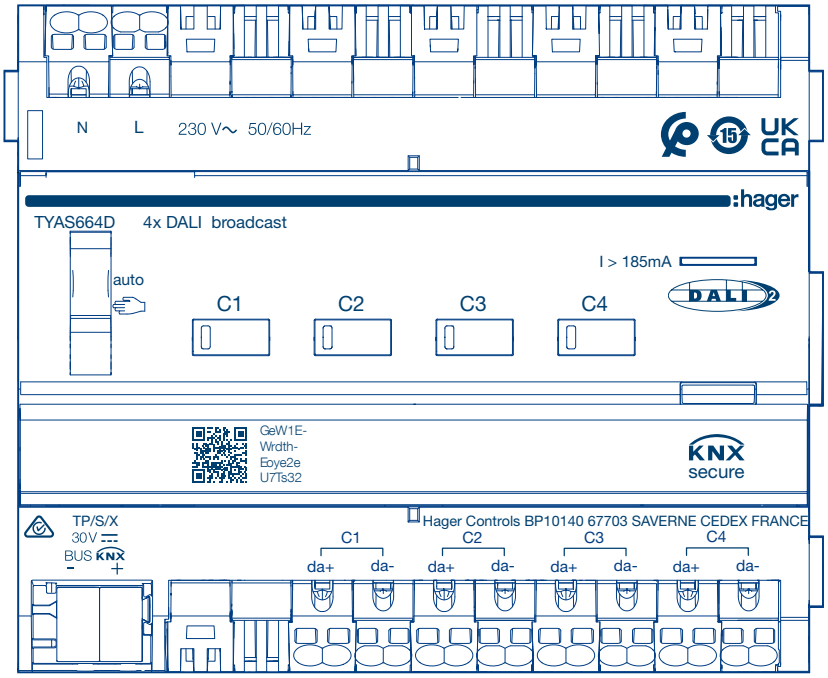
Application description

KNX Building system technology

DALI actuator Broadcast

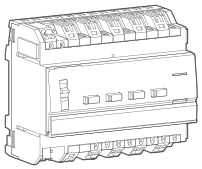


DALI actuator 4gang, Broadcast
TYAS664D

:hager

EN

Product overview

	Reference no.	Product designation	Application software ref.	TP device Radio device
	TYAS664D	KNX-DALI 2 actuator, 4 channels, broadcast, KNX Secure, easy, RGB(T)W	STYAS664D	▬

Subject to technical changes!

Content

1 General

1.1 About this guide

The purpose of this manual is to describe the operation and configuration of the KNX-devices using the ETS program.

It consists of 4 parts:
- General information.
- The parameters and KNX objects available.
- The Easytool configurations are available.
- Technical characteristics.

1.2 About the program

1.2.1 ETS compatibility

The application programmes are compatible with ETS5 or ETS6 and are always available in their latest version on our Internet website.

ETS version	File extension of compatible products	File extension of compatible projects
ETS 5 (v 5.6.0 or higher)	*.knxprod	*.knxproj
ETS 6 (v 6.0.0 or higher)	*.knxprod	*.knxproj

- **ETS Application designation**

Application	Product designation	Application designation
STYAS664D v1.0	TYAS664D	DALI broadcast 4-output module

1.2.2 Easytool compatibility

This product can also be configured using the configuration tool.

Compatible software version: V 7.0.9 or higher

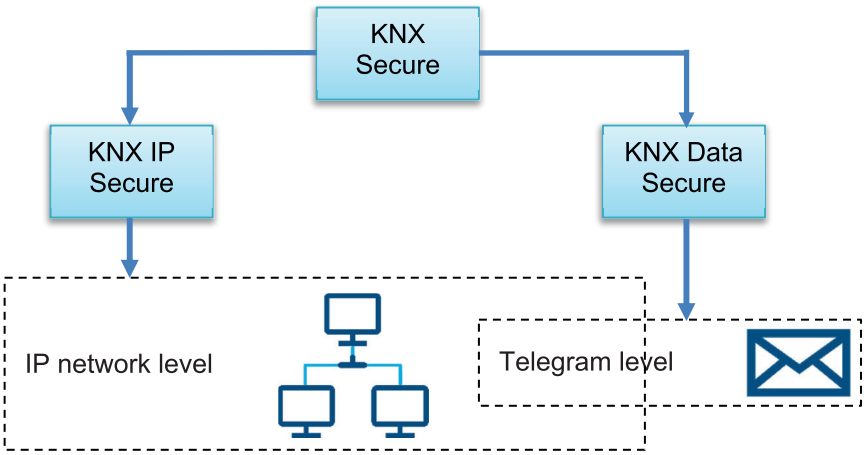
Kompatible Server :
- TJA470: Domovea expert
- TJA670: Domovea basic
- TJA665: Konfigurationsserver KNX easy

It is essential to update the configuration server software version. (Please refer to the user manual).

1.3 Connexion KNX secure

KNX Secure devices are able to encrypt and decrypt telegrams, thus adding an extra level of security to a KNX installation. This level of security can be used both during the commissioning of KNX installations as for KNX installations at runtime.

There are two types of encryption:
- KNX IP Secure : Telegrams are entirely encrypted and applied only to the KNX IP medium. This encryption must be used for KNX installations using an external IP network such as the Internet.
- KNX Data Secure : Telegrams are partly encrypted and applied to any KNX communication medium. This encryption can be used for the KNX IP medium, but only for the part of the KNX installation that is not exposed to an external IP network



The device is KNX Data Secure capable and can be configured in the ETS project. A device certificate, which is attached to the front to the device, is required for safe commissioning. During mounting, it is recommended to remove the certificate from the device and to store it securely.
Note: It is also possible to commission the device without KNX Data-Secure. In this case, the device is not secured and behaves like other KNX devices.

Note: During the configuration of products in Secure mode, if one of the products mentioned below is installed, it is recommended to replace it by its Secure version:

- Replace the reference TYF120 (KNX/IP Interface) with the reference TYFS120
- Replace the reference TYF130 (Line coupler) with the reference TYFS130
- Replace the reference TH101 (USB modular data interface) with the reference TYFS122

Commissioning of the KNX Secure mode
The device is mounted and connected ready for use.
1. Activate the secure commissioning mode in ETS.
2. Enter or scan the device certificate to add it to the project in ETS.

Note: To scan the QR code, a high-resolution camera must be used.

3. Record all passwords and keep them in a safe place.
4. Remove the certificate from the device (QR code) and keep it in a safe place with the passwords.

Master-Reset
The master reset restores the basic device setting.
The reset allows :

- deleting the encryption key
- deleting of the BCU password
- application of the default settings
- the application of a default individual address (15.15.255).

The device must then be recommissioned with the ETS. The manual mode is possible.
In case of Secure mode, a reinitialization deactivates the security of the device. It can then be used again with the device certificate.

How do I perform a Master Reset?
1. Switch off the device by removing the bus connection or disconnecting the power supply to the system
2. Press and hold the lighted push button
3. Switch on the device again by connecting the bus connection or by switching on the power supply to the system.
The address LED lights up. After 5 seconds the LED flashes.
4. Release the address button.
The address LED lights up permanently while the master reset is in progress.
After several seconds, the LED lights off, indicating that the reset is complete. The device restarts.

Updating the firmware
The device can be updated. Firmware updates can be easily performed with the Hager ETS App. This application is free of charge and can be used on site or remotely.

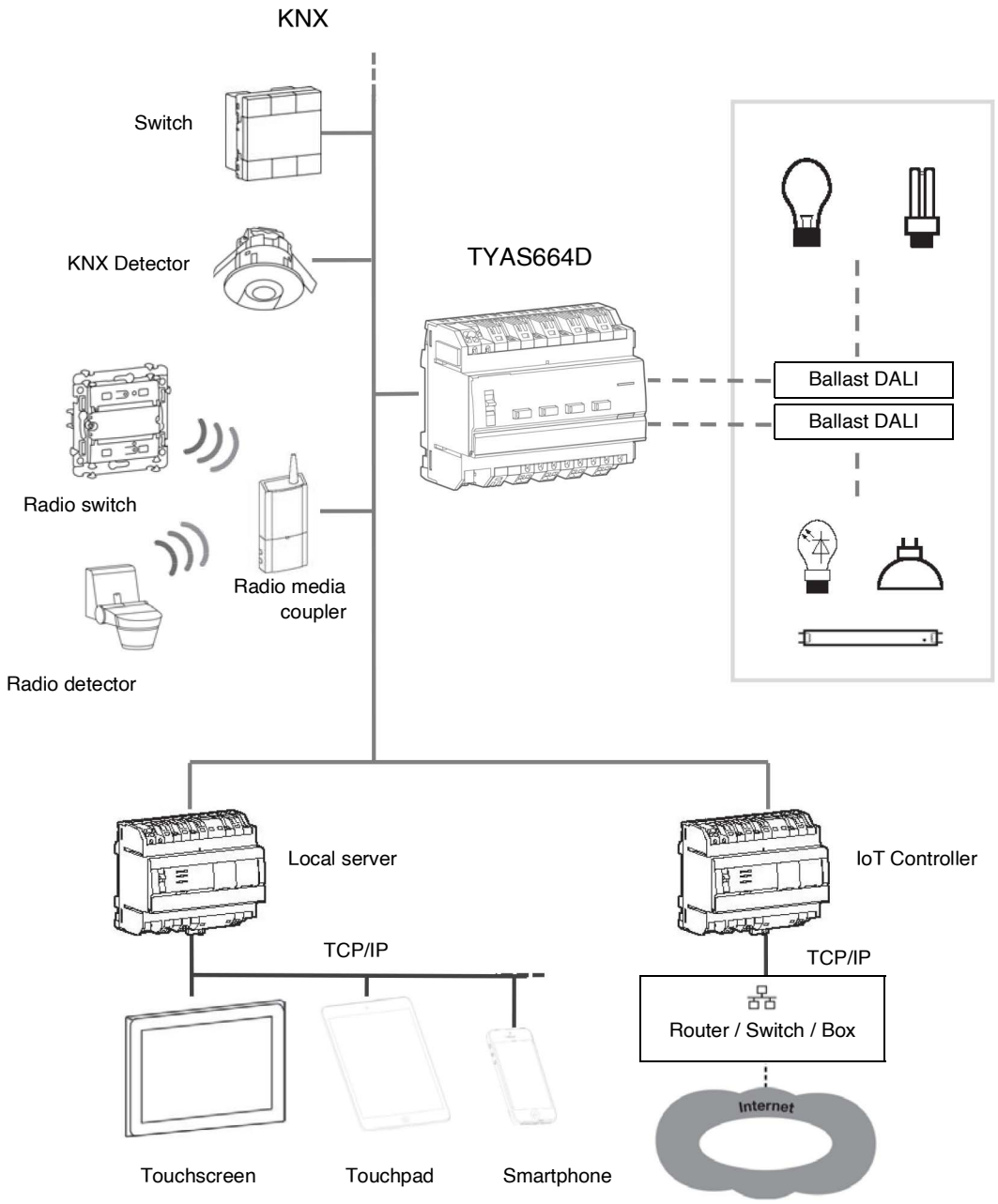
How to update?
1. Login to **my.knx.org**
2. Create a new account or login with your existing account
3. Search for the **Hager Service** application
4. Add to basket
5. Go to the basket and click on Order
6. Select billing and shipping addresses
7. Click on Go to Payment
8. Confirm payment (free)Se connecter à **my.knx.org**
The application is now available in your account.
9. Download the application and the licence to update.

In the ETS project:
10. Start the application from the **Apps** tab
11. Select the device to be updated
12. Select the latest available firmware version
13. Load the device with the firmware
14. After loading is complete, activate the proprietary firmware
The device will update and restart.

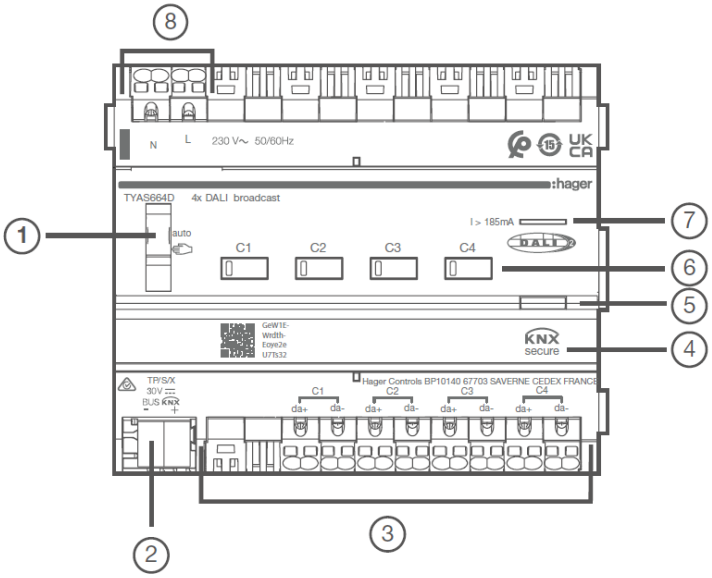
2 General Description

2.1 Installation of the device

2.1.1 Overview presentation



2.1.2 Description of the device



(1) Slide switch **auto** / ☜
(2) KNX bus connection terminal
(3) Connection of DALI ballasts
(4) Labelling field with cover
(5) Illuminated programming button
(6) Operation button for manual operation with status LED
(7) Overload status LED
(8) Mains supply

2.1.3 Physical addressing

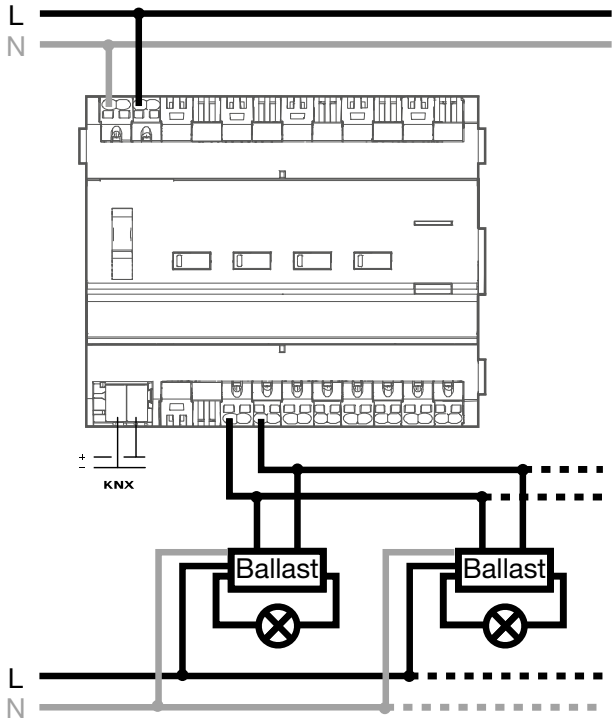
In order to perform the physical addressing or to check whether or not the bus is connected, press the lighted push button (5) on the right-hand side above the identification plates on the front of the device.

Light on = bus connected and ready for physical addressing.

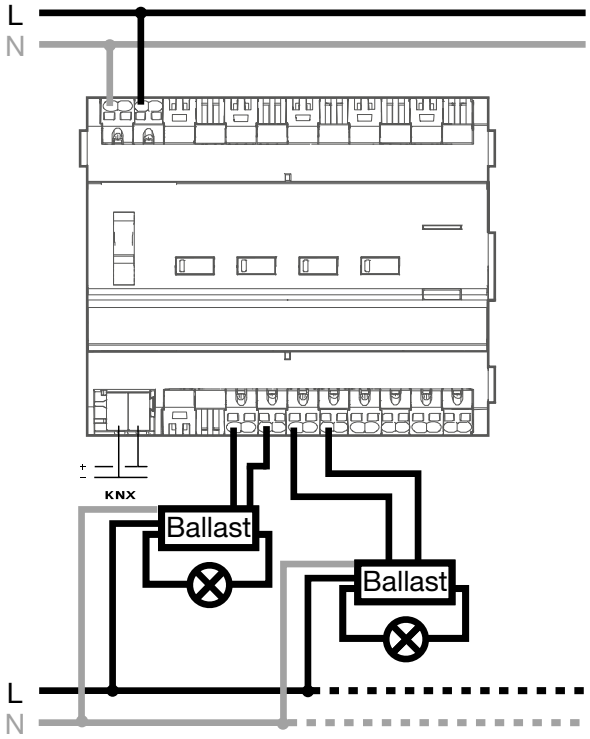
Programming mode is activated, until the physical address is transferred from ETS. Pressing the button again, exits programming mode. Physical addressing can be carried out in automatic or manual mode.

2.1.4 Connection

- On 1 channel



- On 2 channels

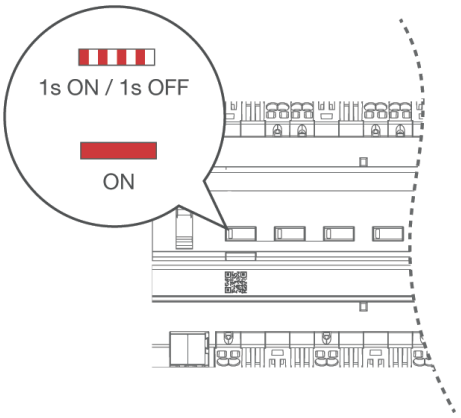


2.1.5 LED meaning

LED	LED/Operation status	
Cx red		output active
		output inactive
		short-circuit detected, flashes every 0.5 s
		no ballast or lamp fault, flashes every 0.5 s for 5 s

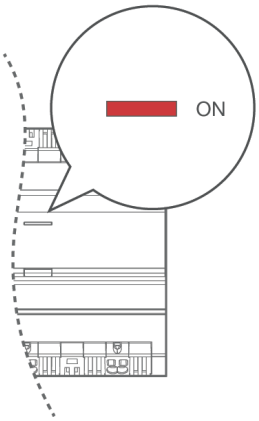
- Short-circuit protection

The device has built-in short-circuit protection in accordance with IEC 62386-101. In the event of a short circuit, all outputs (C1 --- C4) are switched off. The device automatically scans all outputs, leaves all faulty outputs switched off and all other outputs return to automatic mode.
In the event of a short circuit, the status LED of the affected output flashes.



- Overload protection

In the event of an overload, the device switches off all outputs and the status LED lights up red.



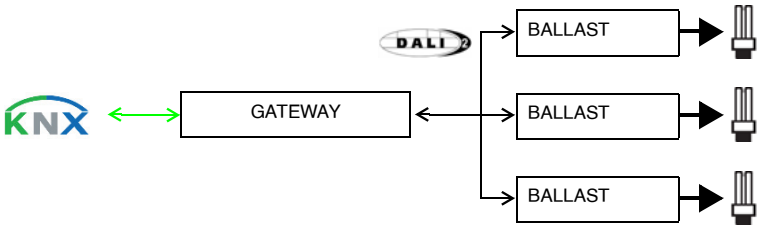
2.2 Function modules of the application

2.2.1 DALI Protocol

DALI (Digital Addressable Lighting Interface) is a standardised international communication and interoperability protocol for lighting management system components. This protocol exists to ensure that lighting manufacturers and fitters have a perfect compatibility between the materials that are fitted.

