

Technical Manual



MDT DALI Control Broadcast Gateway

SCN-DABC4.01

Further Documents:

Datasheets:

https://www.mdt.de/EN_Downloads_Datasheets.html

Assembly and Operation Instructions:

https://www.mdt.de/EN_Downloads_Instructions.html

Solution Proposals for MDT products:

https://www.mdt.de/EN_Downloads_Solutions.html

1 Content

1 Content.....	2
2 Overview	5
2.1 Overview Devices	5
2.2 DALI Bus system properties.....	6
2.3 Functional description.....	7
2.4 Structure & Handling.....	8
2.5 Device operation concept.....	9
2.6 Manual Operation	9
2.7 Auto Commissioning Concept	11
2.7.1 New installation.....	11
2.7.2 Post-installation	11
3 KNX Secure.....	13
3.1 Secure Usage.....	14
3.2 Unsecure Usage.....	15
3.3 Master-Reset.....	15
4 Colour Control.....	16
4.1 Features of DALI Device Type 8	16
4.2 Colour display via colour temperature	16
4.3 Colour display via 3 or 4 colour channels (RGBWAF)	17
5 Operating Modes, Special Functions and Time Settings	18
5.1 Operating Modes	18
5.1.1 Normal mode.....	18
5.1.2 Normal / Night Mode	18
5.2 Special Functions	19
5.2.1 Active Power Reporting.....	19
5.2.2 Alarm Function	19
5.2.3 Locking Function	19
5.2.4 Energy Saving	19
5.3 Time Settings.....	20
5.3.1 Staircase Time.....	20
5.3.2 Switch-On Delay.....	20
5.3.3 Switch-Off Delay.....	20
5.4 Scenes	20
5.5 Operating mode and special function hierarchy	21
6 Analysis and service functions	22
6.1 Recording operating hours	22
6.2 Failure analysis at channel level	22
6.3 Failure analysis at device level.....	22
6.4 Parametrisation	22

7 ETS Communication objects.....	23
7.1 General objects	23
7.1.1 General.....	23
7.1.2 Special Functions	24
7.2 Channel objects	24
7.2.1 Channel objects – Behaviour	24
7.2.2 Channel objects – Colour Control	25
7.2.2.1 Colour Temperature	25
7.2.2.2 RGB.....	26
7.2.2.2.1 RGB (3 Byte combined object).....	26
7.2.2.2.2 RGB (separate objects)	27
7.2.2.3 HSV.....	28
7.2.2.3.1 HSV (separate objects)	28
7.2.2.4 RGBW	29
7.2.2.4.1 RGBW (6 Byte combined object DPT 251.600)	29
7.2.2.4.2 RGBW (separate objects)	29
7.2.2.5 HSVW (separate objects)	30
7.2.2.6 Colour Temperature + RGB	31
7.2.2.6.1 Colour Temperature + RGB (3 Byte combined object DPT 232.600).....	31
7.2.2.6.2 Colour Temperature + RGB (RGB separate objects)	32
7.2.2.6.3 Colour Temperature + RGB (HSV separate objects)	33
7.2.2.7 Colour Temperature + RGBW.....	34
7.2.2.7.1 Colour Temperature + RGBW (6 Byte combined object DPT 251.600)	34
7.2.2.7.2 Colour Temperature + RGBW (RGBW separate objects)	35
7.2.2.7.3 Colour Temperature + RGBW (HSVW separate objects)	36
7.2.3 Channel objects – Time Settings.....	38
7.2.4 Channel objects – Analysis and Service.....	38
7.2.5 Channel objects – Special Functions and Scenes.....	39
8 ETS Parameters	41
8.1 General	41
8.1.1 Parameter page: General	41
8.1.2 Special Functions	44
8.2 Parameter pages: Channels	45
8.2.1 Channel 1 (-4).....	46
8.2.2 Behaviour	50
8.2.3 Colour Control	53
8.2.3.1 Colour Temperature	53
8.2.3.2 RGB Colour	54
8.2.3.3 RGBW Colour.....	55
8.2.3.4 Colour Temperature + RGB	56
8.2.3.5 Colour Temperature + RGBW.....	57

8.2.4 Special Functions	59
8.2.5 Time Settings.....	61
8.2.6 Scenes	64
8.2.6.1 Scene 1 ... 16.....	65
9 Appendix	67
9.1 Legal provisions.....	67
9.2 Disposal	67
9.3 Assembly	67
9.4 History	67

2 Overview

2.1 Overview Devices

The description refers to the following unit:

- **SCN-DABC4.01** DALI Control Broadcast Gateway, 4 channels, KNX Data Secure, 4SU MDRC

2.2 DALI Bus system properties

The cross-functional DALI-Bus (DALI = Digital Addressable Lighting Interface) is a system used to control electronic ballasts (ECGs) in lighting technology. The specifications of the DALI communications interface are set in the international norm EN62386.

The DALI Bus enables the receipt of switch and dim commands. In addition, the DALI can be used for the notification of a failure status such as light or ECG failures or for other light status information.

Via the connected control device / gateway, up to 32 DALI ECGs can be connected in one of four DALI segments.

A more detailed description of the DALI system can be found on the official website of the DALI Alliance:

→ <https://www.DALI-alliance.org>

2.3 Functional description

The MDT DALI Control Broadcast Gateway is a single-master application controller for controlling electronic ballasts with up to four DALI interfaces via the KNX installation bus. It supports ballasts according to EN 62386-102 ed1 (DALI1), devices according to EN 62386-102 ed2 (DALI2).

The device transforms switching, dimming and colour control commands from the connected KNX system into corresponding DALI broadcast telegrams.

The DALI Control Broadcast Gateway has 4 DALI outputs which can control up to 128 ECGs (each DALI Output supports 32 ECGs).

The required power supply for the connected ECGs is provided directly from the device. Additional DALI power supplies are not required and not allowed.

The gateway is checking the number of connected ECGs automatically. If more than 32 ECGs are connected to one channel, the channel stops working and generate an overload failure.

The device is available in a 4SU wide DIN rail housing for direct installation in an electrical distribution board. The bus connection is made via a standard KNX bus connector. Mains and DALI lines are connected via screw terminals on the device.

Per gateway the ECGs can be controlled in 4 DALI bus lines.

