Chorus

Easy dimmer actuators for LED Vdc - DIN rail mounting

GW 90 854 - CVD and GW 90 855 - CCD

Technical manual

Contents

1 Introduction

The Easy dimmer actuators for LEDs powered with direct voltage (Vdc) - DIN rail mounted - are devices for regulating the brightness of up to 4 monochrome LEDs or LED RGB[W] strips and spotlights.

They are available in two versions:
- GW90854 dimmer actuator for CVD LEDs (direct voltage control) for regulating monochrome or RGB[W] strips
- GW90855 dimmer actuator for CCD LEDs (direct current control) for regulating power LEDs (RGB[W] or monochrome).

The devices are identical from a functional viewpoint, apart from the fact that the dimmer actuator for CCD LEDs GW90855 offers the possibility to set - via a parameter - the drive current of the LED output (monochrome or for RGBW channels).

2 Application

The Easy dimmer actuators for LEDs allow you to regulate the brightness of strips of RGB or monochrome LEDs, whilst at the same time guaranteeing the usual domotic functions of the KNX actuators.
The Easy dimmer actuators for LEDs are powered from the BUS line and have 4 two-colour front LEDs for indicating the status of the outputs, 4 front command button keys for testing the outputs, 1 red LED for signalling any faults, 1 relay contact for controlling the network voltage of the LED auxiliary power supply, and 4 independent output channels.
The dimmer actuator is assembled on a DIN rail, or in electric boards or junction boxes.

The dimmer actuator is configured with the ETS software, to perform the following functions:

- **ON/OFF switching** (*)
  The dimmer actuator activates the corresponding channel with the last brightness value stored, or deactivates (0%) the channel, when it receives ON/OFF commands sent - for instance – by a contact interface or a push-button panel configured in cyclic ON/OFF switching mode or edge management mode.
- **RGB[W] relative brightness regulation** (*)
  Used to increase or decrease the brightness value of the channel, on the basis of the commands received from the other KNX devices. When a stop command is received, the regulation is stopped and the current brightness value is maintained. If the load type is RGBW (or RGB + 1 single-colour), you can regulate the colour brilliancy.
- **RGB[W] absolute brightness regulation** (*)
  Used to set the absolute brightness percentage value defined by the command received. The brightness value is reached via a ramp. If the load type is RGBW (or RGB + 1 single-colour), you can regulate the colour brilliancy.
- **Scenes** (*)
  The dimmer actuator can memorise and manage up to 8 scenes. The brightness values can be stored and called up via Easy devices or conventional push-buttons connected to the BUS by means of a contact interface. You can create up to 8 scenes, with freely set brightness values. When it receives the command, the dimmer brings the load to the previously set brightness value.
- **Colour sequences and light sequences**
  If the load type is RGBW (or RGB + 1 monochrome), 5 pre-configured colour sequences can be managed (monochrome strobe, monochrome blinking, colour brilliancy scale, rainbow, rainbow strobe). If the load type is monochrome, it is possible to manage 2 different pre-configured light sequences (strobe and blinking) for each channel.
- **Priority command (Forcing)** (*)
  The dimmer actuator activates the corresponding channel with the last brightness value stored, or deactivates (0%) the channel, depending on the command (ON or OFF) transmitted by the device that sends the priority command. The dimmer ignores any other commands received (including those from the front push-button) until it receives a command to annul the forcing. If no other commands are received, at the end of the forcing the actuator returns to the status it had prior to forcing activation. Otherwise, it will adopt the status corresponding to the last command received.
- **Timed switching (stair lights)** (*)
  The dimmer actuator activates the corresponding channel with the last brightness value stored, for the time defined by the Activation Time parameter, and deactivates it (brightness value 0%) when the time expires. This is the setting for the stair lights, for instance. If the dimmer actuator receives a new ON command with timing during the activation time, the time count starts again from the beginning. If an OFF command is sent before the time has elapsed, the light will be switched off. With the Pre-warning Time parameter, you can enable the switch-off pre-warning: in this case, the device decreases the brightness value for the set time prior to switch-off. You can therefore send a new timed command before the light switches off completely.

(*) This function can be configured for each single channel, or for all 4 channels simultaneously

2.1 Association limits

Maximum number of group addresses: 254
Maximum number of associations: 254

This means that up to 254 group addresses can be defined, and up to 254 associations can be made (communication objects and group addresses).

3 *"Settings"* menu

The ***Settings*** menu contains the parameters used to enable the different functions implemented by the device and to set the main operating parameters. The parameters in the "Settings" menu change according to the "**Type of connected load**". Below, you can see the three menus that ETS displays on the basis of how this parameter is set, after specifying "ETS mode" for the **Programming mode** parameter.

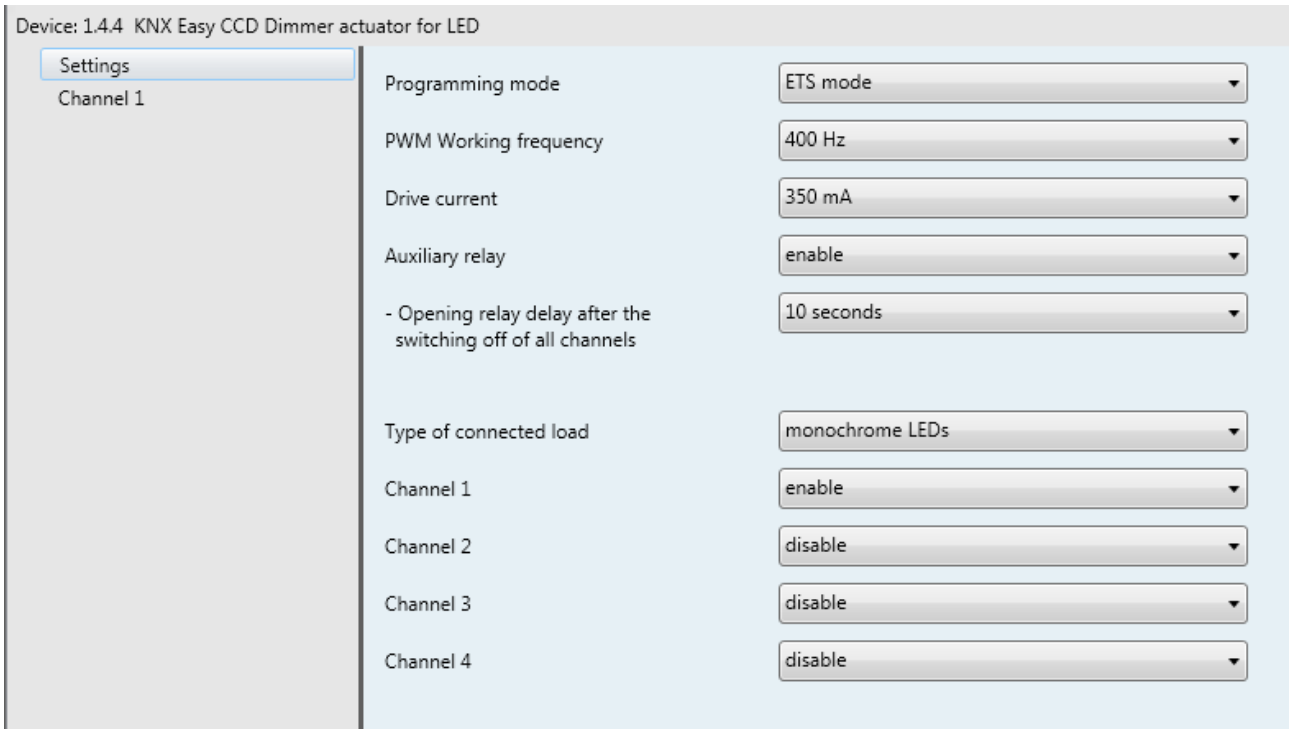

Fig. 3.1: "Settings" menu with a monochrome LED load connected.

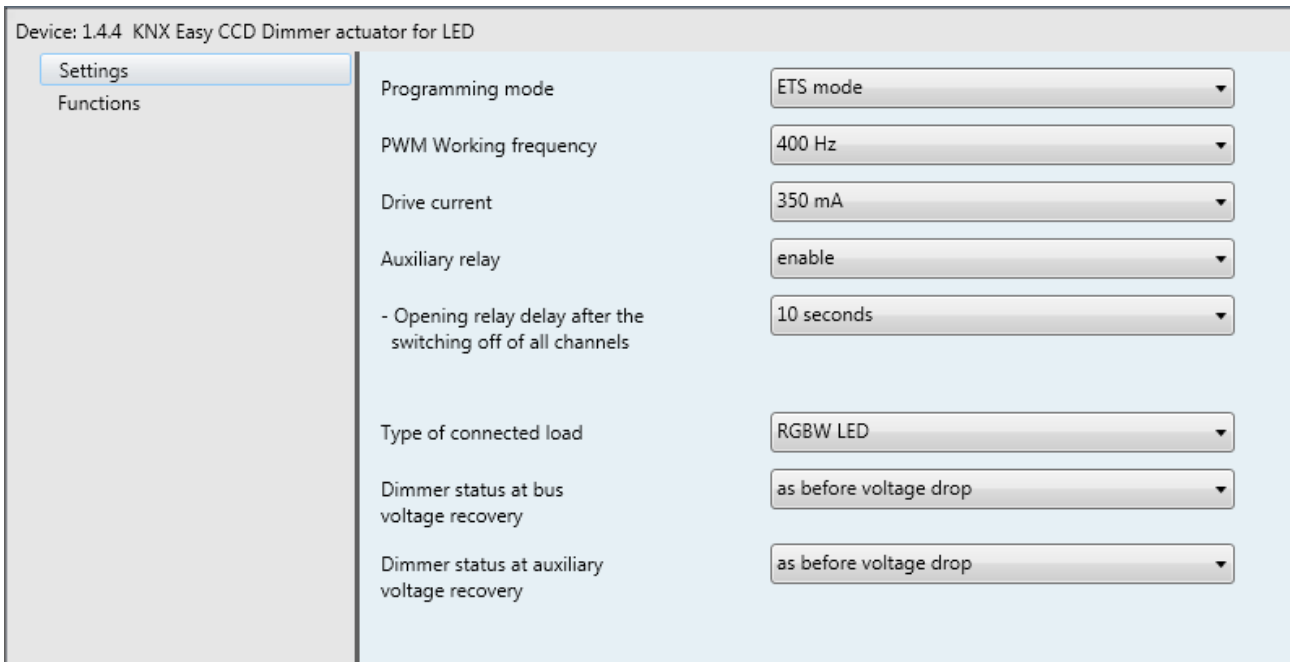

Fig. 3.2: "Settings" menu with an RGBW LED load connected.

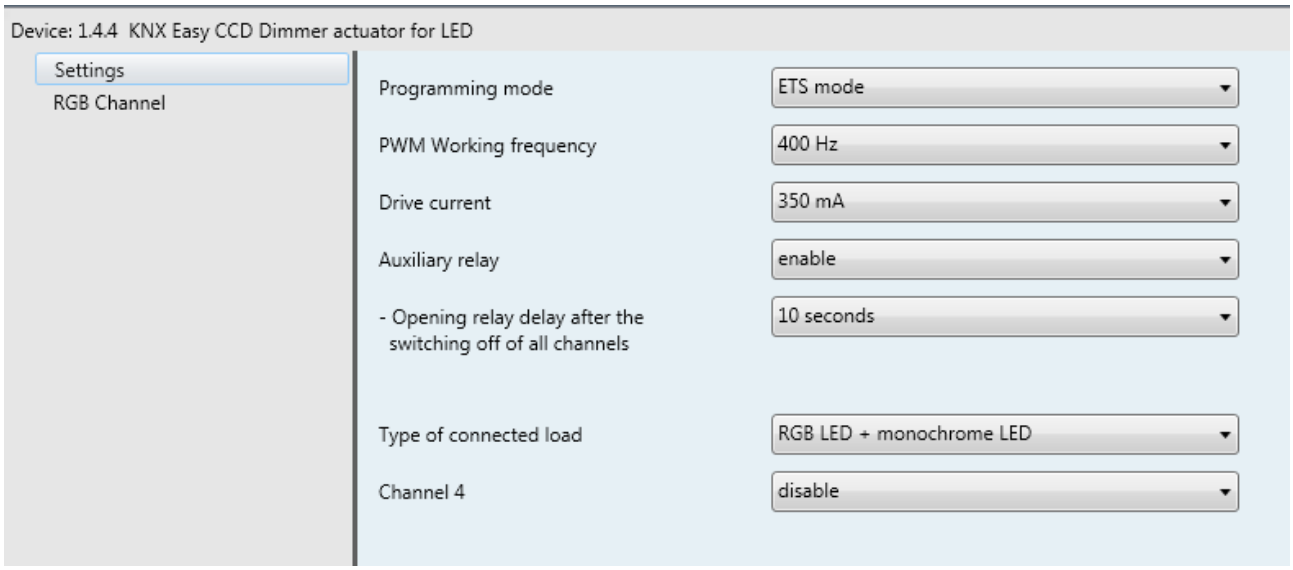

Fig. 3.3: “Settings” menu with an RGB LED + monochrome LED load connected.

3.1 Parameters

3.1.1 Programming mode

The database of the device for configuration with ETS software allows you to configure the main operating parameters, and also gives you the possibility to reconfigure the device with the factory parameters for E-mode operation. The parameter used to differentiate the two behaviours is **“Programming mode”**. The values that can be set are:

- ***Easy mode*** ***(default value)***
- ***ETS mode***

By selecting **Easy mode**, no additional device configuration parameters are displayed as this value is used to restore the device to its factory settings for correct operation in easy mode (E-Mode).
ETS mode allows the visualisation and configuration of the main device operating parameters (S-Mode).

3.1.2 PWM working frequency

The **“PWM working frequency”** parameter is used to select the PWM modulation frequency for driving the LEDs. The values that can be set are:

- ***200 Hz***
- ***260 Hz***
- ***400 Hz - (default value)***

3.1.3 Drive current

The GW90855 device is designed to power LEDs with a direct current (in fact, this parameter is only visible for this type of device for commanding CCD LEDs). The **"Drive current"** parameter is used to select the drive current for channel X. The values that can be set are:

- ***from 300mA to 700mA in steps of 50mA - (default value 350mA)***

3.1.4 Auxiliary relay

The device is equipped with a relay that can be used to interrupt the phase of the power supply connected to the input terminals of the Easy LED dimmer; when all the channels are switched off, the dimmer opens the relay and interrupts the power supply phase in order to maintain its functions as far as possible. The **"Auxiliary relay"** parameter enables the use of this local relay.
The values that can be set are:

- ***disable***
  The relay output contact is always open.
- ***enable - (default value)***
  The relay closes when even just one of the channels has to be activated, and it opens when all the channels are OFF. Even if it is enabled, this function is not implemented when a light sequence or a colour sequence is being reproduced.

3.1.5 Opening relay delay after the switching off of all channels

It is possible to delay the opening of the relay (after the deactivation of all the channels) so that the process to regulate one channel or more is not delayed by any possible relay disconnection due to the deactivation - even just for a moment - of all the channels.
The **"Opening relay delay after the switching off of all channels"** parameter is used to activate and set the duration of the relay opening delay in relation to the moment when all the channels are deactivated. The values that can be set are:

- ***from 0 (no delay) to 255 seconds, in steps of 1 (default value 10)***

3.1.6 Type of connected load

The device is equipped with 4 output contacts with which it can drive up to 4 monochrome LEDs independently, or control an RGBW channel. The **"Type of connected load"** parameter is used to define the type of load connected to the dimmer. The values that can be set are:

- ***monochrome LEDs - (default value)***
  The 4 channels are configured to work entirely independently of each other.
- ***RGBW LED***
  The 4 channels are configured to control loads containing the three colour components RGB, plus the component W. With this configuration, the three RGB colour components can be commanded independently while the W (White) component is controlled directly by the control logic of the device and is activated in place of the colour components when the value of the latter is roughly the same and the resulting colour is in the grey scale (thereby obtaining a "purer" white effect).
- ***RGB LED + monochrome LED***
  Three channels are configured to control loads containing the three RGB colour components, with one (Channel 4) set aside for free use (regardless of the operating logic of the RGB channel).

Select the value "Monochrome LED" to visualise the parameters for enabling and configuring the 4 independent channels separately.
Chapter 6 describes the configuration parameters of a general channel "x" for commanding a monochrome LED.
In the following chapters, a distinction will be made between the configuration parameters for a general monochrome channel "x" and those for the RGB channel.

If the load type is **LED RGBW**, the following parameters will appear in the Settings menu:

3.1.7 Dimmer status at BUS voltage recovery

In the case of BUS voltage failure, the dimmer maintains the output status.
If the load type is RGBW LED, it is possible to set the status of the RGBW channel following BUS voltage recovery using the **"Dimmer status at BUS voltage recovery"** parameter, which may assume the following values:

- ***set fixed value***
  Selecting "**set fixed value"**displays the **"Red channel brightness on bus voltage recovery"**, **"Green channel brightness on bus voltage recovery"** and **"Blue channel brightness on bus voltage recovery"** parameters, via which you can set the required brightness values for each colour.
- ***minimum dimming threshold value***
  When the BUS voltage is reset, the dimmer restores the minimum regulation threshold value for the outputs.
- ***maximum dimming threshold value***
  When the BUS voltage is reset, the dimmer restores the maximum regulation threshold value for the outputs.
- ***as before voltage drop - (default value)***
  When the BUS voltage is reset, the dimmer restores the outputs to the value in place prior to the voltage drop.

3.1.8 Red/green/blue channel brightness on bus voltage recovery

Setting the "**Dimmer status at bus voltage recovery**" parameter at "**Set fixed value**" displays these parameters, via which you can specify the required brightness on the LED outputs when the BUS voltage is restored after a drop. The values that can be set for these parameters are:

- ***from 0 (default value) to 255, in steps of 1***

3.1.9 Dimmer status at auxiliary voltage recovery

With an auxiliary voltage failure, the dimmer will switch to the OFF status (brightness value 0).
If the load type is RGBW LED, the behaviour of the RGBW channel when the auxiliary voltage is reset (if BUS voltage was present at the time of the drop) is determined by the **"Dimmer status at auxiliary voltage recovery"** parameter, which may assume the following values:

- ***set fixed value***
  Selecting "**set fixed value"**displays the **"Red channel brightness on auxiliary voltage recovery"**, **"Green channel brightness on auxiliary voltage recovery"** and **"Blue channel brightness on auxiliary voltage recovery"** parameters, via which you can set the required brightness values for each colour.
- ***minimum dimming threshold value***
  When the auxiliary voltage is reset, the dimmer restores the minimum regulation threshold value for the outputs.
- ***maximum dimming threshold value***
  When the auxiliary voltage is reset, the dimmer restores the maximum regulation threshold value for the outputs.
- ***as before voltage drop***
  In this case, the dimmer returns to the same conditions that were present at the time of the voltage drop, ignoring all the commands received while there was no network voltage.
- ***follows last command received - (default value)***
  If **"follows last command received"** is selected, the dimmer continues processing the commands while the auxiliary voltage is absent (as if the network were present), respecting the relative priorities. When the auxiliary voltage is reset, the dimmer takes the value determined by the last command received and applies it to the output.

