaction
- Dimm to fix value

Dimming value on OFF telegram

With suitable parameterisation, this value is activated with an OFF telegram via object 171, 231, 291 or 351.

Behavior on 2nd OFF telegram

This parameter describes the behavior of the dimmer when a 2nd OFF telegram is received via object 171, 231, 291 or 351.

The choices are:

- No reaction
- Switch off

The 2nd OFF telegram must follow the 1st OFF telegram within 1 second in order to be evaluated. If the current dimming value is equal to or lower than the parameterised dimming value for the OFF telegram, switching off takes place with the 1st OFF telegram.

Fade time on OFF telegram (related to 100%)

This dimming time is active when an OFF telegram is received. The time period is related to a complete dimming process from 0 – 100 %.

Day/night switching

When using this function, the following objects are visible for switching from day/night mode:

Group object	Type KNX	Size	Direction
GO 175 Dimmer 1: Day/Night – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 235 Dimmer 2: Day/Night – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 295 Dimmer 3: Day/Night – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 355 Dimmer 4: Day/Night – Switch	1.001	1 bit	From KNX

Day mode is triggered with an OFF telegram to object 175, 235, 295 or 355, night mode with an ON telegram. The device is in day mode after restart.

In addition, it can be determined when the dimming values become active after telegram via object 175, 235, 295 or 355 are available for selection:

- Disabled

- Switch on day/night telegram
  Immediately after day/night switching is received, dimming is set to the active dimming value in accordance with the last ON/OFF switching received via object 171, 231, 291 or 351.

- Switch on next on/off telegram
  The currently active dimming value is not used until the next ON/OFF switching via object 171, 231, 291 or 351.

There is a separate switch-on and switch-off value in the parameters for night mode, in day mode the always visible dimming values are used.

Dimming value on ON telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an ON telegram via object 171, 231, 291 or 351 and suitable parameterisation.

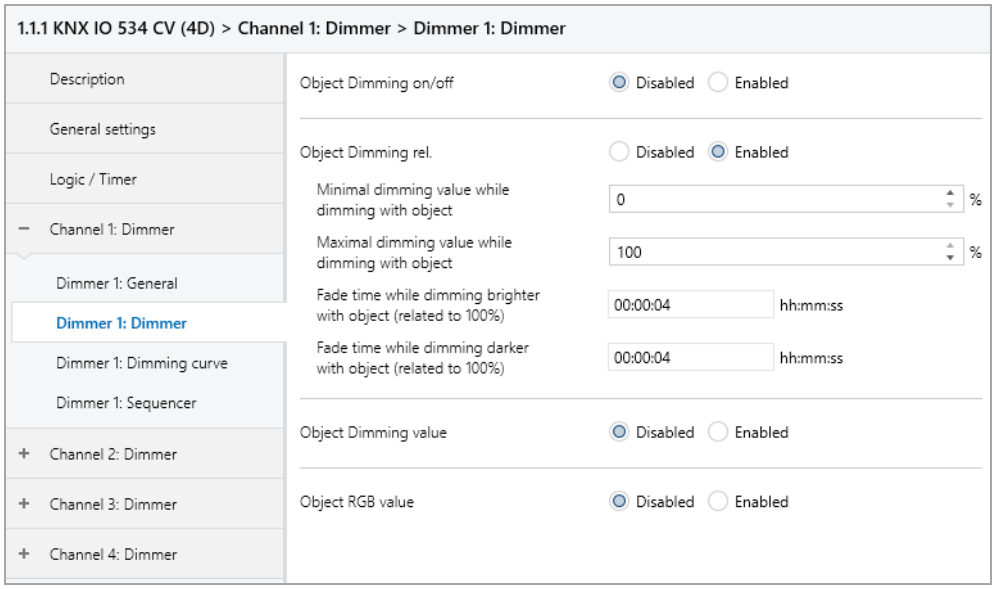
Dimming value on OFF telegram (night) *(only with active day/night switching)*

If the dimmer is in night mode, this value is activated with an OFF telegram via object 171, 231, 291 or 351 and suitable parameterisation.

Fade time for day/night switching (related to 100%)
(only with active day/night switching)

This dimming time is only active if switching is used with day/night switching. If switching is used with the next on/off telegram, the regular dimming time of the respective on or off telegram is active. The time period is related to a complete dimming process from 0 – 100 %.

Object Dimming rel.



The following objects are available for dimming via relative dimming commands if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 172 Dimmer 1: Dimming rel. – Brighter/Darker	3.007	4 bits	From KNX

Group object	Type KNX	Size	Direction
GO 232 Dimmer 2: Dimming rel. – Brighter/Darker	3.007	4 bits	From KNX

Group object	Type KNX	Size	Direction
GO 292 Dimmer 3: Dimming rel. – Brighter/Darker	3.007	4 bits	From KNX

Group object	Type KNX	Size	Direction
GO 352 Dimmer 4: Dimming rel. – Brighter/Darker	3.007	4 bits	From KNX

Minimal dimming value while dimming with object

This parameter can be used to set which minimum dimming value can be reached via relative dimming. If the current dimming value is below the minimum value, the brightness cannot be reduced via object 172, 232, 292 or 352.

Maximal dimming value while dimming with object

This parameter can be used to set which maximum dimming value can be reached via relative dimming. If the current dimming value is above the maximum value, the brightness cannot be increased via object 172, 232, 292 or 352.

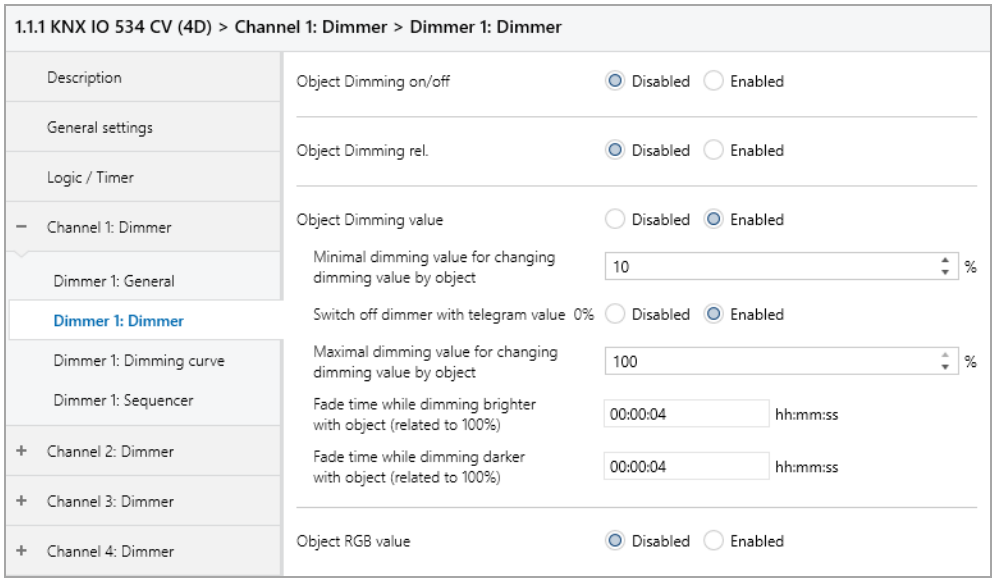
Fade time while dimming brighter with object (related to 100%)

This dimming time is active when the brightness is increased via relative dimming with object 172, 232, 292 or 352. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while dimming darker with object (related to 100%)

This dimming time is active when the brightness is reduced via relative dimming with object 172, 232, 292 or 352. The time period is related to a complete dimming process from 0 – 100 %.

Object Dimming value



The following objects are used to control the dimmer via dimming value if they have been activated via parameters:

Group object	Type KNX	Size	Direction
GO 173 Dimmer 1: Dimming abs. – Set value	5.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 233 Dimmer 2: Dimming abs. – Set value	5.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 293 Dimmer 3: Dimming abs. – Set value	5.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 353 Dimmer 4: Dimming abs. – Set value	5.001	1 byte	From KNX

Minimal dimming value for changing dimming value by object

This parameter can be used to configure which minimum dimming value can be reached via object 173, 233, 293 or 353. If a value below the minimum value is received, the dimmer is controlled with the minimum value. If a value > 0 % is set here, the parameter **Switch off dimmer with telegram value 0%** is also visible.