In addition to the pure gateway functions, the DALI Control Broadcast Gateway offers numerous additional features:

- General adjustable Soft-Start Behaviour for ECGs
- Coloured light control with the support of Device Type 8 (DT-8) ballasts and control via communication objects
- Coloured light control depending on ballast Sub-Type:
 - Colour Temperature (DT-8 Sub-Type Tc)
 - RGB (DT-8 Sub-Type RGBWAF)
 - HSV (DT-8 Sub-Type RGBWAF)
 - RGBW (DT-8 Sub-Type RGBWAF)
- Automatic change of colour temperature depending on the light value (Dim-To-Cold)
- Various operating modes such as normal, night and staircase mode
- Individual time settings for staircase mode, switch-on and switch-off delays
- Especially adjustable behaviours for alarm and lock situations for each channel
- Integrated operating hours counter for each DALI channel
- Alarm when a defined end of life of lights is reached
- General device level error detection
- Individual fault detection with objects for each DALI channel
- Complex error evaluation on channel level with error number and error rate calculation
- Error threshold monitoring with individually adjustable threshold values
- Scene module for each channel to create up to 16 scenes each
- Scenes can be invoked and programmed by KNX objects
- Setting of brightness, colour temperature and/or RGB(W) colour in DT-8 luminaires via scenes
- Energy-saving function with additional objects for each channel to de-energise ECGs
- Active Power Reporting of DT51 ECGs
- Manual operation and fault detection via buttons and LEDs on the device

2.4 Structure & Handling

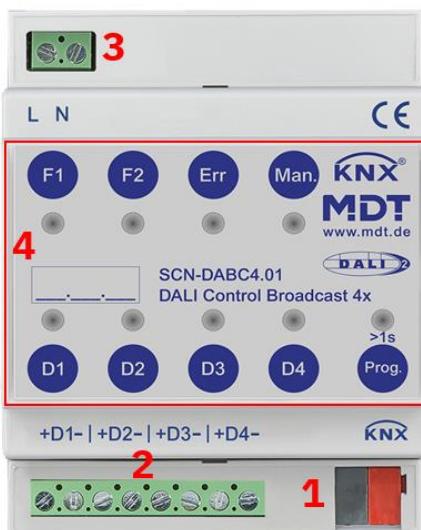


Figure: Hardware module

- 1 = KNX Bus connection terminal
- 2 = DALI Bus connection terminals (D1 - D4)
- 3 = Mains connection terminal (L + N)
- 4 = Control Buttons and Status/Error LEDs

Function of Control Buttons:

- F1 - Function button: New installation (long push)
- F2 - Function button: Post installation (long push)
- Err - Activation of error analysis
- Man. - Activation of manual operation
- D1 - D4 - Operation / Selection of channels (short push, long push)
- Prog. - Switching between normal and addressing mode

Display behaviour of Status and Error LEDs:

- F1/F2 - LEDs Error code detection
- Err - Analysis / Commissioning mode activated – Flashing: Error detection
- Man. - Manual operation activated
- D1 - D4 - Status of channels / Channel selection in 'Error analysis mode'

During the installation phase, the manual control on the device can be used to operate the individual DALI channels. Please see chapter: Manual operation

Once the installation phase is complete, the device should be downloaded with the ETS software and the correspondingly configured application program. Only then can all operating modes, special functions and time settings as well as analysis and service functions be used to their full extent.

2.5 Device operation concept

Like every KNX device, the DALI Control Broadcast Gateway has a KNX connection, which also supplies it with power for operating the central controller and the user interface. In addition, the gateway requires a mains voltage supply to operate the DALI controller and supply the connected ECGs. An external DALI power supply unit is not required and not permitted. The mains voltage is connected via the corresponding terminals.

The gateway is only fully operational when both – KNX and mains voltage – are present.

In principle, the KNX part is already accessible via the ETS when no mains voltage is applied. Planning and programming via the ETS can therefore take place before the DALI is connected and before the final DALI installation has been completed. The device LEDs and the operating buttons are also ready for operation without mains voltage being present. In this case, the KNX controller recognises a mains voltage error and the 'Err' and 'Man' LEDs flash alternately.

However, the availability of mains voltage is a prerequisite for the (also manual → see below) operation of connected DALI luminaires.

The KNX programming button and programming LED can be used without restriction if no mains voltage is present.

2.6 Manual Operation

The DALI Control Broadcast Gateway has 9 buttons and 9 status LEDs for manual operation and error diagnosis. The buttons and LEDs are positioned on the front of the housing so that they can be operated without removing the protection cover once the devices have been installed in the distribution board.

The KNX programming button is located at the bottom right of the device. The button is used to switch between normal and programming mode and the associated LED lights up red when programming mode is activated.

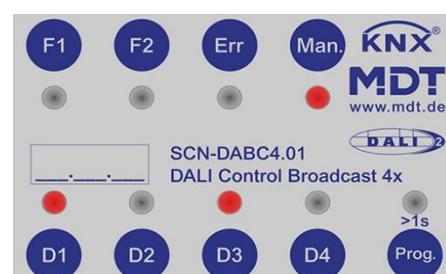
The top right 'Man' button is used to activate manual operation. Whether manual operation is possible can be set via parameters or enabled via a KNX object. In addition, manual operation can also be switched off automatically after an adjustable time. An activated manual mode is indicated by the LED associated to the button.

In manual mode, the four DALI lines can be switched and dimmed by pressing buttons D1...D4 on the device. A short press of the button switches the associated luminaires on and off (toggle function) and the DALI luminaires can be dimmed up and down by a long press of the channel button (dimming direction also toggles).

The status LEDs of buttons D1...D4 indicate the status of the luminaires (ON / OFF) in normal mode or in manual mode.

Example:

Manual operation active
Channel D1 and D3 light "ON"
Channel D2 and D4 light "OFF"

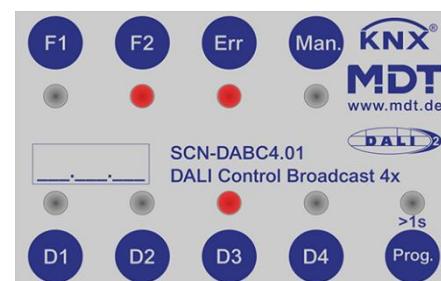


The 'Err' button and the corresponding LED are located next to the 'Man' button. A flashing 'Err' LED indicates that the gateway has detected an error. The device can be switched to error analysis mode by briefly pressing the 'Err' button. The LED is then permanently red (no flashing). Any previously activated manual mode is switched off.

In analysis mode, buttons D1...D4 can be used to select the DALI channel to be analyzed. The combination of LEDs in button F1 and F2 indicates any errors within the selected channel. This means:

LED F1 "ON", F2 "OFF"	→	ECG error in the channel
LED F1 "OFF", LED F2 "ON"	→	Lamp error in the channel
LEDs F1 and F2 flash quickly	→	DALI overload (more than 32 ECGs) in the channel
LEDs F1 and F2 flash slowly	→	DALI short circuit in the channel

Example:
Error analysis channel 3 active
Lamp error detected



A missing mains voltage at the gateway generates an error that is valid for all channels. It is symbolized by the LEDs 'Err' and 'Man' flashing alternately

In addition to error detection, a new or post installation can also be forced if the error analysis operating mode is activated and any existing error due to 'overload' (too many ECGs taught in → see below) can be corrected. The installation processes are activated by a long press of the F1 and F2 buttons.

F1 button long press → Forces reinstallation

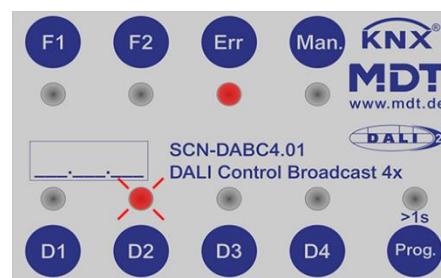
F2 button long press → Forces post-installation with system check (see below)

The respective installation process starts for the channel previously selected using the D1...D4 button. An ongoing installation process is then signalled by a flashing LED. This means:

Slow flashing → new installation process is running

Fast flashing → post-installation process is running

Example:
after long keypress of F2
Post-installation channel 2 running



The flashing of the respective LED (slow → new installation, fast → post-installation) is also activated if the corresponding process was started after a device start or reset by auto-commissioning (see next chapter).