3.1.10 Red/green/blue channel brightness on auxiliary voltage recovery

Setting the "**Dimmer status at auxiliary voltage recovery**" parameter at "**Set fixed value**" displays these parameters, via which you can specify the required brightness on the LED outputs when the auxiliary voltage is restored after a drop. The values that can be set for these parameters are:

- ***from 0 (default value) to 255, in steps of 1***

The behaviour when the auxiliary voltage is reset is not respected if the power supply failed while an overheating alarm was in progress (e.g. if the user has disconnected the power supply in order to speed up the cooling process).

3.1.11 Channel X

If the selected load is monochrome LED, the **"Channel 1"**, **"Channel 2"**, **"Channel 3"** and **"Channel 4"** parameters allow you to view and configure all the operating parameters of the relative channels grouped together in the **Channel 1 settings**, **Channel 2 settings**, **Channel 3 settings** and **Channel 4 settings** menus. The values that can be set for these parameters are:

- ***disable - (default value)***
- ***enable***

The **"Channel 4"** parameter is visible even if the selected load is RGB LED + monochrome LED.

The functions that can be configured for each channel are described in ch.6.

4 *"Functions"* menu

If the load type is RGBW LED, the **Functions** menu appears. This contains all the parameters and objects for controlling the RGB colour components. The white colour component (W) is autonomously managed by the device, and is activated in place of the three colour components when the latter have almost the same value and the resulting colour is in the grey scale (thereby obtaining a "purer" white effect).
The basic structure of the menu is as follows:

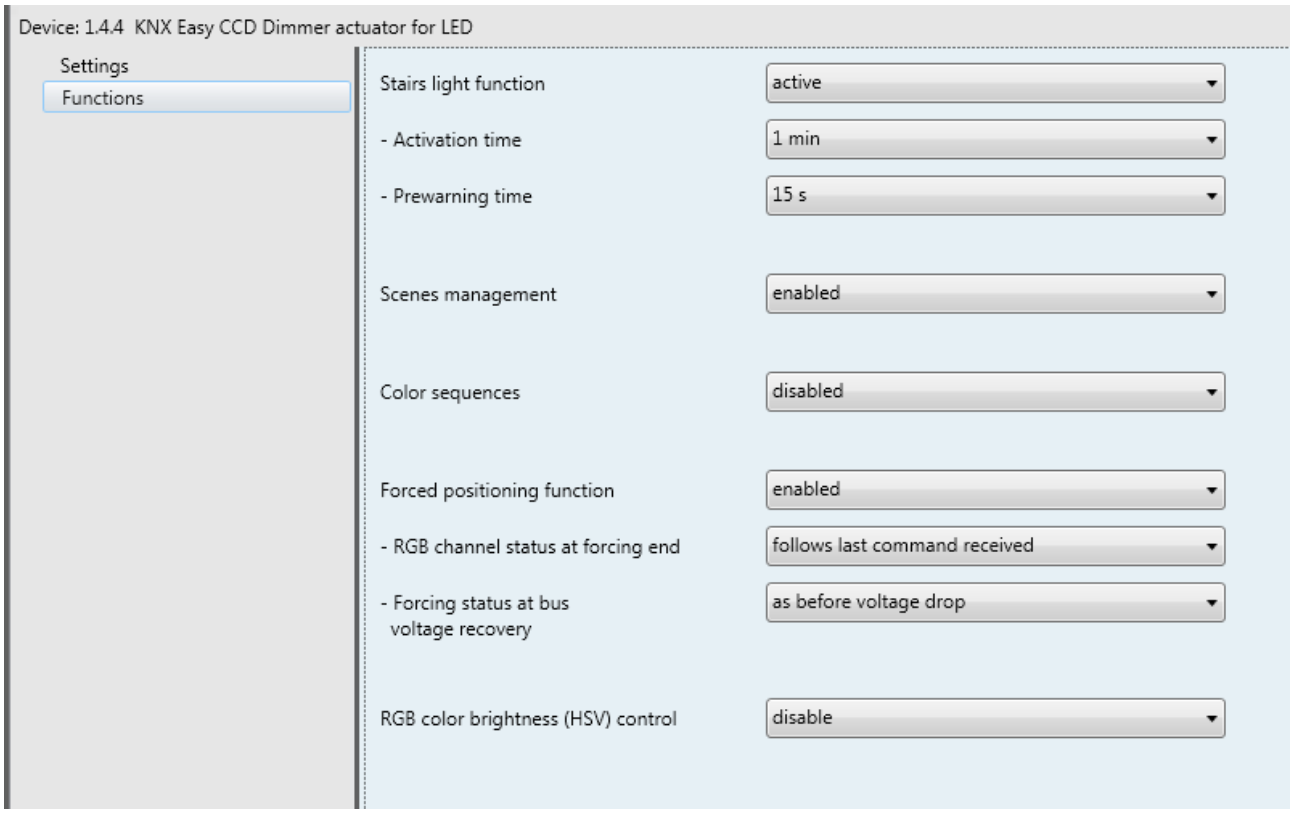

Fig. 4.1: "Functions" menu with an RGBW LED load connected.

Each of the three RGB colour components can be activated/deactivated via the relative ***RGB - Red switching***, ***RGB - Green switching*** and ***RGB - Blue switching*** (Data Point Type: 1.001 DPT_Switch) communication objects; when the ON value is received (1), the dimmer brings the component associated with the communication object to a brightness value equal to the last switch-on value (memory). When switched on for the first time, the last ON status value may not be known: the value is initialised at 255. The last switch-on value to be used is always the last brightness value of the colour component resulting from any command prior to switch-off. In the case of a BUS voltage failure, the value is saved in the non-volatile memory.
When the OFF value is received (0), the dimmer brings the component associated with the communication object to 0.

The brightness value in the ON status and the OFF (0) status is reached via a ramp. The ramp regulation speed 0 - 255 for on/off commands is fixed, and equal to 2 seconds.

Figure 4.2 shows an example.

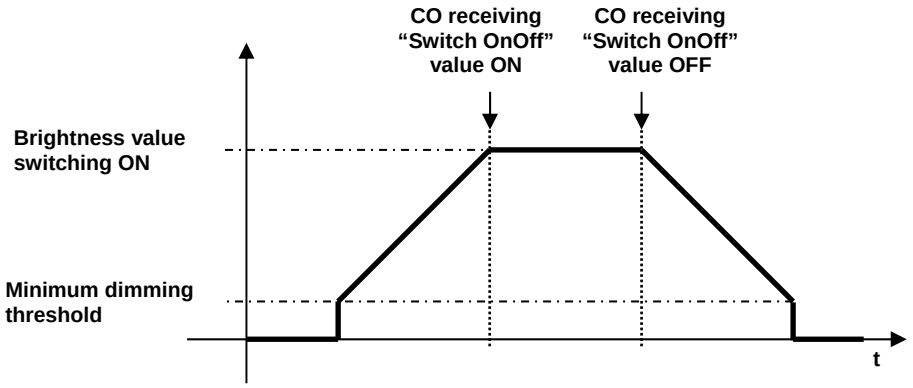

Fig. 4.2: Reaching of the brightness value in ON and OFF switching via a ramp.

There are no switch-on or switch-off delays for the on/off commands.

The relative brightness dimming of each of the three RGB colour components is performed via the ***RGB - Red brightness dimming***, ***RGB - Green brightness dimming*** and ***RGB - Blue brightness dimming*** (Data Point Type: 3.007 DPT_Control_Dimming) communication objects, which allow the brightness to be increased or decreased according to the dimming step value and direction codified in the command. Receiving a brightness dimming stop command during the dimming process immediately stops the dimming and maintains the brightness value that was reached.

The brightness regulation is limited by two fixed threshold values:

- Maximum dimming threshold → 255
- Minimum dimming threshold → 0

The regulation process is limited to the set threshold values: this means that if the calculated increasing dimming value exceeds the maximum dimming threshold value, the dimming is stopped and the final brightness value that is set will be the value of the maximum dimming threshold. Similarly, if the calculated decreasing dimming value is lower than the minimum dimming threshold value, the dimming is stopped and the final brightness value that is set will be the value of the minimum dimming threshold.

The dimming speed is determined by 2 time values that define the time interval for switching from 0% to 128% and for switching from 128% to 255%. The two values are fixed, and are both equal to 2 seconds.

Figure 4.3 shows an example.

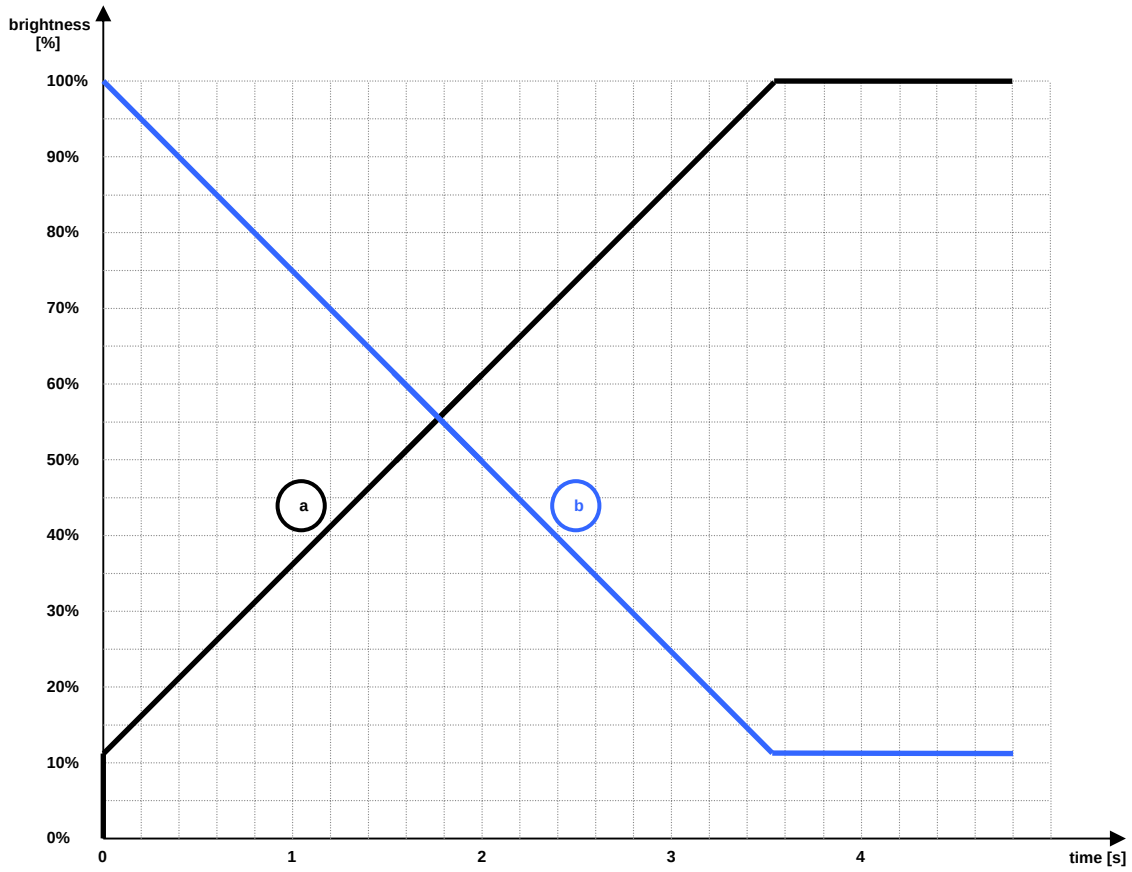

Fig. 4.3: Brightness dimming

a) The black line shows the behaviour of the device when an “increase to 100%” command is received via the *RGB - Brightness dimming* object, with initial brightness 0% (OFF). The minimum threshold (0%), starting from a brightness value of 0%, is always reached with a jump to value.
b) The blue line shows the behaviour of the device when a “decrease to 100%” command is received on the *RGB - Brightness dimming* object, with initial brightness 100%. Once the minimum threshold (0%) has been reached, the value 0% is always reached with a jump to value.

Reaching the minimum threshold starting from brightness value of 0% is always implemented with a jump.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).

The absolute brightness dimming of each of the three RGB colour components is performed via the ***RGB - Red command value***, ***RGB - Green command value*** and ***RGB - Blue command value*** (Data Point Type: 5.001 DPT_Scaling) communication objects, allowing you to set an absolute brightness value defined by the value of the command received.
Starting from the OFF condition, if the brightness value received (>0) is lower than the minimum dimming threshold value (0%), the brightness value to be set corresponds to the minimum dimming threshold value (0%). If a value of 0 is received, the colour component is switched off.
The brightness value in the ON status and the OFF (0) status is reached via a ramp. The ramp regulation speed 0 - 255 for absolute brightness dimming commands is fixed, and equal to 2 seconds.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).
If the load type is RGBW or RGB, you can control the three colours via a single communication object - ***RGB - RGB components command value*** (Data Point Type: 232.600 DPT_Colour_RGB). The behaviour set for the absolute brightness dimming of the individual colours is also applied to the commands received via the above-mentioned object.

4.1 Parameters

4.1.1 Stairs light function

The **"Stairs light function"** parameter is used to activate the timing (stair light) function that automatically switches the RGBW colours off after a set period of time from when the timed activation command is received. The operating parameters and communication objects are visualised and can be configured. The values that can be set are:

- ***disabled - (default value)***
- ***active***

selecting **active** displays the ***RGB - Timed switching*** (Data Point Type: 1.010 DPT_Start) communication object and the **"Activation time"** and **"Pre-warning time"** parameters.
The ***RGB - Timed switching*** communication object is used to receive the timing activation start (value "1") and timing stop (value "0") commands from the BUS. When the START (1) value is received, the dimmer brings each colour to the brightness value equal to the last switch-on value (memory), and activates the timing count (whose value is defined by the **"Activation time"** parameter); at the end of the count, the device autonomously brings the brightness of each colour to 0%.
When switched on for the first time, the last ON status value may not be known: for all the colours, the value is initialised at 100%. The last switch-on value to be used is always the last brightness value of the colour resulting from any command prior to switch-off. In the case of a BUS voltage failure, the value is saved in the non-volatile memory.
If the device receives a new start message while timing is in progress, the activation time count is reinitialised (reset).
When the STOP value (0) is received with timing active, the actuator deactivates all the RGBW colours, annulling the timing operation.
The brightness value in the ON status and the OFF (0%) status is reached via a ramp. The ramp regulation speed 0% - 100% for on/off commands is fixed, and equal to 2 seconds.
There are no delays on timed activation.

4.1.2 Activation time

The **"Activation time"** parameter is used to set the stairs light function activation time. The values that can be set are:

- ***1 s***
- ***2 s***
- ***3 s***
- ***5 s***
- ***10 s***
- ***15 s***
- ***20 s***
- ***30 s***
- ***45 s***
- ***1 min*** ***(default value)***
- ***1 min 15 s***
- ***1 min 30 s***
- ***2 min***
- ***2 min 30 s***
- ***3 min***
- ***5 min***
- ***15 min***
- ***20 min***
- ***30 min***
- ***1h***
- ***2h***
- ***3h***
- ***5h***

- ***12h***
- ***24h***

4.1.3 Prewarning time

The **Prewarning time** parameter can be used to enable signalling when the channel will soon be switched off by automatically reducing the brightness with a dimming ramp between the switch-on brightness value and the minimum dimming threshold, for the defined period of time. The parameter may assume the following values:

- ***no prewarning - (default value)***
- ***15 s***
- ***30 s***
- ***1 min.***

Figure 4.4 shows an operating example of pre-warning time.

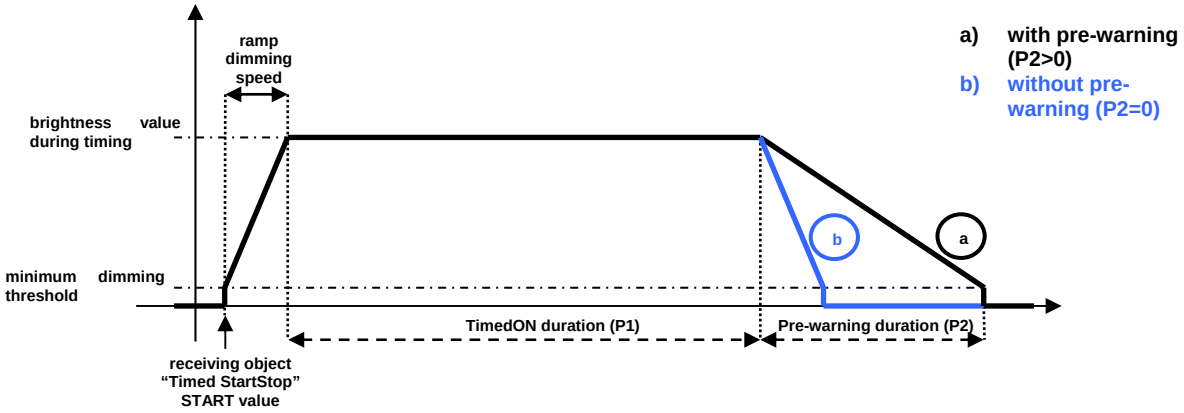

Fig. 4.4: Switch-off pre-warning function

If a relative or absolute dimming command for the single colours or the brilliancy of the RGB channel is received on the ***RGB - Red brightness dimming***, ***RGB - Green brightness dimming*** and ***RGB - Blue brightness dimming*** or the ***RGB - Red command value***, ***RGB - Green command value*** and ***RGB - Blue command value*** or the ***RGB - General brilliancy command value*** and ***RGB - General brilliancy dimming*** objects while timing is in progress, the command is executed and the active timing operation continues without any reset or extension of the activation time; only the colour brightness value is modified.
The timing commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).
This function has the same priority as the On/Off switching of the RGB colour and the single colours; this means that when one of the two functions is activated while the other is already active, the latter is terminated and the former is executed. In particular, an on/off switching command on a specific colour terminates the stairs light function for that colour and also for the others.