Switch off dimmer with telegram value 0%

(only with "Minimal dimming value for changing dimming value by object" > 0 %)

Here you can select whether the dimmer is switched off when a dimming value of 0 % is received.

Maximal dimming value for changing dimming value by object

This parameter can be used to configure which maximum dimming value can be reached via object 173, 233, 293 or 353. If a value above the maximum value is received, the dimmer is controlled with the maximum value.

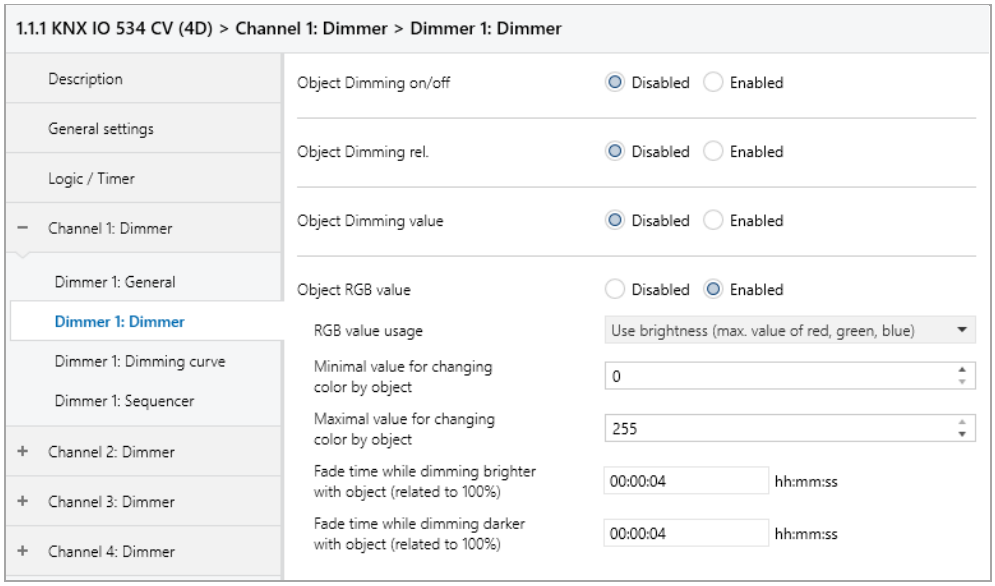
Fade time while dimming brighter with object (related to 100%)

This dimming time is active if the brightness is increased when values are received via object 173, 233, 293 or 353. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while dimming darker with object (related to 100%)

This dimming time is active if the brightness is reduced when values are received via object 173, 233, 293 or 353. The time period is related to a complete dimming process from 0 – 100 %.

Object RGB value



To control the dimmer via RGB color value, the following objects are available if activated via parameters:

Group object	Type KNX	Size	Direction
GO 174 Dimmer 1: RGB color value – Set value	232.600	3 bytes	From KNX

Group object	Type KNX	Size	Direction
GO 234 Dimmer 2: RGB color value – Set value	232.600	3 bytes	From KNX

Group object	Type KNX	Size	Direction
GO 294 Dimmer 3: RGB color value – Set value	232.600	3 bytes	From KNX

Group object	Type KNX	Size	Direction
GO 354 Dimmer 4: RGB color value – Set value	232.600	3 bytes	From KNX

RGB value usage

Here you can set how a received RGB color value is to be processed:

- Use red part
  The 1st byte of the RGB value (red) is used to control the brightness of the dimmer.
- Use green part
  The 2nd byte of the RGB value (green) is used to control the brightness of the dimmer.
- Use blue part
  The 3rd byte of the RGB value (blue) is used to control the brightness of the dimmer.
- Use white (min. value of red, green, blue)
  The smallest value of the 3 bytes is used to control the brightness of the dimmer.
- Use brightness (max. value of red, green, blue)
  The largest value of the 3 bytes is used to control the brightness of the dimmer.

Minimal value for changing color by object

This parameter can be used to configure which minimum dimming value can be set via object 174, 234, 294 or 354. If a value below the minimum value is received, the dimmer is controlled with the minimum value.

Maximal value for changing color by object

This parameter can be used to configure which maximum dimming value can be set via object 174, 234, 294 or 354. If a value above the maximum value is received, the dimmer is controlled with the maximum value.

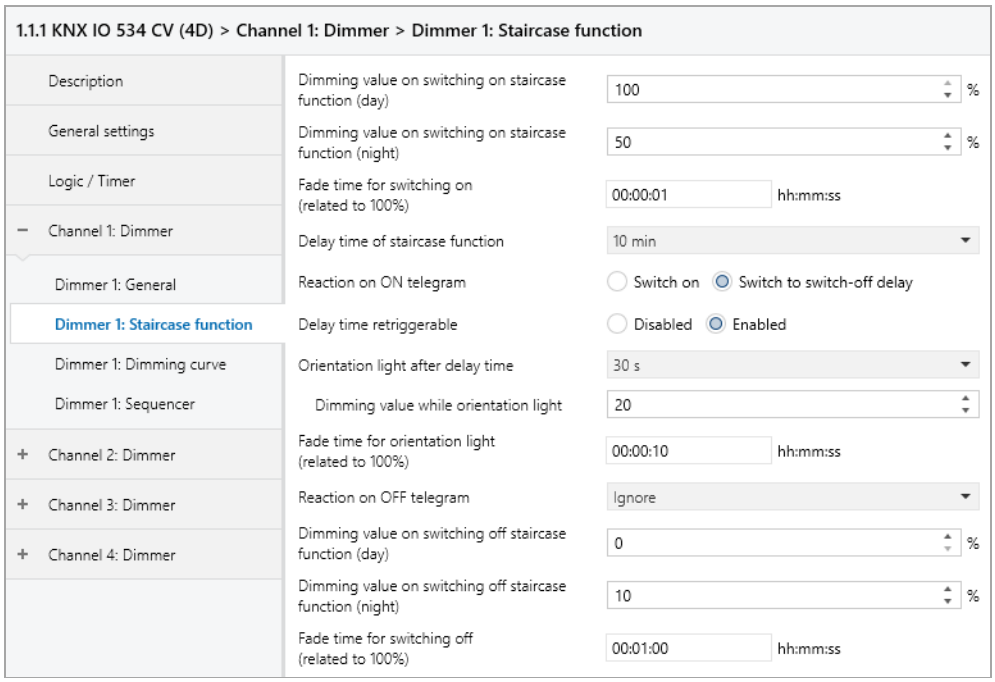
Fade time while dimming brighter with object (related to 100%)

This dimming time is active if the brightness is increased when values are received via object 174, 234, 294 or 354. The time period is related to a complete dimming process from 0 – 100 %.

Fade time while dimming darker with object (related to 100%)

This dimming time is active if the brightness is reduced when values are received via object 174, 234, 294 or 354. The time period is related to a complete dimming process from 0 – 100 %.

6.5.3 Dimmer 1 – 4: Staircase function



A staircase function with optional orientation light can be implemented via this parameter page. The staircase function can be overridden by the disable function. It has the following objects:

Group object	Type KNX	Size	Direction
GO 171 Dimmer 1: Staircase function – Trigger	1.010	1 bit	From KNX
GO 175 Dimmer 1: Day/Night – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 231 Dimmer 2: Staircase function – Trigger	1.010	1 bit	From KNX
GO 235 Dimmer 2: Day/Night – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 291 Dimmer 3: Staircase function – Trigger	1.010	1 bit	From KNX
GO 295 Dimmer 3: Day/Night – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 351 Dimmer 4: Staircase function – Trigger	1.010	1 bit	From KNX
GO 355 Dimmer 4: Day/Night – Switch	1.001	1 bit	From KNX

Day mode is triggered with an OFF telegram to object 175, 235, 295 or 355, night mode with an ON telegram. The device is in day mode after restart.

Dimming value on switching on staircase function (day)

This value is used in day mode when the staircase function is switched on via an ON telegram to object 171, 231, 291 or 351.

Dimming value on switching on staircase function (night)

This value is used in night mode if the staircase function is switched on via an ON telegram to object 171, 231, 291 or 351.