2.7 Auto Commissioning Concept

The complex functions of the DALI Control Broadcast Gateway require individual communication between the gateway and the connected ECGs. To make sure that the gateway can establish this communication, the ECGs must be given a short address. The short address can then be used to query the ECG status, any existing ECG errors or the lamp wattage (see DT-51 below).

The short address also ensures that no more than 32 ECGs are connected per channel of the gateway. If more than 32 ECGs are connected due to an installation error, this is recognised by the gateway, the channel is switched off and a fault message is generated → overload-error.

It is not possible to use more than 32 ECGs per channel!

The short address is assigned automatically (so-called teach-in process) as soon as ECGs are connected, and the device is started or runs through a KNX bus reset. Please note that ECGs can only be taught-in if they are supplied with power and ready for operation and if the gateway is also supplied with mains voltage. Automatic teach-in takes place on all 4 DALI channels simultaneously and independently and is indicated by the respective LED flashing (see also the 'Manual operation' chapter → LEDs). Depending on the number of connected or newly added ECGs, the teach-in process can take up to 60 seconds.

As an alternative to the automatic start, the installation processes described below can also be started manually using the buttons on the device (see chapter 'Manual operation').

Depending on the previous status of the device, the gateway carries out two different installation processes, a new installation or a post-installation.

2.7.1 New installation

When connected for the first time in the delivery and default state, the gateway is not aware of any ECGs. In this case, the device will automatically carry out a new installation after start-up. During the new installation, the device searches for the respective DALI channel for connected ECGs. The search is based on the 3-byte long address of the ECGs. If ECGs are found, the gateway assigns the ECGs a unique, ascending short address from 0 to 31.

2.7.2 Post-installation

If a device start (bus reset) is carried out when ECGs have already been taught in, a post-installation is carried out. During post-installation, the gateway first uses the long and short addresses to check whether the ECGs previously taught-in and known by the gateway are still present. After the check, the gateway then scans the DALI line and uses the long addresses to search for any additionally installed, previously unknown ECGs. New ECGs are added to the installation and given a short address. Here, too, it is important to ensure that the number of ECGs never exceeds the maximum permissible limit of 32, otherwise the channel is switched off and a fault message is generated.

During subsequent installation, it should be noted that defective ECGs or ECGs that are no longer supplied with power (e.g. during maintenance) may also be connected to the DALI segment. In normal operation, such ECGs are recognised as faulty by the gateway and corresponding analysis data is provided via KNX. A defective or switched off ECG can of course not respond during post-installation. To ensure that the error information is not lost, the automatic post-installation in the default configuration does not delete ECGs that no longer respond.

On the other hand, it is possible that the installation has been changed and ECGs have been deliberately removed from the DALI line. In this case, deleting the ECGs and cancelling the associated error message is desired. For this reason, an ETS parameter can be used to set whether the automatic post-installation should be carried out without a system check (no deletion of non-responding ECGs) or with a system check (ECGs that do not respond are deleted).

System-Check

 A system check checks the number and status of the connected ballasts. This check can also be carried out using the operating buttons on the device.

System-Check and automatic configuration after each Reboot No Yes

If post-installation is started manually using the button on the device, a system check is always carried out and non-responding ECGs are deleted.

Attention: Every installation change in the DALI line where ECGs have been removed or replaced must be taught into the device → Carry out a post-installation with system check or alternatively a new installation. If ECGs that no longer exist are not deleted from the device, they generate an error message (ECG error). They also block the memory, and the full number of ECGs can no longer be taught in.

If only ECGs are added to an installation and no ECGs are removed, a post-installation without a system check is sufficient as no deletion is required.

If a post-installation with system check is carried out when no ECGs are connected to the gateway DALI line, all previously taught-in ECGs are deleted from the device memory and the device is emptied. The next time the device is started, the gateway will automatically carry out a new installation on such an empty channel.

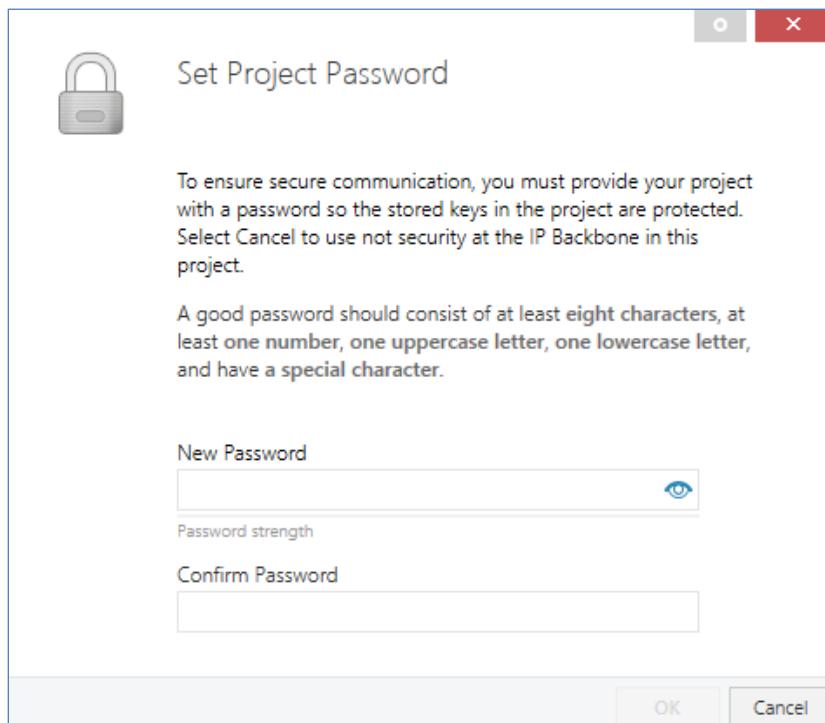
3 KNX Secure

The KNX standard has been extended by KNX Secure.

This enables the transmission of encrypted information within KNX. This allows secure encryption of ETS downloads as well as communication via objects.

Note: There are special conditions to be kept in mind when using secure devices in ETS. Please refer to the corresponding web pages on the KNX website <https://www.knx.org>

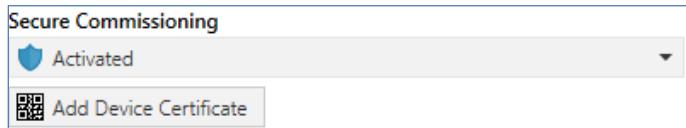
The MDT DALI Control Broadcast Gateway is equipped with a KNX Secure Stack. To use a device "safely", the ETS project must first be protected with a password.