4.1.4 Scenes management

The **"Scenes management"** parameter is used to activate the Scenes function.
The device can store and execute one "scene" type command or more, associating a precise brightness value for each colour with every scene. The values that can be set are:

- ***disabled - (default value)***
- ***enabled***

selecting the value **enabled** displays the ***RGB - Scene*** communication object (Data Point Type: 18.001 DPT_SceneControl) that allows the scene execution and storage commands to be received from the BUS.

The scene function is used to send two possible commands to the device:

- scene execution (i.e. a command to bring the colours to a specific and previously memorised brightness value)
- scene storage (i.e. a command to memorise the current brightness of each colour in the moment when the command is received).

The execution and storage commands are received on the ***RGB - Scene*** object.
The maximum number of scenes that can be managed is 8.
The numerical value for identifying and therefore executing/storing the i-th scene ranges from 0 to 7.
The initial brightness value for all 3 colours for all 8 scenes is 100%.
The brightness value for executing a scene is reached via a ramp. The ramp dimming speed 0% - 100% is fixed and equal to 2 seconds.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).

4.1.5 Colour sequences

You can manage various pre-configured colour sequences which, by dynamically modifying the contribution of the single colours, create plays of light.
The **"Colour sequences"** parameter is used to enable various communication objects for activating the colour sequences via a BUS telegram. The values that can be set are:

- ***disabled - (default value)***
- ***enabled***

Selecting **enabled** displays the ***RGB - Colour sequence 1***, ***RGB - Colour sequence 2***, ***RGB - Colour sequence 3***, ***RGB - Colour sequence 4*** and ***RGB - Colour sequence 5*** communication objects (Data Point Type: 1.010 DPT_Start), the ***RGB - Colour sequence status 1***, ***RGB - Colour sequence status 2***, ***RGB - Colour sequence status 3***, ***RGB - Colour sequence status 4*** and ***RGB - Colour sequence status 5*** communication objects (Data Point Type: 1.001 DPT_Switch), and the **"Sequence 1 strobe effect period [0.1 s]"**, **"Sequence 2 blinking activation time (seconds)**, **"Sequence 2 blinking deactivation time (seconds)**, **"Colour sequence 3 playing speed [s]"**, **"Colour sequence 4 playing speed [s]"**, **"Colour sequence 5 playing speed [s]"** and **"Colour sequence 5 strobe effect period [0.1 s]"** parameters.

When the ON value (1) is received on the ***RGB - Colour sequence 1***, ***RGB - Colour sequence 2***, ***RGB - Colour sequence 3***, ***RGB - Colour sequence 4*** and ***RGB - Colour sequence 5*** communication object, the dimmer activates the playing of the sequence associated with that communication object. If a new ON message is received while playing is in progress, it has no effect.
When the OFF value (0) is received while playing is in progress, the actuator ends the playing of the sequence and brings each RGB colour to the condition it was in prior to the sequence activation.
By activating a colour sequence different from the one being played, the new sequence is launched while the previously active one is deactivated. This means that only one sequence can be active at one time and, when it is deactivated, the dimmer sets the colour that was active prior to the sequence activation, without necessarily having to deactivate the colour sequences previously activated.
When activated, each sequence is repeated cyclically and does not end automatically.

The device signals the colour sequence playing activation status via the associated communication object - ***RGB - Colour sequence 1 status feedback***, ***RGB - Colour sequence 2 status feedback***, ***RGB - Colour sequence 3 status feedback***, ***RGB - Colour sequence 4 status feedback*** and ***RGB - Colour sequence 5 status feedback***. The communication object is sent on request, when the BUS voltage is restored, and spontaneously. It is sent spontaneously when the status passes from ON to OFF or vice versa.

The meanings of the various parameters envisaged in the various colour sequences is explained below.

4.1.6 Sequence 1: monochrome strobe

The **"Sequence strobe time [0.1 s]"** parameter is used to personalise the length of the sequence 1 strobe effect - i.e. the time between one "light flash" and the next. The values that can be set are:

- ***from 1 to 255 in steps of 1 (default value 5)***

The sequence colour is the one set in the moment when the sequence was activated (if the RGB components are all at 0 (black), the sequence colour is the last colour active prior to switch-off). The sequence is repeated cyclically until it is deactivated. When the sequence is deactivated, the RGB colour active prior to sequence activation is set.

4.1.7 Sequence 2: monochrome blinking

The **"Colour sequence 2 blinking activation time [s]"** parameter is used to set the colour activation period for sequence 2. The values that can be set are:

- ***from 0 to 59 in steps of 1 (default value 5)***

The **"Colour sequence 2 blinking deactivation time [s]"** parameter is used to set the deactivation period for the colour selected for sequence 2. The values that can be set are:

- ***from 0 to 59 in steps of 1 (default value 5)***

The sequence colour is the one set in the moment when the sequence was activated (if the RGB components are all at 0% (black), the sequence colour is the last colour active prior to switch-off). The sequence is repeated cyclically until it is deactivated. When the sequence is deactivated, the RGB colour active prior to sequence activation is set.

4.1.8 Sequence 3: colour brilliancy scale

The **"Colour sequence 3 playing speed [s]"** parameter is used to personalise the playing speed of sequence 3, setting the duration; you can slow down or speed up the playing speed of the entire colour brightness scale. The values that can be set are:

- ***from 1 to 255 in steps of 1 (default value 30)***

The sequence colour is the one set in the moment when the sequence was activated. The sequence is repeated cyclically until it is deactivated. When the sequence is deactivated, the RGB colour active prior to sequence activation is set.

4.1.9 Sequence 4: rainbow

The **"Colour sequence 4 playing speed [s]"** parameter is used to personalise the playing speed of the entire colour range of sequence 4; you can slow down or speed up the change from one colour to another. The values that can be set are:

- ***from 1 to 255 in steps of 1 (default value 30)***

The initial colour of the sequence is the one set in the moment when the sequence was activated (if the RGB components all have the same value (saturation =0), the initial colour of the sequence is red). The regulation direction goes from the lightest colour to the darkest one. The sequence is repeated cyclically until it is deactivated. When the sequence is deactivated, the RGB colour active prior to sequence activation is set.

4.1.10 Sequence 5: rainbow strobe

The **"Colour sequence 5 strobe time [0.1 s]"** parameter is used to personalise the length of the sequence 5 strobe effect - i.e. the time between one "light flash" and the next. The values that can be set are:

- ***from 1 to 255 in steps of 1 (default value 5)***

The **"Colour sequence 5 playing speed [s]"** parameter is used to personalise the playing speed of the entire colour range of sequence 5; you can slow down or speed up the change from one colour to another. The values that can be set are:

- ***from 1 to 255 in steps of 1 (default value 30)***

The initial colour of the sequence is the one set in the moment when the sequence was activated (if the RGB components all have the same value (saturation =0), the initial colour of the sequence is red). The regulation direction goes from the lightest colour to the darkest one. The sequence is repeated cyclically until it is deactivated. When the sequence is deactivated, the RGB colour active prior to sequence activation is set.

4.1.11 Forced positioning function

It is possible to enable the function via the **"Forced positioning function"** parameter, which can have the following values:

- ***disabled - (default value)***
- ***enabled***

By selecting **enabled**, the **"RGB channel status at forcing end"** and **"Forcing status on bus voltage recovery"** parameters, and the ***Ch.x - Priority command*** communication object, are made visible.
When a command is received on the ***RGB - Priority command*** object, each colour behaves as described in the following table:

bit 1 c	bit 0 v	Description
0	0	No forcing
0	1	No forcing
1	0	OFF forcing (0%)
1	1	ON forcing (>0%)

When a priority command is received with the ON forcing activation value, the dimmer brings each colour to the brightness value equal to the last switch-on value (memory). When switched on for the first time, the last ON status value may not be known: for all the colours, the value is initialised at 100%. The last switch-on

value to be used is always the last brightness value of the colour resulting from any command prior to switch-off. In the case of a BUS voltage failure, the value is saved in the non-volatile memory.
When a priority command is received with the OFF forcing value, the dimmer brings each colour to the brightness value of 0%.
The brightness value is reached via a ramp. The ramp dimming speed 0% - 100% is fixed and equal to 2 seconds.

4.1.12 RGB channel status at forcing end

When a forcing deactivation command is received, the channels go to the brightness value defined by the **"RGB channel status at forcing end"** parameter. The possible values are:

- ***follows last command received - (default value)***
- ***status prior to forcing***
- ***no change***
- ***maximum dimming threshold value***
- ***minimum dimming threshold value***
- ***set fixed value***

By selecting **follows last command received**, each colour follows the dynamics determined by the last command, as if command execution was initiated at the moment in which the command was actually received. Essentially, the command is executed in the background and is applied to the colour in the moment when forcing ends. This behaviour applies, for example, to timed actuation commands with timing that has a duration that goes beyond the moment of forcing deactivation or to brightness absolute value dimming commands in which the moment of reaching the set brightness is later than the moment of forcing deactivation. If no telegram is received during the forcing activation period, when forcing is deactivated each colour will return to the condition it was in prior to forcing activation.

In the extreme case in which the behaviour **no change** upon forcing deactivation is set and a forcing deactivation command is received while the dimming ramp is in progress for reaching the requested forced value, dimming is stopped and the brightness reached at the moment of receiving the forcing deactivation command is maintained.

Selecting **set fixed value** displays the **"Red channel brightness at forcing ending"**, **"Green channel brightness at forcing ending"** and **"Blue channel brightness at forcing ending"** parameters.

4.1.13 Red/green/blue channel brightness at forcing ending

The possible values for these parameters are:

- ***from 1 to 255 (default value) in steps of 1***

4.1.14 Forcing status at BUS voltage recovery

The **"Forcing status on bus voltage recovery" (="Forced positioning status on bus voltage recovery")** parameter is used to determine the status of the forcing function on BUS voltage recovery. This parameter is useful if the function is active when the BUS voltage drops and you want to have the channel behaviour not be changed after voltage drop. The parameter may assume the following values:

- ***deactivated***
- ***as before voltage drop - (default value)***

Selecting the value **deactivated** (if forcing was active before the BUS voltage drop), when the BUS voltage is restored the forcing function is deactivated and the channels behave as defined in the **"RGB channel status at forcing end"** parameter. If the value set for this last parameter is **follows last command received**, the channel will execute the last command received before the BUS voltage drop that, as a result, must be stored to the non-volatile memory. If the last command received before voltage drop is a timed

activation command, when the BUS voltage is recovered the command will not be executed and the channel will switch to the OFF status (brightness 0%).

If the value **as before voltage drop** is selected (and forcing was activated before BUS voltage drop), when the BUS voltage is recovered the forcing function is reactivated and the channel switches to the status determined by the forcing activation command. If a forcing deactivation command is received and the value of the **"RGB channel status at forcing end"** parameter is **follows last command received**, the channel executes the last command received before the BUS voltage drop, which, as a result, must be stored in the non-volatile memory. If the last command received before the voltage drop was a timed activation command, the command is not executed when the BUS voltage is restored, and the channel switches OFF (brightness 0).

4.1.15 RGB colour brilliancy control (HSV)

If the load type is RGB, you can use the RGB components to obtain the Tone, Saturation and Brilliancy values of the colour (HSV system of cylindrical coordinates). Once these components have been calculated, you can regulate the brilliancy of the RGB colour while maintaining the same Tone and Saturation set. This will in turn modify the values of the RGB components to obtain the optical effect of passing from a lighter colour to a darker one, or vice versa. The ***RGB - General brilliancy regulation*** and ***RGB - General brilliancy command value*** objects are used respectively for the relative and absolute regulation of the RGB colour brilliancy. See the example in fig. 4.5 below.

Fig. 4.5: Regulation of RGB colour brilliancy

The graph shows that by merely altering the brilliancy of the channel, you can obtain a lighter or darker yellow.

The Tone and Saturation values are calculated when at least one of the RGB components changes value via the various BUS commands; they are not updated when telegrams indicating the relative or absolute regulation of the RGB colour are received (even though these commands do actually modify the contributions of the various colours) via the following objects: ***RGB - General brilliancy regulation*** (Data Point Type: 3.007 DPT_Control_Dimming) and ***RGB - General brilliancy command value*** (Data Point Type: 5.001 DPT_Scaling).
Apart from the possibility to regulate the brilliancy of the RGB colour, you can also switch it on and off via the BUS command on the ***RGB - General switching*** communication object (Data Point Type: 1.001 DPT_Switch).

The **"RGB colour brilliancy control (HSV)"** parameter is used to enable the control of the RGB colour brilliancy without having to modify the single components. The values that can be set are:

- ***disable - (default value)***
- ***enable***

Selecting **enabled** displays the ***RGB - General brilliancy regulation***, ***RGB - general brilliancy command value***, ***RGB - General switching***, ***RGB - General status*** and ***RGB - General brilliancy value*** communication objects.

The brightness value of each colour component following an ON command on the ***RGB - General switching*** object with the dimmer OFF is equal to the value assumed prior to switch-off (memory). The brightness value in the ON status and the OFF (0%) status is reached via a ramp. The ramp regulation speed 0% - 100% for on/off commands is fixed, and equal to 2 seconds.

Example:

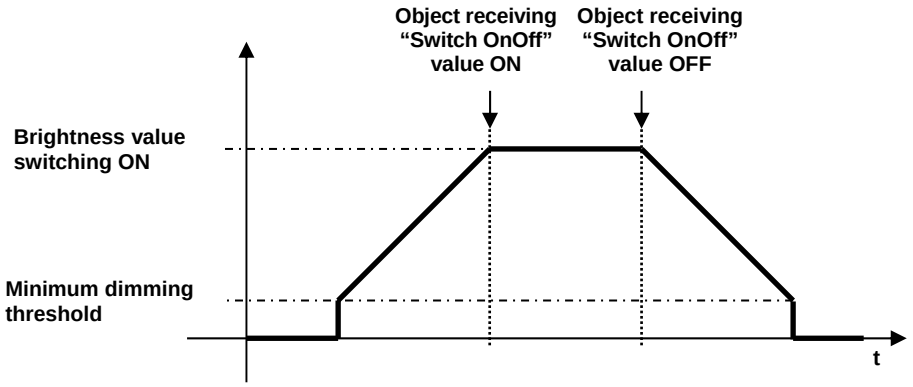

Fig. 4.6: Reaching the RGB colour brightness value from ON/OFF switching command

There are no switch-on or switch-off delays for the on/off commands.

The RGB channel brilliancy dimming takes place by means of the ***RGB - General brilliancy regulation*** communication object, used to increase or decrease the brilliancy according to the value of the regulation step and the direction coded in the command. Receiving a brilliancy dimming stop command during the regulation process immediately stops the dimming and maintains the brilliancy value already reached.

The brightness regulation is limited by two fixed threshold values:
- Maximum dimming threshold → 100%
- Minimum dimming threshold → 0%

The regulation process is limited to the set threshold values: this means that if the calculated increasing dimming value exceeds the maximum dimming threshold value, the dimming is stopped and the final brightness value that is set will be the value of the maximum dimming threshold. Similarly, if the calculated decreasing dimming value is lower than the minimum dimming threshold value, the dimming is stopped and the final brightness value that is set will be the value of the minimum dimming threshold.

The dimming speed is determined based on 2 time values that define the time interval for switching from 0% to 50% and for switching from 50% to 100%. The two values are fixed, and are both equal to 2 seconds.

Example:

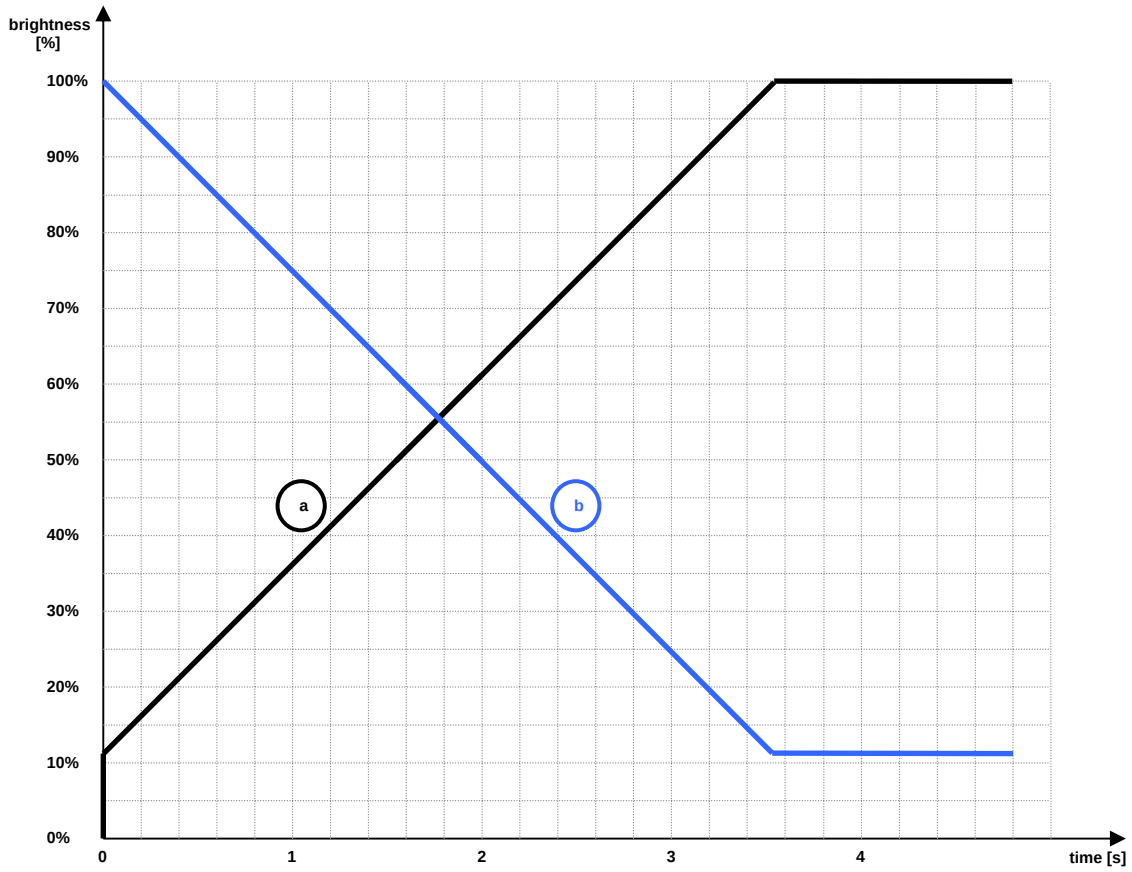

Fig. 4.7: Brightness regulation of the RGB colours when a command is received to increase/decrease to 100%

a) The black line shows the behaviour of one of the 3 RGB colours when an “increase to 100%” command is received via the *RGB - Brightness dimming* object, with initial brilliancy 0% (OFF). The minimum threshold (0%), starting from a brightness value of 0%, is always reached with a jump to value.
b) The blue line shows the behaviour of one of the 3 RGB colours when a “decrease to 100%” command is received via the *RGB - Brightness dimming* object, with initial brilliancy 100%. Once the minimum threshold (0%) has been reached, the value 0% is always reached with a jump to value.