Fade time for switching on (related to 100%)

This dimming time is active when the staircase function is switched on via an ON telegram to object 171, 231, 291 or 351. The time period is related to a complete dimming process from 0 – 100 %.

Delay time of staircase function

After the delay time has elapsed, the dimmer is dimmed to the switch-off or orientation light value, depending on the parameter setting.

Reaction on ON telegram

This parameter determines the behavior after switching on the staircase function via ON telegram to object 171, 231, 291 or 351: In the setting “Switch on”, the channel remains switched on after ON telegram until the delay time is started via OFF telegram. In the “Switch to switch-off delay” setting, the channel goes immediately into the delay time after the ON telegram.

Delay time retriggerable

If it is set that the delay time is started with an ON telegram, this parameter determines whether only the 1st ON telegram to object 171, 231, 291 or 351 restarts the delay time, or also each subsequent ON telegram.

If it is set that the overshoot time is started with an OFF telegram, this parameter determines whether only the 1st OFF telegram to object 171, 231, 291 or 351 restarts the overshoot time, or also each further one if the staircase function is already in the overshoot time.

Orientation light after delay time

This parameter can be used to set whether the dimmer dims to the switch-off value or to the orientation light after the end of the delay time, as well as the duration of the orientation light.

To choose from:

- Disabled
- 1 s
- 2 s
- 5 s
- 10 s
- 30 s
- 1 min
- 2 min
- 5 min
- 10 min
- 20 min
- 30 min
- 1 h
- 2 h
- Without timelimit

Dimming value while orientation light

This value is dimmed to at the end of the delay time if orientation light is used.

Fade time for orientation light (related to 100%)

This dimming time is active when the staircase function dims to orientation light. The time period is related to a complete dimming process from 0 – 100 %.

Reaction on OFF telegram

Here you can set how the staircase function behaves in the event of an Off telegram. The following options are available:

- Ignore
  No reaction of the channel in case of off telegram.
- Switch off
  Switches to switch-off value from the parameters.
- Switch to switch-off delay
  The delay time is started with an OFF telegram.
- Switch to orientation light
  The orientation light phase is started with an OFF telegram.
- Switch to orientation light/switch off
  With the 1st OFF telegram the orientation light phase is started, with the 2nd OFF telegram it is dimmed to the switch-off value.

Dimming value on switching off staircase function (day)

This value is dimmed in day mode if the staircase function is switched off after the delay time or via an OFF telegram to object 171, 231, 291 or 351.

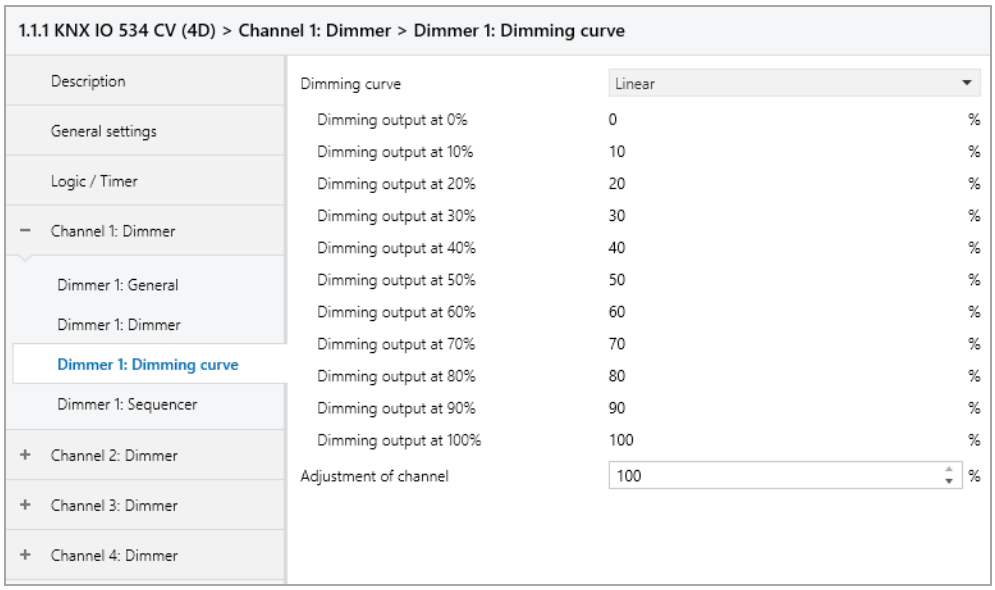
Dimming value on switching off staircase function (night)

This value is dimmed in night mode if the staircase function is switched off after the delay time or via an OFF telegram to object 171, 231, 291 or 351.

Fade time for switching off (related to 100%)

This dimming time is active when the staircase function dims to the OFF value. The time period is related to a complete dimming process from 0 – 100 %.

6.5.4 Dimmer 1 – 4: Dimming curve



This parameter page is used for fine adjustment of the dimmer to different lamps.

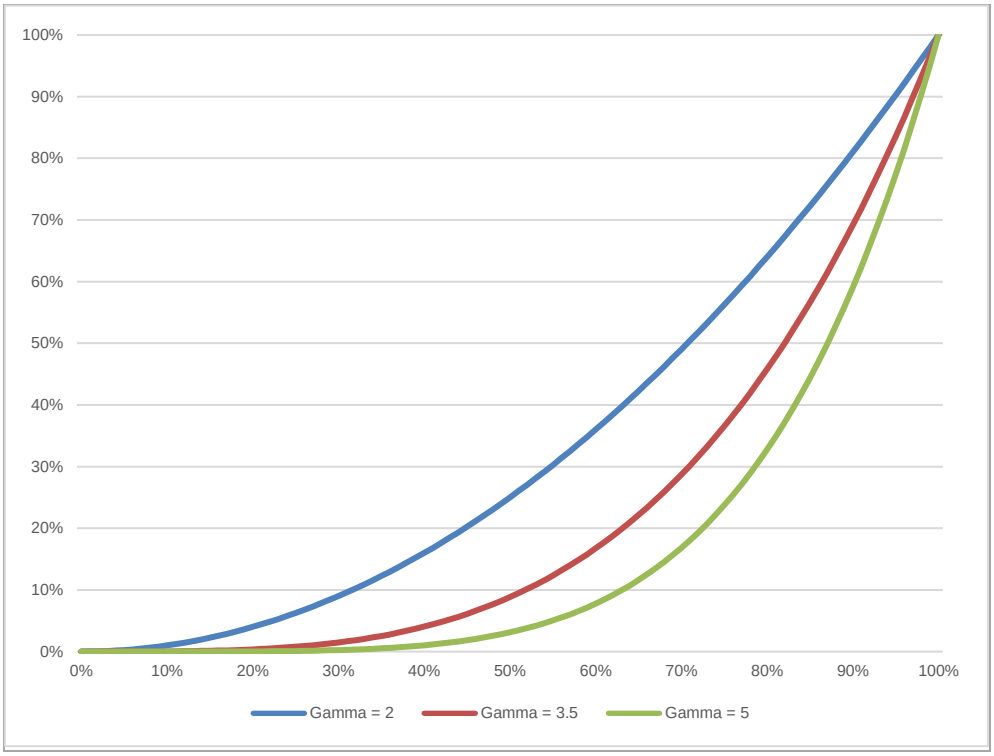
All parameters on this page only affect the PWM value of the output, not the dimming or output state value.