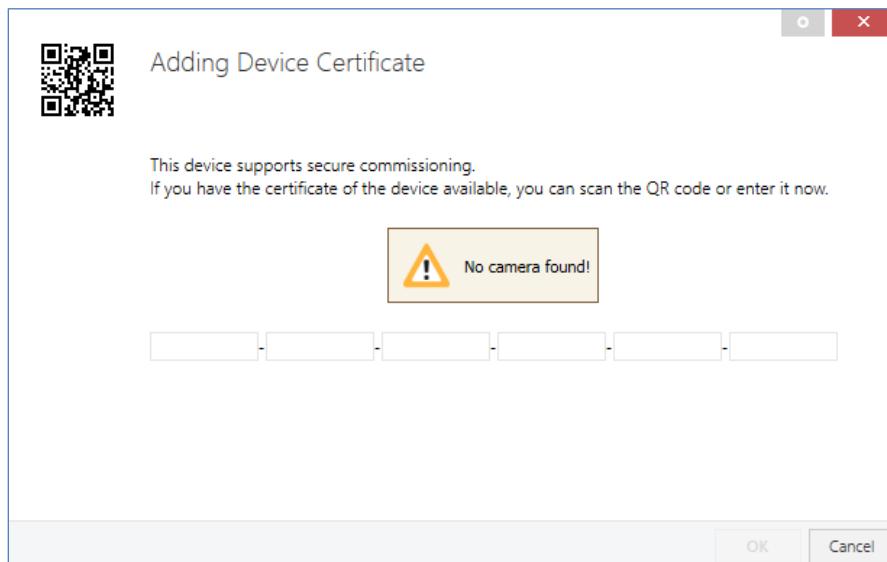
Note: "Safe" devices can only be downloaded with an interface that supports longer telegrams (long frames).

3.1 Secure Usage

In the ETS the secured usage is shown in the properties as follows:



Subsequently, the device certificate must be read in for each "safe" device. For this purpose, the camera is available as a QR Code Reader, or the code must be entered manually:



The certificate consists of the serial number and an initial key FDSK (Factory Default Setup Key). This code is only used for initial commissioning with the ETS. During the first download this key is replaced by the ETS. This prevents unauthorized persons from gaining access to the installation despite knowing the initial key.

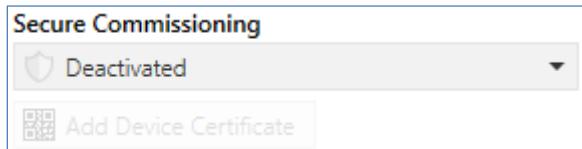
This initial key is printed on the device label both as a QR code and in text form.

Note: A "removable" sticker is also supplied, which the user can place in his documentation.

Note: The unit is designed to use up to 600 group addresses in secure communication. Up to 100 KNX communication partners are possible to communicate with the DALI Control Broadcast Gateway via secured group communication objects.

3.2 Unsecure Usage

However, the DALI Control Broadcast Gateway can also be configured as a "traditional" device in the ETS, as before. In this case, group communication with other devices can also be carried out as usual. In this case no encrypted ETS download takes place.



3.3 Master-Reset

A master reset must be carried out so that the device can be returned to the manufacturing state and thus the initial key can be reactivated.

The following procedure must be followed for this:

1. Remove KNX connector
2. Keep commissioning KNX push button pressed
3. Add KNX connector
4. Keep KNX push button pressed for long time (~7 sec) after KNX power supply connection.

4 Colour Control

The DALI Control Broadcast Gateway supports ECGs for colour control (Device Type 8 according to EN 62386-209). Such devices allow multi-channel colour control (RGB(W)) and thus enable the mixing of a light colour or the setting of a colour temperature (TC) via DALI.

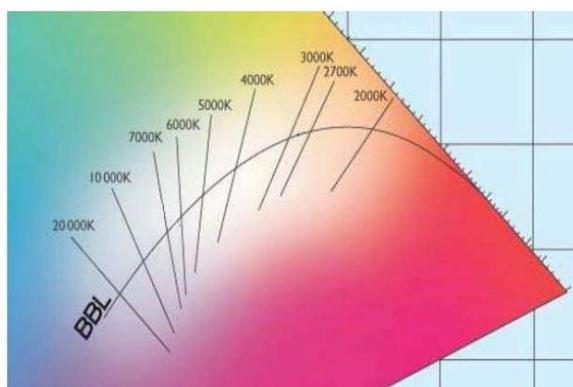
4.1 Features of DALI Device Type 8

ECGs for colour control (DT-8) are offered by various manufacturers. As a rule, these devices enable the direct control of LED modules with multi-coloured LEDs. The most common are modules with LEDs in the three colours red, green and blue (RGB), as well as modules with two different shades of white (Tunable White).

Attention: DT-8 ECGs for the sub-Type PrimaryN are not supported by the DALI gateway.

Occasionally, LED modules with an additional integrated white channel (RGBW) are also offered on the market. While it is of course possible to control the different colour channels individually, each via a separate DALI control device for LEDs (Device Type-6), this solution has the disadvantage that each of these devices is assigned its own DALI short address. This means that two (Tunable White), three (RGB) or even four (RGBW) short addresses are required to control a module. With a maximum number of 32 available short addresses per DALI segment, the number of usable luminaires would be greatly reduced. With a DT-8 device, on the other hand, only one short address is required for all colour channels and the maximum possible number of 32 luminaires can be controlled. The DALI standard EN 62386-209 defines various colour control methods for DT-8 devices. As a rule, a particular device only supports one of these possible methods. Therefore, please observe the specifications of the respective device or lamp manufacturer.

4.2 Colour display via colour temperature



The various shades of white are a subset of all possible colours in the colour space shown opposite. The white tones are located on a line across the entire colour space. The points on this so-called black-body line (BBL) are usually defined by a colour temperature in Kelvin. This makes it possible to precisely determine the white tone of a light between warm and cold with just one value. The colour temperature principle is therefore ideal for controlling white luminaires (Tunable White).

Figure: University of Cambridge press, source Wikipedia

DT-8 operating devices set the required colour temperature on an LED module by mixing cool and warm white LEDs. Of course, as before this is only possible within certain physical limits. With today's LED modules colour temperatures between 2000 and 8000 Kelvin are common.

4.3 Colour display via 3 or 4 colour channels (RGBWAF)

Principally, a colour is always created by mixing different individual colours (different white tones, RGB or RGBW). A colour can therefore also be displayed based on the mixing ratio of different single colours, e.g., 50 % red, 0 % green, 60 % blue.

In contrast to the methods described above, the colour definition in this case is not exact, but depends heavily on the specific physical properties of the LEDs used to generate the colour (wavelength, intensity). Nevertheless, specifying the percentage of primary colours within a system is useful for the relative description of a colour. With most DT-8 ballasts, the colour is set by defining 3 (RGB) or 4 values (RGBW) between 0 and 100 %.

According to the DALI standard EN 62386-209, up to six colours (RGBWAF) can theoretically be used. However, the DALI Control Broadcast Gateway only supports a maximum of 4 colours, corresponding to the ECGs currently available on the market.

5 Operating Modes, Special Functions and Time Settings

The DALI Gateway enables the use of various operating modes, special functions and time settings. These can be set individually on the respective parameter pages of the four DALI channels.

5.1 Operating Modes

The user can choose between the following two possible operating modes:

5.1.1 Normal mode

In normal operation, ECGs can be dimmed and switched without restriction. Each DALI channel can be controlled via three communication objects (switching, dimming, set value). Numerous additional objects for light colour control are available for DT-8 ECGs. Separate status objects provide information about the switching, brightness value and colour status of the individual channels.