The minimum threshold, starting from a brilliancy value of 0%, is always reached with a jump.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).
The absolute regulation of the RGB channel brilliancy is made via the ***RGB - General brilliancy command value*** communication object, which allows you to set an absolute brilliancy percentage value defined by the value of the command received.
Starting from the 0% condition, if the brilliancy value received (>0%) is lower than the minimum dimming threshold value (0%), the brilliancy value to be set corresponds to the minimum dimming threshold value (0%).
The brilliancy value is reached via a ramp. The ramp regulation speed 0% - 100% for absolute brilliancy dimming commands is fixed, and equal to 2 seconds.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).
The device signals the status of the RGB colour via the ***RGB - General status*** communication object (Data Point Type: 1.001 DPT_Switch). The communication object assumes the value 1 = ON when the brightness

percentage of at least one of the 3 RGB colour components is >0%, and the value 0 = OFF when the brightness percentage values of all 3 colour components is = 0%. The communication object is sent on request, when the BUS voltage is restored, and spontaneously. It is sent spontaneously when the status passes from ON to OFF or vice versa. This means that if the brightness regulation value is changed (but remains higher than 0% - “ON” status), the communication object does not need to be transmitted again on the BUS.
The device signals the current brilliancy percentage value of the RGB colour via the ***RGB - General brilliancy value*** communication object (Data Point Type: 5.001 DPT_Scaling). The communication object is sent on request, when the BUS voltage is restored, and spontaneously.
It is sent spontaneously when the percentage brilliancy value is modified by at least 1% compared with the last value sent. There is the risk that the brilliancy values change quickly during a dimming ramp, and the device is unable to send all the feedback correctly. To overcome this problem, there is a minimum time gap of 2 seconds between the transmission of one brilliancy value and the next (only evaluated if the brilliancy variation is greater than the minimum set value of 1%).

The device signals that status of each colour component via the ***RGB - Red status***, ***RGB - Green status*** and ***RGB - Blue status*** objects (Data Point Type 1.001 DPT_Switch).
Each communication object assumes the value 1 = ON when the brightness percentage value of the associated colour is >0, and the value 0 = OFF when the brightness value is = 0. The communication object is sent on request, when the BUS voltage is restored, and spontaneously. It is sent spontaneously when the status passes from ON to OFF or vice versa. This means that if the brightness dimming is changed, staying higher than 0 (“ON” status), the communication object does not need to be retransmitted on the BUS.

The device signals the current absolute brightness value of the colours via the ***RGB - Red brightness value***, ***RGB - Green brightness value*** and ***RGB - Blue brightness value*** communication objects (Data Point Type 5.001 DPT_Scaling).
Each communication object is sent on request, when the BUS voltage is restored, and spontaneously. It is sent spontaneously when the percentage brightness value is modified by at least 1% compared with the last value sent. There is the risk that the brightness values change quickly during a dimming ramp, and the device is unable to send all the feedback correctly. To overcome this problem, there is a minimum time gap of 2 seconds between the transmission of one brightness value and the next (only evaluated if the brightness variation is greater than the minimum set value of 1%).
In the same way, the brightness value of the three colours (red, green and blue) can be indicated via a single telegram on a single communication object - ***RGB - RGB components brightness value*** (Data Point Type: 232.600 DPT_Colour_RGB). A telegram is sent when even just one of the three colours changes its brightness value by at least 1 unit. The minimum gap between one brightness value feedback and the next is 2 seconds.

The delay on the transmission of status information (brightness values and on/off status) on the BUS is fixed and equal to a value between 1 and 15 seconds (depending on the physical address).

5 *"RGB channel"* menu

If the load type is RGB LED + monochrome LED, the **RGB channel** menu will appear. This contains all the parameters and objects for controlling the RGB colour components, while Channel 4 can be managed autonomously by enabling the relative configuration menu.
The basic structure of the menu is as follows:

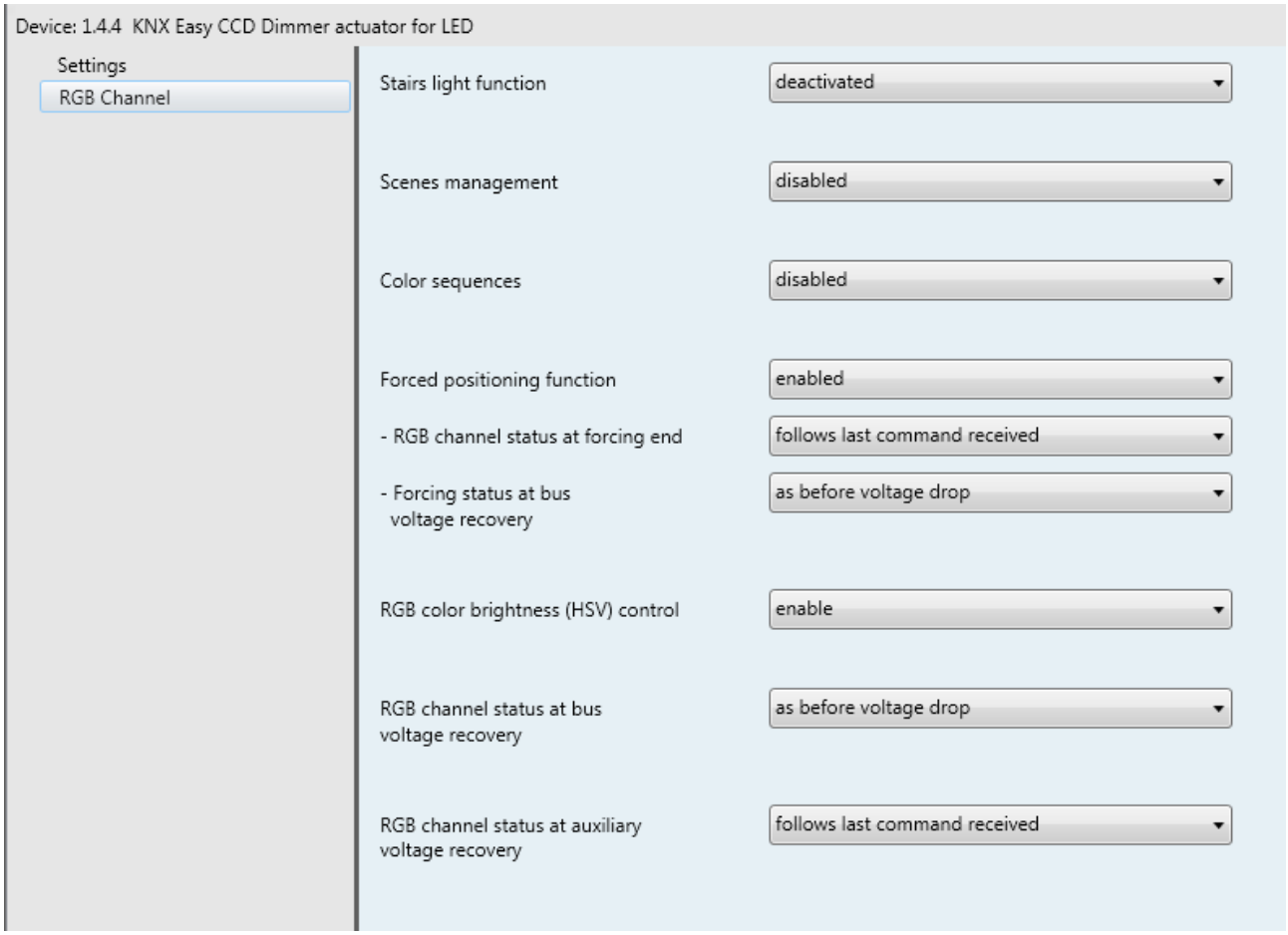

Fig. 5.1: "RGB channel" menu with an RGB LED + monochrome LED load connected.

Each of the three RGB colour components can be activated/deactivated via the relative ***RGB - Red switching***, ***RGB - Green switching*** and ***RGB - Blue switching*** (Data Point Type: 1.001 DPT_Switch) communication objects; when the ON value is received (1), the dimmer brings the component associated with the communication object to a brightness value equal to the last switch-on value (memory). When switched on for the first time, the last ON status value may not be known: the value is initialised at 255. The last switch-on value to be used is always the last brightness value of the colour component resulting from any command prior to switch-off. In the case of a BUS voltage failure, the value is saved in the non-volatile memory.
When the OFF value is received (0), the dimmer brings the component associated with the communication object to 0.

The brightness value in the ON status and the OFF (0) status is reached via a ramp. The ramp regulation speed 0 - 255 for on/off commands is fixed, and equal to 2 seconds.

The following figure shows an example.

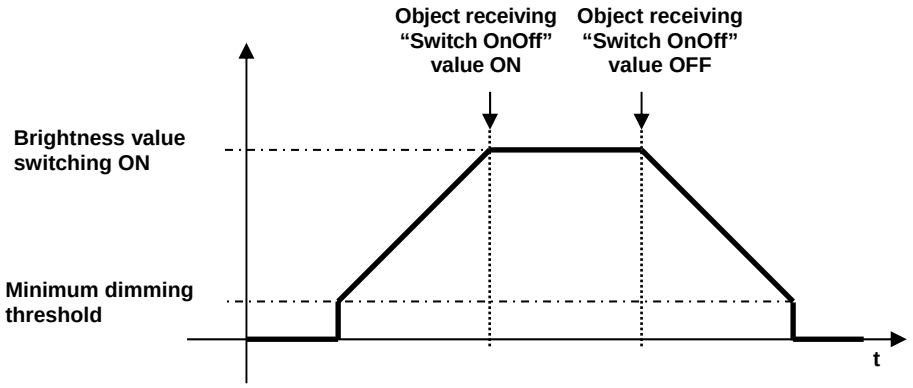

Fig. 5.2: Reaching of the brightness value in ON and OFF switching via a ramp.

There are no switch-on or switch-off delays for the on/off commands.

The relative brightness dimming of each of the three RGB colour components is performed via the ***RGB - Red brightness dimming***, ***RGB - Green brightness dimming*** and ***RGB - Blue brightness dimming*** (Data Point Type: 3.007 DPT_Control_Dimming) communication objects, which allow the brightness to be increased or decreased according to the dimming step value and direction codified in the command. Receiving a brightness dimming stop command during the dimming process immediately stops the dimming and maintains the brightness value that was reached.

The brightness regulation is limited by two fixed threshold values:

- Maximum dimming threshold → 255
- Minimum dimming threshold → 0

The regulation process is limited to the set threshold values: this means that if the calculated increasing dimming value exceeds the maximum dimming threshold value, the dimming is stopped and the final brightness value that is set will be the value of the maximum dimming threshold. Similarly, if the calculated decreasing dimming value is lower than the minimum dimming threshold value, the dimming is stopped and the final brightness value that is set will be the value of the minimum dimming threshold.

The dimming speed is determined by 2 time values that define the time interval for switching from 0% to 128% and for switching from 128% to 255%. The two values are fixed, and are both equal to 2 seconds.

Figure 5.3 shows an example.

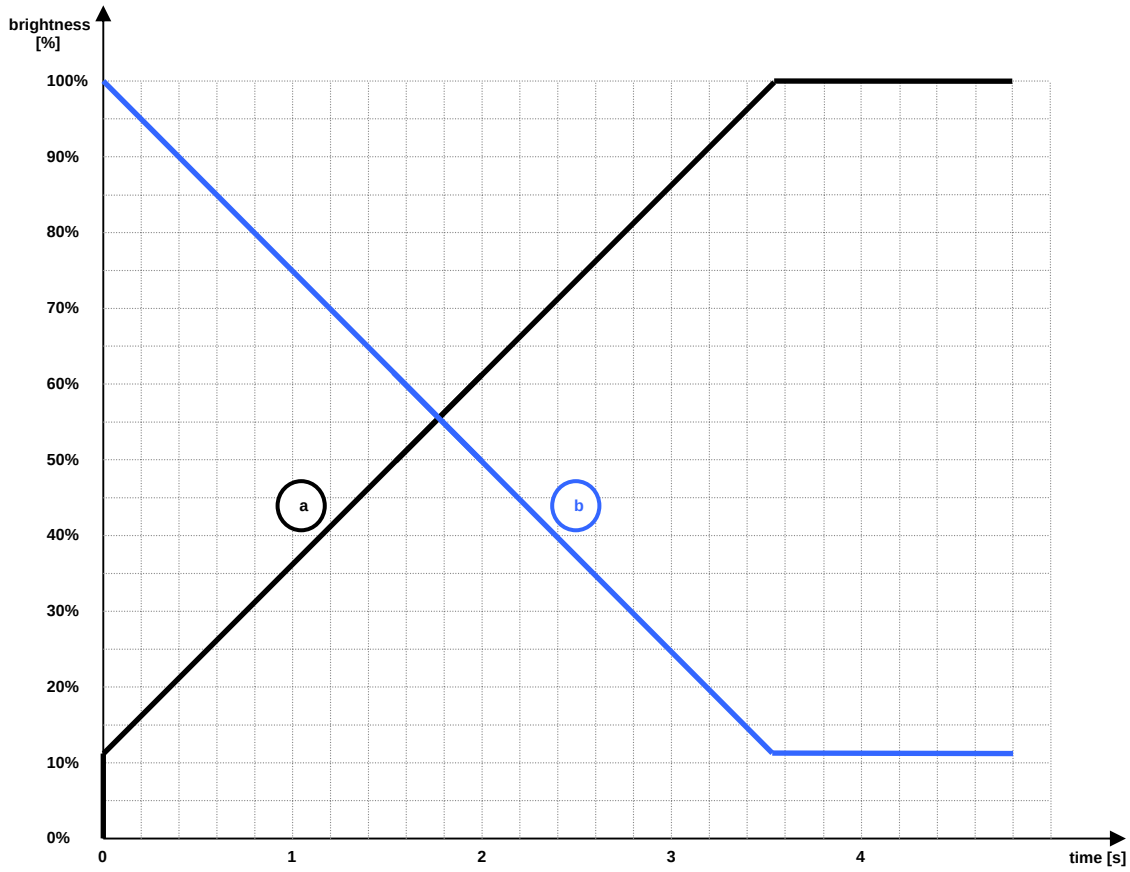

Fig. 5.3: Brightness dimming

a) The black line shows the behaviour of the device when an “increase to 100%” command is received via the *RGB - Brightness dimming* object, with initial brightness 0% (OFF). The minimum threshold (0%), starting from a brightness value of 0%, is always reached with a jump to value.
b) The blue line shows the behaviour of the device when a “decrease to 100%” command is received on the *RGB - Brightness dimming* object, with initial brightness 100%. Once the minimum threshold (0%) has been reached, the value 0% is always reached with a jump to value.

Reaching the minimum threshold starting from brightness value of 0% is always implemented with a jump.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).

The absolute dimming of the brightness of each of the three RGB colour components is obtained via the relative communication objects - ***RGB - Red command value***, ***RGB - Green command value*** and ***RGB - Blue command value*** (Data Point Type: 5.001 DPT_Scaling) communication objects, allowing you to set an absolute brightness value defined by the value of the command received.
Starting from the OFF condition, if the brightness value received (>0) is lower than the minimum dimming threshold value (0%), the brightness value to be set corresponds to the minimum dimming threshold value (0%). If a value of 0 is received, the colour component is switched off.
The brightness value in the ON status and the OFF (0) status is reached via a ramp. The ramp regulation speed 0 - 255 for absolute brightness dimming commands is fixed, and equal to 2 seconds.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).
If the load type is RGBW or RGB, you can control the three colours via a single communication object - ***RGB - RGB components command value*** (Data Point Type: 232.600 DPT_Colour_RGB). The behaviour set for the absolute brightness dimming of the individual colours is also applied to the commands received via the above-mentioned object.

5.1 Parameters

5.1.1 Stairs light function

The **"Stairs light function"** parameter is used to activate the timing (stair light) function that automatically switches the RGB colours off after a set period of time from when the timed activation command is received. The operating parameters and communication objects are visualised and can be configured. The values that can be set are:

- ***disabled - (default value)***
- ***active***

selecting **active** displays the ***RGB - Timed switching*** (Data Point Type: 1.010 DPT_Start) communication object and the **"Activation time"** and **"Pre-warning time"** parameters.
The ***RGB - Timed switching*** communication object is used to receive the timing activation start (value "1") and timing stop (value "0") commands from the BUS. When the START (1) value is received, the dimmer brings each colour to the brightness value equal to the last switch-on value (memory), and activates the timing count (whose value is defined by the **"Activation time"** parameter); at the end of the count, the device autonomously brings the brightness of each colour to 0%.
When switched on for the first time, the last ON status value may not be known: for all the colours, the value is initialised at 100%. The last switch-on value to be used is always the last brightness value of the colour resulting from any command prior to switch-off. In the case of a BUS voltage failure, the value is saved in the non-volatile memory.
If the device receives a new start message while timing is in progress, the activation time count is reinitialised (reset).
When the STOP value (0) is received with timing active, the actuator deactivates all the RGBW colours, annulling the timing operation.
The brightness value in the ON status and the OFF (0%) status is reached via a ramp. The ramp regulation speed 0% - 100% for on/off commands is fixed, and equal to 2 seconds.
There are no delays on timed activation.

5.1.2 Activation time

The **"Activation time"** parameter is used to set the stairs light function activation time. The values that can be set are:

- ***1 s***
- ***2 s***
- ***3 s***
- ***5 s***
- ***10 s***
- ***15 s***
- ***20 s***
- ***30 s***
- ***45 s***
- ***1 min*** ***(default value)***
- ***1 min 15 s***
- ***1 min 30 s***
- ***2 min***
- ***2 min 30 s***
- ***3 min***
- ***5 min***
- ***15 min***
- ***20 min***
- ***30 min***
- ***1h***
- ***2h***
- ***3h***
- ***5h***

- ***12h***
- ***24h***

5.1.3 Prewarning time

The **Prewarning time** parameter can be used to enable signalling when the channel will soon be switched off by automatically reducing the brightness with a dimming ramp between the switch-on brightness value and the minimum dimming threshold, for the defined period of time. The parameter may assume the following values:

- ***no prewarning - (default value)***
- ***15 s***
- ***30 s***
- ***1 min.***

Figure 5.4 shows an operating example of pre-warning time.