It is a lighting systems communication protocol that just as well suited to the management needs of an installation with several lights as it is to controlling the lighting in an entire building or an outdoor lighting installation. DALI lighting solutions can be integrated, via walkways, into the technical management systems of a building (KNX, BACnet, TCP/IP, etc.) or other systems.

Operating principle



Note: The elements that distinguish DALI 2 from the previous DALI version are its interoperability (the assurance of compatibility with all DALI equipment) and certification (guarantee of interoperability with a product from a different manufacturer).
Note: This product is certified DALI2. In the event of a malfunction, please check that the controlled ballasts are DALI2 certified.

* Default value

2.2.2 Primary functions

The applications allow individual configuration of the device outputs.
The most important functions are:

- ON/OFF

An output can be switched on or off using the ON/OFF function. The command can come from switches, buttons or other control inputs.

- Relative or absolute dimming (Brightness value)

With relative dimming, the brightness value is raised or lowered with respect to the current brightness value. This is achieved, for example, by a long press on a sensor button. With absolute dimming, the brightness value to be achieved is set on the dimmer as a % value.

- Timer

The Timer function can switch a lighting circuit on or off for a configurable period. The output can be switched to a desired brightness level for a specified period. The timer may be interrupted before expiry of the delay time. A programmable Cut-OFF pre-warning announces the end of the delay time by halving the present brightness value of the output.

- Priority

The Priority function is used to force the output into a defined state. The Priority function is controlled with a 2-bit command.
Only a Priority OFF command authorizes the output for control.
Application: Keeping lighting on for security reasons.

- Automatic control

The Automation functionality allows commanding an output at the same time as the ON/OFF functionality or lighting value. The two functions have the same level of priority. The last command received will act on the status of the output.
An additional command object is used to activate or deactivate the Automatic control.

- Scene

The Scene function is used to switch groups of outputs into a configurable predefined state.
A scene is activated by receipt of a 1-byte command.
Each output can be included in 64 different scenes.

- Manual mode

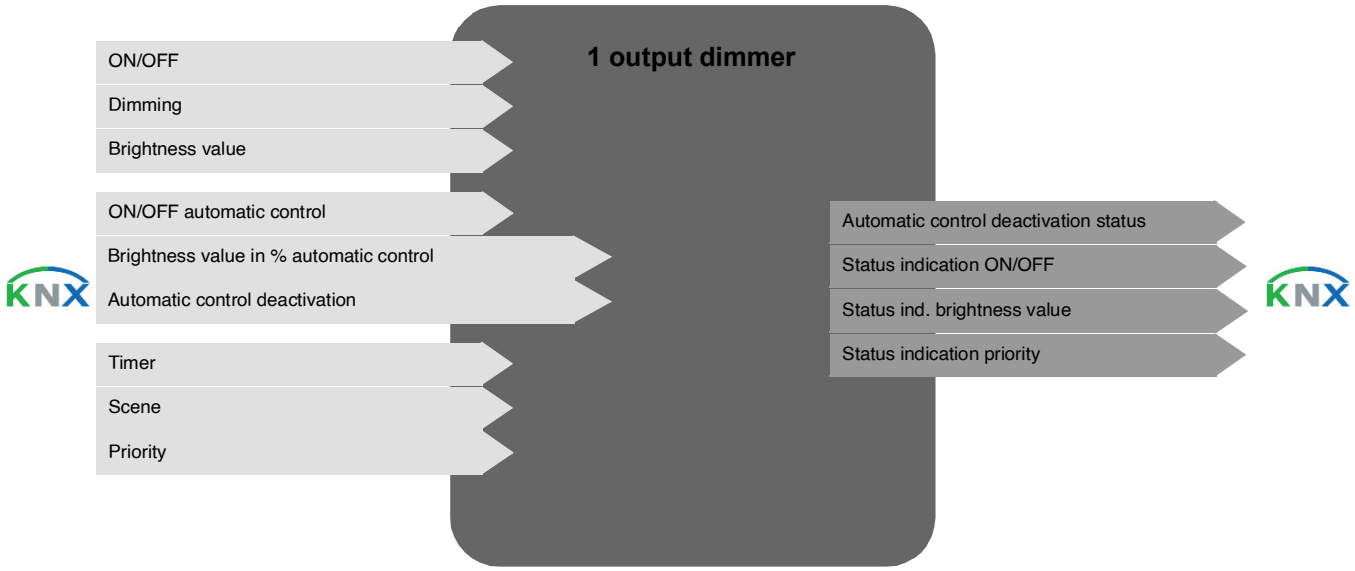
Manual mode allows the device to be disconnected from the bus. In this mode, each output can be priority controlled locally.

- Status indication

The Status function sends the status of each output channel on the KNX bus.

* Default value

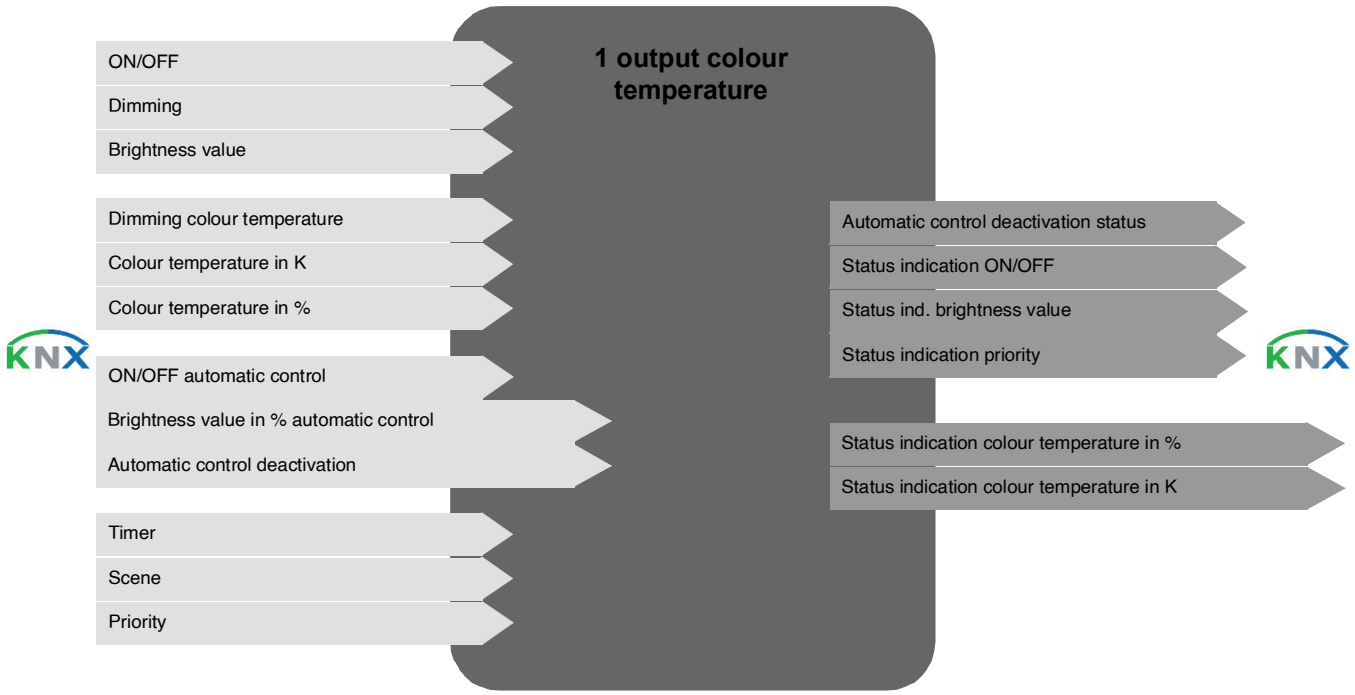
Communication objects



2.2.3 Function: Colour temperature

The product supports the control of the "Colour Control" DALI equipment (DALI Device Type 8) in the specific character "Tunable White (TW)". Using appropriate DALI equipment and lighting sources enables the colour temperature of a lamp to be controlled. The product controls the colour temperature via full dimming and stages. The colour temperature setting is largely independent of the luminosity setting of the lamps used.

Communication objects

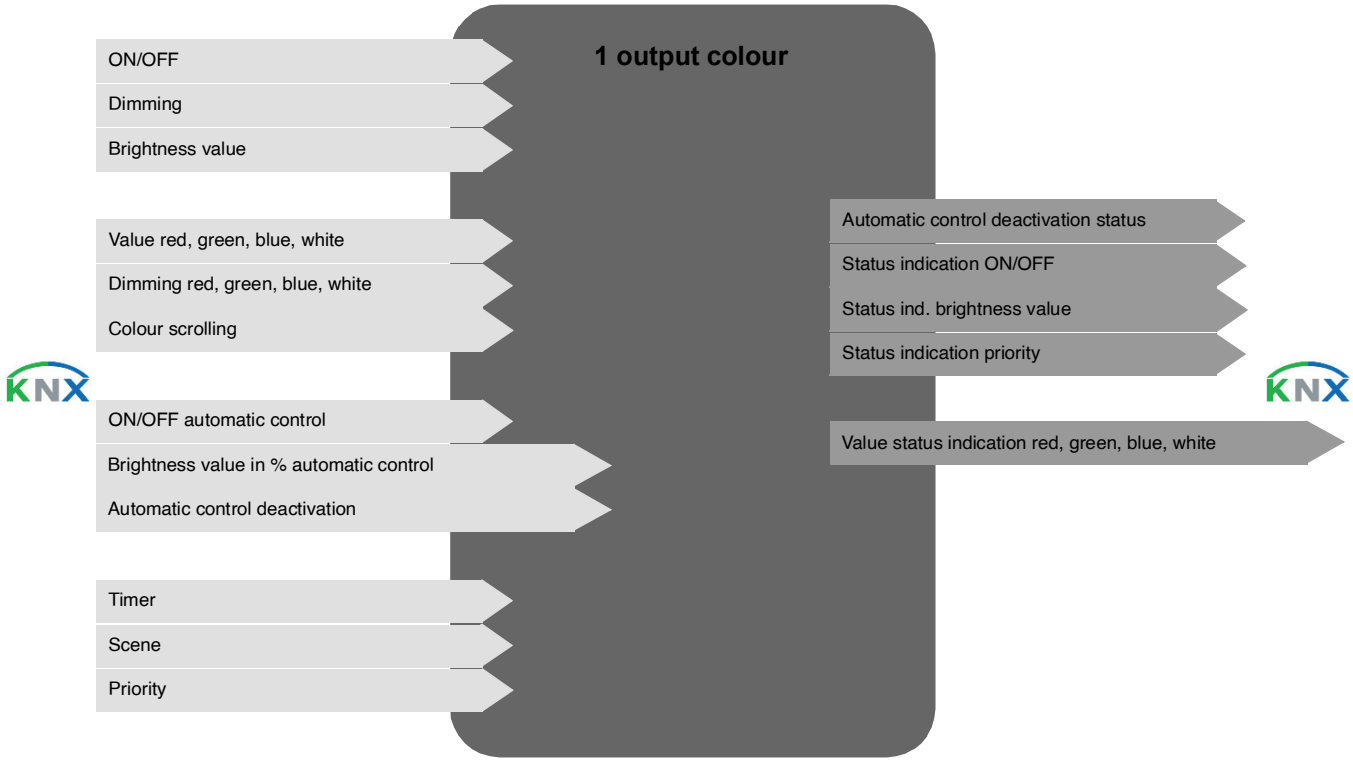


* Default value

2.2.4 Function: Colour

The product supports the control of the "Colour Control" DALI equipment (DALI Device Type 8). Using appropriate DALI equipment and lighting sources enables the colour of a RGB(W) LED lamp to be controlled. The product controls each colour via a switch, full dimming and stages. The colour setting is largely independent of the luminosity setting of the lamps used.

Communication objects



* Default value

2.3 Behaviour of the device

2.3.1 Behaviour after bus power cut

The table below defines the behaviour of the product.
Conditions: 230V mains supply for the product and DALI ballasts is available.

Channel function	During KNX-bus power cut	On return from theKNX-bus
Dimmer	Dimming: 100%	Dimming: Value before bus power cut
Colour temperature	Dimming: 100% Colour temperature: 5000K	Dimming: Value before bus power cut Colour temperature: Value before bus power cut
Colour	Dimming: 100% RGBW values: 100%	Dimming: Value before bus power cut RGBW values: Value before bus power cut

2.3.2 Behaviour on mains supply cut

The table below defines the behaviour of the product.
Conditions: 230V mains supply for DALI ballasts is available.
KNX mains supply is available.

Channel function	During the 230V mains supply cut	On return from the 230V mains supply
Dimmer	Dimming: 100%	Dimming: Value before bus power cut
Colour temperature	Dimming: 100% Colour temperature: 5000K	Dimming: Value before bus power cut Colour temperature: Value before bus power cut
Colour	Dimming: 100% RGBW values: 100%	Dimming: Value before bus power cut RGBW values: Value before bus power cut

* Default value

3 Programming by ETS

The function of the different outputs only differs in the naming of outputs. For this reason, only one output will ever be described.

3.1 Parameters

3.1.1 Fixed parameters

The fixed parameters define the operating mode of the outputs.

Parameter	Description	Value
Status after ETS download	The output status remains unchanged after ETS download. *Note: During ETS-parameters download, the outputs remain unchanged.*	Maintain status
Parameters overwrite at next download (scenes)	The parameter values stored in the device will be overwritten with the ETS configured values at the next download.	Active
Status after priority	At the end of the priority, the output is switched back to the status before priority was activated.	Status before priority
Status after bus power cut	The output status remains unchanged during at bus return. *Note: The device will reboot on bus return. The priority functions that were present before the bus power cut, are no longer active (Priority).*	Maintain status
Status at supply return	The output status remains unchanged when the power is turned back on. *Note: The priority functions that were present before the bus power cut, are no longer active (Priority).*	Maintain status

3.1.2 General

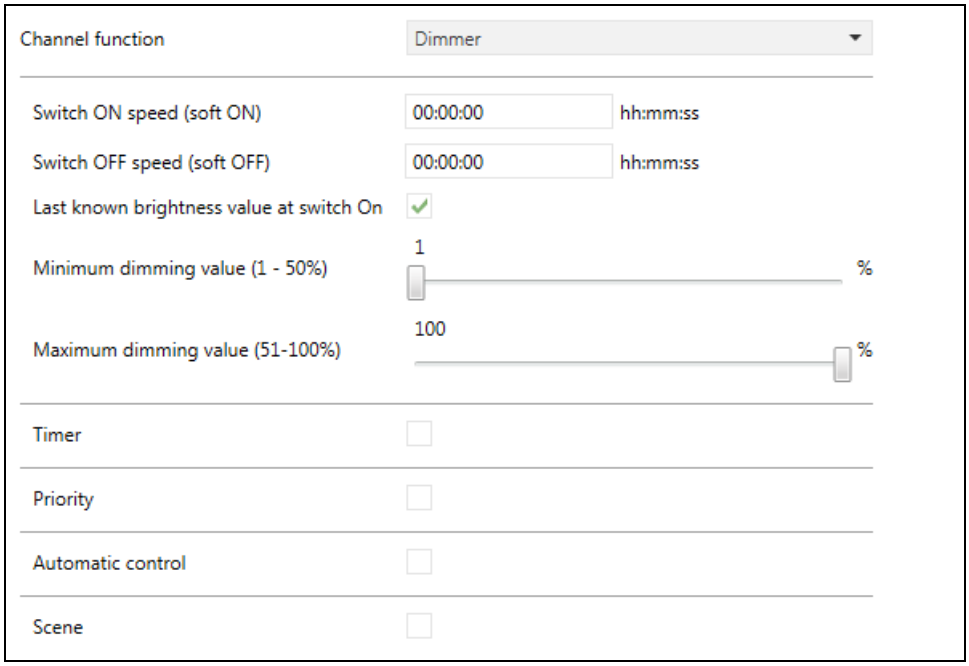
- Outputs naming

Parameter	Description	Value
Output x name	This free text field is used to assign a name to the output in question. The group objects **Name** field will automatically be updated after input.	Output x*

x = 1 to 4

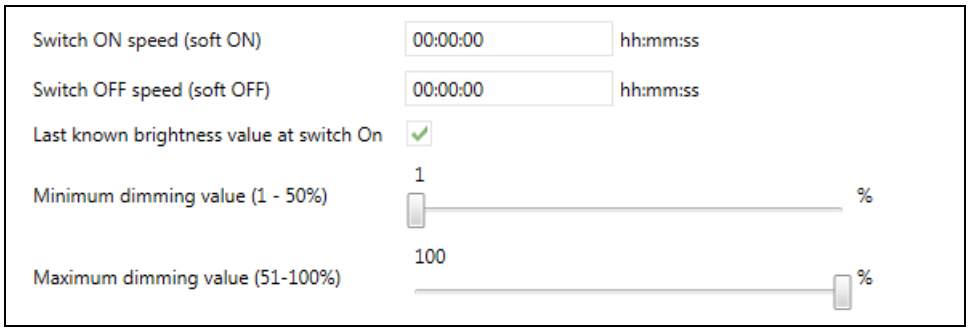
3.1.3 Output functionalities

This parameter window is used to set the device outputs. These parameters are available individually for each output.