5.1.2 Normal / Night Mode

Night mode can be activated and deactivated via a general communication object of the gateway. For each of the four DALI channels, it is possible to configure an additional behaviour during the night. ECGs of the channel can either be set to a predefined permanent light value or can be switched off in one or two steps in a preconfigured time sequence.

Note: If the connected luminaires of a DALI channel are set to a permanent brightness value during the night, the manual and scene control of this channel is blocked.

5.2 Special Functions

Additional special functions are available for each DALI channel, such as active power, alarm, disable and energy-saving functions. These functions are described in more detail below.

5.2.1 Active Power Reporting

Active Power Reporting allows you to monitor the current energy consumed by the ECGs connected to a DALI channel. This requires ECGs that support DT51 according to DALI part 252. These ECGs measure the current consumption of the connected luminaires and make the measurement result available on the DALI bus. The measurement results of all ECGs connected to a channel are totalled and displayed as the total power consumption by the channels corresponding communication objects.

5.2.2 Alarm Function

Each DALI channel has an individually configurable alarm function in its parameters. The alarm can be activated and deactivated via the corresponding communication object of the channel. This means that different behaviours for activating and deactivating an alarm can be set for the connected luminaires of each individual DALI channel.

Note: If the alarm function is activated, manual and scene control of the corresponding channel is disabled. In addition, the night mode or a locking function of the channel have no effect in this state.

5.2.3 Locking Function

The locking function can be activated and deactivated via the corresponding channel object. Individual behaviours can be configured for the start and end of locking. Possible adjustable behaviours are switching on, switching off or set value of the channel. In addition, the behaviour of the locking function can be defined after a KNX download and after a KNX recovery.

Note: If a DALI channel is locked, manual and scene control of the channel are locked.

5.2.4 Energy Saving

Energy can be saved with Energy Saving. This is achieved with the help of four additional communication objects that de-energize the ECGs connected to an additional switching actuator when they are switched off. When the DALI channel is switched on, the energy saving object assigned to the DALI channel is first sent to the KNX bus. This switches on the corresponding switch actuator channel before the actual DALI switch-on command is sent on the DALI bus. To prevent an ECG from not being able to react quickly enough when switching on, a transmission delay for the DALI command can be set in the general parameters. The four energy-saving objects can be individually assigned to the four DALI channels.

5.3 Time Settings

Three different time delay functions are available for each DALI channel. In addition to switch-on and switch-off delays, a staircase function with different operating modes can also be realised.

5.3.1 Staircase Time

There are two general options for using the staircase function. With a fixed time set in the parameters or with a variable time which is sent via a communication object. If a fixed time is set in the parameters, the staircase function is started using the channel's staircase start object. If the variable time variant is used, the function is started by sending the time in seconds to the variable time object.

The switch-off behaviour can also be defined for both variants. In addition to switching off immediately after the time has elapsed, a pre-warning can be used to announce the switch-off. This pre-warning can be signalled by flashing or gentle dimming of the lamps.

A possible retriggering of the function can be defined or not permitted. If the DALI channel is controlled via the on/off or the set value object, no switch-off timer is started. This enables a normal manual control of the connected lights.

Note: If the staircase function is used in a channel, it is not possible to switch between normal and night mode for this channel.

5.3.2 Switch-On Delay

Each connected DALI line can be configured with an individual switch-on delay. It is possible to set an individually adjustable output value during the delay until the lighting switches to the final value. It is also possible to set whether the delay reacts to switching on and/or value setting telegrams. Finally, the option of retriggering can be set.

5.3.3 Switch-Off Delay

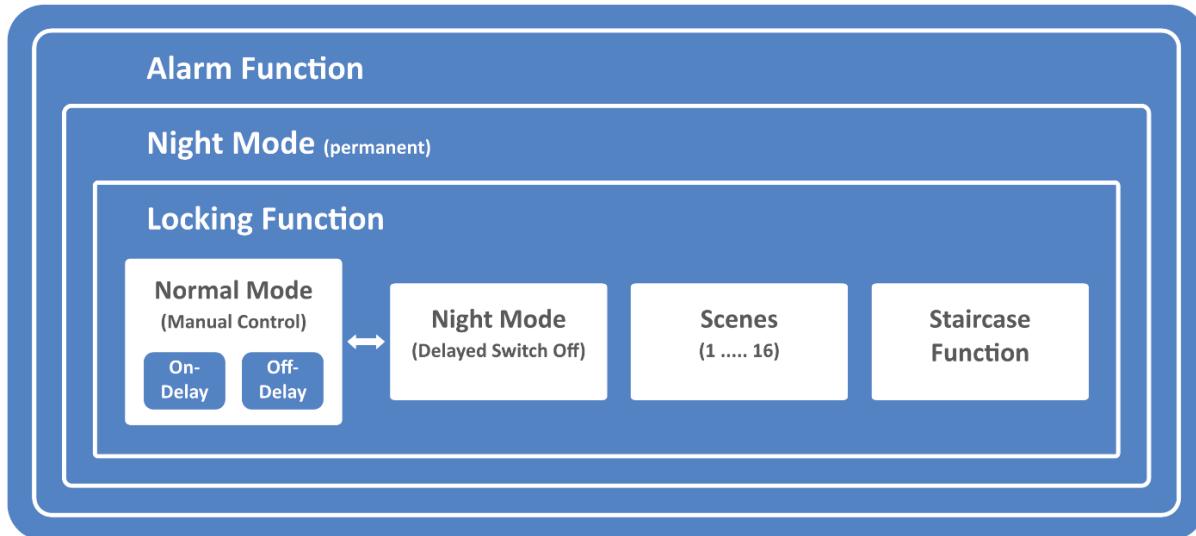
In addition to a switch-on delay, each channel also has a timer for a switch-off delay. A reaction to switching off and/or setting a value can also be set for the off delay.

5.4 Scenes

Each DALI channel has up to 16 assignable and individually configurable scenes. These scenes can be called up and programmed via the channel's scene communication object. An individual scene number can be assigned to each scene in the channel parameters. In addition to the brightness value, the colour and/or colour temperature of DT8-compatible ECGs can also be programmed and invoked in scenes.

5.5 Operating mode and special function hierarchy

Some of the individual operating modes described above have overriding functions and roles for the operation of the system as a whole. A prioritisation or hierarchy of operating modes is therefore required. The alarm function has the highest priority, followed by permanent night mode and the locking function. The normal and night mode with delayed switch-off have the same priority level in the hierarchy, as do scene calls and the staircase function.



By default, each DALI channel operates in normal mode. Night mode, locking, staircase or alarm functions must first be enabled and configured in the respective channel parameters

6 Analysis and service functions

6.1 Recording operating hours

The DALI Control Broadcast Gateway can be used to record the operating hours (burning time) for each DALI channel. Internal recording can be carried out to the second or hour. Externally, the values for each channel are available via communication objects either as DPT 13.100 or DPT 12.102.

The operating hours recording is independent of the dimming value. This means that every light value > 0 % contributes to an increase in the operating hours of a DALI channel. The counter can be reset (when lamps are changed). To reset the counter, the value "1" is written to the "Reset operating hours" communication object.