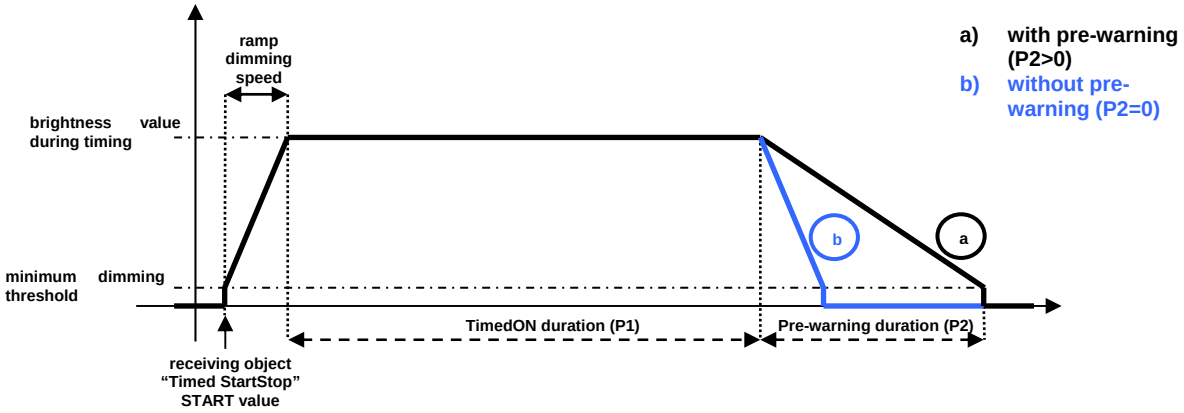

Fig. 5.4: Switch-off pre-warning function

If a relative or absolute dimming command for the single colours or the brilliancy of the RGB channel is received on the ***RGB - Red brightness dimming***, ***RGB - Green brightness dimming*** and ***RGB - Blue brightness dimming*** or the ***RGB - Red command value***, ***RGB - Green command value*** and ***RGB - Blue command value*** or the ***RGB - General brilliancy command value*** and ***RGB - General brilliancy dimming*** objects while timing is in progress, the command is executed and the active timing operation continues without any reset or extension of the activation time; only the colour brightness value is modified.
The timing commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).
This function has the same priority as the On/Off switching of the RGB colour and the single colours; this means that when one of the two functions is activated while the other is already active, the latter is terminated and the former is executed. In particular, an on/off switching command on a specific colour terminates the stairs light function for that colour and also for the others.

5.1.4 Scenes management

The **"Scenes management"** parameter is used to activate the Scenes function.
The device can store and execute one "scene" type command or more, associating a precise brightness value for each colour with every scene. The values that can be set are:

- ***disabled - (default value)***
- ***enabled***

selecting the value **enabled** displays the ***RGB - Scene*** communication object (Data Point Type: 18.001 DPT_SceneControl) that allows the scene execution and storage commands to be received from the BUS.

The scene function is used to send two possible commands to the device:

- scene execution (i.e. a command to bring the colours to a specific and previously memorised brightness value)
- scene storage (i.e. a command to memorise the current brightness of each colour in the moment when the command is received).

The execution and storage commands are received on the ***RGB - Scene*** object.
The maximum number of scenes that can be managed is 8.
The numerical value for identifying and therefore executing/storing the i-th scene ranges from 0 to 7.
The initial brightness value for all 3 colours for all 8 scenes is 100%.
The brightness value for executing a scene is reached via a ramp. The ramp dimming speed 0% - 100% is fixed and equal to 2 seconds.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).

5.1.5 Colour sequences

You can manage various pre-configured colour sequences which, by dynamically modifying the contribution of the single colours, create plays of light.
The **"Colour sequences"** parameter is used to enable various communication objects for activating the colour sequences via a BUS telegram. The values that can be set are:

- ***disabled - (default value)***
- ***enabled***

Selecting **enabled** displays the ***RGB - Colour sequence 1***, ***RGB - Colour sequence 2***, ***RGB - Colour sequence 3***, ***RGB - Colour sequence 4*** and ***RGB - Colour sequence 5*** communication objects (Data Point Type: 1.010 DPT_Start), the ***RGB - Colour sequence status 1***, ***RGB - Colour sequence status 2***, ***RGB - Colour sequence status 3***, ***RGB - Colour sequence status 4*** and ***RGB - Colour sequence status 5*** communication objects (Data Point Type: 1.001 DPT_Switch), and the **"Sequence 1 strobe effect period [0.1 s]"**, **"Sequence 2 blinking activation time (seconds)**, **"Sequence 2 blinking deactivation time (seconds)**, **"Colour sequence 3 playing speed [s]"**, **"Colour sequence 4 playing speed [s]"**, **"Colour sequence 5 playing speed [s]"** and **"Colour sequence 5 strobe effect period [0.1 s]"** parameters.

When the ON value (1) is received on the ***RGB - Colour sequence 1***, ***RGB - Colour sequence 2***, ***RGB - Colour sequence 3***, ***RGB - Colour sequence 4*** and ***RGB - Colour sequence 5*** communication object, the dimmer activates the playing of the sequence associated with that communication object. If a new ON message is received while playing is in progress, it has no effect.
When the OFF value (0) is received while playing is in progress, the actuator ends the playing of the sequence and brings each RGB colour to the condition it was in prior to the sequence activation.
By activating a colour sequence different from the one being played, the new sequence is launched while the previously active one is deactivated. This means that only one sequence can be active at one time and, when it is deactivated, the dimmer sets the colour that was active prior to the sequence activation, without necessarily having to deactivate the colour sequences previously activated.
When activated, each sequence is repeated cyclically and does not end automatically.

The device signals the colour sequence playing activation status via the associated communication object - ***RGB - Colour sequence 1 status feedback***, ***RGB - Colour sequence 2 status feedback***, ***RGB - Colour sequence 3 status feedback***, ***RGB - Colour sequence 4 status feedback*** and ***RGB - Colour sequence 5 status feedback***. The communication object is sent on request, when the BUS voltage is restored, and spontaneously. It is sent spontaneously when the status passes from ON to OFF or vice versa.

The meanings of the various parameters envisaged in the various colour sequences is explained below.

5.1.6 Sequence 1: monochrome strobe

The **"Sequence strobe time [0.1 s]"** parameter is used to personalise the length of the sequence 1 strobe effect - i.e. the time between one "light flash" and the next. The values that can be set are:

- ***from 1 to 255 in steps of 1 (default value 5)***

The sequence colour is the one set in the moment when the sequence was activated (if the RGB components are all at 0 (black), the sequence colour is the last colour active prior to switch-off). The sequence is repeated cyclically until it is deactivated. When the sequence is deactivated, the RGB colour active prior to sequence activation is set.

5.1.7 Sequence 2: monochrome blinking

The **"Colour sequence 2 blinking activation time [s]"** parameter is used to set the colour activation period for sequence 2. The values that can be set are:

- ***from 0 to 59 in steps of 1 (default value 5)***

The **"Colour sequence 2 blinking deactivation time [s]"** parameter is used to set the deactivation period for the colour selected for sequence 2. The values that can be set are:

- ***from 0 to 59 in steps of 1 (default value 5)***

The sequence colour is the one set in the moment when the sequence was activated (if the RGB components are all at 0% (black), the sequence colour is the last colour active prior to switch-off). The sequence is repeated cyclically until it is deactivated. When the sequence is deactivated, the RGB colour active prior to sequence activation is set.

5.1.8 Sequence 3: colour brilliancy scale

The **"Colour sequence 3 playing speed [s]"** parameter is used to personalise the playing speed of sequence 3, setting the duration; you can slow down or speed up the playing speed of the entire colour brightness scale. The values that can be set are:

- ***from 1 to 255 in steps of 1 (default value 30)***

The sequence colour is the one set in the moment when the sequence was activated. The sequence is repeated cyclically until it is deactivated. When the sequence is deactivated, the RGB colour active prior to sequence activation is set.

5.1.9 Sequence 4: rainbow

The **"Colour sequence 4 playing speed [s]"** parameter is used to personalise the playing speed of the entire colour range of sequence 4; you can slow down or speed up the change from one colour to another. The values that can be set are:

- ***from 1 to 255 in steps of 1 (default value 30)***

The initial colour of the sequence is the one set in the moment when the sequence was activated (if the RGB components all have the same value (saturation =0), the initial colour of the sequence is red). The regulation direction goes from the lightest colour to the darkest one. The sequence is repeated cyclically until it is deactivated. When the sequence is deactivated, the RGB colour active prior to sequence activation is set.

5.1.10 Sequence 5: rainbow strobe

The **"Colour sequence 5 strobe time [0.1 s]"** parameter is used to personalise the length of the sequence 5 strobe effect - i.e. the time between one "light flash" and the next. The values that can be set are:

- ***from 1 to 255 in steps of 1 (default value 5)***

The **"Colour sequence 5 playing speed [s]"** parameter is used to personalise the playing speed of the entire colour range of sequence 5; you can slow down or speed up the change from one colour to another. The values that can be set are:

- ***from 1 to 255 in steps of 1 (default value 30)***

The initial colour of the sequence is the one set in the moment when the sequence was activated (if the RGB components all have the same value (saturation =0), the initial colour of the sequence is red). The regulation direction goes from the lightest colour to the darkest one. The sequence is repeated cyclically until it is deactivated. When the sequence is deactivated, the RGB colour active prior to sequence activation is set.

5.1.11 Forced positioning function

It is possible to enable the function via the **"Forced positioning function"** parameter, which can have the following values:

- ***disabled - (default value)***
- ***enabled***

By selecting **enabled**, the **"RGB channel status at forcing end"** and **"Forcing status on bus voltage recovery"** parameters, and the ***Ch.x - Priority command*** communication object, are made visible.
When a command is received on the ***RGB - Priority command*** object, each colour behaves as described in the following table:

bit 1 c	bit 0 v	Description
0	0	No forcing
0	1	No forcing
1	0	OFF forcing (0%)
1	1	ON forcing (>0%)

When a priority command is received with the ON forcing activation value, the dimmer brings each colour to the brightness value equal to the last switch-on value (memory). When switched on for the first time, the last ON status value may not be known: for all the colours, the value is initialised at 100%. The last switch-on

value to be used is always the last brightness value of the colour resulting from any command prior to switch-off. In the case of a BUS voltage failure, the value is saved in the non-volatile memory.
When a priority command is received with the OFF forcing value, the dimmer brings each colour to the brightness value of 0%.
The brightness value is reached via a ramp. The ramp dimming speed 0% - 100% is fixed and equal to 2 seconds.

5.1.12 RGB channel status at forcing end

When a forcing deactivation command is received, the channels go to the brightness value defined by the **"RGB channel status at forcing end"** parameter. The possible values are:

- ***follows last command received - (default value)***
- ***status prior to forcing***
- ***No change***
- ***maximum dimming threshold value***
- ***minimum dimming threshold value***
- ***set fixed value***

By selecting **follows last command received**, each colour follows the dynamics determined by the last command, as if command execution was initiated at the moment in which the command was actually received. Essentially, the command is executed in the background and is applied to the colour in the moment when forcing ends. This behaviour applies, for example, to timed actuation commands with timing that has a duration that goes beyond the moment of forcing deactivation or to brightness absolute value dimming commands in which the moment of reaching the set brightness is later than the moment of forcing deactivation. If no telegram is received during the forcing activation period, when forcing is deactivated each colour will return to the condition it was in prior to forcing activation.

In the extreme case in which the behaviour **no change** upon forcing deactivation is set and a forcing deactivation command is received while the dimming ramp is in progress for reaching the requested forced value, dimming is stopped and the brightness reached at the moment of receiving the forcing deactivation command is maintained.

Selecting **set fixed value** displays the **"Red channel brightness at forcing ending"**, **"Green channel brightness at forcing ending"** and **"Blue channel brightness at forcing ending"** parameters.

5.1.13 Red/green/blue channel brightness at forcing ending

The possible values for these parameters are:

- ***from 1 to 255 (default value) in steps of 1***

5.1.14 Forcing status at BUS voltage recovery

The **"Forcing status on bus voltage recovery" (="Forced positioning status on bus voltage recovery")** parameter is used to determine the status of the forcing function on BUS voltage recovery. This parameter is useful if the function is active when the BUS voltage drops and you want to have the channel behaviour not be changed after voltage drop. The parameter may assume the following values:

- ***deactivated***
- ***as before voltage drop - (default value)***

Selecting the value **deactivated** (if forcing was active before the BUS voltage drop), when the BUS voltage is restored the forcing function is deactivated and the channels behave as defined in the **"RGB channel status at forcing end"** parameter. If the value set for this last parameter is **follows last command received**, the channel will execute the last command received before the BUS voltage drop that, as a result, must be stored to the non-volatile memory. If the last command received before voltage drop is a timed

activation command, when the BUS voltage is recovered the command will not be executed and the channel will switch to the OFF status (brightness 0%).

If the value **as before voltage drop** is selected (and forcing was activated before BUS voltage drop), when the BUS voltage is recovered the forcing function is reactivated and the channel switches to the status determined by the forcing activation command. If a forcing deactivation command is received and the value of the **"RGB channel status at forcing end"** parameter is **follows last command received**, the channel executes the last command received before the BUS voltage drop, which, as a result, must be stored in the non-volatile memory. If the last command received before the voltage drop was a timed activation command, the command is not executed when the BUS voltage is restored, and the channel switches OFF (brightness 0).

5.1.15 RGB colour brilliancy control (HSV)

If the load type is RGB, you can use the RGB components to obtain the Tone, Saturation and Brilliancy values of the colour (HSV system of cylindrical coordinates). Once these components have been calculated, you can regulate the brilliancy of the RGB colour while maintaining the same Tone and Saturation set. This will in turn modify the values of the RGB components to obtain the optical effect of passing from a lighter colour to a darker one, or vice versa. The ***RGB - General brilliancy regulation*** and ***RGB - General brilliancy command value*** objects are used respectively for the relative and absolute regulation of the RGB colour brilliancy. See the example in fig. 5.5 below.

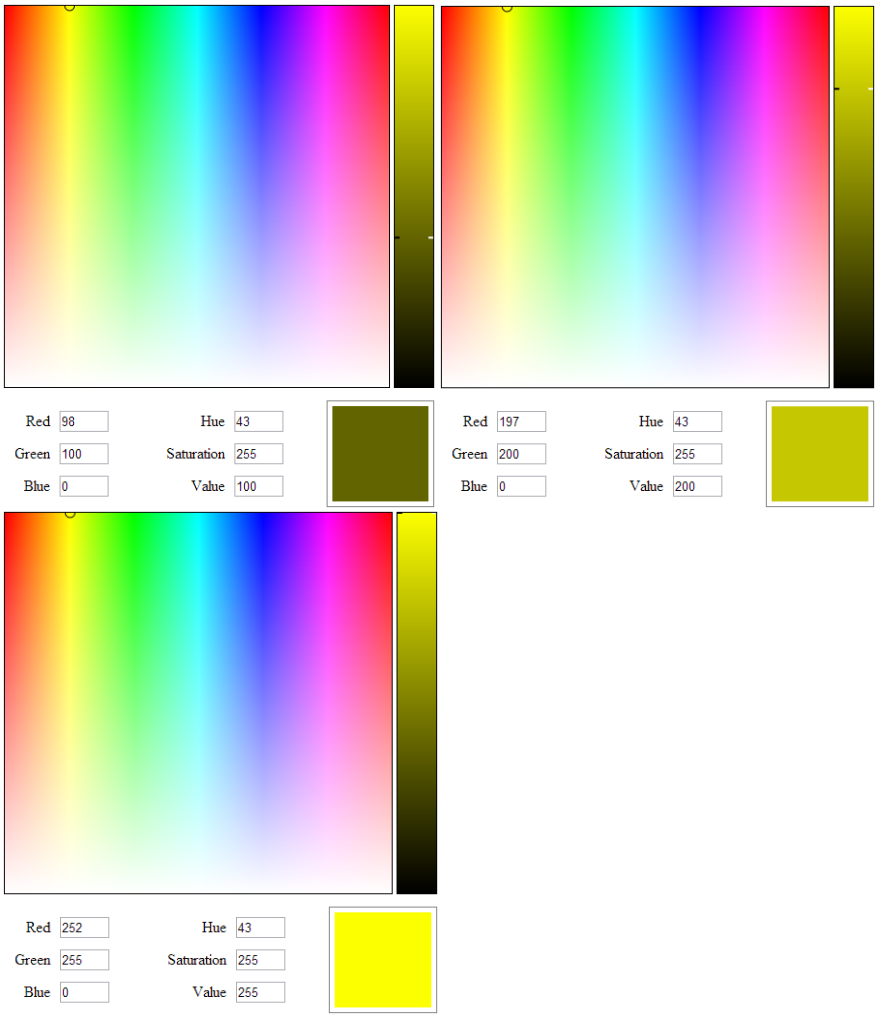

Fig. 5.5: Regulation of RGB colour brilliancy

The graph shows that by merely altering the brilliancy of the channel, you can obtain a lighter or darker yellow.
The Tone and Saturation values are calculated when at least one of the RGB components changes value via the various BUS commands; they are not updated when telegrams indicating the relative or absolute regulation of the RGB colour are received (even though these commands do actually modify the contributions of the various colours) via the following objects: ***RGB - General brilliancy regulation*** (Data Point Type: 3.007 DPT_Control_Dimming) and ***RGB - General brilliancy command value*** (Data Point Type: 5.001 DPT_Scaling).
Apart from the possibility to regulate the brilliancy of the RGB colour, you can also switch it on and off via the BUS command on the ***RGB - General switching*** communication object (Data Point Type: 1.001 DPT_Switch).

The **"RGB colour brilliancy control"** parameter is used to enable the control of the RGB colour brilliancy without having to modify the single components. The values that can be set are:

- ***disable - (default value)***
- ***enable***

Selecting **enabled** displays the ***RGB - General brilliancy regulation***, ***RGB - general brilliancy command value***, ***RGB - General switching***, ***RGB - General status*** and ***RGB - General brilliancy value*** communication objects.

The brightness value of each colour component following an ON command on the ***RGB - General switching*** object with the dimmer OFF is equal to the value assumed prior to switch-off (memory). The brightness value in the ON status and the OFF (0%) status is reached via a ramp. The ramp regulation speed 0% - 100% for on/off commands is fixed, and equal to 2 seconds.
The following figure shows an example.