Dimming curve

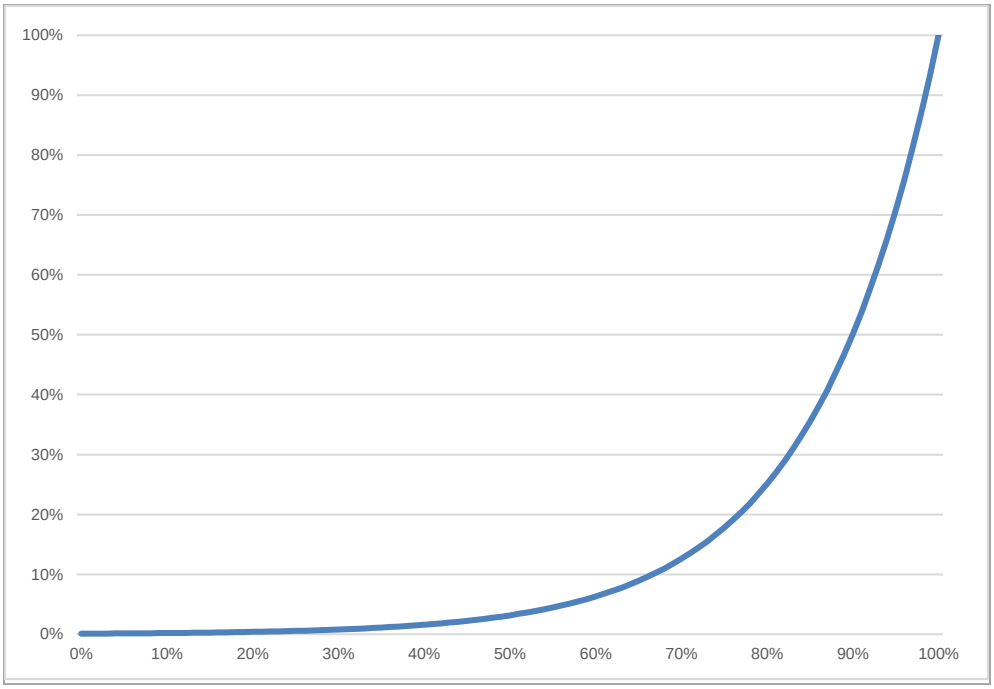
Here you can define which PWM value is output by the dimming output when the dimming channel has reached a certain dimming value. The following are available for selection:

- Linear
- Logarithmic
- User defined

- Gamma
  Gamma correction according to the formula: *PWM value = Dimming value* ^{gamma}
  Gamma can be set via parameter from 1.00 ... 5.00.

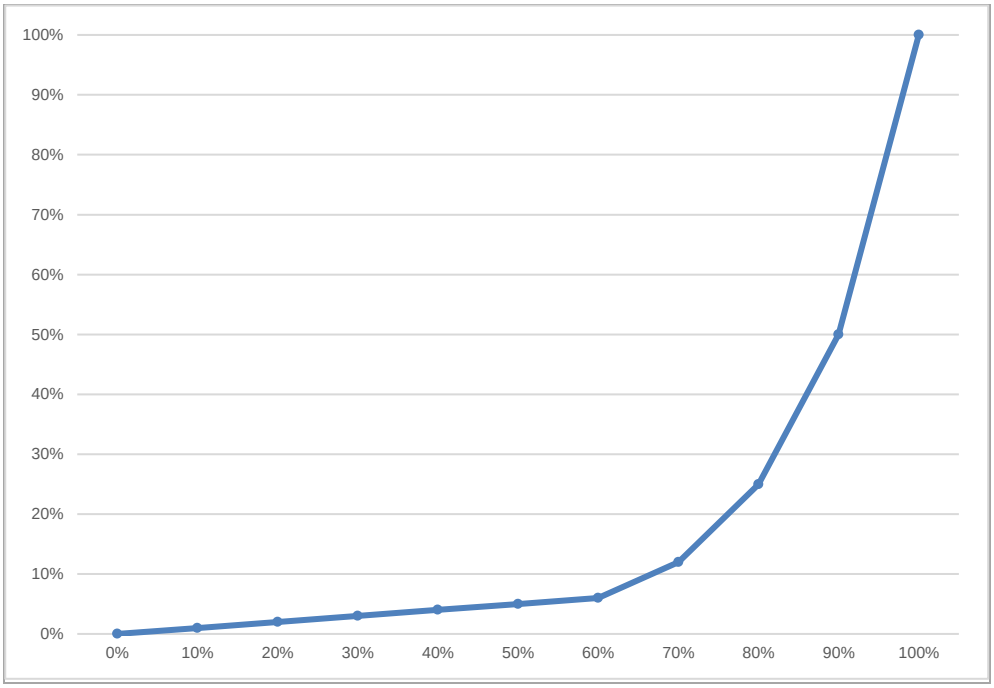


- DALI
  An DALI based function with the formula: *PWM value = 10* $^{3 - (Dimming\ value - 1)}$



Dimming output at 0% – 100%

For the dimming curves “Linear”, “Logarithmic” and “User defined”, these values determine the PWM value of the dimming output at the specified dimming value. Values between the specified points are calculated and output linearly. As an example, the dimming output behaves according to the following graph for dimming curve “Logarithmic”:



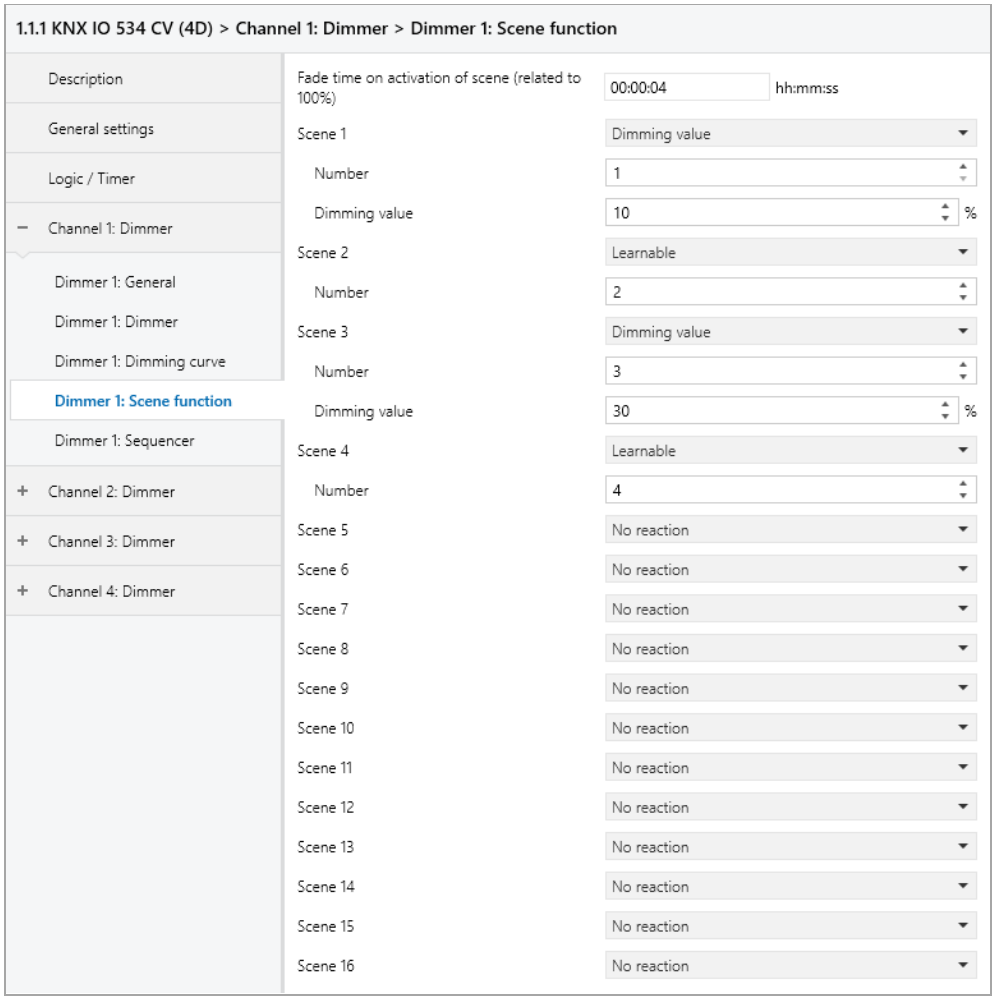
For the dimming curves “Linear” and “Logarithmic” the output values are fixed, for “User defined” they can be freely configured.

If a dimming value of 0 % is reached, the channel always switches off.

Adjustment of channel

The PWM value calculated by the dimming curve is additionally scaled with this value.