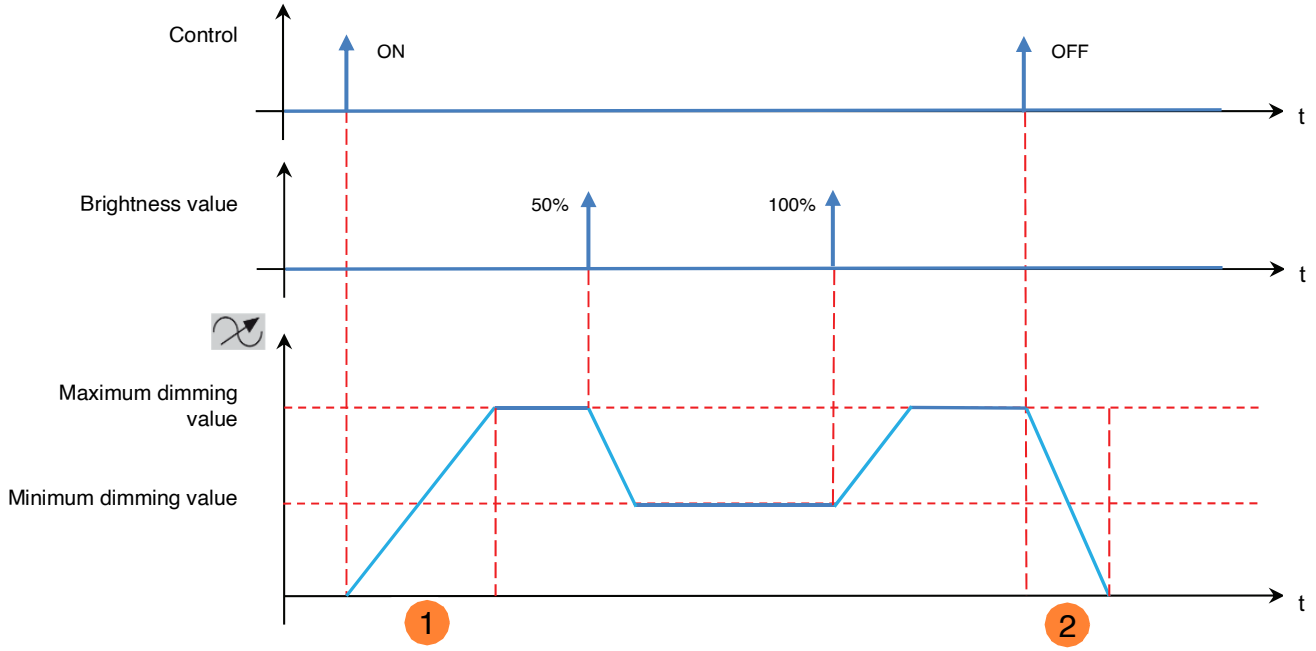


Parameter	Description	Value
Channel function	This configuration window is used to set the operating mode of the output channel.	**Dimmer*** Colour Colour temperature

3.1.3.1 Definition



Dimmer and switch principle:



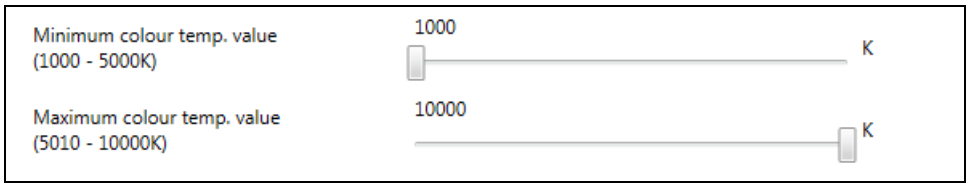
1 Switch ON speed (soft ON)
2 Switch OFF speed (soft OFF)

Parameter	Description	Value
Last known brightness value at switch On	On receipt of an ON command on the **ON/OFF** communication object, the output is set to the following value: 100% To the last brightness value	 Not active Active*
Switch ON speed (soft ON)	This parameter defines the switch ON speed for attaining the brightness value after input of an ON command.	**0***...1h45m00s
Switch OFF speed (soft OFF)	This parameter defines the switch OFF speed for attaining brightness value 0% after input of an OFF command.	**0***...1h45m00s
Minimum dimming value (1 - 50%)	This parameter specifies a minimum brightness value for the dimming.	**1***...50
Maximum dimming value (51 - 100%)	This parameter specifies a maximum brightness value for the dimming.	51...**100***

3.1.3.2 Additional parameters

Additional parameters are available depending on the channel type selected.

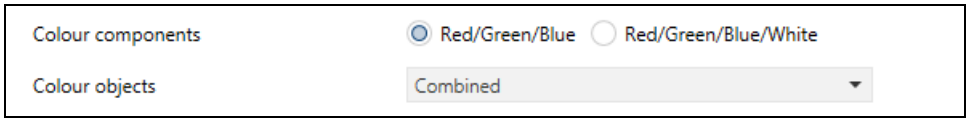
- Colour temperature



Parameter	Description	Value
Minimum colour temp. value (1000 - 5000K)	This parameter defines the minimum colour temperature level.	1000...**2000***...5000K
Maximum colour temp. value (5010 - 10000K)	This parameter defines the maximum colour temperature level.	5010...**6000***...10000K

Communication objects:
5, 43, 81, 119 – Output x – Colour temperature in K (2-byte-7.600 DPT_Absolute_Colour_Temperature)
6, 44, 82, 120 – Output x – Colour temperature in % (1-byte-5.001 DPT_Scaling)
13, 51, 89, 127 – Output x – Status indication colour temperature in % (1-byte-5.001 DPT_Scaling)
14, 52, 90, 128 – Output x – Status indication colour temperature in K (2-byte-7.600 DPT_Absolute_Colour_Temperature)

- Colour



Parameter	Description	Value
Colour components	This parameter defines the colour components used for the corresponding output channel.	**Red/Green/Blue*** Red/Green/Blue/White

Parameter	Description	Value
Colour objects	This parameter defines the size of items used to control the colours. All of the colours are controlled using: - Several items - One unique item - Several items and a single item	 Simple **Combined*** Both

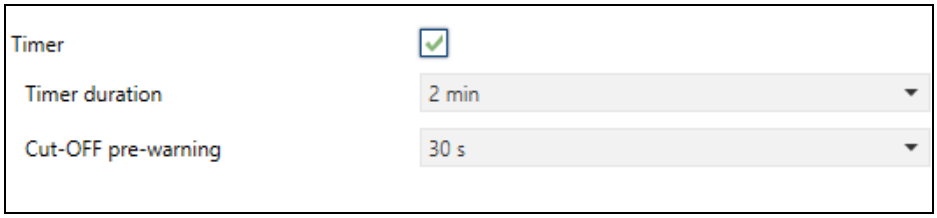
Communication objects:
8, 46, 84, 122 – Output x – RGBW values (6-byte-251.600 DPT_Colour_RGBW)
9, 47, 85, 123 – Output x – RGB values (3-byte-232.600 DPT_Colour_RGB)
10, 48, 86, 124 – Output x – Red value (1-byte-5.001 DPT_Scaling)
11, 49, 87, 125 – Output x – Green value (1-byte-5.001 DPT_Scaling)
12, 50, 88, 126 – Output x – Blue value (1-byte-5.001 DPT_Scaling)
13, 51, 89, 127 – Output x – White value (1-byte-5.001 DPT_Scaling)
14, 52, 90, 128 – Output x – Red dimming (4-bit-3.007 DPT_Control_Dimming)
15, 53, 91, 129 – Output x – Green dimming (4-bit-3.007 DPT_Control_Dimming)
16, 54, 92, 130 – Output x – Blue dimming (4-bit-3.007 DPT_Control_Dimming)
17, 55, 93, 131 – Output x – White dimming (4-bit-3.007 DPT_Control_Dimming)
18, 56, 94, 132 – Output x – Colour scrolling (4-bit-3.007 DPT_Control_Dimming)

* Default value

26, 64, 102, 140 – Output x – Status indication red value (1 byte -5.001 DPT_Scaling)
28, 66, 104, 142 – Output x – Status indication green value (1 byte -5.001 DPT_Scaling)
30, 68, 106, 144 – Output x – Status indication blue value (1 byte -5.001 DPT_Scaling)
32, 70, 108, 146 – Output x – Status indication white value (1 byte -5.001 DPT_Scaling)
33, 71, 109, 147 – Output x – Status indication RGBW values (6-byte-251.600 DPT_Colour_RGBW)
34, 72, 110, 148 – Output x – Status indication RGB values (3-byte-232.600 DPT_Colour_RGB)

3.1.3.3 Timer

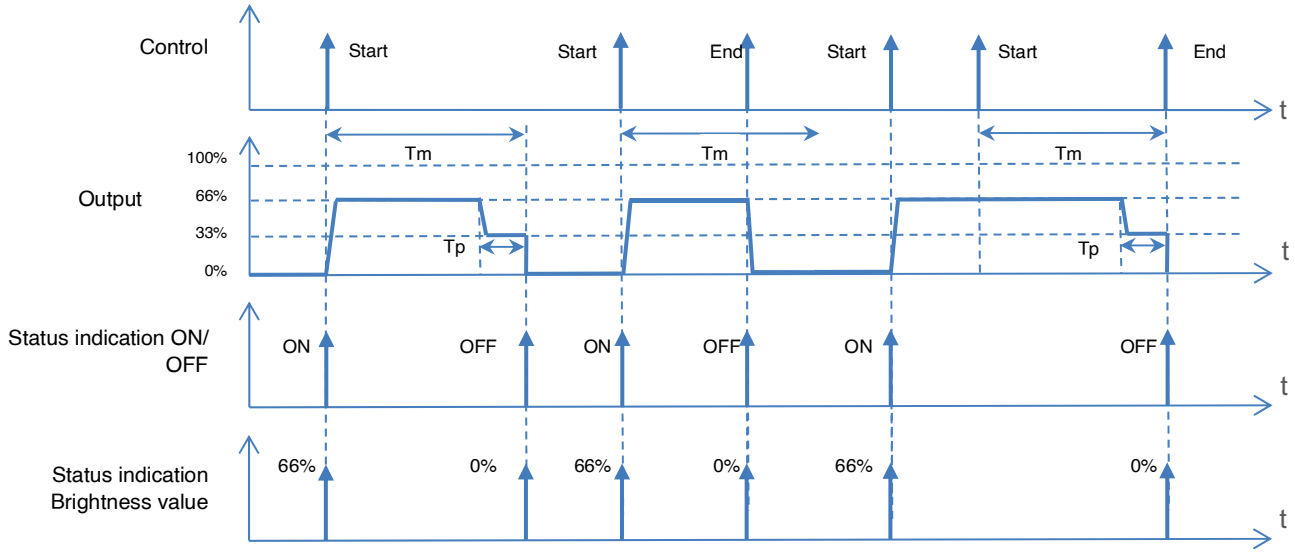
The Timer function is used to switch on a lighting circuit for a programmable period. The timer may be interrupted before expiry of the delay time. A programmable Cut-OFF pre-warning announces the end of the delay time by halving the present brightness value of the output.



Parameter	Description	Value
Timer duration	This parameter determines the timer duration.	Not active, 1 s, 2 s, 3 s, 5 s, 10 s, 15 s, 20 s, 30 s, 45 s, 1 min, 1 min 15 s, 1 min 30 s, **2 min*,** 2 min 30 s, 3 min, 5 min, 15 min, 20 min, 30 min, 1 h, 2 h, 3 h, 5 h, 12 h, 24 h
Cut-OFF pre-warning	This parameter determines the lead time of the cut-OFF pre-warning.	Not active, 15 s, **30 s***, 1 min

* Default value

Operating principle:



Tm: Timer duration
Tp: Pre-warning lead time

Note: If the lead time of the cut-OFF pre-warning is greater than the duration of the timer (Tp>Tm), the cut-OFF pre-warning is not triggered.

Communication objects:
10, 48, 86, 124 – Output x – Timer (1 Bit – 1.001 DPT_Switch)

3.1.3.4 Priority

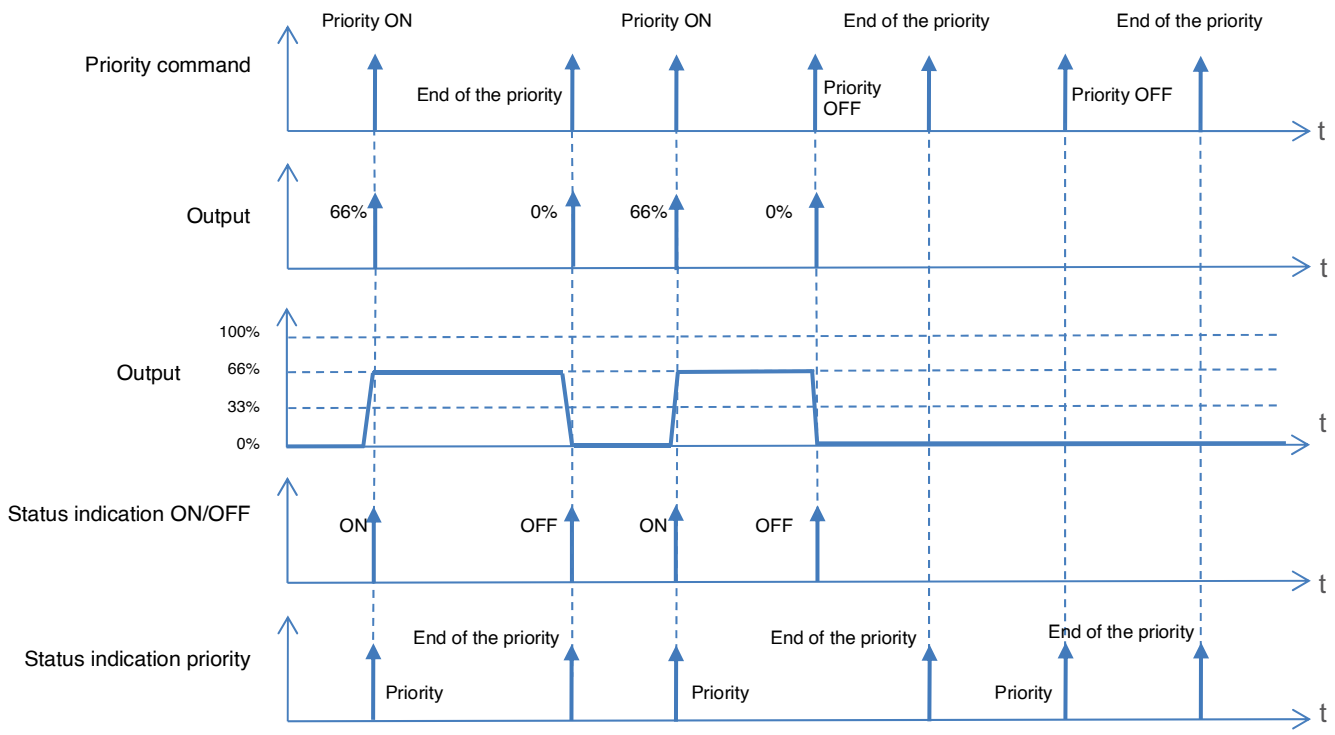
The Priority function is used to force the output into a defined state.
Only a Priority OFF command authorizes the output for control.
At the end of the priority, the output returns to the status it had before the priority (Memorisation function).

The device responds to telegrams received via the **Priority** object, as given in the following table:

Telegram received by the priority operation object			Output behaviour
Hexadecimal Value	Binary Value		
	Bit 1 (MSB)	Bit 0 (LSB)	
00	0	0	End of the priority
01	0	1	End of the priority
02	1	0	Priority OFF
03	1	1	Priority ON

Note: For ON priority, the output is set to the last temperature and colour brightness value.

Operating principle:



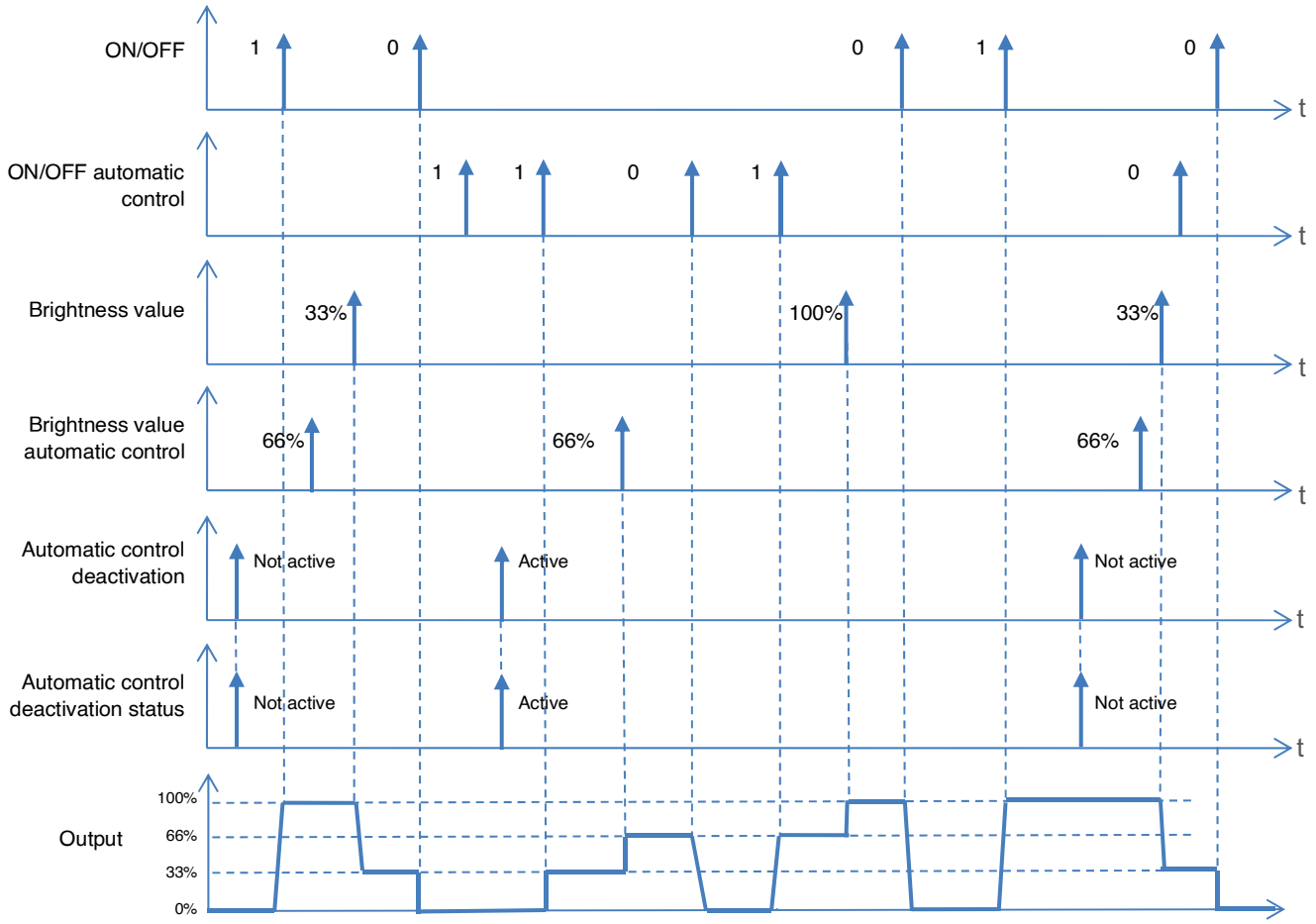
Communication objects:
12, 50, 88, 126 – Output x – Priority (2 Bit – 2.002 DPT_Bool_Control)
13, 51, 89, 127 – Output x – Status indication priority (1 Bit – 1.011 DPT_State)

3.1.3.5 Automatic control

The Automatic control function is used to command an output in parallel to the ON/OFF function.
The two functions have the same level of priority. The last command received will act on the status of the output.
An additional command object is used to activate or deactivate the Automatic control.

Example: when an output is controlled by a button and in parallel by an automatic control (timer, twilight switch, weather station, etc.) the automatic control can be deactivated for reasons of comfort (vacations, public holidays, etc.).