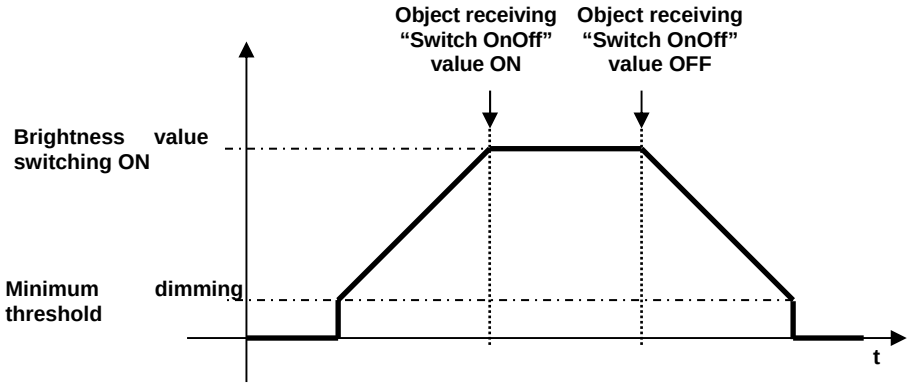

Fig. 5.6: Reaching the RGB colour brightness value from ON/OFF switching command

There are no switch-on or switch-off delays for the on/off commands.
The RGB channel brilliancy dimming takes place by means of the ***RGB - General brilliancy regulation*** communication object, used to increase or decrease the brilliancy according to the value of the regulation step and the direction coded in the command. Receiving a brilliancy dimming stop command during the regulation process immediately stops the dimming and maintains the brilliancy value already reached.

The brightness regulation is limited by two fixed threshold values:
- Maximum dimming threshold → 100%
- Minimum dimming threshold → 0%

The regulation process is limited to the set threshold values: this means that if the calculated increasing dimming value exceeds the maximum dimming threshold value, the dimming is stopped and the final brightness value that is set will be the value of the maximum dimming threshold. Similarly, if the calculated decreasing dimming value is lower than the minimum dimming threshold value, the dimming is stopped and the final brightness value that is set will be the value of the minimum dimming threshold.

The dimming speed is determined based on 2 time values that define the time interval for switching from 0% to 50% and for switching from 50% to 100%. The two values are fixed, and are both equal to 2 seconds.

Figure 5.7 shows an example.

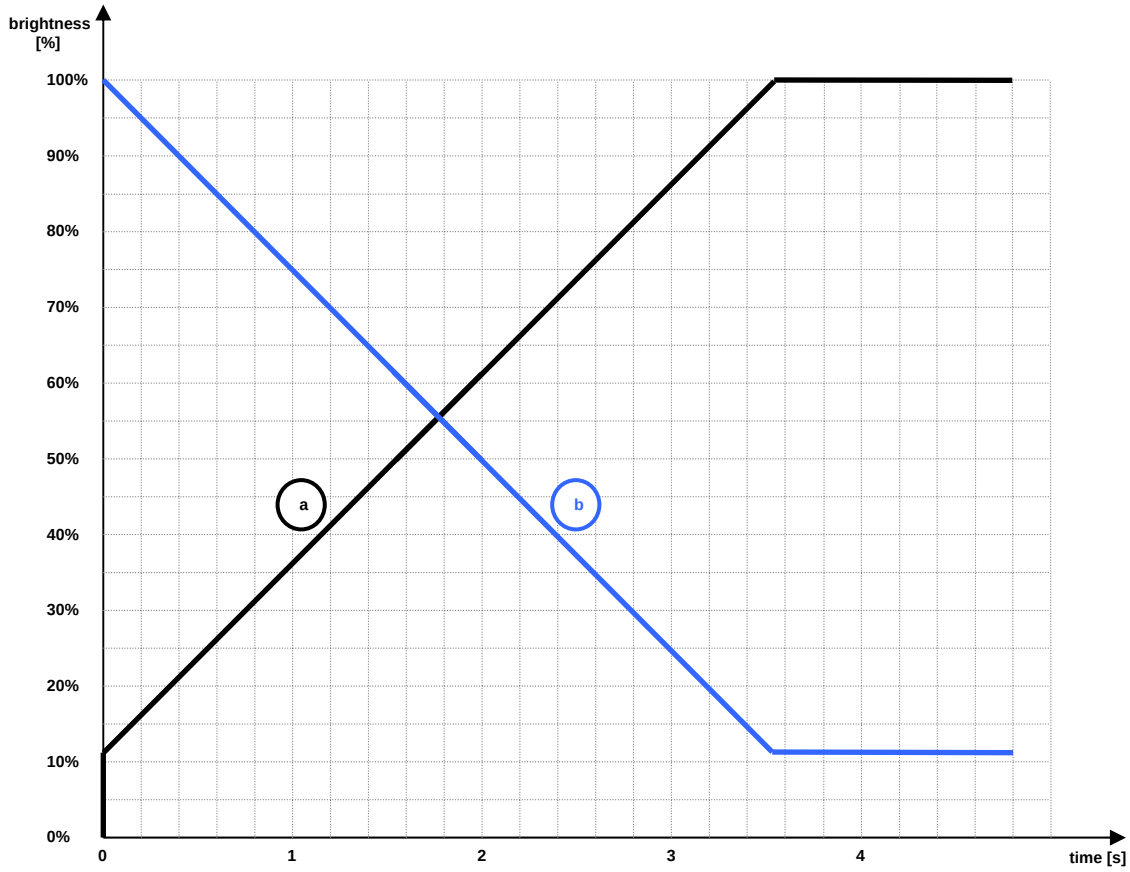

Fig. 5.7: Brightness regulation of the RGB colours when a command is received to increase/decrease to 100%

a) The black line shows the behaviour of one of the 3 RGB colours when an “increase to 100%” command is received via the *RGB - Brightness dimming* object, with initial brilliancy 0% (OFF). The minimum threshold (0%), starting from a brightness value of 0%, is always reached with a jump to value.
b) The blue line shows the behaviour of one of the 3 RGB colours when a “decrease to 100%” command is received via the *RGB - Brightness dimming* object, with initial brilliancy 100%. Once the minimum threshold (0%) has been reached, the value 0% is always reached with a jump to value.

The minimum threshold, starting from a brilliancy value of 0%, is always reached with a jump.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).
The absolute regulation of the RGB channel brilliancy is made via the ***RGB - General brilliancy command value*** communication object, which allows you to set an absolute brilliancy percentage value defined by the value of the command received.
Starting from the 0% condition, if the brilliancy value received (>0%) is lower than the minimum dimming threshold value (0%), the brilliancy value to be set corresponds to the minimum dimming threshold value (0%).
The brilliancy value is reached via a ramp. The ramp regulation speed 0% - 100% for absolute brilliancy dimming commands is fixed, and equal to 2 seconds.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).

The device signals the status of the RGB colour via the ***RGB - General status*** communication object (Data Point Type: 1.001 DPT_Switch). The communication object assumes the value 1 = ON when the brightness percentage of at least one of the 3 RGB colour components is >0%, and the value 0 = OFF when the brightness percentage values of all 3 colour components is = 0%. The communication object is sent on request, when the BUS voltage is restored, and spontaneously. It is sent spontaneously when the status passes from ON to OFF or vice versa. This means that if the brightness regulation value is changed (but remains higher than 0% - "ON" status), the communication object does not need to be transmitted again on the BUS.
The device signals the current brilliancy percentage value of the RGB colour via the ***RGB - General brilliancy value*** communication object (Data Point Type: 5.001 DPT_Scaling). The communication object is sent on request, when the BUS voltage is restored, and spontaneously.
It is sent spontaneously when the percentage brilliancy value is modified by at least 1% compared with the last value sent. There is the risk that the brilliancy values change quickly during a dimming ramp, and the device is unable to send all the feedback correctly. To overcome this problem, there is a minimum time gap of 2 seconds between the transmission of one brilliancy value and the next (only evaluated if the brilliancy variation is greater than the minimum set value of 1%).

The device signals that status of each colour component via the ***RGB - Red status***, ***RGB - Green status*** and ***RGB - Blue status*** objects (Data Point Type 1.001 DPT_Switch).
Each communication object assumes the value 1 = ON when the brightness percentage value of the associated colour is >0, and the value 0 = OFF when the brightness value is = 0. The communication object is sent on request, when the BUS voltage is restored, and spontaneously. It is sent spontaneously when the status passes from ON to OFF or vice versa. This means that if the brightness dimming is changed, staying higher than 0 ("ON" status), the communication object does not need to be retransmitted on the BUS.
The device signals the current absolute brightness value of the colours via the ***RGB - Red brightness value***, ***RGB - Green brightness value*** and ***RGB - Blue brightness value*** communication objects (Data Point Type 5.001 DPT_Scaling).
Each communication object is sent on request, when the BUS voltage is restored, and spontaneously. It is sent spontaneously when the percentage brightness value is modified by at least 1% compared with the last value sent. There is the risk that the brightness values change quickly during a dimming ramp, and the device is unable to send all the feedback correctly. To overcome this problem, there is a minimum time gap of 2 seconds between the transmission of one brightness value and the next (only evaluated if the brightness variation is greater than the minimum set value of 1%).
In the same way, the brightness value of the three colours (red, green and blue) can be indicated via a single telegram on a single communication object - ***RGB - RGB components brightness value*** (Data Point Type: 232.600 DPT_Colour_RGB). A telegram is sent when even just one of the three colours changes its brightness value by at least 1 unit. The minimum gap between one brightness value feedback and the next is 2 seconds.
The delay on the transmission of status information (brightness values and on/off status) on the BUS is fixed and equal to a value between 1 and 15 seconds (depending on the physical address).

5.1.16 RGB channel status at bus voltage recovery

In the case of BUS voltage failure, the dimmer maintains the output status.
It is possible to set the status of the RGB channel following BUS voltage recovery using the **"Dimmer status at BUS voltage recovery"** parameter, which may assume the following values:

- ***set fixed value***
  Selecting "**set fixed value"**displays the **"Red channel brightness on bus voltage recovery"**, **"Green channel brightness on bus voltage recovery"** and **"Blue channel brightness on bus voltage recovery"** parameters, via which you can set the required brightness values for each colour.
- ***minimum dimming threshold value***
  When the BUS voltage is reset, the dimmer restores the minimum regulation threshold value for the outputs.
- ***maximum dimming threshold value***
  When the BUS voltage is reset, the dimmer restores the maximum regulation threshold value for the outputs.

- ***as before voltage drop - (default value)***
  When the BUS voltage is reset, the dimmer restores the outputs to the value in place prior to the voltage drop.

5.1.17 Red/green/blue channel brightness on bus voltage recovery

Setting the "**RGB channel status at bus voltage recovery**" parameter at "**Set fixed value**" displays these parameters, via which you can specify the required brightness on the LED outputs when the BUS voltage is restored after a drop. The values that can be set for these parameters are:

- ***from 0 (default value) to 255, in steps of 1***

5.1.18 RGB channel status at auxiliary voltage recovery

With an auxiliary voltage failure, the red, green and blue channels will switch to the OFF status (brightness value 0).
The behaviour of the RGB channel when the auxiliary voltage is reset (if BUS voltage was present at the time of the drop) is determined by the **"RGB channel status at auxiliary voltage recovery"** parameter, which may assume the following values:

- ***set fixed value***
  Selecting "**set fixed value"**displays the **"Red channel brightness on auxiliary voltage recovery"**, **"Green channel brightness on auxiliary voltage recovery"** and **"Blue channel brightness on auxiliary voltage recovery"** parameters, via which you can set the required brightness values for each colour.
- ***minimum dimming threshold value***
  When the auxiliary voltage is reset, the dimmer restores the minimum regulation threshold value for the outputs.
- ***maximum dimming threshold value***
  When the auxiliary voltage is reset, the dimmer restores the maximum regulation threshold value for the outputs.
- ***as before voltage drop***
  In this case, the dimmer returns to the same conditions that were present at the time of the voltage drop, ignoring all the commands received while there was no network voltage.
- ***follows last command received - (default value)***
  If **"follows last command received"** is selected, the dimmer continues processing the commands while the auxiliary voltage is absent (as if the network were present), respecting the relative priorities. When the auxiliary voltage is reset, the dimmer takes the value determined by the last command received and applies it to the output.

5.1.19 Red/green/blue channel brightness on auxiliary voltage recovery

Setting the "**RGB channel status at auxiliary voltage recovery**" parameter at "**Set fixed value**" displays these parameters, via which you can specify the required brightness on the LED outputs when the auxiliary voltage is restored after a drop. The values that can be set for these parameters are:

- ***from 0 (default value) to 255, in steps of 1***

The behaviour when the auxiliary voltage is reset is not respected if the power supply failed while an overheating alarm was in progress (e.g. if the user has disconnected the power supply in order to speed up the cooling process).

6 *"Channel X"* menu

If the load type is monochrome LED, the parameters shown in fig. 6.1 appear when channel X is enabled. For the sake of simplicity, the items that make up the ***Channel 1***, ***Channel 2***, ***Channel 3*** and ***Channel 4*** menus will be described only once in the following chapters (with reference to the general ***Channel X*** menu), as these menus all have the same items.
The **Channel X** menu contains the parameters that define the behaviour of the monochrome LED connected to channel X.
The basic structure of the menu is as follows:

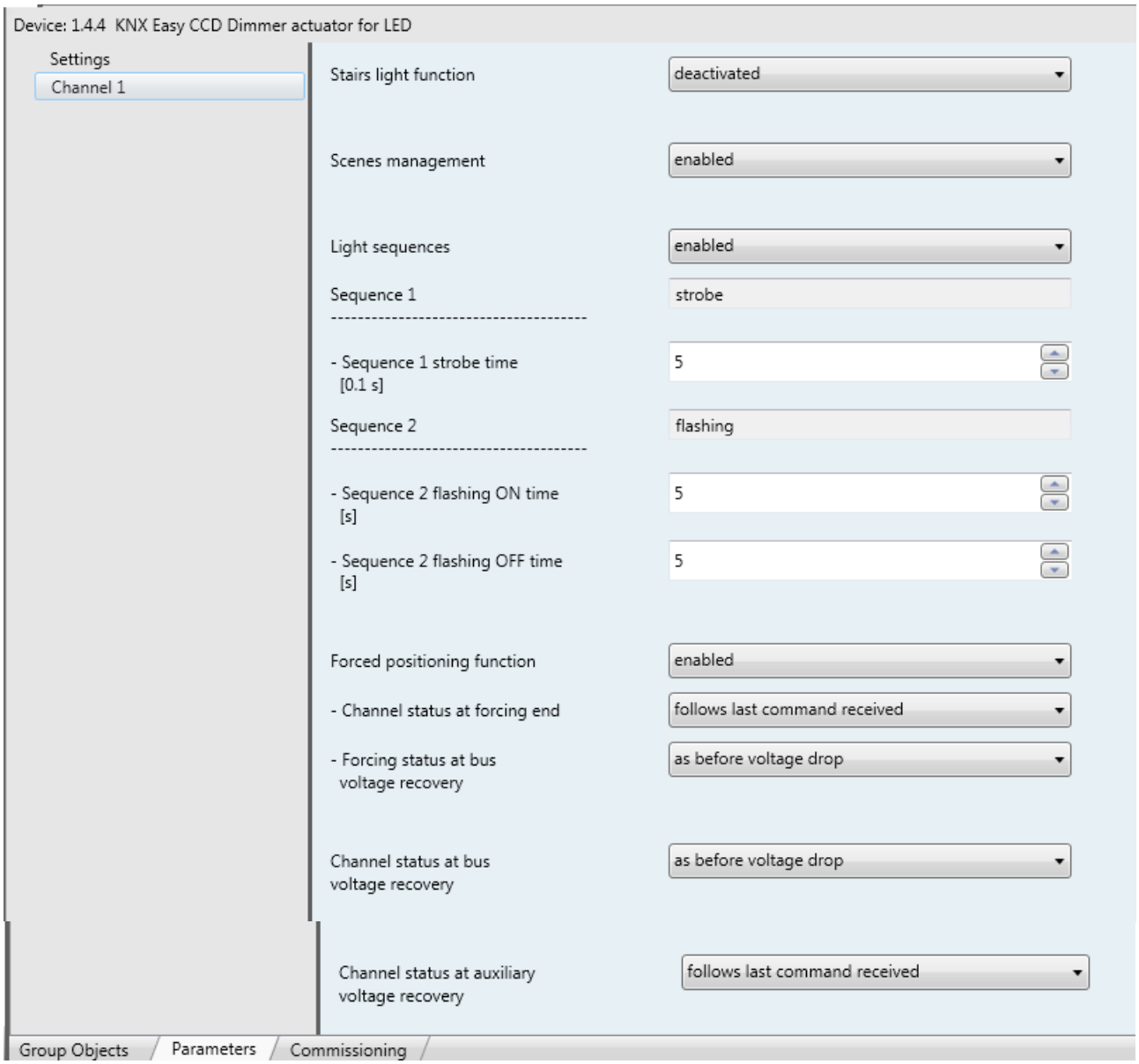

Fig. 6.1: "Channel X" menu

Channel X can be activated/deactivated via the ***Ch. x - Switching*** communication object (Data Point Type: 1.001 DPT_Switch). When the ON value (1) is received, the dimmer brings channel X to the brightness value equal to the last switch-on value (memory). When switched on for the first time, the last ON status value may not be known: the value is initialised at 100%. The last switching on value to use is always the last brightness value of the channel based on any command, before being switched off. In the case of a BUS voltage failure, the value is saved in the non-volatile memory.

When the OFF value (0) is received, the channel always switches to a brightness value of 0%.
The brightness value in the ON status and the OFF (0%) status is reached via a ramp. The ramp regulation speed 0% - 100% for on/off commands is fixed, and equal to 2 seconds.

Figure 6.2 shows an example.

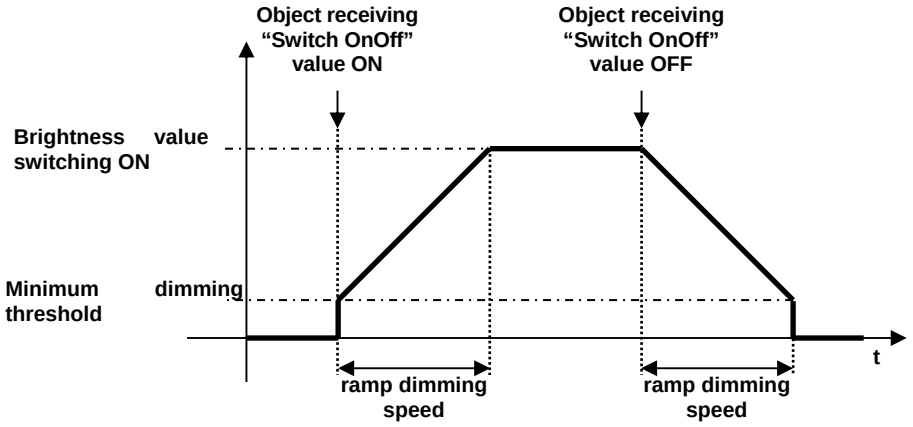

Fig. 6.2: Reaching of the brightness value in ON and OFF switching via a ramp.