6.5.5 Dimmer 1 – 4: Scene function



If the scene function is activated, the following group objects appear:

Group object	Type KNX	Size	Direction
GO 178 Dimmer 1: Scene – Activ./Lrn.	18.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 238 Dimmer 2: Scene – Activ./Lrn.	18.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 298 Dimmer 3: Scene – Activ./Lrn.	18.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 358 Dimmer 4: Scene – Activ./Lrn.	18.001	1 byte	From KNX

Fade time on activation of scene (related to 100%)

The time period in which the received scene is dimmed is set here. The time period is related to a complete dimming process from 0 – 100 %.

Scene 1 – 16

These parameters can be used to configure the reaction of the channel when the respective scene is received.

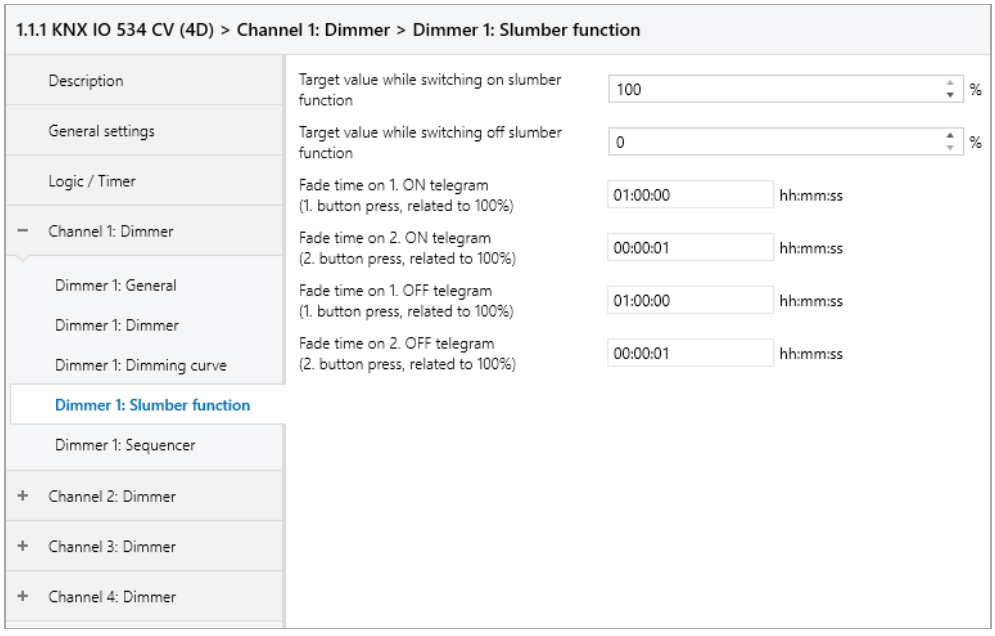
The choices are:

- No reaction
- Dimming value
  The output is switched to the set dimming value if the scene of the corresponding number was received.
- Learnable
  Here, the current state at the output for the respective scene can be saved with the help of a scene control telegram. Thus, the scene can be adapted by the user without ETS download.

Number

This parameter can be used to assign any scene number between 1 and 64 to the scene. No scene numbers may be assigned twice.

6.5.6 Dimmer 1 – 4: Slumber function



If the slumber function is selected, the following objects are visible:

Group object	Type KNX	Size	Direction
GO 181 Dimmer 1: Slumber function – Trigger	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 241 Dimmer 2: Slumber function – Trigger	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 301 Dimmer 3: Slumber function – Trigger	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 361 Dimmer 4: Slumber function – Trigger	1.001	1 bit	From KNX

Target value while switching on slumber function

This value is reached after receipt of an ON telegram via object 181, 241, 301 or 361 at the output of the dimmer after completion of the dimming process.

Target value while switching off slumber function

This value is reached after receipt of an OFF telegram via object 181, 241, 301 or 361 at the output of the dimmer after completion of the dimming process.

Fade time on 1. ON telegram (1. button press, related to 100%)

This dimming time is used to dim to the final value for switching on after pressing the 1st button. The time period is related to a complete dimming process from 0 – 100 %.

Fade time on 2. ON telegram (2. button press, related to 100%)

This dimming time is used to dim to the final value for switching on after the 2nd button is pressed. The time period is related to a complete dimming process from 0 – 100 %.

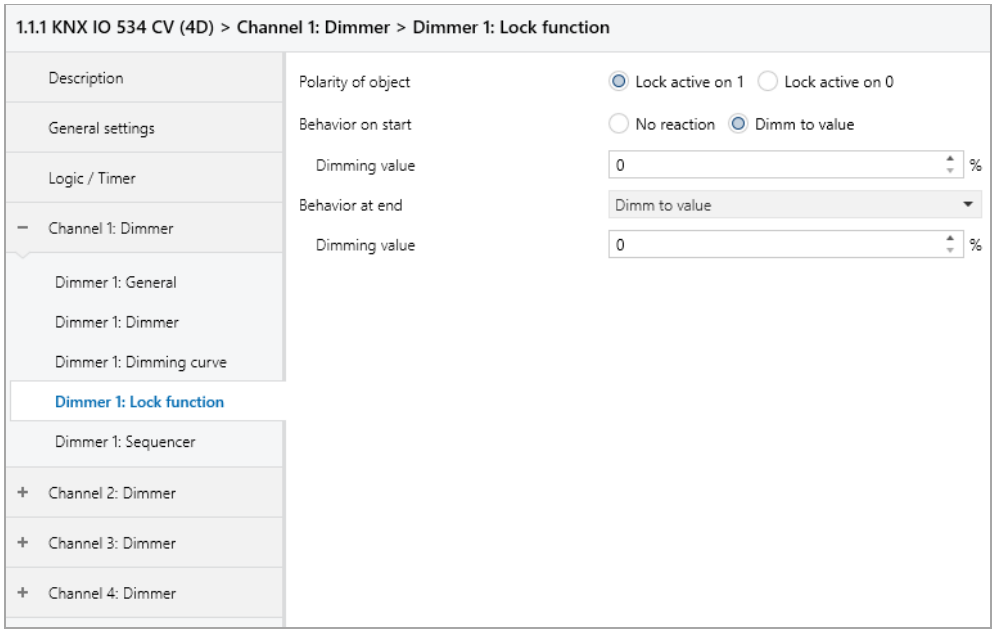
Fade time on 1. OFF telegram (1. button press, related to 100%)

This dimming time is used to dim to the final value for switching off after the 1st key is pressed. The time period is related to a complete dimming process from 0 – 100 %.

Fade time on 2. OFF telegram (2. button press, related to 100%)

This dimming time is used to dim to the final value for switching off after the 2nd button is pressed. The time period is related to a complete dimming process from 0 – 100 %.

6.5.7 Dimmer 1 – 4: Lock function



If the lock function is activated, the following objects are active:

Group object	Type KNX	Size	Direction
GO 182 Dimmer 1: Lock – Activate	1.001	1 bit	From KNX
GO 183 Dimmer 1: Prior. dimming on/off – Switch	1.001	1 bit	From KNX
GO 184 Dimmer 1: Prior. dimming rel. – Brighter/Darker	3.007	4 bits	From KNX
GO 185 Dimmer 1: Prior. dimming abs. – Set value	5.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 242 Dimmer 2: Lock – Activate	1.001	1 bit	From KNX
GO 243 Dimmer 2: Prior. dimming on/off – Switch	1.001	1 bit	From KNX
GO 244 Dimmer 2: Prior. dimming rel. – Brighter/Darker	3.007	4 bits	From KNX
GO 245 Dimmer 2: Prior. dimming abs. – Set value	5.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 302 Dimmer 3: Lock – Enable	1.001	1 bit	From KNX
GO 303 Dimmer 3: Prior. dimming on/off – Switch	1.001	1 bit	From KNX
GO 304 Dimmer 3: Prior. dimming rel. – Brighter/Darker	3.007	4 bits	From KNX
GO 305 Dimmer 3: Prior. dimming abs. – Set value	5.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 362 Dimmer 4: Lock – Activate	1.001	1 bit	From KNX
GO 363 Dimmer 4: Prior. dimming on/off – Switch	1.001	1 bit	From KNX
GO 364 Dimmer 4: Prior. dimming rel. – Brighter/Darker	3.007	4 bits	From KNX
GO 365 Dimmer 4: Prior. dimming abs. – Set value	5.001	1 byte	From KNX

If the lock has been activated via group object 182, 242, 302 or 362, other received telegrams for dimmer, automatic mode, slumber, scene function and sequencer are not executed.