Operating principle:



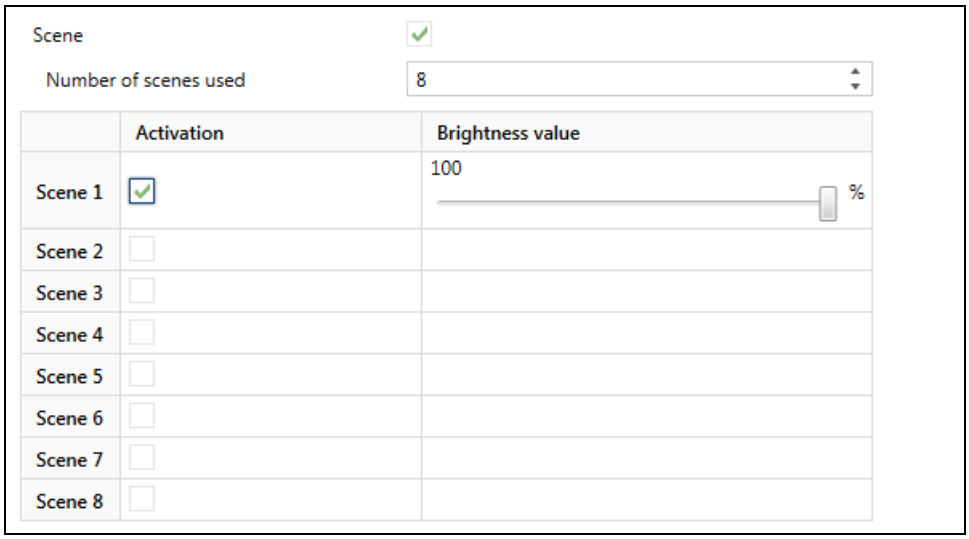
Communication objects:

4, 42, 80, 118 – Output x – ON/OFF automatic control (1 Bit – 1.001 DPT_Switch)
5, 43, 81, 119 – Output x – Brightness value in % automatic control (1 Byte – 5.001 DPT_Scaling)
6, 44, 82, 120 – Output x – Automatic control deactivation (1 Bit – 1.001 DPT_Switch)
7, 45, 83, 121 – Output x – Automatic control deactivation status (1 Bit – 1.001 DPT_Switch)

* Default value

3.1.3.6 Scene

The Scene function is used to switch groups of outputs into a configurable predefined state. Each output can be included in 64 different scenes.



Parameter	Description	Value
Number of scenes used	This parameter determines the number of scenes used.	**1***...64

Note: If the Scene number received on the Scene object is greater than the maximum number of scenes, the status of the output remains unchanged.

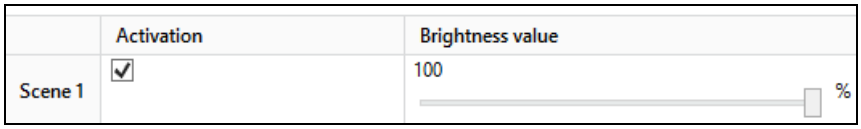
Parameter	Description
Scene x	This parameter is used to activate the scene in question.

x = 1 to 64

*Note: Each output has up to 64 scenes available, in accordance with the **Number of scenes used** parameter.*

Depending on the channel function value, the setting parameters for the different stages may change.

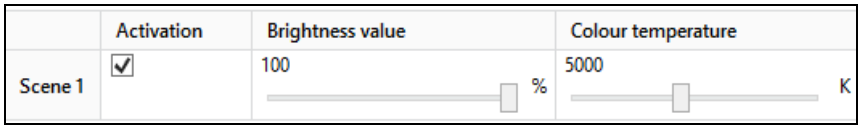
- Dimmer



Parameter	Description	Value
Brightness value	This parameter defines the brightness value that is applied to the output when Scene **x** is selected.	0...**100***

x = 1 to 64

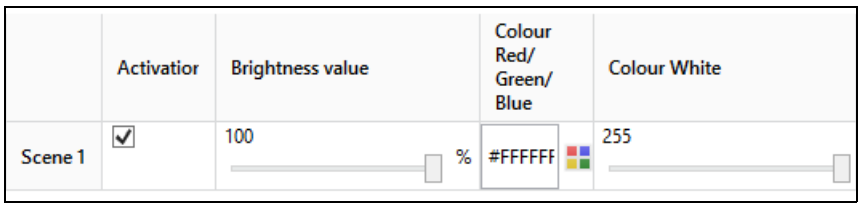
- Colour temperature



Parameter	Description	Value
Brightness value	This parameter defines the brightness value that is applied to the output when Scene **x** is selected.	0...**100***
Colour temperature	This parameter defines the colour temperature applied to the output when stage**x** is selected.	1000...**5000***…10000

Scene x = 1 to 64

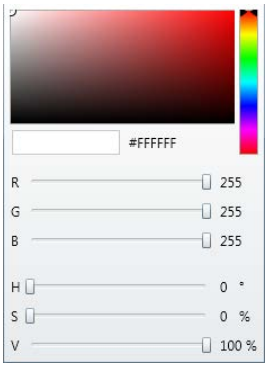
- Colour



Parameter	Description	Value
Brightness value	This parameter defines the brightness value that is applied to the output when Scene **x** is selected.	0...**100***
Colour Red/Green/Blue	This parameter defines the value of the red, green and blue components applied to the output when stage **x** is selected.	

Scene x = 1 to 64

Note: By clicking the symbol, a window opens to allow the colours to be adjusted.

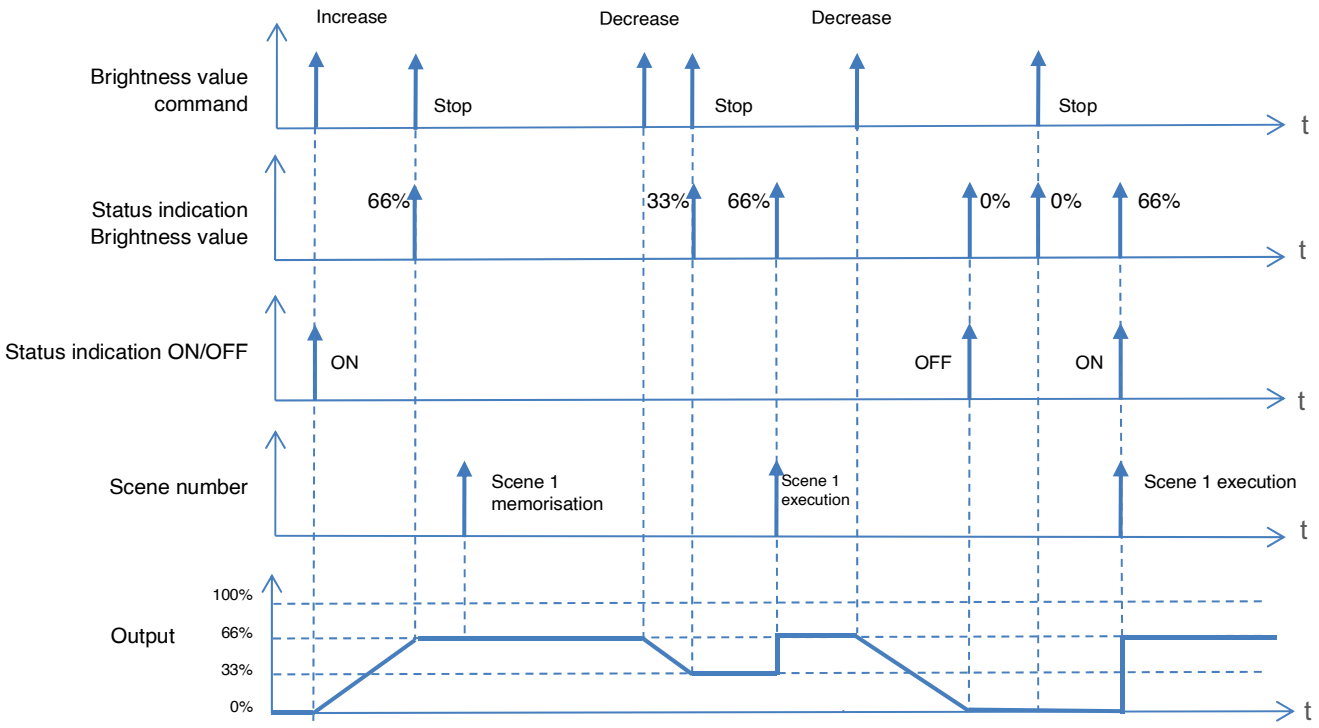


Parameter	Description	Value
Colour White	This parameter defines the value of the white component applied to the output when stage x is selected.	0...**255***

x = 1 to 64

*Note: This parameter is only visible when the **Colour components** parameter has the value: **Red/Green/Blue/ White**.*

Operating principle:



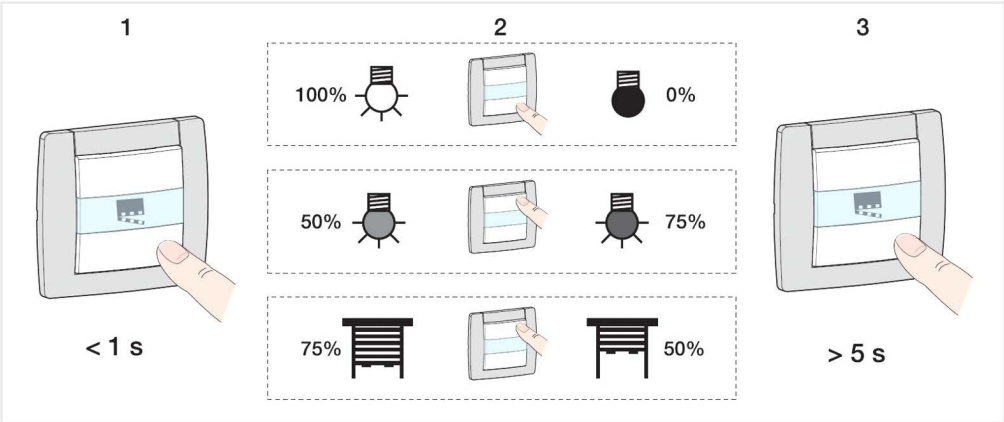
Learning and storing scenes
This process is used to change and store a scene. For example, by locally pressing the key in the room or by emission of the values from a visualization.

To access and store scenes, the following values must be sent:

Scene number	**Access scene (Object value: 1 byte)**	**Store scene (Object value: 1 byte)**
1-64	= Scene number -1	= Scene number +128
Examples		
1	0	128
2	1	129
3	2	130
...	...	
64	63	191

Here is the scene memorisation for local switches, for example.

- Activate scene by briefly pressing the transmitter that starts it.
- The outputs (lights, shutters, etc.) are set in the desired state using the usual local control devices (buttons, remote control, etc.).
- Memorise the status of the outputs with a press greater than 5 seconds long on the transmitter that starts the scene. The memorisation can be displayed by short-term activation of the outputs.



3.1.4 DALI

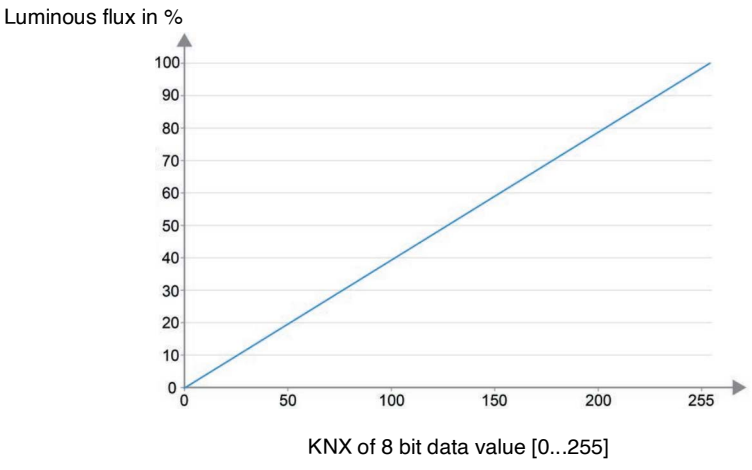
This part configures the parameters related to the DALI bus. They are valid for all of the output channels.

Dimming curve	Logarithmic / Linear
Emission of DALI settings	At initialization and periodically
Periodicity	00:01 hh:mm

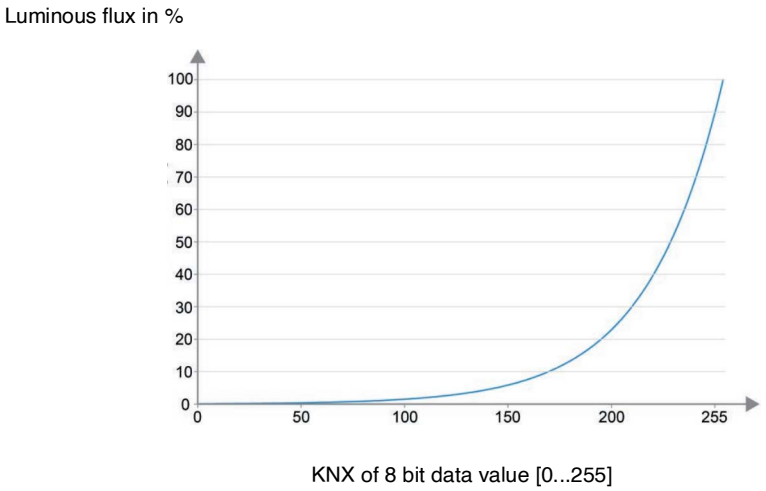
- Dimming curve

During dimming, the evolution of the logarithmic characteristic curve, planned for DALI and saved in the equipment, is not adapted for dimming controls.
This is why the product offers the option of influencing the DALI dimming characteristic curve without intervening in the equipment.

Linear: The product linearises the dimming characteristic curve by converting all of the brightness values received by the KNX system under an appropriate form in DALI data values. The KNX brightness values are reproduced linearly in this way on the luminous flux emitted by the DALI light sources. The product does not perform any linear dimming on this setting. It is only once the non-linear conversion of the product is combined with the logarithmic characteristic curve of equipment that a linear graduation of the luminous flux related to the physical output of a piece of equipment ensues.
The brightness value status indications to the KNX system are also adjusted by conversion.



Logarithmic: The product transmits the KNX brightness values almost without input from the DALI interface side. The data values only lead to a levelling in the lower dimming range. Once the transmission of values by the product is combined with the logarithmic characteristic curve of equipment, a logarithmic graduation of the luminous flux related to the physical output of a piece of equipment ensues.
The status indication of the actual DALI brightness value to the KNX system is also possible.



Parameter	Description	Value
Dimming curve	This parameter defines the order of magnitude of the values for transmitting the data between the KNX and DALI bus.	Linear **Logarithmic***

- Emission of DALI settings

Parameter	Description	Value
Emission of DALI settings	The parameters concerning the DALI settings are emitted: - When starting the product. - Periodically after a configurable time. - When starting the product and periodically according to a set time.	 **At initialization*** Periodically At initialization and periodically

Parameter	Description	Value
Periodicity	This parameter determines the time interval between each emission of the DALI settings to the ballasts.	**00:01*** ... 18 :12 (mm:ss)

*Note: This parameter is only visible when the **At initialization and periodically** parameter has the value: **Periodically** or **At initialization and periodically**.*

3.2 Communication objects

3.2.1 Communication objects dimmer

	Number	Name	Function of the object	Length	C	R	W	T
	1	Output 1	ON/OFF	1 bit	C	-	W	-
	2	Output 1	Dimming	4 bit	C	-	W	-
	3	Output 1	Brightness value	1 byte	C	-	W	-
	4	Output 1	ON/OFF automatic control	1 bit	C	-	W	-
	5	Output 1	Brightness value in % automatic control	1 byte	C	-	W	-
	6	Output 1	Automatic control deactivation	1 bit	C	-	W	-
	7	Output 1	Automatic control deactivation status	1 bit	C	R	-	T
	8	Output 1	Status indication ON/OFF	1 bit	C	R	-	T
	9	Output 1	Status ind. brightness value	1 byte	C	R	-	T
	10	Output 1	Timer	1 bit	C	-	W	-
	11	Output 1	Scene	1 byte	C	-	W	-
	12	Output 1	Priority	2 bit	C	-	W	-
	13	Output 1	Status indication priority	1 bit	C	R	-	T

3.2.1.1 ON/OFF

No.	Name		Data type	Flags
1, 39, 77, 115	Output x	ON/OFF	1 bit - 1.001 DPT_Switch	C, W

These objects are always activated.
It allows the output channel to be switched depending on the value sent on the KNX bus.

Normally open:

- Upon reception of an OFF command, the output varies the brightness value 0%.
- Upon reception of an ON command, the output varies to the last brightness value received (1 to 100%).

3.2.1.2 Dimming

No.	Name	Function of the object	Data type	Flags
2, 40, 78, 116	Output x	Dimming	4 bit - 3.007 DPT_Control_Dimming	C, W

These objects are always activated. It allows for relative dimming of the output as a function of the value sent by the KNX bus.
The output is dimmed in accordance with the 4-bit format value that arrives.

Object value:

b3	b2	b1	b0
C	Steps		

Data fields	Description	Code
C	Increase or reduction in brightness	0: Decrease 1: Increase
Steps	Brightness between 0% and 100% divided into steps	0: Stop 1: 100% 2: 50% 3: 25% 4: 12% 5: 6% 6: 3% 7: 1%

No.	Name	Function of the object	Data type	Flags
3, 41, 79, 117	Output x	Brightness value	1 byte - 5.001 DPT_Scaling	C, W

These objects are always activated. It allows for absolute dimming of the output as a function of the value sent by the KNX bus.
The output is dimmed according to the value that arrives in 1-byte format and corresponds in % to the brightness value to be attained.

Object value: 0 to 255: 0 = 0%, 255 = 100%.
Resolution: Approx. 0.4%.

3.2.1.3 Automatic control

No.	Name	Function of the object	Data type	Flags
4, 42, 80, 118	Output x	ON/OFF automatic control	1 bit - 1.001 DPT_Switch	C, W
This object is activated when the **Automatic control** parameter is active. It allows the output channel to be switched depending on the value sent on the KNX bus. **Normally open**: - Upon reception of an OFF command, the output varies the brightness value 0%. - Upon reception of an ON command, the output varies to the last brightness value received (1 to 100%). For further information, see: Automatic control.				

No.	Name	Function of the object	Data type	Flags
5, 43, 81, 119	Output x	Brightness value in % automatic control	1 byte - 5.001 DPT_Scaling	C, W
This object is activated when the **Automatic control** parameter is active. It allows for absolute dimming of the output as a function of the value sent by the KNX bus. The output is dimmed according to the value that arrives in 1-byte format and corresponds in % to the brightness value to be attained. Object value: 0 to 255: 0 = 0%, 255 = 100%. Resolution: Approx. 0.4%. For further information, see: Automatic control.				

No.	Name	Function of the object	Data type	Flags
6, 44, 82, 120	Output x	Automatic control deactivation	1 bit - 1.003 DPT_Enable	C, W
This object is activated when the **Automatic control deactivation** parameter is active. This object is used to activate the automatic control function. Object value: - If the object receives the value 0, the automatic control function is inactive. - If the object receives the value 1, the automatic control function is active. For further information, see: Automatic control.				

No.	Name	Function of the object	Data type	Flags
7, 45, 83, 121	Output x	Automatic control deactivation status	1 bit - 1.011 DPT_State	C, R, T
This object is activated when the **Automatic control deactivation** parameter is active. This object is used to send the status of the Automatic control deactivation function of the device on the KNX bus. Object value: - If the Automatic control deactivation function is deactivated, a telegram with a logical value 0 is sent. - If the Automatic control deactivation function is activated, a telegram with a logical value 1 is sent. This object is sent when there is a status change. For further information, see: Automatic control.				