A maximum value (life span) can be configured for each operating hour counter, which activates an alarm object on the KNX bus. This information can be used for maintenance purposes.

Attention: In accordance with KNX standards, the operating hours are sent in seconds (DPT 13.100). This setting for time recording can be changed in the general parameters to hours (DPT 12.102).

6.2 Failure analysis at channel level

Various communication objects are available for each channel to display errors. In addition to general failure objects for DALI, ECG and lamp failures within a channel, the number of faulty ECGs and lamps or an exceeded failure rate can be displayed via communication objects.

For details of channel-specific communication objects, please see the communication objects description below in chapter: [7.2.4 Channel objects – Analysis and Service](#)

6.3 Failure analysis at device level

In addition to objects for a Main Power failure and a general error object, a cyclically sent "In operation" object is also available at device level.

For further details regarding the communication objects, please see the communication objects description in chapter: [7.1 General objects](#)

6.4 Parametrisation

The parameters and the corresponding group addresses can now be configured as with any other KNX product. Through the parameters, various operating modes and functions can also be set. These are described in more detail in the chapter:

[5 Operating Modes, Special Functions and Time Settings](#)

Finally, the parameters and links to group addresses should be loaded onto the device. The device is now ready to use.

7 ETS Communication objects

The DALI Control Broadcast Gateway communicates via the KNX bus based on a powerful communication stack of the System B type. Altogether 199 communication objects are available, which are described below separated by function block.

Note: Up to 600 group addresses can be used in encrypted form, see chapter [3.1 Secure Usage](#).

7.1 General objects

7.1.1 General

Object	Object name	Function	Type	Flags
1	Central Switching	ON/OFF	1 Bit 1.001	CW
All lights on all channels can be switched together via this object.				
2	Central Set Value	Dimming absolute	1 Byte 5.001	CW
All lights on all channels can be set to a common value via this object.				
6	Night mode	Activate/Stop	1 Bit 1.010	CW
Use this object to activate or stop the night mode via the bus.				
7	General Failure	Alarm	1 Bit 1.005	CRT
This object is used to report the presence of a general failure in the connected DALI lines independent of its type.				
8	Main Power Failure	Alarm	1 Bit 1.005	CRT
This object is used to report a main power failure.				
24 ... 27	Energy Saving Object 1 ... 4	Switch	1 Bit 1.001	CRT
If assigned accordingly in the channel parameters, these objects are also switched off when a channel is switched off. This allows the power supply to the ECGs to be interrupted using a switching actuator. If the associated channels are switched on again with a value > 0%, this object is switched on again beforehand and sent. In this case, a minimum time delay is parameterised so that the ECGs are ready for operation again after the voltage is switched on, see parameter page: General → Energy Saving.				

7.1.2 Special Functions

Object	Object name	Function	Type	Flags
3	In operation	Send status	1 Bit 1.017	CT
This object can be used to send a cyclical telegram to show that the device is 'alive'. It is used to monitor the status of the device. The transmission cycle time can be set in the parameters: General → Special Functions → Device Status				
4	Manual operation	Enable/Disable	1 Bit 1.003	CW
This object is used to enable or disable the manual operation on the device				
5	Manual operation	Send status	1 Bit 1.003	CRT
This object shows the status of the manual operation				

7.2 Channel objects

A set of communication objects are available for each one of the up to 4 possible DALI channels. The following objects are available (Example for DALI channel 1):

7.2.1 Channel objects – Behaviour

Object	Object name	Function	Type	Flags
32	CH1, Switching	ON/OFF	1 Bit 1.001	CW
Use this object to switch channel 1 on or off.				
33	CH1, Dimming	Dimming relative	4 Bit 3.007	CW
Used for the relative dimming of channel 1. Bit 3 is set to dim up and deleted to dim down. Bit 0 ... 2 refer to the increment size. Bit 0 ... 2 deleted are interpreted as a stop telegram.				
34	CH1, Dimming	Dimming absolute	1 Byte 5.001	CW
This object can be used to set channel 1 to a relative value.				
37	CH1, Status	Status: ON/OFF	1 Bit 1.001	CRT
Sends the switch status of the channel. Any value > 0 % is interpreted as ON.				
38	CH1, Status	Status of dimming value	1 Byte 5.001	CRT
Sends the relative value status of the channel in percentage.				

7.2.2 Channel objects – Colour Control

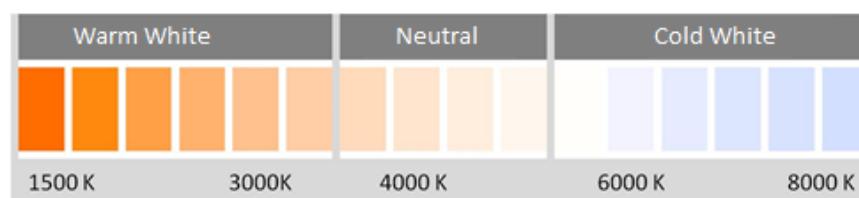
Different colour control options are supported:

- Colour temperature
- RGB
- HSV
- RGBW
- Colour temperature + RGB
- Colour temperature + RGBW

Only one type of colour control can be selected per channel. All installed ECGs of this channel that support this type, can be controlled. Other ECG types will not react to the command. Depending on type of colour control chosen, different objects are displayed:

7.2.2.1 Colour Temperature

The colour temperature can be set in Kelvin. Colour temperatures below 3000 K are called "warm white", above 5000 K "cool white" and between 3000 and 5000 "neutral white".



Object	Object name	Function	Type	Flags
44	CH1, Colour Temperature	Value	2 Byte 7.600	CW
Sets the colour temperature of the channel.				
45	CH1, Colour Temperature relative	Value	1 Byte 5.001	CW
Sets the colour temperature in the channel relatively between 0 and 100%. The value range 0 to 100% is automatically converted to the possible colour temperature range.				
50	CH1, Colour Temperature Fading	Dimming relative	4 Bit 3.007	CW
The colour of the channel can be changed using this object. Increase the angle with Bit 3 set, decrease the angle with Bit 3 deleted. Bit 0...2 deleted is interpreted as a stop telegram. This means that the entire circumference of the circle can be circulated, and every colour can be set.				
56	CH1, Colour Temperature	Status	2 Byte 4.600	CRT
Sends the set colour temperature as channel status.				
61	CH1, Colour Temperature relative	Status	1 Byte 5.001	CRT
Sends the set relative colour temperature as channel status.				

7.2.2.2 RGB

The RGB colour space is called additive colour space as the colour perception is created by mixing the three primary colours.

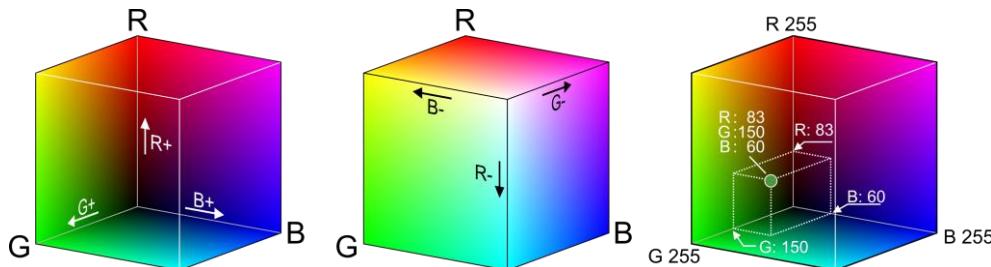


Figure: RGB cubes (source: Wikipedia)

7.2.2.2.1 RGB (3 Byte combined object)

Object	Object name	Function	Type	Flags
43	CH1, Colour RGB	Value	3 Byte 232.600	CW

Sets the colour in the channel as RGB.