There are no switch-on or switch-off delays for the on/off commands.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).

The relative dimming of the brightness of channel X is performed via the ***Ch. x - Brightness dimming*** (Data Point Type: 3.007 DPT_Control_Dimming) communication object, which allows the brightness to be increased or decreased according to the dimming step value and direction codified in the command. Receiving a brightness dimming stop command during the dimming process immediately stops the dimming and maintains the brightness value that was reached.
The brightness regulation is limited by two fixed threshold values:

- Maximum dimming threshold → 100%
- Minimum dimming threshold → 0%

The regulation process is limited to the set threshold values: this means that if the calculated increasing dimming value exceeds the maximum dimming threshold value, the dimming is stopped and the final brightness value that is set will be the value of the maximum dimming threshold. Similarly, if the calculated decreasing dimming value is lower than the minimum dimming threshold value, the dimming is stopped and the final brightness value that is set will be the value of the minimum dimming threshold.
The dimming speed is determined based on 2 time values that define the time interval for switching from 0% to 50% and for switching from 50% to 100%. The two values are fixed, and are both equal to 2 seconds.

Figure 6.3 shows an example.

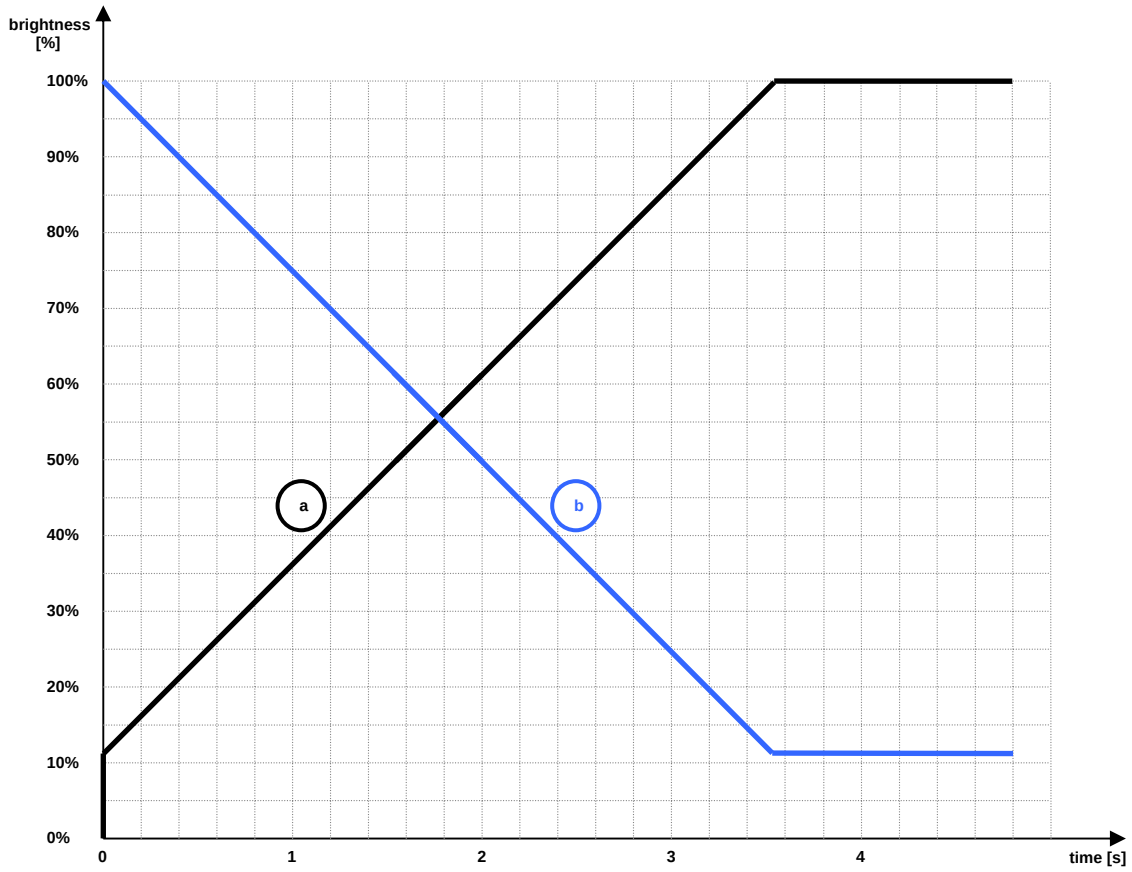

Fig. 6.3: Brightness dimming

a) The black line shows the behaviour of the device when an “increase to 100%” command is received via the *Ch.x.- Brightness dimming* object, with initial brightness 0% (OFF). The minimum threshold (0%), starting from a brightness value of 0%, is always reached with a jump to value.
b) The blue line shows the behaviour of the device when a “decrease to 100%” command is received on the *Ch.x- Brightness dimming* object, with initial brightness 100%. Once the minimum threshold (0%) has been reached, the value 0% is always reached with a jump to value.

Reaching the minimum threshold starting from brightness value of 0% is always implemented with a jump.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).

The absolute dimming of the brightness of channel X is performed via the ***Ch. x - Command value*** (Data Point Type: 5.001 DPT_Scaling) communication object, allowing you to set an absolute brightness percentage value defined by the value of the command received.
Starting from the OFF condition, if the brightness value received (>0%) is lower than the minimum dimming threshold value (0%), the brightness value to be set corresponds to the minimum dimming threshold value (0%). If the value 0% is received, the channel switches off.
The brightness value in the ON status and the OFF (0%) status is reached via a ramp. The ramp regulation speed 0% - 100% for absolute brightness dimming commands is fixed, and equal to 2 seconds.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).

6.1 Parameters

6.1.1 Stairs light function

The **"Stairs light function"** parameter is used to activate the timing (stair light) function that automatically switches the RGB colours off after a set period of time from when the timed activation command is received. The operating parameters and communication objects are visualised and can be configured. The values that can be set are:

- ***disabled - (default value)***
- ***active***

selecting **active** displays the ***Ch.x - Timed switching*** (Data Point Type: 1.010 DPT_Start) communication object and the **"Activation time"** and **"Prewarning time"** parameters.
The ***Ch.x - Timed switching*** communication object is used to receive the timing activation start (value "1") and timing stop (value "0") commands from the BUS. When the START (1) value is received, the dimmer brings channel 1 to the brightness value equal to the last switch-on value (memory), and activates the timing count (whose value is defined by the **"Activation time"** parameter); at the end of the count, the device autonomously brings the brightness back to 0%. When switched on for the first time, the last ON status value may not be known: the value is initialised at 100%. The last switching on value to use is always the last brightness value of the channel based on any command, before being switched off. In the case of a BUS voltage failure, the value is saved in the non-volatile memory.
If the device receives a new start message while timing is in progress, the activation time count is reinitialised (reset).
When the STOP value (0) is received while timing is active, the channel always switches to a brightness value of 0% and the timing is ended. There are no delays on timed activation.

6.1.2 Activation time

The **"Activation time"** parameter is used to set the stairs light function activation time. The values that can be set are:

- ***1 s***
- ***2 s***
- ***3 s***
- ***5 s***
- ***10 s***
- ***15 s***
- ***20 s***
- ***30 s***
- ***45 s***
- ***1 min*** ***(default value)***
- ***1 min 15 s***
- ***1 min 30 s***
- ***2 min***
- ***2 min 30 s***
- ***3 min***
- ***5 min***
- ***15 min***
- ***20 min***
- ***30 min***
- ***1h***
- ***2h***
- ***3h***
- ***5h***
- ***12h***
- ***24h***

6.1.3 Prewarning time

The **Prewarning time** parameter can be used to enable signalling when the channel will soon be switched off by automatically reducing the brightness with a dimming ramp between the switch-on brightness value and the minimum dimming threshold, for the defined period of time. The parameter may assume the following values:

- ***no prewarning - (default value)***
- ***15 s***
- ***30 s***
- ***1 min.***

Figure 6.4 shows an operating example of pre-warning time.

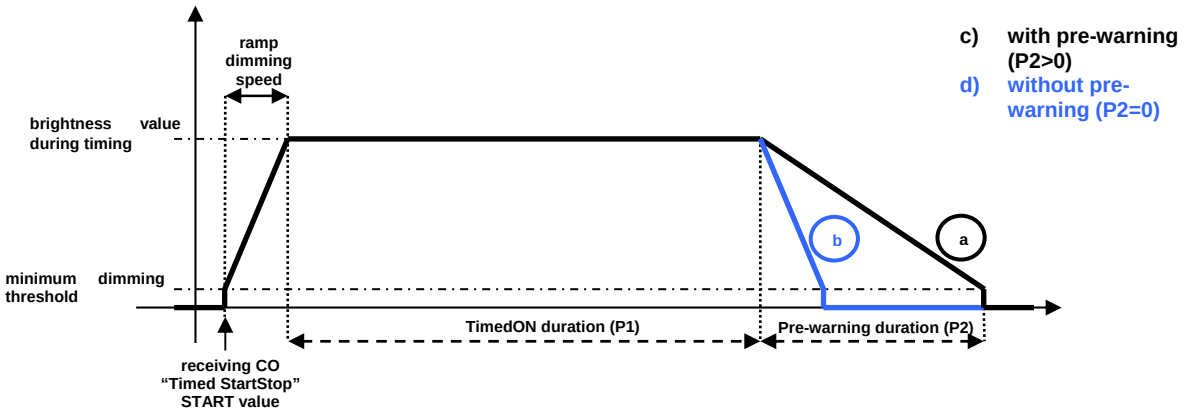

Fig. 6.4: Switch-off pre-warning function

The brightness value in the ON status and the OFF (0%) status is reached via a ramp. The ramp regulation speed 0% - 100% for on/off commands is fixed, and equal to 2 seconds.
If a relative or absolute brightness dimming command is received on the ***Ch. x - Brightness dimming*** or ***Ch. x - Command value*** object while timing is in progress, the command is executed and the active timing operation continues without any reset or extension of the activation time; only the channel X brightness value is modified.
The timing commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).
This function has the same priority as On/Off switching; this means that when one of the two functions is activated while the other is already active, the latter is terminated and the former is executed. In particular, an on/off switching command on a specific channel terminates the stairs light function for that channel, but not for the others.

6.1.4 Scenes management

The **"Scenes management"** parameter is used to activate the Scenes function.
The device can store and execute one "scene" type command or more, associating a precise brightness value for each colour with every scene. The values that can be set are:

- ***disabled - (default value)***
- ***enabled***

selecting the value **enabled** displays the ***Ch.x - Scene*** communication object (Data Point Type: 18.001 DPT_SceneControl) that allows the scene execution and storage commands to be received from the BUS.

The scene function is used to send two possible commands to the device:

- scene execution, which is the command to switch to a determined previously memorised brightness value
- store scene, which is a command to memorise the current brightness (the moment the command is received).

The execution and storage commands are received on the ***Ch.x - Scene*** object.
The maximum number of scenes that can be managed is 8.
The numerical value for identifying and therefore executing/storing the i-th scene ranges from 0 to 7.
The initial brightness value for all 3 colours for all 8 scenes is 100%.
The brightness value for executing a scene is reached via a ramp. The ramp dimming speed 0% - 100% is fixed and equal to 2 seconds.
The received commands are implemented if no other function with a higher priority is active (refer to the "priorities" table).

6.1.5 Light sequences

Two different pre-configured brightness sequences can be managed for each channel; by dynamically modifying the brightness value of the associated channel, they create plays of light.
The **"Light sequences"** parameter is used to enable various communication objects for activating the colour sequences via a BUS telegram. The values that can be set are:

- ***disabled - (default value)***
- ***enabled***

Selecting **enabled** displays the **"Sequence 1 strobe time [0.1 s]"**, **"Sequence 2 flashing ON time (seconds)"** and **"Sequence 2 flashing OFF time (seconds)"** parameters, along with the ***Ch.x - Light sequence 1*** and ***Ch.x - Light sequence 2*** communication objects (Data Point Type: 1.010 DPT_Start).

When the ON value (1) is received on the ***Ch.x - Light sequence i*** communication object, channel X activates the playing of the sequence associated with the communication object. If a new ON message is received while playing is in progress, it has no effect. The sequence brightness value is the one set in the moment when the sequence is activated (if the brightness value is 0%, the sequence is performed with the last value that was active prior to switch-off).
When the OFF value (0) is received while playing is in progress, the actuator ends the playing of the sequence and brings the channel to the condition it was in prior to the sequence activation.
For each general channel X, by activating a light sequence different from the one being played, the new sequence is launched while the previously active one is deactivated. This means that only one sequence can be active at one time and, when it is deactivated, the channel sets the brightness value that was active prior to the sequence activation, without necessarily having to deactivate the sequences previously activated.
When activated, each sequence is repeated cyclically and does not end automatically.
The meanings of the various parameters envisaged in the various sequences are explained below.

6.1.6 Sequence 1: strobe

The **"Sequence 1 strobe time [0.1 s]"** parameter is used to personalise the length of the sequence 1 strobe effect - i.e. the time between one "light flash" and the next. The values that can be set are:

- ***from 1 to 255 in steps of 1 (default value 5)***

6.1.7 Sequence 2: blinking

The **"Sequence 2 flashing ON time [s]"** parameter is used to set the activation period for the selected brightness for sequence 2 "blinking". The values that can be set are:

- ***from 0 to 59 in steps of 1 (default value 5)***

The **"Sequence 2 flashing OFF time [s]"** parameter is used to set the deactivation period for the selected brightness for sequence 2 "blinking". The values that can be set are:

- ***from 0 to 59 in steps of 1 (default value 5)***

The sequence colour is the one set in the moment when the sequence was activated (if the RGB components are all at 0% (black), the sequence colour is the last colour active prior to switch-off). The sequence is repeated cyclically until it is deactivated. When the sequence is deactivated, the RGB colour active prior to sequence activation is set.

6.1.8 Forced positioning function

It is possible to enable the function via the parameter **"Forced positioning function"** which can have the following values:

- ***disabled - (default value)***
- ***enabled***

By selecting **enabled**, the **"Channel status at forcing end"** and **"Forcing status on bus voltage recovery"** parameters, and the ***Ch.x - Priority command*** communication object, are made visible.
When a command is received on the ***Ch.x - Priority command*** object, the channel behaves as described in the following table:

bit 1 c	bit 0 v	Description
0	0	No forcing
0	1	No forcing
1	0	OFF forcing (0%)
1	1	ON forcing (>0%)

When a priority command is received with the ON forcing activation value, the dimmer brings each colour to the brightness value equal to the last switch-on value (memory). When switched on for the first time, the last ON status value may not be known: for all the colours, the value is initialised at 100%. The last switch-on value to be used is always the last brightness value of the colour resulting from any command prior to switch-off. In the case of a BUS voltage failure, the value is saved in the non-volatile memory.
When a priority command is received with the OFF forcing value, the dimmer brings each colour to the brightness value of 0%.
The brightness value is reached via a ramp. The ramp dimming speed 0% - 100% is fixed and equal to 2 seconds.

6.1.9 Channel status at forcing end

When a forcing deactivation command is received, the channels go to the brightness value defined by the **"Channel status at forcing end"** parameter. The possible values are:

- ***follows last command received - (default value)***
- ***status prior to forcing***
- ***No change***
- ***maximum dimming threshold value***
- ***minimum dimming threshold value***
- ***set fixed value***

By selecting the value **follows last command received**, each channel follows the dynamics determined by the last command, as if command execution was initiated at the moment in which the command was actually received. Essentially, the command is executed in the background and is applied to the channel at the moment forcing is ended. This behaviour applies, for example, to timed actuation commands with timing that has a duration that goes beyond the moment of forcing deactivation or to brightness absolute value dimming commands in which the moment of reaching the set brightness is later than the moment of forcing

deactivation. If no telegram is received during the forcing activation period, upon deactivation of the forcing the channel will return to its conditions prior to the activation itself.

In the extreme case in which the behaviour **no change** upon forcing deactivation is set and a forcing deactivation command is received while the dimming ramp is in progress for reaching the requested forced value, dimming is stopped and the brightness reached at the moment of receiving the forcing deactivation command is maintained.

Selecting **set fixed value** displays the **"Brightness at forcing end"** parameter. The brightness value is reached via a ramp. The ramp dimming speed 0% - 100% is fixed and equal to 2 seconds.

6.1.10 Brightness at forcing end

The possible values for these parameters are:

- ***from 0% to 100% (default value) with steps of 5%***

6.1.11 Forcing status at BUS voltage recovery

The **"Forcing status on bus voltage recovery" (="Forced positioning status on bus voltage recovery")** parameter is used to determine the status of the forcing function on BUS voltage recovery. This parameter is useful if the function is active when the BUS voltage drops and you want to have the channel behaviour not be changed after voltage drop. The parameter may assume the following values:

- ***deactivated***
- ***as before voltage drop - (default value)***

Selecting the value **deactivated** (if forcing was active before the BUS voltage drop), when the BUS voltage is restored the forcing function is deactivated and the channels behave as defined in the **"Channel status at forcing end"** parameter. If the value set for this last parameter is **follows last command received**, the channel will execute the last command received before the BUS voltage drop that, as a result, must be stored to the non-volatile memory. If the last command received before voltage drop is a timed activation command, when the BUS voltage is recovered the command will not be executed and the channel will switch to the OFF status (brightness 0%).

If the value **as before voltage drop** is selected (and forcing was activated before BUS voltage drop), when the BUS voltage is recovered the forcing function is reactivated and the channel switches to the status determined by the forcing activation command. If a forcing deactivation command is received and the value of the parameter **"Channel status at forcing end"** is **follows last command received**, the channel executes the last command received before the BUS voltage drop, which, as a result, must be stored in the non-volatile memory. If the last command received before the voltage drop was a timed activation command, the command is not executed when the BUS voltage is restored, and the channel switches OFF (brightness 0%).