In addition to the disable object, 3 priority objects become visible when the disable function is activated, with which the dimmer can be controlled independently of the disable. In this way, it is possible to set an initial state without influencing other functions.

Example of priority objects:

At events in public buildings or in restaurants, the buttons can be disabled after regular operation by means of the disable object. This makes it possible to block buttons that are accessible to unauthorised persons during the lecture or concert in order to prevent unintentional switching. Nevertheless, the organiser can, if necessary, control the individual lamps with the help of the priority object without lifting the lock.

Polarity of object

The object's mode of action can be used to set how the lock is to be activated – either by receiving a 1 or by receiving a 0.

The choices are:

- Lock active on 1
- Lock active on 0

Behavior on start

Here you can configure the state that is set when the lock is activated at the output.

The choices are:

- No reaction
- Dimm to value
  The state of the output can be further changed by the priority objects.

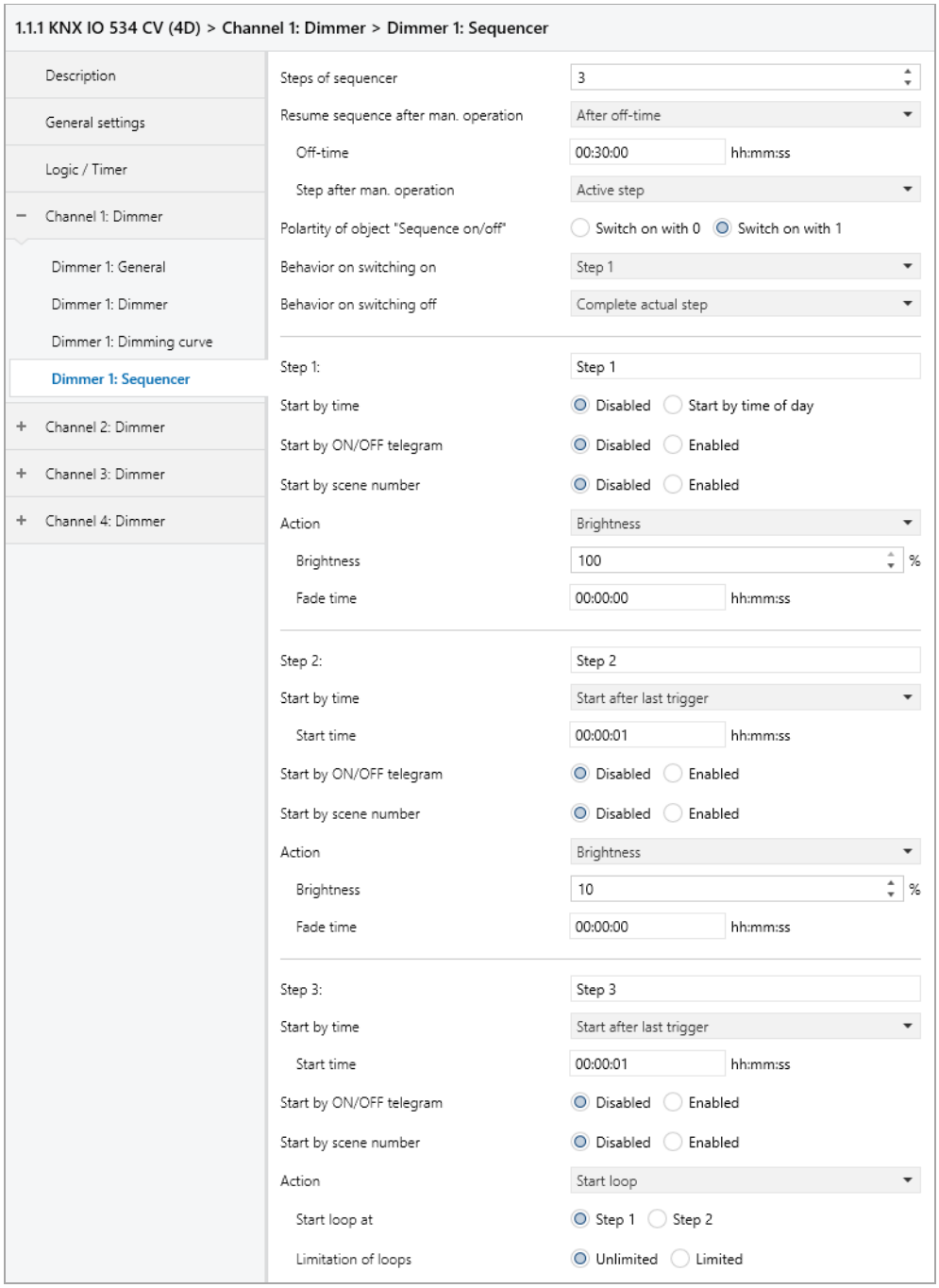
Behavior at end

Here you can configure the state that is set when the lock is deactivated at the output.

The choices are:

- No reaction
- Dimm to value
- State before lock
  Here the original state before activation of the lock is restored. Telegrams received during the lock are ignored.
- State without lock
  Here the state of the last received telegram is restored. This means that the received telegrams are taken into account during the lock. Thus, when the lock is deactivated, the state of the last received telegram is set.

6.5.8 Dimmer 1 – 4: Sequencer



The sequencer can be used to create complex sequence programs consisting of up to 32 individual steps for the dimmer channel. The activation of the individual steps is possible at the following start conditions:

- At a fixed time
- After a waiting time to a previous step
- Via on/off telegram
- On receipt of a parameterized scene number

When a step is activated, a value can be dimmed or a scene number can be sent. In addition, a step or an entire step sequence can be repeated cyclically.

The following objects are available for general control of the sequencer:

Group object	Type KNX	Size	Direction
GO 193 Dimmer 1: Sequence suspend – Suspend/Resume	1.001	1 bit	From KNX
GO 194 Dimmer 1: Sequence on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 253 Dimmer 2: Sequence suspend – Suspend/Resume	1.001	1 bit	From KNX
GO 254 Dimmer 2: Sequence on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 313 Dimmer 3: Sequence suspend – Suspend/Resume	1.001	1 bit	From KNX
GO 314 Dimmer 3: Sequence on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 373 Dimmer 4: Sequence suspend – Suspend/Resume	1.001	1 bit	From KNX
GO 374 Dimmer 4: Sequence on/off – Switch	1.001	1 bit	From KNX

Polarity of objects 193, 253, 313 and 373:
1 = Suspend / 0 = Resume

The following parameters determine the general behavior of the sequencer:

Steps of sequencer

Number of steps (0 ... 32) to be used.

Resume sequence after man. operation

A sequence that is switched on can always be interrupted or continued via object 193, 253, 313 or 373; an ON telegram interrupts the sequence, an OFF telegram continues it.

A sequence is also interrupted after manual operation, i.e. after commands for dimmer, automatic mode, slumber or scene function.

In addition, this parameter determines how an interrupted sequence can still be continued, is available for selection:

- Only by object
  The sequence can only be continued via object 193, 253, 313 or 373.

- After off-time
  The sequence is continued after the set blocking time.

- On next activated step
  The sequence is continued at the next activated step. The next step can be activated via object or time-controlled.

Off-time

Only visible if the sequence is to be continued after off-time, this blocking time can be configured with this.

Step after man. operation

This step is executed when resuming after manual operation, the function of the set step is always executed, regardless of its other set start conditions.

Polarity of object “Sequence on/off”

This parameter can be used to set which telegram value can be used to switch the sequence on and off via object 194, 254, 314 or 374. If the sequence is switched off, any further activation of a step is blocked.

Behavior on switching on

This determines how the sequencer behaves when switched on via object 194, 254, 314 or 374 is available for selection:

- No reaction
  No function is executed, the sequencer is waiting for steps to be activated.

- Step 1 – 32
  The function of the step is executed (regardless of the other set start conditions of the step), the sequence is then continued according to its configuration from this step.

Switching on also reactivates a sequence interrupted by manual operation.