<u>Format:</u>	3 octets: U ₈ U ₈ U ₈			
octet nr.	3 MSB 2 1 LSB			
field names	R G B			
encoding	U U U U U U U U U U U U U U U U U U U U U U U U			
<u>Encoding:</u>	All values binary encoded.			
<u>Range:</u>	R, G, B: 0 to 255			
<u>Unit:</u>	None			
<u>Resol.:</u>	1			
<u>PDT:</u>	PDT_GENERIC_03			
Datapoint Types				
<u>ID:</u>	<u>Name:</u>	<u>Range:</u>	<u>Resol.:</u>	<u>Use:</u>
232.600	DPT_Colour_RGB	R: 0 to 255 G: 0 to 255 B: 0 to 255	R: 1 G: 1 B: 1	G

55	CH1, Colour RGB	Status	3 Byte 232.600	CRT
----	-----------------	--------	-------------------	-----

Use this object to send the set colour of the channel as status.

7.2.2.2.2 RGB (separate objects)

Object	Object name	Function	Type	Flags
46	CH1, Colour RGB Red	Value	1 Byte 5.001	CW
Sets the colour of the channel. The values for red (R) are transmitted.				
47	CH1, Colour RGB Green	Value	1 Byte 5.001	CW
Sets the colour of the channel. The values for green (G) are transmitted.				
48	CH1, Colour RGB Blue	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for blue (B) are transmitted.				
51	CH1, Colour Fading RGB Red	Dimming relative	4 Bit 3.007	CW
Use this object to change the colour (R) of the channel. Bit 3 is set to increase the red component and deleted to decrease the red component. Bit 0 ... 2 refer to the increment size. Bit 0 ... 2 deleted is interpreted as a stop telegram.				
52	CH1, Colour Fading RGB Green	Dimming relative	4 Bit 3.007	CW
Use this object to change the colour (G) of the channel. Description as for colour change RGB (R).				
53	CH1, Colour Fading RGB Blue	Dimming relative	4 Bit 3.007	CW
Use this object to change the colour (B) of the channel. Description as for colour change RGB (R).				
57	CH1, Colour RGB Red	Status	1 Byte 5.001	CRT
Sends the selected colour (R) as channel status.				
58	CH1, Colour RGB Green	Status	1 Byte 5.001	CRT
Sends the selected colour (G) as channel status.				
59	CH1, Colour RGB Blue	Status	1 Byte 5.001	CRT
Sends the selected colour (B) as channel status.				

7.2.2.3 HSV

The colour is set as an HSV value. This consists of hue, saturation, and value. The value (V) is set via

the value objects. Further objects are displayed for hue (H) and saturation (S). The hue is entered as a value between 0° and 360° and rotates around the colour circle making it easy to reach all colours of the circle.

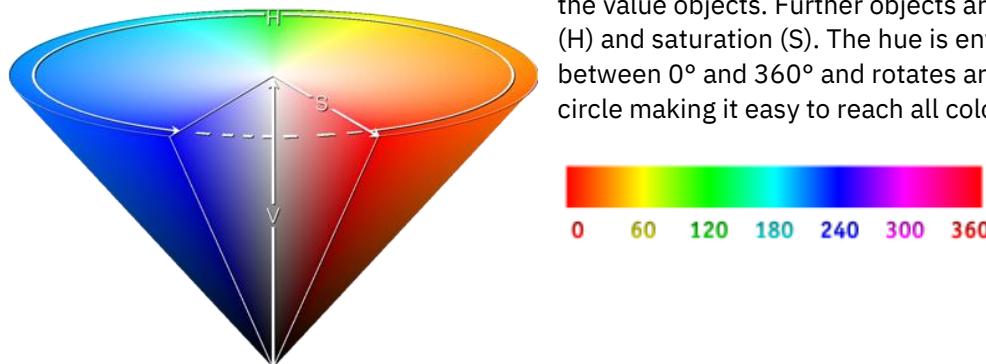


Figure: HSV colour value (Source: Wikipedia)

Values for saturation and intensity (darkness value) are set between 0 and 100 %. 100 % means complete saturation and full intensity.

7.2.2.3.1 HSV (separate objects)

Object	Object name	Function	Type	Flags
46	CH1, Colour HSV Hue (H)	Value	1 Byte 5.003	CW
Sets the colour via an HSV value. A value between 0° and 360° can be transmitted. Please remember that the used data type 5.003 only allows for a resolution of about 1.4°.				
47	CH1, Colour HSV Saturation (S)	Value	1 Byte 5.001	CW
Use this object to set the saturation. A value between 0° and 100% can be transmitted.				
51	CH1, Colour Fading HSV Hue (H)	Dimming relative	4 Bit 3.007	CW
Use this object to change the hue of a channel. Bit 3 is set to increase the angle and deleted to decrease the angle. Bit 0 ... 2 deleted is interpreted as a stop telegram. As the whole colour circle is accessible, any colour can be set.				
52	CH1, Colour Fading HSV Saturation (S)	Dimming relative	4 Bit 3.007	CW
See change of hue above. The value between 0 and 100% is increased incrementally.				
57	CH1, Colour HSV Hue (H)	Status	1 Byte 5.003	CRT
Sends the configured hue as channel status.				
58	CH1, Colour HSV Saturation (S)	Status	1 Byte 5.001	CRT
Sends the configured saturation as channel status.				

7.2.2.4 RGBW

7.2.2.4.1 RGBW (6 Byte combined object DPT 251.600)

Object	Object name	Function	Type	Flags
43	CH1, Colour RGBW	Value	6 Byte 251.600	CW
Use this object to set the colour in the channel as RGBW.				
Datapoint Type DPT_Name: DPT_Colour_RGBW DPT Format: U ₈ U ₈ U ₈ U ₈ U ₄ DPT_ID: 251.600				
Field	Description	Supp.	Range	Unit
R	Colour Level Red	M	0 % to 100 %	-
G	Colour Level Green	M	0 % to 100 %	-
B	Colour Level Blue	M	0 % to 100 %	-
W	Colour Level White	M	0 % to 100 %	-
m _R	Shall specify whether the colour information red in the field R is valid or not.	M	{0,1}	None.
m _G	Shall specify whether the colour information green in the field G is valid or not.	M	{0,1}	None.
m _B	Shall specify whether the colour information blue in the field B is valid or not.	M	{0,1}	None.
m _w	Shall specify whether the colour information white in the field W is valid or not.	M	{0,1}	None.
55	CH1, Colour RGBW	Status	6 Byte 251.600	CRT
Sends the set colour of the channel as status.				