The device signals the status of channel X via the ***Ch. x - Status*** communication object (Data Point Type: 1.001 DPT_Switch).
The communication object assumes the value 1 = ON when the percentage brightness value is >0%, and the value 0 = OFF when the brightness value is = 0%. The communication object is sent on request, when the BUS voltage is restored, and spontaneously. It is sent spontaneously when the status passes from ON to OFF or vice versa. This means that if the brightness regulation value is changed (but remains higher than 0% - "ON" status), the communication object does not need to be transmitted again on the BUS.

The device signals the percentage brightness value of channel 1 via the ***Ch. x - Brightness value*** communication object (Data Point Type 1 DPT_Scaling); 5.001 DPT_Scaling).
The communication object is sent on request, when the BUS voltage is restored, and spontaneously.
It is sent spontaneously when the percentage brightness value is modified by at least 1% compared with the last value sent. There is the risk that the brightness values change quickly during a dimming ramp, and the device is unable to send all the feedback correctly. To overcome this problem, there is a minimum time gap of 2 seconds between the transmission of one brightness value and the next (only evaluated if the brightness variation is greater than the minimum set value of 1%).

The delay on the transmission of status information (brightness values and on/off status) on the BUS is fixed and equal to a value between 1 and 15 seconds (depending on the physical address).

6.1.12 Channel status at BUS voltage recovery

In the case of BUS voltage failure, the dimmer maintains the output status.
It is possible to set the status of channel x following BUS voltage recovery using the parameter **"Channel status at BUS voltage recovery"** which can have the following values:

- ***set fixed value***
  Selecting **set fixed value** displays the **"Channel brightness at bus voltage recovery"** parameter.

- ***minimum dimming threshold value***
  When the BUS voltage is reset, the dimmer restores the minimum regulation threshold value for the outputs.
- ***maximum dimming threshold value***
  When the BUS voltage is reset, the dimmer restores the maximum regulation threshold value for the outputs.
- ***as before voltage drop - (default value)***
  When the BUS voltage is reset, the dimmer restores the outputs to the value in place prior to the voltage drop.

6.1.13 Channel brightness at bus voltage recovery

Selecting **set fixed value** for the "**Channel status at bus voltage recovery**" parameter displays this parameter, used to define the required brightness value. The values that can be set are:

- ***from 0% (default value) to 100% in steps of 5%***

6.1.14 Channel status at auxiliary voltage recovery

With an auxiliary voltage failure, channel X will switch to the OFF status (brightness value 0%).
The behaviour of channel X when the auxiliary voltage is reset (if BUS voltage was present at the time of the drop) is determined by the **"Channel status at auxiliary voltage recovery"** parameter, which may assume the following values:

- ***set fixed value***
  Selecting **set fixed value** displays the **"Channel brightness at auxiliary voltage recovery"** parameter, with which you can define a value.
- ***minimum dimming threshold value***
  When the auxiliary voltage is reset, the dimmer restores the minimum regulation threshold value for the outputs.
- ***maximum dimming threshold value***
  When the auxiliary voltage is reset, the dimmer restores the maximum regulation threshold value for the outputs.
- ***as before voltage drop***
  In this case, channel X returns to the same conditions that were present at the time of the voltage drop, ignoring all the commands received while there was no network voltage.
- ***follows last command received - (default value)***
  If the value **"follows last command received"** is selected, channel X continues processing the commands while the auxiliary voltage is absent, as if the network were present, respecting the relative priorities; when the auxiliary voltage is restored, channel X takes the value determined by the last command received and applies it to the output.

6.1.15 Channel brightness at auxiliary voltage recovery

Selecting **set fixed value** displays the **"Channel brightness at auxiliary voltage recovery"** parameter and channel X will switch the output to the status set by the parameters, maintaining any other pre-existing condition (block, forcing). The above cited parameter may assume the following values:

- ***from 0% (default value) to 100% in steps of 5%***

The behaviour when the auxiliary voltage is reset is not respected if the power supply failed while an overheating alarm was in progress (e.g. if the user has disconnected the power supply in order to speed up the cooling process).

7 Behaviour in the case of BUS/auxiliary voltage drop and recovery, front button keys operation

The behaviour of the dimmer in the event of a BUS/auxiliary voltage drop and recovery is explained below.

7.1 Behaviour at BUS voltage failure

In the case of BUS voltage failure, the dimmer maintains the output status.

7.2 Behaviour at BUS voltage recovery

You can set the status that the channel/colour must assume on BUS voltage recovery using the **"Dimmer status at bus voltage recovery"** parameter of the **Settings** menu if the load is RGBW, the **"Channel status at bus voltage recovery"** parameter of the **Channel X** menu if the load is monochrome, or the **"RGB channel status at bus voltage recovery"** parameter of the **RGB channel** menu if the load is RGB.

When the BUS voltage is restored, the following items are evaluated in order of priority for each channel/colour:

1. "Forcing status at bus voltage recovery" if forcing is not active
2. "Dimmer status at bus voltage recovery"

7.3 Behaviour at auxiliary voltage drop

With an auxiliary voltage failure, the dimmer will switch to the OFF status (brightness value 0%).

7.4 Behaviour at auxiliary voltage recovery

The dimmer continues processing the commands while the auxiliary voltage is absent (as if the network were present), respecting the relative priorities. You can set the status that the channel/colour must assume on auxiliary voltage recovery using the **"Dimmer status at auxiliary voltage recovery"** parameter of the **Settings** menu if the load is RGBW, the **"Channel x status at auxiliary voltage recovery"** parameter of the **Channel x** menu if the load is monochrome, or the **"RGB channel status at auxiliary voltage recovery"** parameter of the **RGB channel** menu if the load is RGB.

The behaviour when the auxiliary voltage is reset is not respected if the power supply failed while an overheating alarm was in progress (e.g. if the user has disconnected the power supply in order to speed up the cooling process).

8 Front button key operation

The local button key (on the front of the device) assigned to each channel acts as a “single push-button dimmer test”:

- a brief pressing of the key (< 0.5 seconds) activates (ON 100%) the output associated with channel X if it was OFF, and deactivates it (OFF) if it was ON (brightness value >0)
- if pressed for longer (> 0.5 seconds), it alternates the brightness increase and decrease commands (between 0% and 100%) and stops the regulation when released. The dimming speed is fixed at 5 seconds. This command has maximum priority and is carried out regardless of the value of the communication objects (including the “Forcing” function).

If the load type is RGBW and the White front button key is pressed, this generates the activation of the white colour (deactivating the other three colour components). In the same way, if all three R, G and B components are activated at the same value, the White channel is powered in place of the other 3 (as during normal operation).

If the load type is RGB + monochrome, the button key associated with channel 4 acts independently of the first three as it is associated with the independent monochrome channel.
The behaviour of the local button keys cannot be modified.

The local button key controls the output connected to channel X, regardless of the device functions that are active at that moment but without changing the activation status of those functions. This means that if the forcing function was active before the local button key was pressed, it will continue to be active even if the brightness value is changed on the basis of how the front key is pressed.

9 Priorities between functions and alarm signals

9.1 Function priorities

The priority of the functions is shown in the following table:

Function	Priority	
Relative brightness dimming (Brightness relative dimming)	1	low
On/off switching	1	
Timed switching	1	
Absolute brightness dimming (Brightness absolute dimming)	1	
RGB component dimming	1	
RGB channel brilliancy dimming	1	
Scenes	1	
Colour sequences/Brightness sequences	1	
Channel x/RGBW status at forcing end	3	
Dimmer/channel X status on BUS voltage recovery	4	
Forcing status at BUS voltage recovery	5	
Forced positioning	6	
Front button key	7	
Dimmer/channel X status on auxiliary voltage recovery with BUS voltage present	8	
Status at auxiliary voltage failure with BUS voltage present (OFF)	9	
Status at BUS voltage drop	10	
Overheating alarm	11	high

9.2 Alarm signalling

Any possible device overheating is signalled by a front fault LED (fixed red light), and the deactivation of the channel status LEDs.
During overheating, the dimmer output is fixed and equal to 10%, and every command received from the BUS is ignored. Any functions that were active at that moment are kept active, but they do not have any influence on the dimmer output.

There are two ways to try to eliminate the cause of the overheating:
- Wait for the dimmer temperature to decrease by itself
- Disconnecting the network voltage. In this case, the dimmer output switches off and a normal operating temperature may be reached more quickly. To restore normal operation, the network voltage will obviously have to be reconnected

Once the cause of the overheating has been eliminated, you can restore normal operation and deactivate the overheating signal in the following ways:
- using the front button key of the dimmer to command the output. In particular, if the temperature has dropped below the alarm value, the dimmer performs a test by bringing all the outputs to the maximum brightness value. If the temperature is still below the alarm value after about 5 seconds, the “fault” LED turns off and the dimmer returns to the condition it was in prior to overheating (including the status LEDs). During the reset time (approx. 5 seconds), the “fault” LED remains ON (fixed light) while the status LEDs flash red (frequency 1 Hz 50% On, 50% Off).
- sending a command via BUS. If the temperature has dropped below the alarm value, the dimmer will perform a test (regardless of the command received) by bringing all the outputs to the maximum brightness value. After approx. 5 seconds, if the temperature is still below the alarm value, the "fault" signalling LED will turn off and the dimmer will execute the last command received. During the reset time (approx. 5 seconds), the “fault” LED remains ON (fixed light) while the status LEDs flash red (frequency 1 Hz 50% On, 50% Off).

In the case of a BUS voltage failure, the status of the overheating alarm must be saved to the non-volatile memory so that if the entire device is switched off while this alarm is active, the condition will be noted immediately when it switches back on.

As long as the BUS voltage is present, the absence of input voltage - or its fall below the 10V threshold level - can be signalled via the “fault” LED ON and the status LEDs all flashing YELLOW (frequency 1 Hz 50% On, 50% Off).
If the input voltage is disconnected during an overheating phase, the “fault” LED will remain ON (fixed red light) and the status LEDs will be OFF.

As long as the BUS voltage is present, any possible polarity inversion on the auxiliary voltage input terminals can be signalled via the “fault” front LED flashing red (frequency 1 Hz 50% On, 50% Off); the status LEDs will all be OFF.
Polarity inversion is different from an “input voltage below threshold” alarm so, when it occurs, the relative alarm feedback is sent but not the alarm feedback for input voltage below the threshold.

10 Communication objects

The communication objects are listed in the following table:

Input objects:

#				Object name	Object function	Description	Datapoint type
Ch 1	Ch 2	Ch 3	Ch 4				
0	8	16	24	Ch.x - Switch	On/Off	ON/OFF switching command of channel X	1.001 DPT_Switch
1	9	17	25	Ch.x – Brightness dimming	Increase/Decrease	Brightness relative dimming of channel x	3.007 DPT_Control_Dimming
2	10	18	26	Ch.x - Command value	% Value	Sets the brightness absolute value (% value) of channel x	5.001 DPT_Scaling
3	11	19	27	Ch.x - Timed switch	Start/Stop	Staircase light timing command of channel x	1.010 DPT_Start
4	12	20	28	Ch.x - Priority command	On/Off forced positioning	Forces the value of the channel x output in a given state	2.001 DPT_Switch_Control
5	13	21	29	Ch.x - Scene	Execute/Store	Allows scenes execution/learning of channel x	18.001 DPT_SceneControl
32				RGB - General switching	On/Off	ON/OFF switching command of RGB channel	1.001 DPT_Switch
33				RGB - General lightness dimming	Increase/Decrease	Brightness relative dimming of RGB channel	3.007 DPT_Control_Dimming
34				RGB - General lightness command value	% Value	Sets the brightness absolute value (% value) of RGB channel	5.001 DPT_Scaling
35				RGB - Timed switch	Start/Stop	Staircase light timing command of RGB channel	1.010 DPT_Start
36				RGB - Priority command	On/Off forced positioning	Forces the value of the RGB channel output in a given state	2.001 DPT_Switch_Control
37				RGB - Scene	Execute/Store	Allows scene execution/learning of RGB channel	18.001 DPT_SceneControl
40				RGB - Red switching	On/Off	ON/OFF switching command of red channel	1.001 DPT_Switch
41				RGB - Red brightness dimming	Increase/Decrease	Brightness relative dimming of red channel	3.007 DPT_Control_Dimming
42				RGB - Red command value	Value 0 - 255	Sets the brightness absolute value (0-255) of red channel	5.001 DPT_Scaling
45				RGB - Green switching	On/Off	ON/OFF switching command of green channel	1.001 DPT_Switch
46				RGB - Green brightness dimming	Increase/Decrease	Brightness relative dimming of green channel	3.007 DPT_Control_Dimming
47				RGB - Green command value	Value 0 - 255	Sets the brightness absolute value (0-255) of green channel	5.001 DPT_Scaling
50				RGB - Blue switching	On/Off	ON/OFF switching command of blue channel	1.001 DPT_Switch
51				RGB - Blue brightness dimming	Increase/Decrease	Brightness relative dimming of blue channel	3.007 DPT_Control_Dimming
52				RGB - Blue command value	Value 0 - 255	Sets the brightness absolute value (0-255) of blue channel	5.001 DPT_Scaling
55				RGB - Colour sequence 1	Start/Stop	Allows colour sequence 1 playing/stop	1.010 DPT_Start
55				Ch.1 - Light sequence 1	Start/Stop	Allows light sequence 1 playing/stop of channel 1	1.010 DPT_Start
57				RGB - Colour sequence 2	Start/Stop	Allows colour sequence 2 playing/stop	1.010 DPT_Start
57				Ch.1 - Light sequence 2	Start/Stop	Allows light sequence 2 playing/stop of channel 1	1.010 DPT_Start
59				RGB - Colour sequence 3	Start/Stop	Allows colour sequence 3 playing/stop	1.010 DPT_Start
59				Ch.2 - Light sequence 1	Start/Stop	Allows light sequence 1 playing/stop of channel 2	1.010 DPT_Start
61				RGB - Colour sequence 4	Start/Stop	Allows colour sequence 4 playing/stop	1.010 DPT_Start
61				Ch.2 - Light sequence	Start/Stop	Allows light sequence 2	1.010 DPT_Start

	2		playing/stop of channel 2	
63	RGB - Colour sequence 5	Start/Stop	Allows colour sequence 5 playing/stop	1.010 DPT_Start
63	Ch.3 - Light sequence 1	Start/Stop	Allows light sequence 1 playing/stop of channel 3	1.010 DPT_Start
65	Ch.3 - Light sequence 2	Start/Stop	Allows light sequence 2 playing/stop of channel 3	1.010 DPT_Start
67	Ch.4 - Light sequence 1	Start/Stop	Allows light sequence 1 playing/stop of channel 4	1.010 DPT_Start
69	Ch.4 - Light sequence 2	Start/Stop	Allows light sequence 2 playing/stop of channel 4	1.010 DPT_Start
71	RGB - RGB component command value	RGB Component value 0 - 255	Sets the brightness absolute value (0-255) of red, green and blue components	232.600 DPT_Colour_RGB

Output objects:

#				Object name	Object function	Description	Datapoint type
Ch 1	Ch 2	Ch 3	Ch 4				
6	14	22	30	Ch.x - Status	On/Off	On/Off status of channel x	1.001 DPT_Switch
7	15	23	31	Ch.x - Brightness value	% Value	Current brightness value of channel x	5.001 DPT_Scaling
38				RGB - General status	On/Off	On/Off status of RGB channel	1.001 DPT_Switch
39				RGB - General brightness value	% Value	Current lightness value of RGB colour	5.001 DPT_Scaling
43				RGB - Red status	On/Off	On/Off status of red channel	1.001 DPT_Switch
44				RGB - Red brightness value	Value 0 - 255	Current brightness value of red colour	5.001 DPT_Scaling
48				RGB - Green status	On/Off	On/Off status of green channel	1.001 DPT_Switch
49				RGB - Green brightness value	Value 0 - 255	Current brightness value of green colour	5.001 DPT_Scaling
53				RGB - Blue status	On/Off	On/Off status of blue channel	1.001 DPT_Switch
54				RGB - Blue brightness value	Value 0 - 255	Current brightness value of blue colour	5.001 DPT_Scaling
56				RGB - Colour sequence 1 status	On/Off	On/Off status of colour sequence 1	1.001 DPT_Switch
56				Ch.1 - Light sequence 1 status	On/Off	On/Off status of light sequence 1 of channel 1	1.001 DPT_Switch
58				RGB - Colour sequence 2 status	On/Off	On/Off status of colour sequence 2	1.001 DPT_Switch
58				Ch.1 - Light sequence 2 status	On/Off	On/Off status of light sequence 2 of channel 1	1.001 DPT_Switch
60				RGB - Colour sequence 3 status	On/Off	On/Off status of colour sequence 3	1.001 DPT_Switch
60				Ch.2 - Light sequence 1 status	On/Off	On/Off status of light sequence 1 of channel 2	1.001 DPT_Switch
62				RGB - Colour sequence 4 status	On/Off	On/Off status of colour sequence 4	1.001 DPT_Switch
62				Ch.2 - Light sequence 2	On/Off	Allows light sequence 2 playing/stop of channel 2	1.001 DPT_Switch
64				RGB - Colour sequence 5 status	On/Off	On/Off status of colour sequence 5	1.001 DPT_Switch
64				Ch.3 - Light sequence 1 status	On/Off	On/Off status of light sequence 1 of channel 3	1.001 DPT_Switch
66				Ch.3 - Light sequence 2 status	On/Off	On/Off status of light sequence 2 of channel 3	1.001 DPT_Switch
68				Ch.4 - Light sequence 1 status	On/Off	On/Off status of light sequence 1 of channel 4	1.001 DPT_Switch
70				Ch.4 - Light sequence 2 status	On/Off	On/Off status of light sequence 2 of channel 4	1.001 DPT_Switch

72	RGB - RGB component brightness value	RGB Component brightness	Current brightness value 0 - 255 of the three components red, green and blue	232.600 DPT_Colour_RGB

code 7.01.6.945.3

Ai sensi dell'articolo 9 comma 2 della Direttiva Europea 2004/108/CE si informa che responsabile dell'immissione del prodotto sul mercato Comunitario è:
According to article 9 paragraph 2 of the European Directive 2004/108/EC, the responsible for placing the apparatus on the Community market is:
GEWISS S.p.A Via A. Volta, 1 - 24069 Cenate Sotto (BG) Italy Tel: +39 035 946 111 Fax: +39 035 945 270 E-mail: qualitymarks@gewiss.com

SAT
+39 035 946 111
8.30 - 12.30 / 14.00 - 18.00
lunedì ÷ venerdì - monday ÷ friday
24h +39 035 946 260
sat@gewiss.com
www.gewiss.com

LAST REVISION 01/2015