3.2.1.4 Status indication

No.	Name	Function of the object	Data type	Flags
8, 46, 84, 122	Output x	Status indication ON/OFF	1 bit - 1.001 DPT_Switch	C, R, T
These objects are always activated. This object is used to send the switching status of the appliance output channel on the KNX bus. Object value: - If the brightness value is equal to 0, a telegram with logic value 0 is sent on the KNX bus. - If the brightness value is greater than 0, a telegram with logic value 1 is sent on the KNX bus. This object is sent when there is a status change.				

No.	Name	Function of the object	Data type	Flags
9, 47, 85, 123	Output x	Status ind. brightness value	1 byte - 5.001 DPT_Scaling	C, R, T
These objects are always activated. This object allows the status of the brightness value of the Output to be sent over the KNX bus. Object value: 0 to 255: 0 = 0%, 255 = 100%. This object is sent when there is a status change.				

3.2.1.5 Timer

No.	Name	Function of the object	Data type	Flags
10, 48, 86, 124	Output x	Timer	1 bit - 1.010 DPT_Start	C, W
This object is activated when the **Timer** parameter is active. This object is used to activate the Timer function of the device via the KNX bus. Object value: - If the object receives the value 1, the output switches for a configurable period. - If the object receives the value 0, the output remains in its current state. *Note: The timer duration can be interrupted by a long press on the button controlling the timer (only with Hager push-buttons with timer object).* *Note: When a start command is received during the timer, the timer duration is reset.* For further information, see: Timer.				

3.2.1.6 Scene

No.	Name	Function of the object	Data type	Flags
11, 49, 87, 125	Output x	Scene	1 byte - 18.001 DPT_SceneControl	C, W

This object is activated when the **Scene** parameter is active.
This object is used to recall or save a scene.

Details on the format of the object are given below.

7	6	5	4	3	2	1	0
Learning	Not used	Scene number					

Bit 7: 0: The scene is called / 1: The scene is saved.
Bit 6: Not used.
Bit 5 to Bit 0: Scene numbers from 0 (Scene 1) to 63 (Scene 64).

For further information, see: Scene.

3.2.1.7 Priority

No.	Name	Function of the object	Data type	Flags
12, 50, 88, 126	Output x	Priority	2 bit - 2.002 DPT_Bool_Control	C, W

This object is activated if the **Priority** parameter is active.
The status of the output contact is determined directly by this object.

Details on the format of the object are given below.

Telegram received by the priority operation object			Output behaviour
Hexadecimal Value	Binary Value		
	Bit 1 (MSB)	Bit 0 (LSB)	
00	0	0	End of the priority
01	0	1	End of the priority
02	1	0	Priority OFF
03	1	1	Priority ON

The first bit of this object (Bit 0) determines the status of the output contact, which should be priority controlled. The second bit activates or deactivates the Priority.

For further information, see: Priority.

No.	Name	Function of the object	Data type	Flags
13, 51, 89, 127	Output x	Status indication priority	1 bit - 1.011 DPT_State	C, R, T

This object is activated if the **Priority** parameter is active.
This object allows the status of the Priority to be sent from the device on the KNX bus.

Object value:
0 = Not forced, 1 = Forced:

- If Priority is deactivated, a telegram is sent with logic value 0.
- If Priority is activated, a telegram is sent with logic value 1.

This object is sent when there is a status change.
For further information, see: Priority.

3.2.2 Communication objects colour temperature

	Number	Name	Function of the object	Length	C	R	W	T
	1	Output 1	ON/OFF	1 bit	C	-	W	-
	2	Output 1	Dimming	4 bit	C	-	W	-
	3	Output 1	Brightness value	1 byte	C	-	W	-
	4	Output 1	Dimming colour temperature	4 bit	C	-	W	-
	5	Output 1	Colour temperature in K	2 bytes	C	-	W	-
	6	Output 1	Colour temperature in %	1 byte	C	-	W	-
	7	Output 1	ON/OFF automatic control	1 bit	C	-	W	-
	8	Output 1	Brightness value in % automatic control	1 byte	C	-	W	-
	9	Output 1	Automatic control deactivation	1 bit	C	-	W	-
	10	Output 1	Automatic control deactivation status	1 bit	C	R	-	T
	11	Output 1	Status indication ON/OFF	1 bit	C	R	-	T
	12	Output 1	Status ind. brightness value	1 byte	C	R	-	T
	13	Output 1	Status indication colour temperature in %	1 byte	C	R	-	T
	14	Output 1	Status indication colour temperature in K	2 bytes	C	R	-	T
	15	Output 1	Timer	1 bit	C	-	W	-
	16	Output 1	Scene	1 byte	C	-	W	-
	17	Output 1	Priority	2 bit	C	-	W	-
	18	Output 1	Status indication priority	1 bit	C	R	-	T

3.2.2.1 ON/OFF

No.	Name	Function of the object	Data type	Flags
1, 39, 77, 115	Output x	ON/OFF	1 bit - 1.001 DPT_Switch	C, W

These objects are always activated.
It allows the output channel to be switched depending on the value sent on the KNX bus.

Normally open:

- Upon reception of an OFF command, the output varies the brightness value 0%.
- Upon reception of an ON command, the output varies to the last brightness value received (1 to 100%).

3.2.2.2 Dimming

No.	Name	Function of the object	Data type	Flags
2, 40, 78, 116	Output x	Dimming	4 bit - 3.007 DPT_Control_Dimming	C, W

These objects are always activated. It allows for relative dimming of the output as a function of the value sent by the KNX bus.
The output is dimmed in accordance with the 4-bit format value that arrives.

Object value:

b3	b2	b1	b0
C	Steps		

Data fields	Description	Code
C	Increase or reduction in brightness	0: Decrease 1: Increase
Steps	Brightness between 0% and 100% divided into steps	0: Stop 1: 100% 2: 50% 3: 25% 4: 12% 5: 6% 6: 3% 7: 1%

No.	Name	Function of the object	Data type	Flags
3, 41, 79, 117	Output x	Brightness value	1 byte - 5.001 DPT_Scaling	C, W

These objects are always activated. It allows for absolute dimming of the output as a function of the value sent by the KNX bus.
The output is dimmed according to the value that arrives in 1-byte format and corresponds in % to the brightness value to be attained.

Object value: 0 to 255: 0 = 0%, 255 = 100%.
Resolution: Approx. 0.4%.

3.2.2.3 Colour temperature

No.	Name	Function of the object	Data type	Flags
4, 42, 80, 118	Output x	Dimming colour temperature	4 bit - 3.007 DPT_Control_Dimming	C, W

This object is activated when the parameter **Channel function** has the value **Colour temperature**.
It allows the colour temperature to be dimmed depending on the value sent on the KNX bus.

The output is dimmed in accordance with the 4-bit format value that arrives.

Object value:

b3	b2	b1	b0
C	Steps		

Data fields	Description	Code
C	Increase or reduction in brightness	0: Decrease 1: Increase
Steps	Brightness between 0% and 100% divided into steps	0: Stop 1: 100% 2: 50% 3: 25% 4: 12% 5: 6% 6: 3% 7: 1%

For further information, see: Additional parameters.

No.	Name	Function of the object	Data type	Flags
5, 43, 81, 119	Output x	Colour temperature in K	2 - byte - 7.600 DPT_Absolute_Colour_Temperature	C, W

This object is activated when the parameter **Channel function** has the value **Colour temperature**.
It allows the colour temperature to be dimmed depending on the value sent on the KNX bus.
The output is dimmed according to the value that arrives in 2-byte format and corresponds in K to the colour temperature value to be attained.

Object value: 1000 to 10000 K.

For further information, see: Additional parameters.

No.	Name	Function of the object	Data type	Flags
6, 44, 82, 120	Output x	Colour temperature in %	1 - byte - 5.001 DPT_Scaling	C, W

This object is activated when the parameter **Channel function** has the value **Colour temperature**.
It allows the colour temperature to be dimmed depending on the value sent on the KNX bus.
The output is dimmed according to the value that arrives in 1-byte format and corresponds in % to the colour temperature value to be attained.

Object value: 0 to 255: 0 = 0%, 255 = 100%.
Resolution: Approx. 0.4%.

Note: 0% corresponds to the minimum value that can be set and 100% corresponds to the maximum value that can be set.

For further information, see: Additional parameters.

3.2.2.4 Automatic control

No.	Name	Function of the object	Data type	Flags
7, 45, 83, 121	Output x	ON/OFF automatic control	1 bit - 1.001 DPT_Switch	C, W

This object is activated when the **Automatic control** parameter is active. It allows the output channel to be switched depending on the value sent on the KNX bus.

Normally open:
- Upon reception of an OFF command, the output varies the brightness value 0%.
- Upon reception of an ON command, the output varies to the last brightness value received (1 to 100%).

For further information, see: Automatic control.

No.	Name	Function of the object	Data type	Flags
8, 46, 84, 122	Output x	Brightness value in % automatic control	1 byte - 5.001 DPT_Scaling	C, W

This object is activated when the **Automatic control** parameter is active. It allows for absolute dimming of the output as a function of the value sent by the KNX bus.
The output is dimmed according to the value that arrives in 1-byte format and corresponds in % to the brightness value to be attained.

Object value: 0 to 255: 0 = 0%, 255 = 100%.
Resolution: Approx. 0.4%.

For further information, see: Automatic control.

No.	Name	Function of the object	Data type	Flags
9, 47, 85, 123	Output x	Automatic control deactivation	1 bit - 1.003 DPT_Enable	C, W

This object is activated when the **Automatic control deactivation** parameter is active.
This object is used to activate the automatic control function.

Object value:
- If the object receives the value 0, the automatic control function is inactive.
- If the object receives the value 1, the automatic control function is active.

For further information, see: Automatic control.

No.	Name	Function of the object	Data type	Flags
10, 48, 86, 124	Output x	Automatic control deactivation status	1 bit - 1.011 DPT_State	C, R, T

This object is activated when the **Automatic control deactivation** parameter is active.
This object is used to send the status of the Automatic control deactivation function of the device on the KNX bus.

Object value:
- If the Automatic control deactivation function is deactivated, a telegram with a logical value 0 is sent.
- If the Automatic control deactivation function is activated, a telegram with a logical value 1 is sent.

This object is sent when there is a status change.
For further information, see: Automatic control.

3.2.2.5 Status indication

No.	Name	Function of the object	Data type	Flags
11, 49, 87, 125	Output x	Status indication ON/OFF	1 bit - 1.001 DPT_Switch	C, R, T

These objects are always activated.
This object is used to send the switching status of the appliance output channel on the KNX bus.

Object value:
- If the brightness value is equal to 0, a telegram with logic value 0 is sent on the KNX bus.
- If the brightness value is greater than 0, a telegram with logic value 1 is sent on the KNX bus.

This object is sent when there is a status change.

No.	Name	Function of the object	Data type	Flags
12, 50, 88, 126	Output x	Status ind. brightness value	1 byte - 5.001 DPT_Scaling	C, R, T

These objects are always activated.
This object allows the status of the brightness value of the Output to be sent over the KNX bus.

Object value: 0 to 255: 0 = 0%, 255 = 100%.

This object is sent when there is a status change.

No.	Name	Function of the object	Data type	Flags
13, 51, 89, 127	Output x	Status indication colour temperature in %	1 byte - 5.001 DPT_Scaling	C, R, T

This object is activated when the parameter **Channel function** has the value **Colour temperature**.
This object is used to emit the colour temperature value of the output on the KNX bus.

Object value: 0 to 255: 0 = 0%, 255 = 100%.

Note: 0% corresponds to the minimum value that can be set and 100% corresponds to the maximum value that can be set.

This object is sent when there is a status change.

No.	Name	Function of the object	Data type	Flags
14, 52, 90, 128	Output x	Status indication colour temperature in K	2 bytes - 7.600 DPT_Absolute_Colour_Temperature	C, R, T

This object is activated when the parameter **Channel function** has the value **Colour temperature**.
This object is used to emit the colour temperature value of the output on the KNX bus.

Object value: 1000 to 10000 K.

This object is sent when there is a status change.

3.2.2.6 Timer

No.	Name	Function of the object	Data type	Flags
15, 53, 91, 129	Output x	Timer	1 bit - 1.010 DPT_Start	C, W

This object is activated when the **Timer** parameter is active.
This object is used to activate the Timer function of the device via the KNX bus.

Object value:
- If the object receives the value 1, the output switches for a configurable period.
- If the object receives the value 0, the output remains in its current state.

Note: The timer duration can be interrupted by a long press on the button controlling the timer (only with Hager push-buttons with timer object).
Note: When a start command is received during the timer, the timer duration is reset.

For further information, see: Timer.

3.2.2.7 Scene

No.	Name	Function of the object	Data type	Flags
16, 54, 92, 130	Output x	Scene	1 byte - 18.001 DPT_SceneControl	C, W

This object is activated when the **Scene** parameter is active.
This object is used to recall or save a scene.

Details on the format of the object are given below.

7	6	5	4	3	2	1	0
Learning	Not used	Scene number					

Bit 7: 0: The scene is called / 1: The scene is saved.
Bit 6: Not used.
Bit 5 to Bit 0: Scene numbers from 0 (Scene 1) to 63 (Scene 64).

For further information, see: Scene.

3.2.2.8 Priority

No.	Name	Function of the object	Data type	Flags
17, 55, 93, 131	Output x	Priority	2 bit - 2.002 DPT_Bool_Control	C, W

This object is activated if the **Priority** parameter is active.
The status of the output contact is determined directly by this object.

Details on the format of the object are given below.

Telegram received by the priority operation object			Output behaviour
Hexadecimal Value	Binary Value		
	Bit 1 (MSB)	Bit 0 (LSB)	
00	0	0	End of the priority
01	0	1	End of the priority
02	1	0	Priority OFF
03	1	1	Priority ON

The first bit of this object (Bit 0) determines the status of the output contact, which should be priority controlled. The second bit activates or deactivates the Priority.

For further information, see: Priority.

No.	Name	Function of the object	Data type	Flags
18, 56, 94, 132	Output x	Status indication priority	1 bit - 1.011 DPT_State	C, R, T

This object is activated if the **Priority** parameter is active.
This object allows the status of the Priority to be sent from the device on the KNX bus.

Object value:
0 = Not forced, 1 = Forced:
- If Priority is deactivated, a telegram is sent with logic value 0.
- If Priority is activated, a telegram is sent with logic value 1.

This object is sent when there is a status change.
For further information, see: Priority.

3.2.3 Colour communication objects

	Number	Name	Function of the object	Length	C	R	W	T
	1	Output 1	ON/OFF	1 bit	C	-	W	-
	2	Output 1	Dimming	4 bit	C	-	W	-
	3	Output 1	Brightness value	1 byte	C	-	W	-
	8	Output 1	RGBW values	6 bytes	C	-	W	-
	9	Output 1	RGB values	3 bytes	C	-	W	-
	10	Output 1	Red value	1 byte	C	-	W	-
	11	Output 1	Green value	1 byte	C	-	W	-
	12	Output 1	Blue value	1 byte	C	-	W	-
	13	Output 1	White value	1 byte	C	-	W	-
	14	Output 1	Red dimming	4 bit	C	-	W	-
	15	Output 1	Green dimming	4 bit	C	-	W	-
	16	Output 1	Blue dimming	4 bit	C	-	W	-
	17	Output 1	White dimming	4 bit	C	-	W	-
	18	Output 1	Colour scrolling	4 bit	C	-	W	-
	19	Output 1	ON/OFF automatic control	1 bit	C	-	W	-
	20	Output 1	Brightness value in % automatic control	1 byte	C	-	W	-
	21	Output 1	Automatic control deactivation	1 bit	C	-	W	-
	22	Output 1	Automatic control deactivation status	1 bit	C	R	-	T
	23	Output 1	Status indication ON/OFF	1 bit	C	R	-	T
	24	Output 1	Status ind. brightness value	1 byte	C	R	-	T
	26	Output 1	Status indication red value	1 byte	C	R	-	T
	28	Output 1	Status indication green value	1 byte	C	R	-	T
	30	Output 1	Status indication blue value	1 byte	C	R	-	T
	32	Output 1	Status indication white value	1 byte	C	R	-	T
	33	Output 1	Status indication RGBW values	6 bytes	C	R	-	T
	34	Output 1	Status indication RGB values	3 bytes	C	R	-	T
	35	Output 1	Timer	1 bit	C	-	W	-
	36	Output 1	Scene	1 byte	C	-	W	-
	37	Output 1	Priority	2 bit	C	-	W	-
	38	Output 1	Status indication priority	1 bit	C	R	-	T

3.2.3.1 ON/OFF

No.	Name	Function of the object	Data type	Flags
1, 39, 77, 115	Output x	ON/OFF	1 bit - 1.001 DPT_Switch	C, W

These objects are always activated.
It allows the output channel to be switched depending on the value sent on the KNX bus.

Normally open:

- Upon reception of an OFF command, the output varies the brightness value 0%.
- Upon reception of an ON command, the output varies to the last brightness value received (1 to 100%).

3.2.3.2 Dimming

No.	Name	Function of the object	Data type	Flags
2, 40, 78, 116	Output x	Dimming	4 bit - 3.007 DPT_Control_Dimming	C, W

These objects are always activated. It allows for relative dimming of the output as a function of the value sent by the KNX bus.
The output is dimmed in accordance with the 4-bit format value that arrives.

Object value:

b3	b2	b1	b0
C	Steps		

Data fields	Description	Code
C	Increase or reduction in brightness	0: Decrease 1: Increase
Steps	Brightness between 0% and 100% divided into steps	0: Stop 1: 100% 2: 50% 3: 25% 4: 12% 5: 6% 6: 3% 7: 1%

No.	Name	Function of the object	Data type	Flags
3, 41, 79, 117	Output x	Brightness value	1 byte - 5.001 DPT_Scaling	C, W

These objects are always activated. It allows for absolute dimming of the output as a function of the value sent by the KNX bus.
The output is dimmed according to the value that arrives in 1-byte format and corresponds in % to the brightness value to be attained.

Object value: 0 to 255: 0 = 0%, 255 = 100%.
Resolution: Approx. 0.4%.

3.2.3.3 Colour

No.	Name	Function of the object	Data type	Flags
8, 46, 84, 122	Output x	RGBW values	6 bytes - 251.600 DPT_Colour_RGBW	C, W

This object is activated when the **Channel function** parameter has the **Colour** value and when the **Colour components** parameter has the value **Red/Green/Blue/White**.
It enables absolute dimming of the output channel depending on the value sent on the KNX bus. This command is valid for the red, green, blue and white coloured components.

Object value:

Byte 6 (MSB)								Byte 5								Byte 4							
Red								Green								Blue							
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

Byte 3 (LSB)								Byte 2								Byte 1 (LSB)							
White								Reserved								Reserved				Dimming			
U	U	U	U	U	U	U	U	r	r	r	r	r	r	r	r	r	r	r	r	R	G	B	W

Fields	Designation	Value
Red	Red colour level	0 to 255 (8 bit)
Green	Green colour level	0 to 255 (8 bit)
Blue	Blue colour level	0 to 255 (8 bit)
White	White colour level	0 to 255 (8 bit)
R	Approval of the red coloured value	0 or 1
G	Approval of the green coloured value	0 or 1
B	Approval of the blue coloured value	0 or 1
W	Approval of the white coloured value	0 or 1

For further information, see: Additional parameters.