Behavior on switching off

This determines how the sequencer behaves when switched off via object 194, 254, 314 or 374 is available for selection:

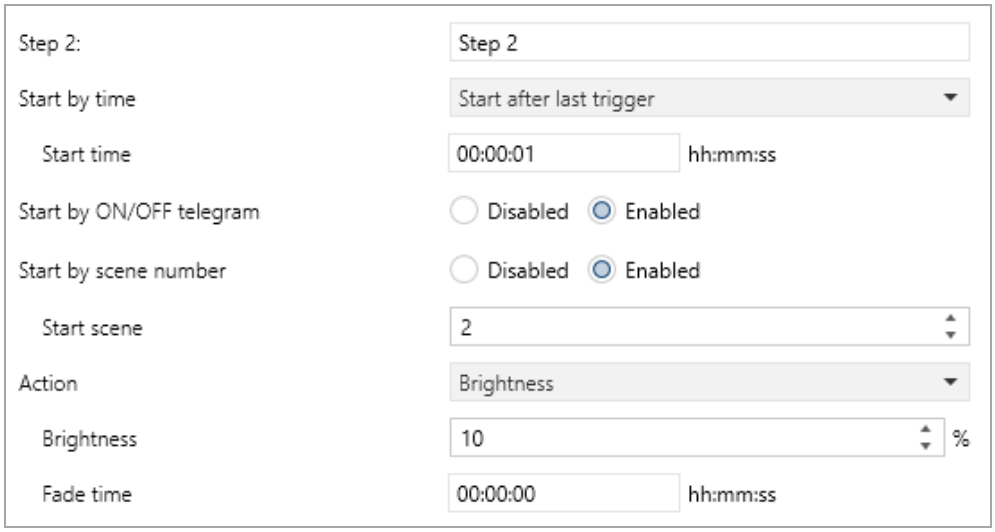
- Complete actual step
  If the sequencer is in a dimming process, this is still being completed.

- Step 1 – 32
  The function of the step is executed (regardless of the other start conditions set for the step).

- Stop immediately
  If the sequencer is in a dimming process, this is stopped.

Apart from the set behavior at power off, any further activation of a step after power off is disabled until the sequencer is switched on again via object 194, 254, 314 or 374.

Step 1 – 32



When a step is activated, its parameters appear for configuration.

You can enter your own name for the step in the text field at the top right with the content “Step x”. This designation is used for better orientation of the user and has no influence on the functionality of the step.

Start by time

This parameter is used to configure a time start condition of the step, available for selection:

- Disabled
  Start condition not used.

- Start by time of day
  The time at which the step is to start can be entered here. When using this start condition, the current time must have been received via the following object:

Group object	Type KNX	Size	Direction
GO 5 Time of Day – Set	10.001	3 bytes	From KNX

If no valid time has been specified via object 5, all start conditions at fixed times are not active.

The time is continuously updated by the device through its internal timer, but due to component tolerances there is always a deviation from the actual time. Therefore, the current time should be sent to the device at least twice a day by a precise timer in order to keep the deviation as small as possible.

- Start after last trigger
  Here you can specify the time interval to wait after the previous activation before executing the step. This start condition is not available for step 1.

Start time

Here either the time or the waiting time can be specified for the execution of the current step, if a timed start condition is used.

Start by ON/OFF telegram

When using this start condition, a separate object is available for each step:

Group object	Type KNX	Size	Direction
GO 195 – 226 Dimmer 1: Sequence Step 1 – 32 on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 255 – 286 Dimmer 2: Sequence Step 1 – 32 on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 315 – 346 Dimmer 3: Sequence Step 1 – 32 on/off – Switch	1.001	1 bit	From KNX

Group object	Type KNX	Size	Direction
GO 375 – 406 Dimmer 4: Sequence Step 1 – 32 on/off – Switch	1.001	1 bit	From KNX

An ON telegram to one of these objects activates the respective step, the sequence is then continued from this step according to its configuration.

An Off telegram also activates this step, but resets the sequence at the same time.

Start by scene number

When this start condition is used, the following object becomes visible:

Group object	Type KNX	Size	Direction
GO 191 Dimmer 1: Sequence scene – Activate step	18.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 251 Dimmer 2: Sequence scene – Activate step	18.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 311 Dimmer 3: Sequence scene – Activate step	18.001	1 byte	From KNX

Group object	Type KNX	Size	Direction
GO 371 Dimmer 4: Sequence scene – Activate step	18.001	1 byte	From KNX

A telegram with the set scene to one of these objects activates the respective step, the sequence is then continued according to its configuration from this step.

All steps with this start condition are controlled via this object.

Action

When the step is activated, the configured function is executed:

- None
  No function is executed. This can be used, for example, to implement a switch-on delay of a sequence.

- Start loop
  The sequence is continued at the selected step. Parameters for the start step of the loop and number of loops become visible.

- Send scene number
  When using this function, the following objects become visible:

Group object	Type KNX	Size	Direction
GO 192 Dimmer 1: Sequence scene – Send scene	18.001	1 byte	To KNX

Group object	Type KNX	Size	Direction
GO 252 Dimmer 2: Sequence scene – Send scene	18.001	1 byte	To KNX

Group object	Type KNX	Size	Direction
GO 312 Dimmer 3: Sequence scene – Send scene	18.001	1 byte	To KNX

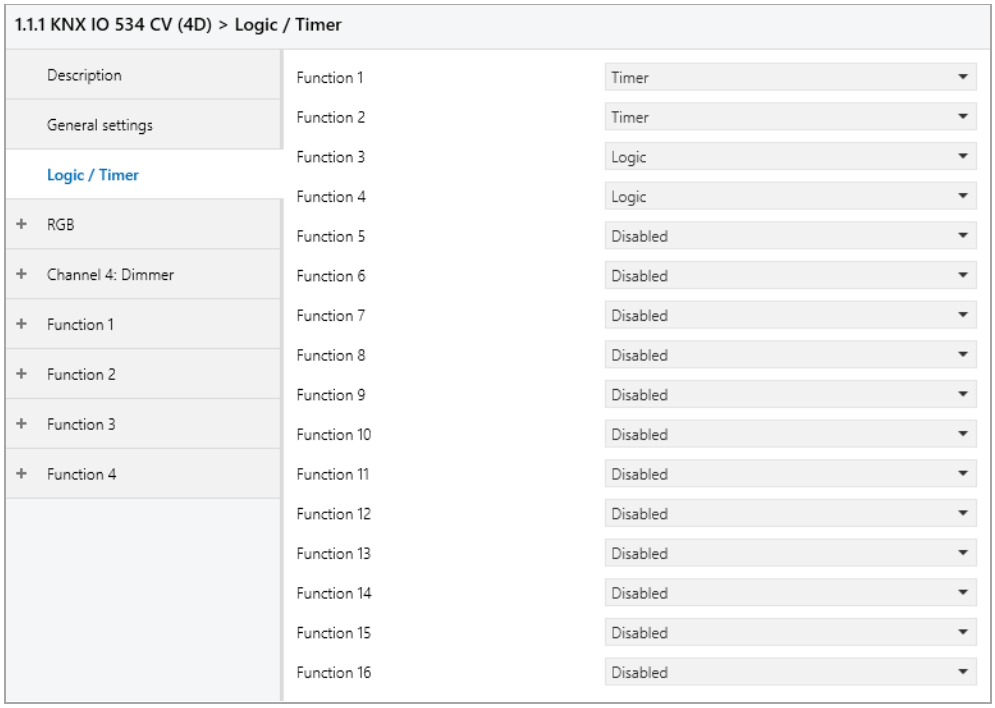
Group object	Type KNX	Size	Direction
GO 372 Dimmer 4: Sequence scene – Send scene	18.001	1 byte	To KNX

  A parameter for the sent scene number becomes visible; when the step is activated, this scene number is sent via the respective object.
  All steps send the scene number via one of these objects if this function is used for the respective step.

- Brightness
  Parameters for brightness and fade time become visible. When the step is activated, the dimmer dims from the current value to the specified brightness with the parameterized fade time. This time is related to a complete dimming process from 0 – 100 %.