No.	Name	Function of the object	Data type	Flags
9, 47, 85, 123	Output x	RGB values	3 bytes - 232.600 DPT_Colour_RGB	C, W

This object is activated when the **Channel function** parameter has the **Colour** value and when the **Colour components** parameter has the value **Red/Green/Blue**.
It enables absolute dimming of the output channel depending on the value sent on the KNX bus. This command is valid for the red, green and blue coloured components.

Object value:

Byte 3 (MSB)								Byte 2								Byte 1 (LSB)							
Red								Green								Blue							
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

Fields	Designation	Value
Red	Red colour level	0 to 255 (8 bit)
Green	Green colour level	0 to 255 (8 bit)
Blue	Blue colour level	0 to 255 (8 bit)

For further information, see: Additional parameters.

No.	Name	Function of the object	Data type	Flags
10, 48, 86, 124	Output x	Red value	1 byte - 5.001 DPT_Scaling	C, W

This object is activated when the parameter **Channel function** has the value **Colour**.
It enables absolute dimming of the output channel depending on the value sent on the KNX bus.
This control is only valid for the red coloured component.

Object value: 0 to 255: 0 = 0%, 255 = 100%.
Resolution: Approx. 0.4%.

For further information, see: Additional parameters.

No.	Name	Function of the object	Data type	Flags
11, 49, 87, 125	Output x	Green value	8 bit - 5.001 DPT_Scaling	C, W

This object is activated when the parameter **Channel function** has the value **Colour**.
It enables absolute dimming of the output channel depending on the value sent on the KNX bus.
This command is only valid for the green coloured component.

Object value: 0 to 255: 0 = 0%, 255 = 100%.
Resolution: Approx. 0.4%.

For further information, see: Additional parameters.

No.	Name	Function of the object	Data type	Flags
12, 50, 88, 126	Output x	Blue value	1 byte - 5.001 DPT_Scaling	C, W

This object is activated when the parameter **Channel function** has the value **Colour**.
It enables absolute dimming of the output channel depending on the value sent on the KNX bus.
This command is only valid for the blue coloured component.

Object value: 0 to 255: 0 = 0%, 255 = 100%.
Resolution: Approx. 0.4%.

For further information, see: Additional parameters.

No.	Name	Function of the object	Data type	Flags
13, 51, 89, 127	Output x	White value	1 byte - 5.001 DPT_Scaling	C, W

This object is activated when the **Channel function** parameter has the **Colour** value and when the **Colour components** parameter has the value **Red/Green/Blue/White**.
It enables absolute dimming of the output channel depending on the value sent on the KNX bus.
This command is only valid for the white coloured component.

Object value: 0 to 255: 0 = 0%, 255 = 100%.
Resolution: Approx. 0.4%.

For further information, see: Additional parameters.

No.	Name	Function of the object	Data type	Flags
14, 52, 90, 128	Output x	Red dimming	4 bit - 3.007 DPT_Control_Dimming	C, W

This object is activated when the parameter **Channel function** has the value **Colour**.
It enables relative dimming of the output channel depending on the value sent on the KNX bus.
This control is only valid for the red coloured component.

Object value:

b3	b2	b1	b0
C	Steps		

Data fields	Description	Code
C	Increase or reduction in brightness	0: Decrease 1: Increase
Steps	Brightness between 0% and 100% divided into steps	0: Stop 1: 100% 2: 50% 3: 25% 4: 12% 5: 6% 6: 3% 7: 1%

For further information, see: Additional parameters.

No.	Name	Function of the object	Data type	Flags
15, 53, 91, 129	Output x	Green dimming	4 bit - 3.007 DPT_Control_Dimming	C, W
This object is activated when the parameter **Channel function** has the value **Colour**. It enables relative dimming of the output channel depending on the value sent on the KNX bus. This command is only valid for the green coloured component. Object value: See object No. 14. For further information, see: Additional parameters.				

No.	Name	Function of the object	Data type	Flags
16, 54, 92, 130	Output x	Blue dimming	4 bit - 3.007 DPT_Control_Dimming	C, W
This object is activated when the parameter **Channel function** has the value **Colour**. It enables relative dimming of the output channel depending on the value sent on the KNX bus. This command is only valid for the blue coloured component. Object value: See object No. 14. For further information, see: Additional parameters.				

No.	Name	Function of the object	Data type	Flags
17, 55, 93, 131	Output x	White dimming	4 bit - 3.007 DPT_Control_Dimming	C, W
This object is activated when the **Channel function** parameter has the **Colour** value and when the **Colour components** parameter has the value **Red/Green/Blue/White**. It enables relative dimming of the output channel depending on the value sent on the KNX bus. This command is only valid for the white coloured component. Object value: See object No. 14. For further information, see: Additional parameters.				

No.	Name	Function of the object	Data type	Flags
18, 56, 94, 132	Output x	Colour scrolling	4 bit - 3.007 DPT_Control_Dimming	C, W

This object is activated when the parameter **Channel function** has the value **Colour**.
It enables colour scrolling of the output channel depending on the value sent on the KNX bus.

Object value:

b3	b2	b1	b0
C	Steps		

Data fields	Description	Code
C	Increase or reduction in brightness	0: Rearward scrolling 1: Forward scrolling
Steps	Brightness between 0% and 100% divided into steps	0: Stop 1: 100% 2: 50% 3: 25% 4: 12% 5: 6% 6: 3% 7: 1%

Scrolling colours allows you to select a pre-defined colour to be applied to the output.

In addition to white, the available color set is as follows:

For further information, see: Additional parameters.

3.2.3.4 Automatic control

No.	Name	Function of the object	Data type	Flags
19, 57, 95, 133	Output x	ON/OFF automatic control	1 bit - 1.001 DPT_Switch	C, W

This object is activated when the **Automatic control** parameter is active. It allows the output channel to be switched depending on the value sent on the KNX bus.

Normally open:
- Upon reception of an OFF command, the output varies the brightness value 0%.
- Upon reception of an ON command, the output varies to the last brightness value received (1 to 100%).

For further information, see: Automatic control.

No.	Name	Function of the object	Data type	Flags
20, 58, 96, 134	Output x	Brightness value in % automatic control	1 byte - 5.001 DPT_Scaling	C, W
This object is activated when the **Automatic control** parameter is active. It allows for absolute dimming of the output as a function of the value sent by the KNX bus. The output is dimmed according to the value that arrives in 1-byte format and corresponds in % to the brightness value to be attained. Object value: 0 to 255: 0 = 0%, 255 = 100%. Resolution: Approx. 0.4%. For further information, see: Automatic control.				

No.	Name	Function of the object	Data type	Flags
21, 59, 97, 135	Output x	Automatic control deactivation	1 bit - 1.003 DPT_Enable	C, W
This object is activated when the **Automatic control deactivation** parameter is active. This object is used to activate the automatic control function. Object value: - If the object receives the value 0, the automatic control function is inactive. - If the object receives the value 1, the automatic control function is active. For further information, see: Automatic control.				

No.	Name	Function of the object	Data type	Flags
22, 60, 98, 136	Output x	Automatic control deactivation status	1 bit - 1.011 DPT_State	C, R, T
This object is activated when the **Automatic control deactivation** parameter is active. This object is used to send the status of the Automatic control deactivation function of the device on the KNX bus. Object value: - If the Automatic control deactivation function is deactivated, a telegram with a logical value 0 is sent. - If the Automatic control deactivation function is activated, a telegram with a logical value 1 is sent. This object is sent when there is a status change. For further information, see: Automatic control.				

3.2.3.5 Status indication

No.	Name	Function of the object	Data type	Flags
23, 61, 99, 137	Output x	Status indication ON/OFF	1 bit - 1.001 DPT_Switch	C, R, T
These objects are always activated. This object is used to send the switching status of the appliance output channel on the KNX bus. Object value: - If the output relay is open, a telegram with logic value 0 is sent on the KNX bus. - If the output relay is closed, a telegram with logic value 1 is sent on the KNX bus. This object is sent when there is a status change.				

No.	Name	Function of the object	Data type	Flags
24, 62, 100, 138	Output x	Status ind. brightness value	1 byte - 5.001 DPT_Scaling	C, R, T
These objects are always activated. This object allows the status of the brightness value of the Output to be sent over the KNX bus. Object value: 0 to 255: 0 = 0%, 255 = 100%. This object is sent when there is a status change.				

No.	Name	Function of the object	Data type	Flags
26, 64, 102, 140	Output x	Status indication red value	1 byte - 5.001 DPT_Scaling	C, R, T
This object is activated when the parameter **Channel function** has the value **Colour**. This object is used to send the status of the brightness value of the output channel for the red coloured component on the KNX bus. Object value: 0 to 255: 0 = 0%, 255 = 100%. This object is sent when there is a status change.				

No.	Name	Function of the object	Data type	Flags
28, 66, 104, 142	Output x	Status indication green value	1 byte - 5.001 DPT_Scaling	C, R, T
This object is activated when the parameter **Channel function** has the value **Colour**. This object is used to send the brightness value status of the output channel for the green coloured component on the KNX bus. Object value: 0 to 255: 0 = 0%, 255 = 100%. This object is sent when there is a status change.				

No.	Name	Function of the object	Data type	Flags
30, 68, 106, 144	Output x	Status indication blue value	1 byte - 5.001 DPT_Scaling	C, R, T
This object is activated when the parameter **Channel function** has the value **Colour**. This object is used to send the brightness value status of the output channel for the blue coloured component on the KNX bus. Object value: 0 to 255: 0 = 0%, 255 = 100%. This object is sent when there is a status change.				

No.	Name	Function of the object	Data type	Flags
32, 70, 108, 146	Output x	Status indication white value	1 byte - 5.001 DPT_Scaling	C, R, T

This object is activated when the parameter **Channel function** has the value **Colour**.
This object is used to send the brightness value status of the output channel for the white coloured component on the KNX bus.

Object value: 0 to 255: 0 = 0%, 255 = 100%.

This object is sent when there is a status change.

No.	Name	Function of the object	Data type	Flags
33, 71, 109, 147	Output x	Status indication RGBW values	6 bytes - 251.600 DPT_Colour_RGBW	C, R, T

This object is activated when the **Channel function** parameter has the **Colour** value and when the **Colour components** parameter has the value **Red/Green/Blue/White**.
This object is used to send the brightness value status of the output channel for the red, green, blue and white coloured components on the KNX bus.

Object value:

Byte 6 (MSB)								Byte 5								Byte 4							
Red								Green								Blue							
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

Byte 3 (LSB)								Byte 2								Byte 1 (LSB)							
White								Reserved								Reserved				Dimming			
U	U	U	U	U	U	U	U	r	r	r	r	r	r	r	r	r	r	r	r	R	G	B	W

Fields	Designation	Value
Red	Red colour level	0 to 255 (8 bit)
Green	Green colour level	0 to 255 (8 bit)
Blue	Blue colour level	0 to 255 (8 bit)
White	White colour level	0 to 255 (8 bit)
R	Approval of the red coloured value	0 or 1
G	Approval of the green coloured value	0 or 1
B	Approval of the blue coloured value	0 or 1
W	Approval of the white coloured value	0 or 1

This object is sent when there is a status change.

No.	Name	Function of the object	Data type	Flags
34, 72, 110, 148	Output x	Status indication RGB values	3 bytes - 232.600 DPT_Colour_RGB	C, R, T

This object is activated when the **Channel function** parameter has the **Colour** value and when the **Colour components** parameter has the value **Red/Green/Blue**.
This object is used to send the brightness value status of the output channel for the red, green and blue coloured components on the KNX bus.

Object value:

Byte 3 (MSB)								Byte 2								Byte 1 (LSB)							
Red								Green								Blue							
U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

Fields	Designation	Value
Red	Red colour level	0 to 255 (8 bit)
Green	Green colour level	0 to 255 (8 bit)
Blue	Blue colour level	0 to 255 (8 bit)

This object is sent when there is a status change.

3.2.3.6 Timer

No.	Name	Function of the object	Data type	Flags
35, 73, 111, 149	Output x	Timer	1 bit - 1.010 DPT_Start	C, W

This object is activated when the **Timer** parameter is active.
This object is used to activate the Timer function of the device via the KNX bus.

Object value:
- If the object receives the value 1, the output switches for a configurable period.
- If the object receives the value 0, the output remains in its current state.

Note: The timer duration can be interrupted by a long press on the button controlling the timer (only with Hager push-buttons with timer object).
Note: When a start command is received during the timer, the timer duration is reset.

For further information, see: Timer.

3.2.3.7 Scene

No.	Name	Function of the object	Data type	Flags
36, 74, 112, 150	Output x	Scene	1 byte - 18.001 DPT_SceneControl	C, W

This object is activated when the **Scene** parameter is active.
This object is used to recall or save a scene.

Details on the format of the object are given below.

7	6	5	4	3	2	1	0
Learning	Not used	Scene number					

Bit 7: 0: The scene is called / 1: The scene is saved.
Bit 6: Not used.
Bit 5 to Bit 0: Scene numbers from 0 (Scene 1) to 63 (Scene 64).

For further information, see: Scene.

3.2.3.8 Priority

No.	Name	Function of the object	Data type	Flags
37, 75, 113, 151	Output x	Priority	2 bit - 2.002 DPT_Bool_Control	C, W

This object is activated if the **Priority** parameter is active.
The status of the output contact is determined directly by this object.

Details on the format of the object are given below.

Telegram received by the priority operation object			Output behaviour
Hexadecimal Value	Binary Value		
	Bit 1 (MSB)	Bit 0 (LSB)	
00	0	0	End of the priority
01	0	1	End of the priority
02	1	0	Priority OFF
03	1	1	Priority ON

The first bit of this object (Bit 0) determines the status of the output contact, which should be priority controlled. The second bit activates or deactivates the Priority.

For further information, see: Priority.

No.	Name	Function of the object	Data type	Flags
38, 76, 114, 152	Output x	Status indication priority	1 bit - 1.011 DPT_State	C, R, T

This object is activated if the **Priority** parameter is active.
This object allows the status of the Priority to be sent from the device on the KNX bus.

Object value:
0 = Not forced, 1 = Forced:

- If Priority is deactivated, a telegram is sent with logic value 0.
- If Priority is activated, a telegram is sent with logic value 1.

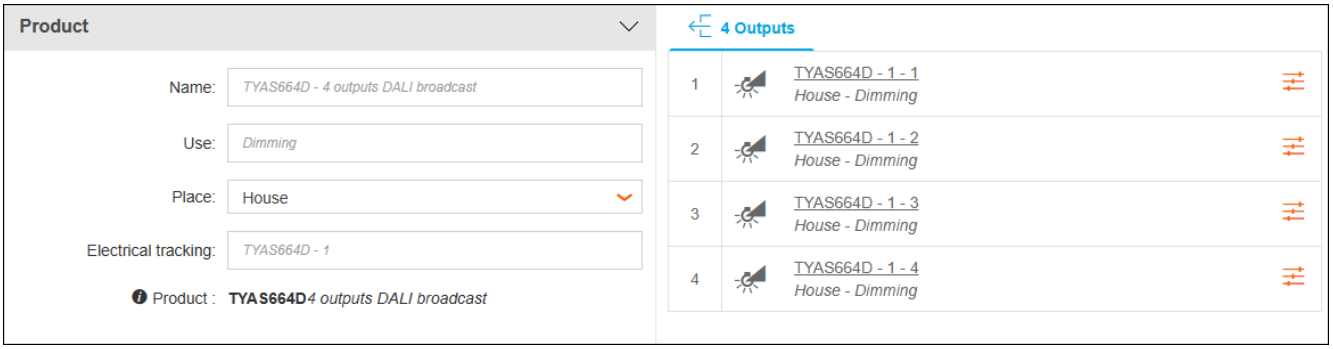
This object is sent when there is a status change.
For further information, see: Priority.

4 Programming by Easytool

4.1 Product overview

4.1.1 TYAS664D: 4 outputs DALI broadcast

Product view:



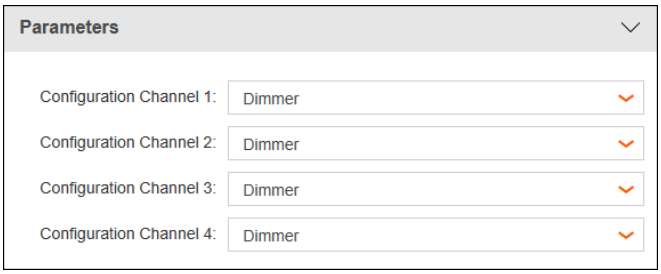
View of channels:

0 Input

4-fold output	
	TYAS664D - 1 - 1 *Housing - Dimming*
	TYAS664D - 1 - 2 *Housing - Dimming*
	TYAS664D - 1 - 3 *Housing - Dimming*
	TYAS664D - 1 - 4 *Housing - Dimming*

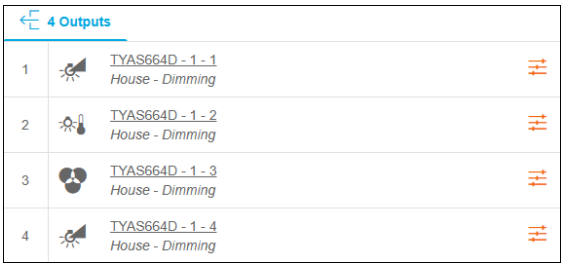
4.1.2 Product settings

This configuration window is used for general configuration of the device.



This configuration window is used to set the operating mode of the output channel. Depending on the operating mode, the icon symbolising the output changes.

Symbols			
Operating mode	Dimmer	Colour	Colour temperature

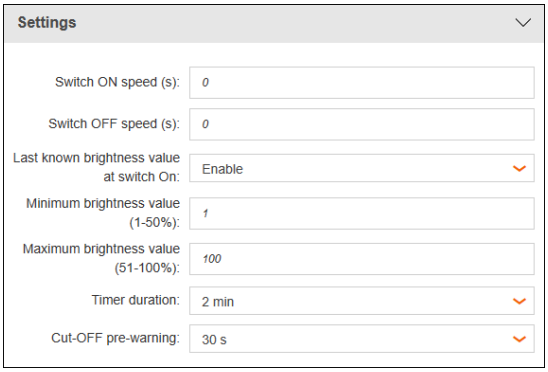


Note: All available functions are valid for all operating modes, except the colour dimming and colour temperature setting, each having an additional function.

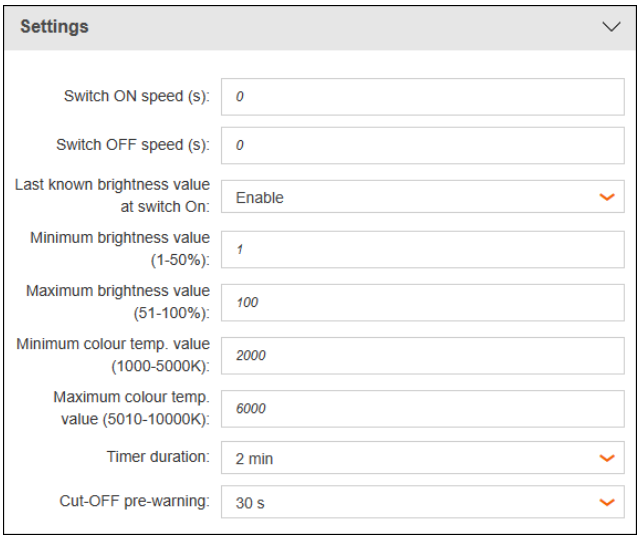
4.1.3 Pathway parameters

This parameter window is used to set the device outputs. These parameters are available individually for each output.

- Dimmer and colour channel



- Colour temperature channel



4.1.4 Available functionalities

For all operating modes

Lighting				Dimming	
	ON		Central ON		Increase dimming/ON
	OFF		Central OFF		Decrease dimming/OFF
	ON/OFF		Central ON/OFF switch		Increase/decrease dimming
	Toggle switch		Scene		Dimming
	Timer		Scene switch		Dimming switch
	Priority ON		Automatic control deactivation		Dimming automatic control PB
	Priority OFF		Automatic control deactivation toggle (1)		Dimmer switch automatic control
	Priority ON push-button (1)				Scene
	Priority OFF push-button (1)				Scene switch
	Automatic control ON				Automatic control deactivation
	Automatic control OFF				Automatic control deactivation toggle (1)
	ON/OFF automatic control				

(1) These functionalities are only available with products with push-button input that have status indication LEDs.

* Default value

- Additional functions: For the colour operating mode

Dimming	
	Forward colour scrolling
	Rearward colour scrolling

- Additional functions: For the colour temperature operating mode

Dimming	
	Colour temperature increase
	Colour temperature decrease

* Default value

4.2 Product functionalities

4.2.1 ON/OFF

An output can be switched on or off using the ON/OFF function. The command can come from switches, buttons or other control inputs.

- **ON**: switches the lighting circuit on.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns on the light at the last saved level
Opening input contact: no action

- **OFF**: switches the lighting circuit off.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns off the light
Opening input contact: no action

- **ON/OFF**: switches the lighting circuit on or off(switch).

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns on the light at the last saved level
Opening input contact: turns off the light

- **Toggle switch**: inverses the lighting circuit status.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: toggles between turning on at the last saved level and turning off the light
Successive closings inverse output contact status each time.

4.2.2 Relative or absolute dimming (Brightness value)

With relative dimming, the brightness value is raised or lowered with respect to the current brightness value. This is achieved, for example, by a long press on a sensor button. With absolute dimming, the brightness value to be achieved is set on the dimmer as a % value.

- **Increase dimming/ON**: increases the output level.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		 TYAS664D - 1 - 1 *Housing - Dimming*

Brief closing of the input contact: turns on the light at the last saved level
Prolonged closing of the input contact: increase in the brightness level

- **Decrease dimming/OFF**: decreases the output level.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		 TYAS664D - 1 - 1 *Housing - Dimming*

Brief closing of the input contact: turns off the light
Prolonged closing of the input contact: decrease in the brightness level

- **Increase/decrease dimming**: varies the light with a single push-button.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		 TYAS664D - 1 - 1 *Housing - Dimming*

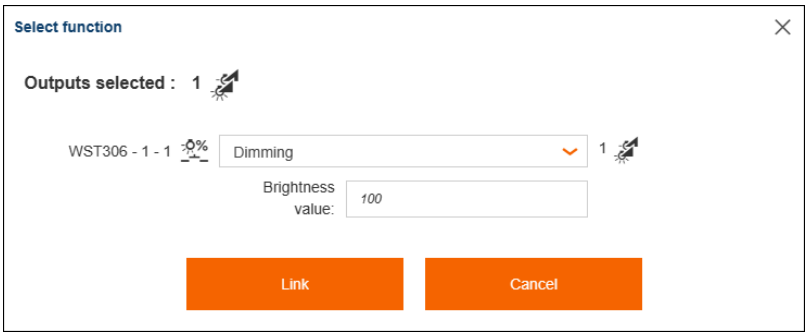
Brief closing of the input contact: turns on the light at the last saved level or turns off the light
Prolonged closing of the input contact: increase or decrease in the lighting level

- **Dimming**: varies the light with a defined brightness value.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		 TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns on the light at the defined brightness value
Opening input contact: no action

Note: At the time the connection is made, the brightness value must be defined for the contact closure input.

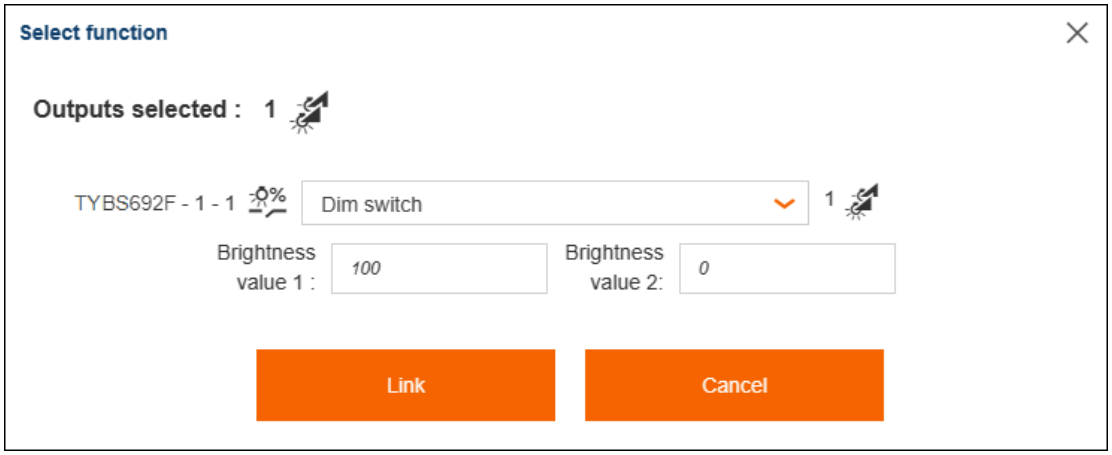


- **Dimming switch**: varies the light with two brightness values defined according to the opening and closing of the input contact.

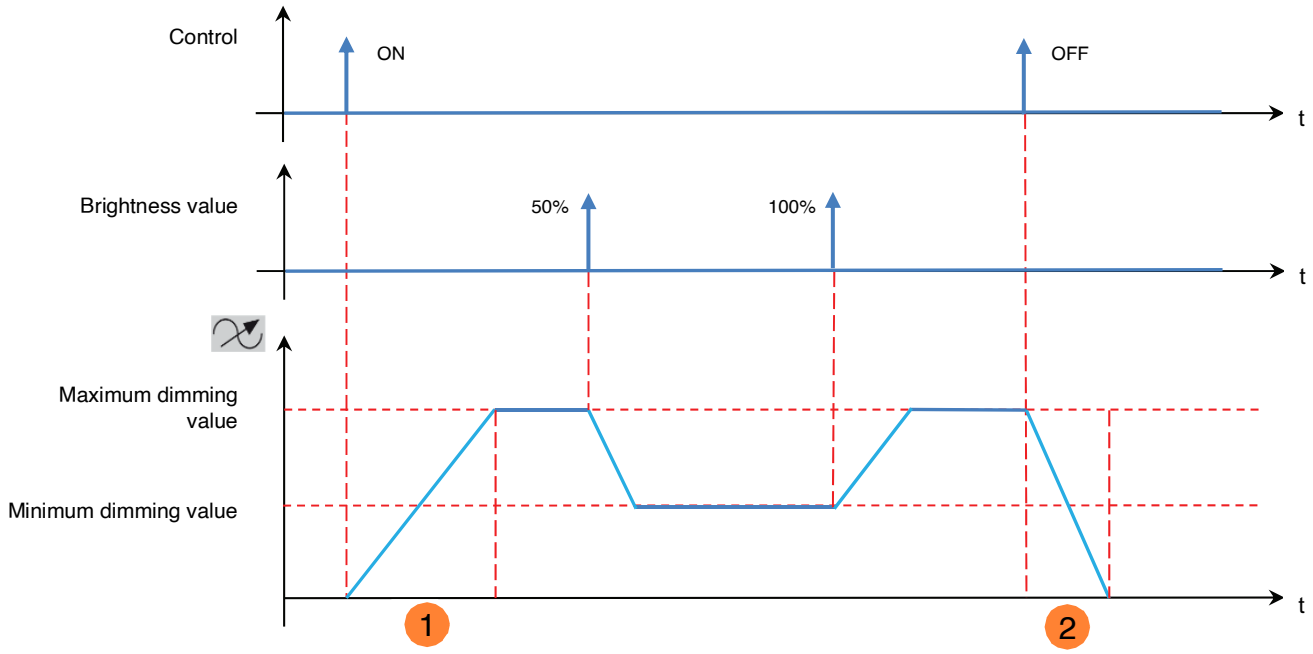
Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns on the light at the 1 brightness value
Opening input contact: turns on the light at the 2 brightness value

Note: At the time the connection is made, the brightness values must be defined for the contact closure input.



4.2.3 Dimmer and switch principle-



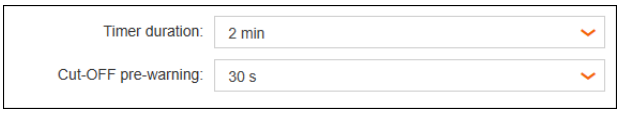
1 Switch ON speed (soft ON)

2 Switch OFF speed (soft OFF)

Parameter	Description	Value
Last known brightness value at switch On	On receipt of an ON command on the **ON/OFF** communication object, the output is set to the following value: 100% To the last brightness value	 Not active **Active***
Switch ON speed (soft ON)	This parameter defines the switch ON speed for attaining the brightness value after input of an ON command.	**0***...1h45m00s
Switch OFF speed (soft OFF)	This parameter defines the switch OFF speed for attaining brightness value 0% after input of an OFF command.	**0***...1h45m00s
Minimum relative dimming value (1 - 50%)	This parameter specifies a minimum brightness value for the dimming.	**1***...50
Maximum relative dimming value (51-100%)	This parameter specifies a maximum brightness value for the dimming.	51...**100***

4.2.4 Timer

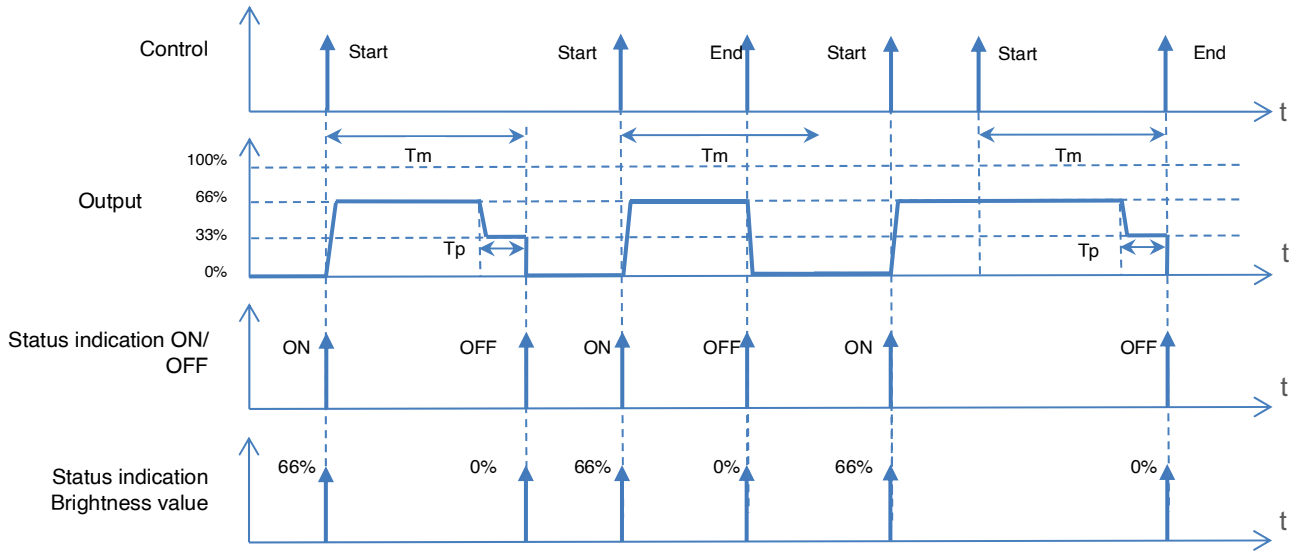
The Timer function is used to switch on a lighting circuit for a programmable period. The timer may be interrupted before expiry of the delay time. A programmable Cut-OFF pre-warning announces the end of the delay time by halving the present brightness value of the output.



Parameter	Description	Value
Timer duration	This parameter determines the timer duration.	Not active, 1 s, 2 s, 3 s, 5 s, 10 s, 15 s, 20 s, 30 s, 45 s, 1 min, 1 min 15 s, 1 min 30 s, **2 min*,** 2 min 30 s, 3 min, 5 min, 15 min, 20 min, 30 min, 1 h, 2 h, 3 h, 5 h, 12 h, 24 h

Parameter	Description	Value
Cut-OFF pre-warning	This parameter determines the lead time of the cut-OFF pre-warning.	Not active, 15 s, **30 s***, 1 min

Operating principle:



Tm: Timer duration
Tp: Pre-warning lead time

Note: If the lead time of the cut-OFF pre-warning is greater than the duration of the timer (Tp>Tm), the cut-OFF pre-warning is not triggered.

- The connection:

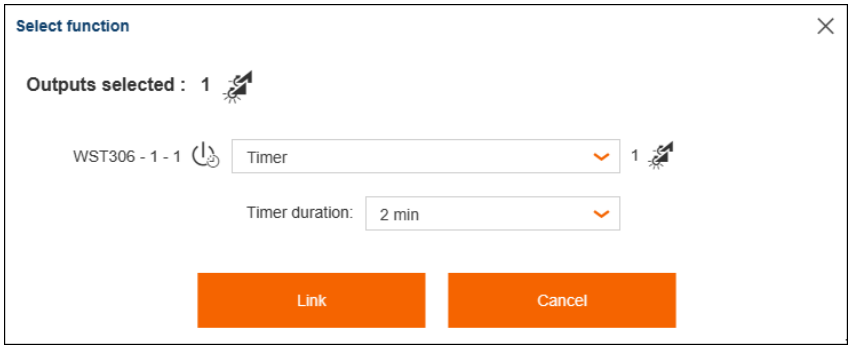
The Timer function is used to switch on a lighting circuit for a programmable period.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Brief closing of the input contact: timing function light switched on at the last saved level

Timing function interruption:
Prolonged closing of the input contact: stop of timing delay in progress and light is turned off

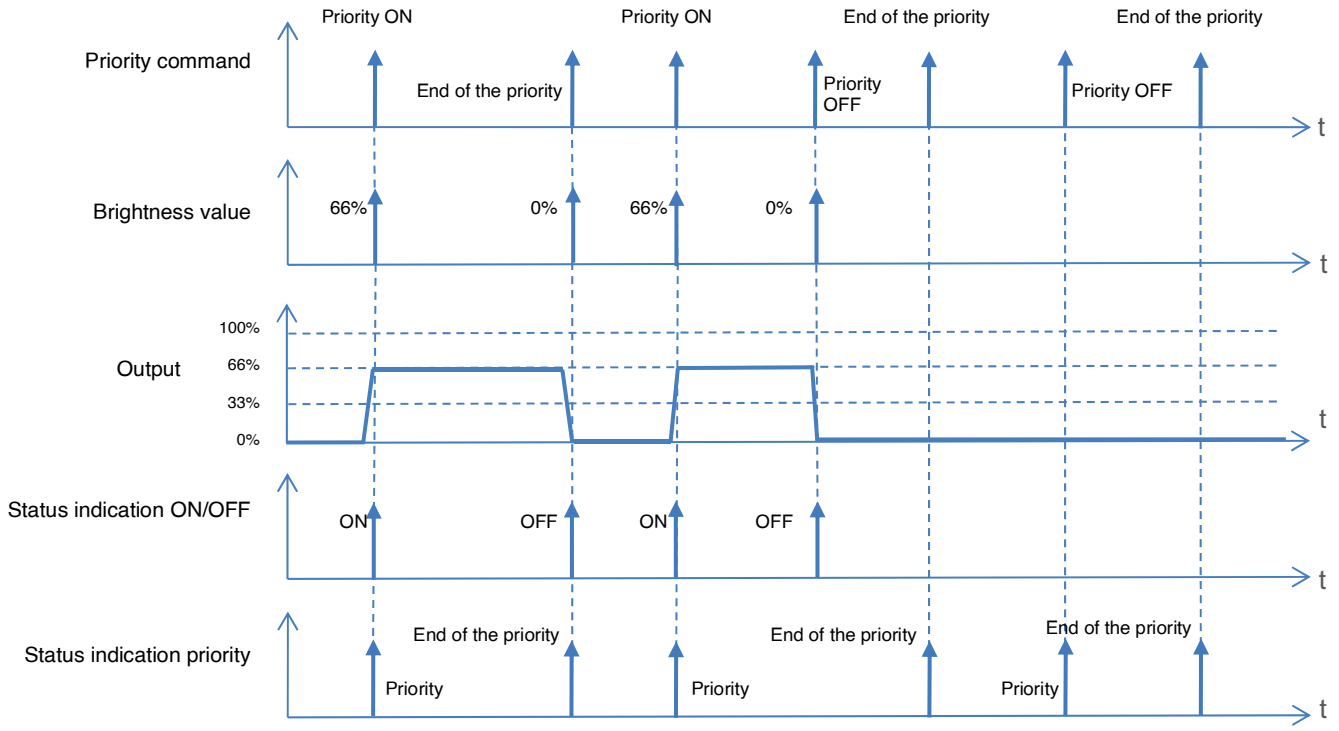
Note: At the time of connection, it is possible to define the timer duration.



4.2.5 Priority

The Priority function is used to force the output into a defined state.
Priority: **Priority** > Basic function.
Only a Priority OFF command authorizes the output for control.
At the end of the priority, the output returns to the status it had before the priority (Memorisation function).

Operating principle:



Note: The brightness value for the ON priority corresponds to the last saved level.

- Links
  - **Priority ON**: allows forcing and keeping the lighting circuit on.

Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns on the light at the last saved level
Opening input contact: end of the priority

  - **Priority ON push-button**: allows forcing and keeping the light circuit on using a push-button.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns on the light at the last saved level
Opening input contact: no action
A second closure of the input contact triggers the end of priority.

- **Priority OFF**: allows forcing and keeping the lighting circuit off.

Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns off the light
Opening input contact: end of the priority

- **Priority OFF push-button**: allows forcing and keeping the lighting circuit off using a push-button.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

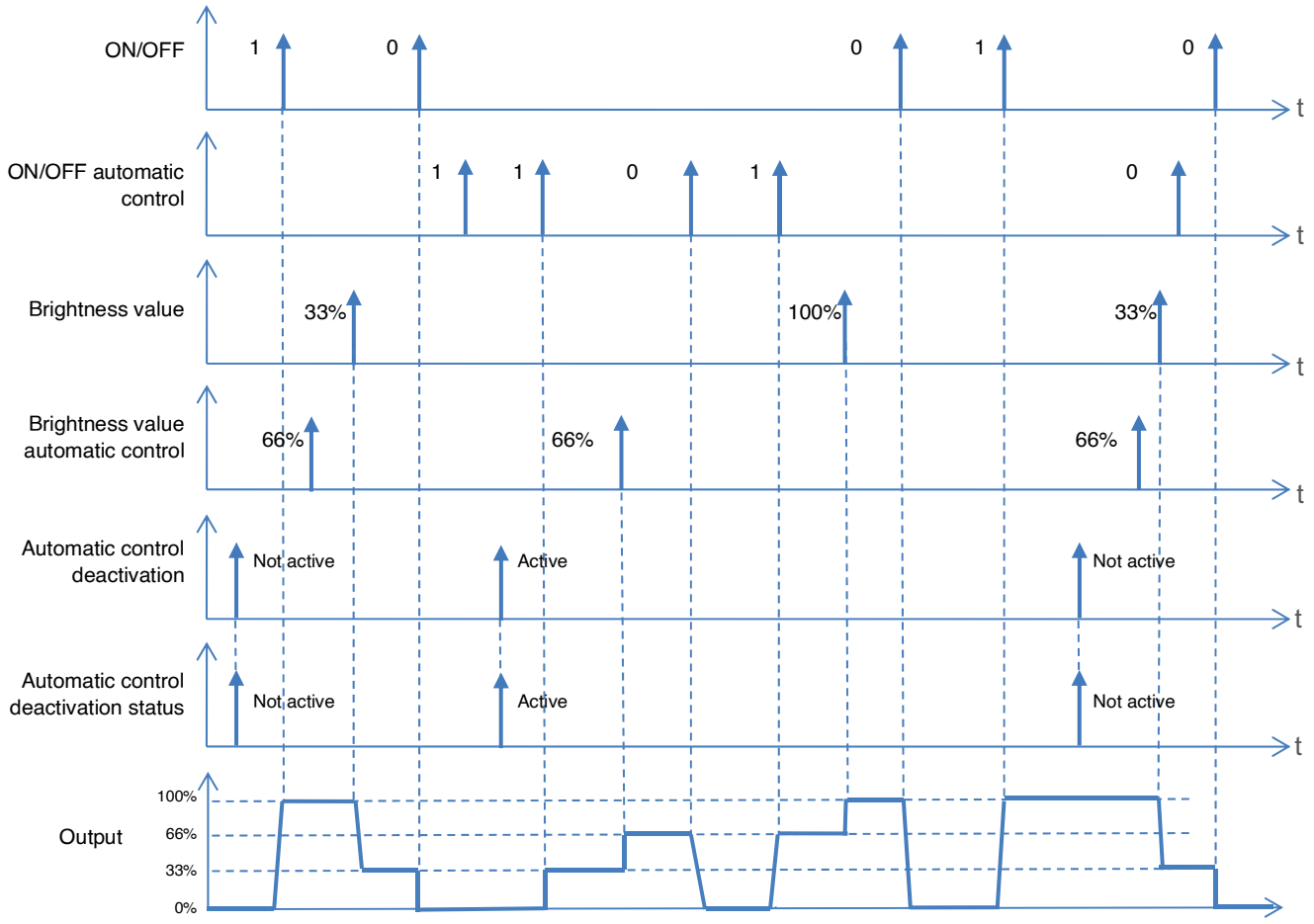
Closing input contact: turns off the light
Opening input contact: no action
A second closure of the input contact triggers the end of priority.

4.2.6 Automatic control

The Automatic control function is used to command an output in parallel to the ON/OFF function. The two functions have the same level of priority. The last command received will act on the status of the output. An additional command object is used to activate or deactivate the Automatic control.

Example: when an output is controlled by a button and in parallel by an automatic control (timer, twilight switch, weather station, etc.) the automatic control can be deactivated for reasons of comfort (vacations, public holidays, etc.).

Operating principle:



- Links
  - **Automatic control ON**: allows turning on the light circuit using automatic control.

Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns on the light at the last saved level
Opening input contact: no action

- **Automatic control OFF**: allows turning on the light circuit using automatic control.

Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns off the light
Opening input contact: no action

- **ON/OFF automatic control**: allows turning the lighting circuit on or off using automatic control (switch).

Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns on the light at the last saved level
Opening input contact: turns off the light

- **Dimming automatic control PB**: allows varying the light with a defined brightness value using automatic control.

Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns on the light at the last saved level
Opening input contact: turns off the light

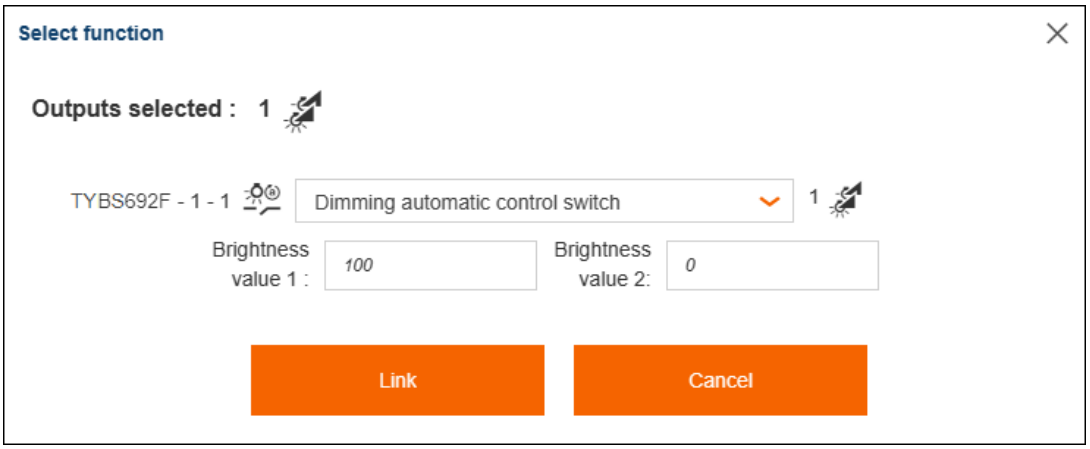
Note: At the time the connection is made, the brightness value must be defined for the contact closure input.

- **Dimmer switch automatic control**: allows varying the light with two defined brightness values according to the opening and closing input contact using automatic control.

Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns on the light at the 1 brightness value
Opening input contact: turns on the light at the 2 brightness value

Note: At the time the connection is made, the brightness values must be defined for the contact closure input.



- **Automatic control deactivation**: deactivates automatic control.

Inputs			Outputs	
	TYBS692F - 1 - 1 *Housing*			TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: deactivated automatic control
Opening input contact: activated automatic control

- **Automatic control deactivation toggle**: deactivates automatic control using a push-button.

Inputs			Outputs	
	WST316 - 1 - 1 *Housing*			TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: deactivated automatic control
Opening input contact: no action
A second closing input contact triggers activation of the automatic control.

4.2.7 Central ON/OFF switch

An output can be switched on or off using the ON/OFF function. The command can come from switches, buttons or other control inputs.Unlike the ON/OFF function, it does not send the status indication of the controlled outputs. This prevents KNX bus saturation when switching outputs simultaneously.

- **Central ON**: switches the lighting circuit on.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns on the light at the last saved level
Opening input contact: no action

- **Central OFF**: switches the lighting circuit off.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns off the light
Opening input contact: no action

- **Central ON/OFF switch**: switches the lighting circuit on or off(switch).

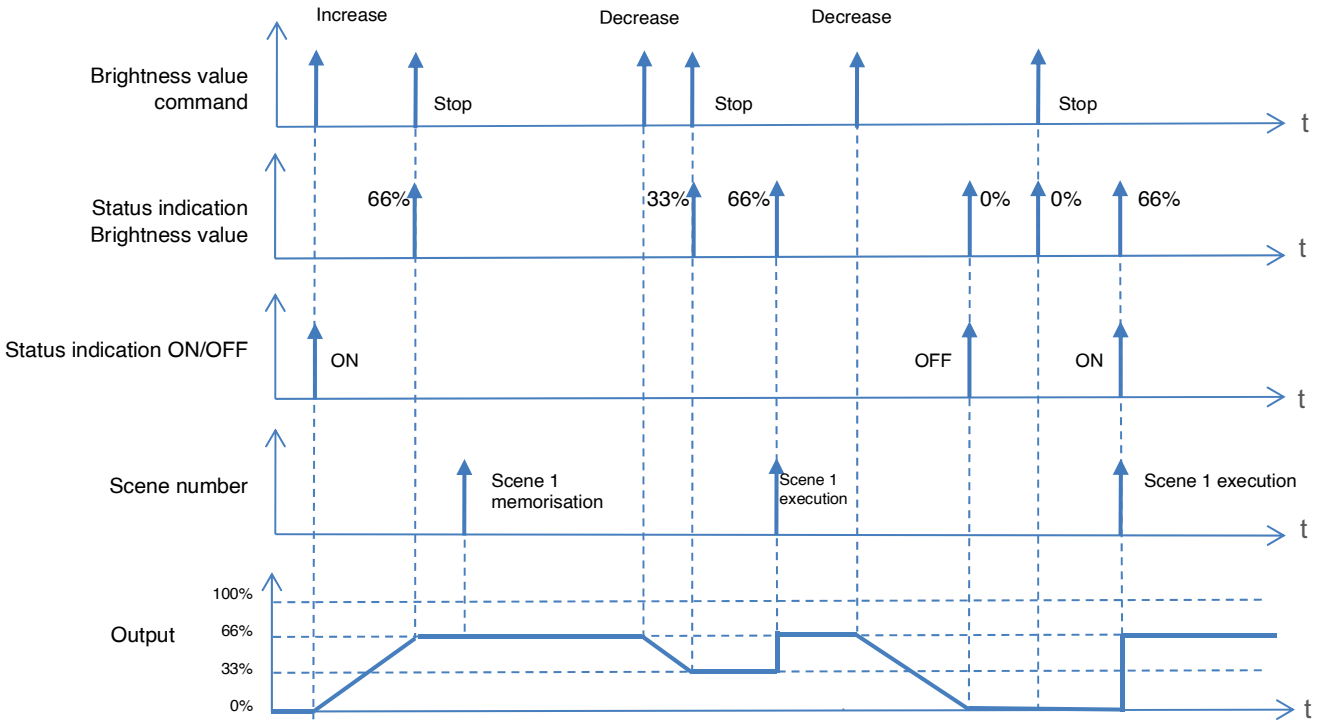
Inputs		Outputs	
	TYBS692F- 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: turns on the light at the last saved level
Opening input contact: turns off the light

4.2.8 Scene

The Scene function is used to switch groups of outputs into a configurable predefined state. Each output can be included in 8 different scenes.

Operating principle:



Learning and storing scenes

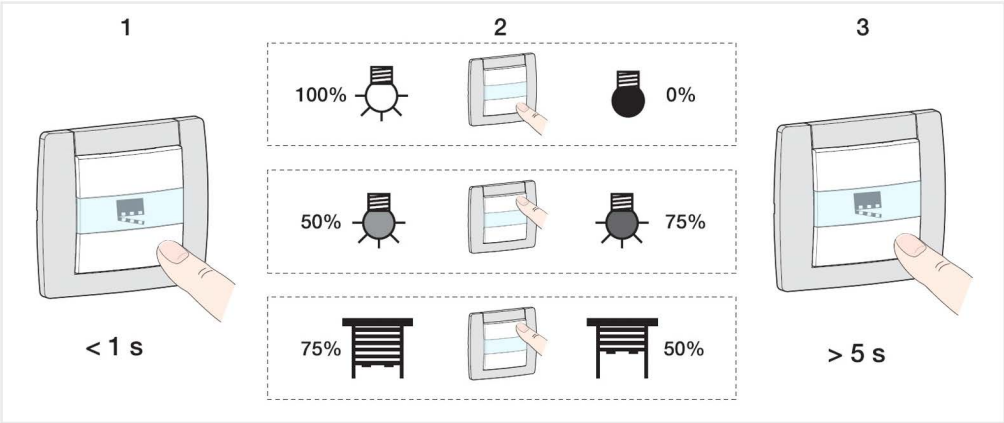
This process is used to change and store a scene. For example, by locally pressing the key in the room or by emission of the values from a visualization.

To access and store scenes, the following values must be sent:

Scene number	**Access scene (Object value: 1 byte)**	**Store scene (Object value: 1 byte)**
1-64	= Scene number -1	= Scene number +128
Examples		
1	0	128
2	1	129
3	2	130
...	...	
64	63	191

Here is the scene memorisation for local switches, for example.

- Activate scene by briefly pressing the transmitter that starts it.
- The outputs (lights, shutters, etc.) are set in the desired state using the usual local control devices (buttons, remote control, etc.).
- Memorise the status of the outputs with a press greater than 5 seconds long on the transmitter that starts the scene. The memorisation can be displayed by short-term activation of the outputs.



Product learning and memorisation

This procedure allows modifying a scene using a local action on the push buttons located on the front side of the product.

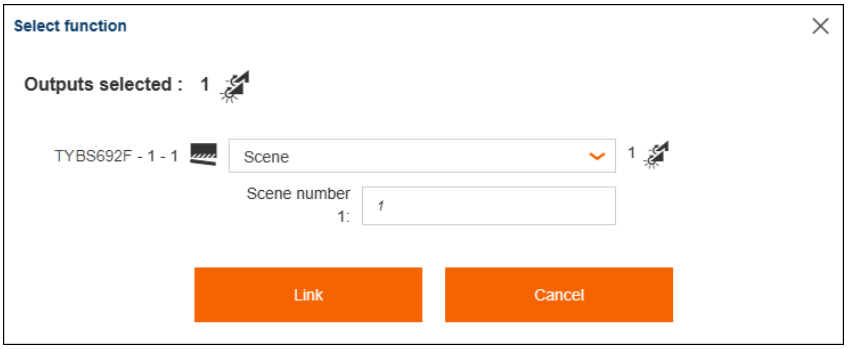
- Activate the scene using a short press on the ambiance push button, which triggers the scene,
- Set the dimmer to Manual mode and set the outputs to the desired setting by pressing the appropriate output push-buttons,
- Return to Auto mode,
- Save the scene using a long push for more than 5 seconds on the push-button that triggers the scene,
- Memorisation is signalled by the inversion of the concerned output status for 3 sec.

- Links
  - **Scene**: the scene is activated by pressing the push-button.

Inputs		Outputs	
	WST316 - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: scene activation
Opening input contact: no action

Note: At the time the connection is made, the scene number must be defined for the closing input contact.

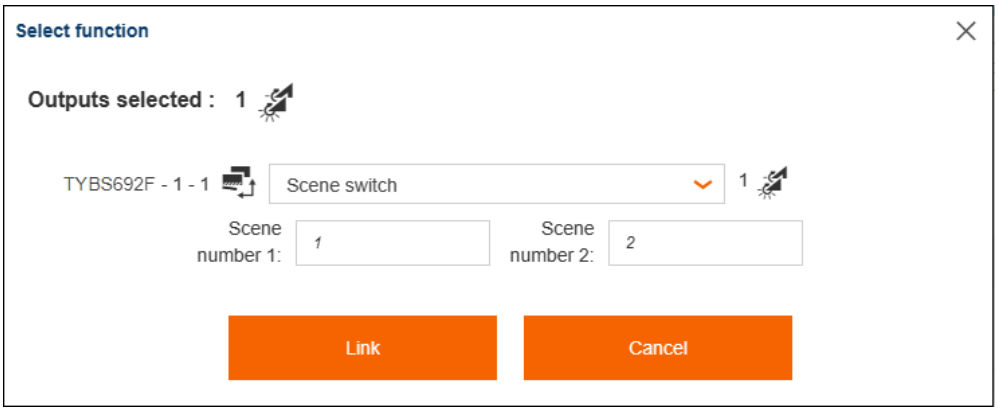


- **Scene switch**: the scene is activated according to the closing or opening input contact.

Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Closing input contact: scene activation 1
Opening input contact: scene activation 2

Note: At the time the connection is made, the scene number must be defined for the closing and opening input contact.



4.2.9 Colour

The product supports control of the DALI "Colour Control" (DALI Device Type 8) equipment. Using appropriate DALI equipment and lighting sources enables the colour of a RGB(W) LED lamp to be controlled.

Scrolling colours allows you to select a pre-defined colour to be applied to the output.
In addition to white, the available color set is as follows:

- Forward colour scrolling: enables clockwise colour scrolling.

Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Prolonged closing of the input contact: forward colour scrolling

- Rearward colour scrolling: enables anti-clockwise colour scrolling.

Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Prolonged closing of the input contact: rearward colour scrolling

4.2.10 Colour temperature

The product supports the control of the "Colour Control" DALI equipment (DALI Device Type 8) in the specific character "Tunable White (TW)". Using appropriate DALI equipment and lighting sources enables the colour temperature of a lamp to be controlled.

- Colour temperature increase: enables the colour temperature to be increased.

Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Prolonged closing of the input contact: colour temperature increase
Opening input contact: no action

- Colour temperature decrease: enables the colour temperature to be decreased.

Inputs		Outputs	
	TYBS692F - 1 - 1 *Housing*		TYAS664D - 1 - 1 *Housing - Dimming*

Prolonged closing of the input contact: colour temperature decrease
Opening input contact: no action

5 Appendix

5.1 Technical data

KNX Medium	TP1-256
Commissioning mode	Systemlink, Easylink
Mains power supply	
Rated supply voltage	230 V +10% /- 15% 240 V ±6%
Network frequency	50/60 Hz
Own consumption on mains	900 mW
KNX	
Rated supply voltage	21…32 V ⎓ SELV
Power consumption standby	2 mA
Current consumption typ.	3 mA
DALI	
Rated supply voltage	16 V FELV
Guaranteed current level	185 mA
Maximum current	250 mA
Start-up time	< 500 ms
Number of DALI ballasts per channel	24
Number of DALI_ballasts per device max.	96
DALI Protocol	DIN EN 62386 Appendix E4
Environmental conditions	
Operating temperature	-5° ... +45 °C
Storage/transport temperature	-20° … +70 °C
Relative humidity	95% (at 20°C)
Degree of contamination	2
Degree of protection of housing	IP20
Degree of protection of housing under front plate	IP30
Impact resistance	IK04
Operating altitude	Max. 2000 m
Surge voltage	4 kV
Overvoltage class	III
Circuit breaker	10 A
Connection capacity	
KNX connection mode	Connection terminal
KNX connection cross-section	0.6 ... 0.8 mm
Connection type DALI/230 V	quickconnect
Connection cross-section quickconnect	0.75 ... 2.5 mm²
DALI control line length	
at 0.75 mm²	< 168 m
at 1.0 mm²	< 224 m
at 1.5 mm²	< 300 m*
* Cable lengths over 300m are not recommended!	
Dimensions	6 modules, 6 x 17.5 mm

5.2 Characteristics

Device	TYAS664D
Max. number of group addresses	254
Max. number of allocations	255
Objects	151

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