  *The fade time must be shorter than or equal to the **start time** or waiting time of the next step in order to achieve the set brightness.*

6.6 Logic / Timing



Function 1 – 16

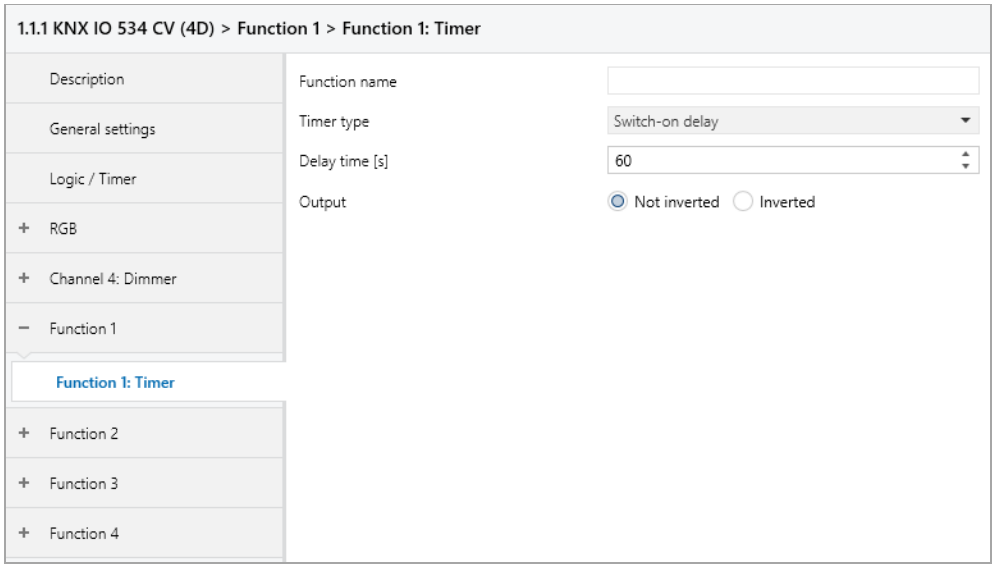
These parameters contain the functions timer and logic, whereby all 16 functions are identical.

The following options are available:

- Disabled
  No parameters and group objects for timer and logic.
- Timer
  Parameters and group objects for timer are available.
- Logic
  Parameters and group objects for logic are available.

The functions for timer and logic can be linked to one another by means of the associated group objects. This also allows to create complex structures. For this purpose, the output of a function is set to the same group address as the input of the next function.

6.6.1 Function 1 – 16: Timer



Function name *(10 characters)*

The function name can be chosen freely.

The name is visible in the group object entry in the ETS software. This makes it easier to work with the associated group objects, because the given name is displayed there as a label.

Timer type

Here the type of the timer can be set:

- Switch-on delay
  The ON telegram (1) received on the input is delayed on the output.
  Input: `--1---------0------`
  Output: `--|-T-1-----0------`

Group object	Type KNX	Size	Direction
Timer – Switch-on delayed – Input	1.002	1 Bit	From KNX
Timer – Switch-on delayed – Output	1.002	1 Bit	To KNX

- Switch-off delay
  The OFF telegram (0) received on the input is delayed on the output.
  Input: `--1---------0------`
  Output: `--1---------|-T-0--`

Group object	Type KNX	Size	Direction
Timer – Switch-off delayed – Input	1.002	1 Bit	From KNX
Timer – Switch-off delayed – Output	1.002	1 Bit	To KNX

- Switch-on and -off delay
  The ON/OFF telegram (1/0) received on the input is delayed on the output.
  Input: `--1---------0------`
  Output: `--|-T-1-----|-T-0--`

Group object	Type KNX	Size	Direction
Timer – Switch-on/off delayed – Input	1.002	1 Bit	From KNX
Timer – Switch-on/off delayed – Output	1.002	1 Bit	To KNX

- Impulse (staircase)
  The ON telegram (1) received on the input is sent on the output. After a delay the output sends the OFF telegram (0).
  Input: `--1---------0------`
  Output: `--1-T-0-----------`

Group object	Type KNX	Size	Direction
Timer – Impulse (staircase) – Input	1.002	1 Bit	From KNX
Timer – Impulse (staircase) – Output	1.002	1 Bit	To KNX

Each timer can be stopped by sending the opposite value to its input group object. For example: An already started switch-on timer can be stopped by sending OFF (0) to its input group object.

Delay [s]

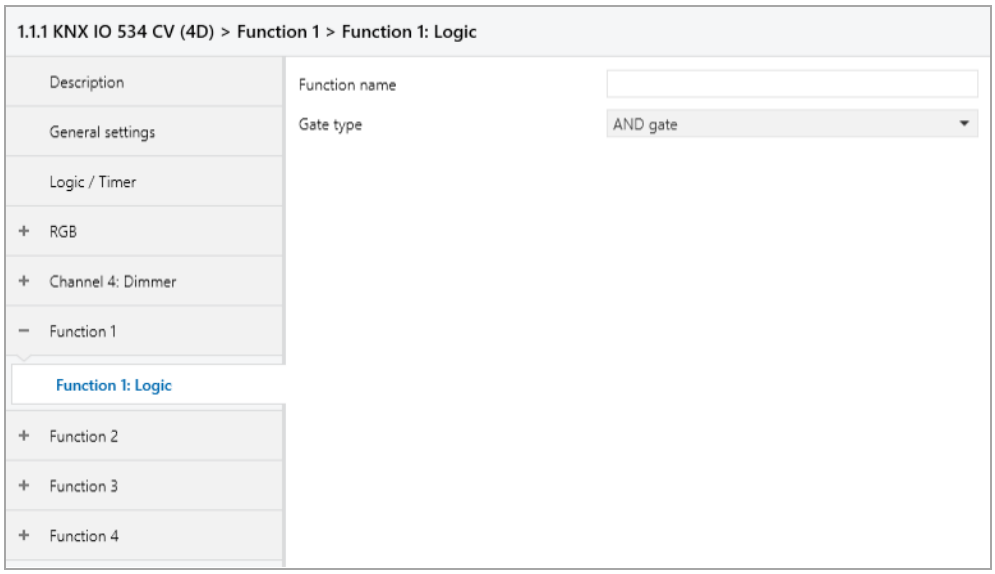
This parameter defines the delay when sending at the output.

Output

Via this parameter the sent value on the output can be inverted:

- Not inverted
- Inverted

6.6.2 Function 1 – 16: Logic



Function name *(10 characters)*

The function name can be chosen freely.

The name is visible in the group object entry in the ETS software. This makes it easier to work with the associated group objects, because the given name is displayed there as a label.

Gate type

This parameter defines the type of the logic gate:

- And gate
  The output is triggered ON (1), if both inputs are switched ON (1).
- OR gate
  The output is triggered ON (1), if one or both inputs are switched ON (1).
- XOR gate
  The output is triggered ON (1), if the two inputs are not equal.
- NAND gate
  The output is triggered ON (1), if one or both inputs are switched OFF (0).
- NOR gate
  The output is triggered ON (1), if both inputs are switched OFF (0).
- XNOR gate
  The output is triggered ON (1), if both inputs are equal.

Group object	Type KNX	Size	Direction
Logic – Gate input A – Input	1.002	1 Bit	From KNX
Logic – Gate input B – Input	1.002	1 Bit	From KNX
Logic – Gate output – Output	1.002	1 Bit	To KNX

The output transmits when a telegram is received on one of the inputs. A precondition for this is that both inputs are valid (have received at least one telegram). The output sends a 1 if the respective condition is fulfilled, otherwise a 0.

- INVERTER
  Input ON (1) is converted into output OFF (0). Input OFF (0) is converted into output ON (1).

Group object	Type KNX	Size	Direction
Logic – Gate input – Input	1.002	1 Bit	From KNX
Logic – Gate output – Output	1.002	1 Bit	To KNX

The output transmits when a telegram is received on the input.

WARNING

- The device must be mounted and commissioned by an authorized electrician.
- The prevailing safety rules must be heeded.
- The device must not be opened.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.
- The power rating is indicated on the side of the product

ETS6 Database
www.weinzierl.de/en/products/534/ets6

Data sheet
www.weinzierl.de/en/products/534/datasheet

CE Declaration
www.weinzierl.de/en/products/534/ce-declaration

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