7.2.2.4.2 RGBW (separate objects)

Object	Object name	Function	Type	Flags
46	CH1, Colour RGB Red	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for red (R) are transmitted.				
47	CH1, Colour RGB Green	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for green (G) are transmitted.				
48	CH1, Colour RGB Blue	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for blue (B) are transmitted.				
49	CH1, Colour White	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for white (W) are transmitted.				
51	CH1, Colour Fading RGB Red	Dimming relative	4 Bit 3.007	CW

Use this object to change the colour (R) in the channel. Bit 3 is set to increase the red component and deleted to decrease the red component. Bit 0 ... 2 refer to the increment size. Bit 0 ... 2 deleted is interpreted as a stop telegram.

52	CH1, Colour Fading RGB Green	Dimming relative	4 Bit 3.007	CW
----	------------------------------	------------------	----------------	----

Use this object to change the colour (G) in the channel. Description as for colour change (red).

53	CH1, Colour Fading RGB Blue	Dimming relative	4 Bit 3.007	CW
----	-----------------------------	------------------	----------------	----

Use this object to change the colour (B) in the channel. Description as for colour change (red).

54	CH1, Colour Fading White	Dimming relative	4 Bit 3.007	CW
----	--------------------------	------------------	----------------	----

Use this object to change the colour white in the channel. Description as for colour change (red).

57	CH1, Colour RGB Red	Status	1 Byte 5.001	CRT
----	---------------------	--------	-----------------	-----

Sends the set colour red as channel status.

58	CH1, Colour RGB Green	Status	1 Byte 5.001	CRT
----	-----------------------	--------	-----------------	-----

Sends the set colour green as channel status.

59	CH1, Colour RGB Blue	Status	1 Byte 5.001	CRT
----	----------------------	--------	-----------------	-----

Sends the set colour blue as channel status.

60	CH1, Colour White	Status	1 Byte 5.001	CRT
----	-------------------	--------	-----------------	-----

Sends the set colour white as channel status.

7.2.2.5 HSVW (separate objects)

See chapter: [7.2.2.3.1 HSV \(separate objects\)](#)

7.2.2.6 Colour Temperature + RGB

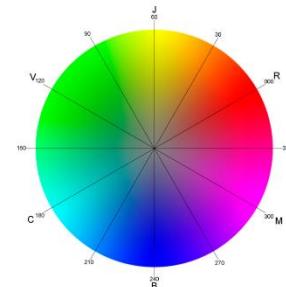
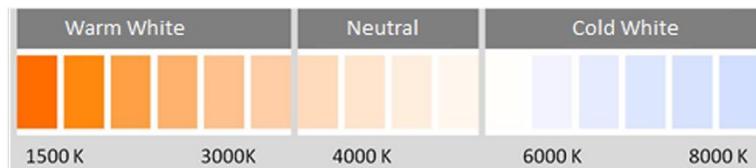


Figure: Colour temperature + RGB (Source: Wikipedia)

7.2.2.6.1 Colour Temperature + RGB (3 Byte combined object DPT 232.600)

Object	Object name	Function	Type	Flags
43	CH1, Colour RGB	Value	3 Byte 232.600	CW
The colour can be set as RGB in the channel via this object.				
44	CH1, Colour Temperature	Value	2 Byte 7.600	CW
Sets the colour temperature in the channel.				
45	CH1, Colour Temperature relative	Value	1 Byte 5.001	CW
Sets the colour temperature in the channel relatively between 0 and 100%. The value range 0 to 100% is automatically converted to the possible colour temperature range.				
50	CH1, Colour Temperature Fading	Dimming relative	4 Bit 3.007	CW
Changes the colour temperature in the channel. Bit 3 is set to dim up and deleted to dim down. Bit 0 ... 2 refer to the increment size. Bit 0 ... 2 deleted is interpreted as a stop telegram.				
55	CH1, Colour RGB	Status	3 Byte 232.600	CRT
Sends the set RGB colour as channel status.				
56	CH1, Colour Temperature	Status	2 Byte 7.600	CRT
Sends the set colour temperature as channel status.				
61	CH1, Colour Temperature relative	Status	1 Byte 5.001	CRT
Sends the set relative colour temperature as channel status.				

7.2.2.6.2 Colour Temperature + RGB (RGB separate objects)

Object	Object name	Function	Type	Flags
44	CH1, Colour Temperature	Value	2 Byte 7.600	CW
Sets the colour temperature in the channel.				
45	CH1, Colour Temperature relative	Value	1 Byte 5.001	CW
Sets the colour temperature in the channel relatively between 0 and 100%. The value range 0 to 100% is automatically converted to the possible colour temperature range.				
46	CH1, Colour RGB Red	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for red (R) are transmitted.				
47	CH1, Colour RGB Green	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for green (G) are transmitted.				
48	CH1, Colour RGB Blue	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for blue (B) are transmitted.				
50	CH1, Colour Temperature Fading	Dimming relative	4 Bit 3.007	CW
Changes the colour temperature in the channel. Bit 3 is set to dim up and deleted to dim down. Bit 0 ... 2 refer to the increment size. Bit 0 ... 2 deleted is interpreted as a stop telegram.				
51	CH1, Colour Fading RGB Red	Dimming relative	4 Bit 3.007	CW
Use this object to change the colour red in the channel. Bit 3 is set to increase the red component and deleted to decrease the red component. Bit 0 ... 2 refer to the increment size. Bit 0 ... 2 deleted is interpreted as a stop telegram.				
52	CH1, Colour Fading RGB Green	Dimming relative	4 Bit 3.007	CW
Use this object to change the colour green in the channel. Description as for colour change (red).				
53	CH1, Colour Fading RGB Blue	Dimming relative	4 Bit 3.007	CW
Use this object to change the colour blue in the channel. Description as for colour change (red).				
56	CH1, Colour Temperature	Status	2 Byte 7.600	CRT
Sends the set colour temperature as channel status.				
57	CH1, Colour RGB Red	Status	1 Byte 5.001	CRT
Sends the set colour red as channel status.				

58	CH1, Colour RGB Green	Status	1 Byte 5.001	CRT
Sends the set colour green as channel status.				
59	CH1, Colour RGB Blue	Status	1 Byte 5.001	CRT
Sends the set colour blue as channel status.				
61	CH1, Colour Temperature relative	Status	1 Byte 5.001	CRT
Sends the set relative colour temperature as channel status.				

7.2.2.6.3 Colour Temperature + RGB (HSV separate objects)

Object	Object name	Function	Type	Flags
44	CH1, Colour Temperature	Value	2 Byte 7.600	CW
Sets the colour temperature in the channel.				
45	CH1, Colour Temperature relative	Value	1 Byte 5.001	CW
Sets the colour temperature in the channel relatively between 0 and 100 %. The value range 0 to 100 % is automatically converted to the possible colour temperature range.				
46	CH1, Colour HSV Hue (H)	Value	1 Byte 5.003	CW
Sets the colour via a HSV value. A value between 0° and 360° can be transmitted. Please remember that the used data type 5.003 only allows for a resolution of about 1.4°.  0 60 120 180 240 300 360				
47	CH1, Colour HSV Saturation (S)	Value	1 Byte 5.001	CW
Use this object to set the saturation. A value between 0 and 100% can be transmitted.				
50	CH1, Colour Temperature Fading	Dimming relative	4 Bit 3.007	CW
The colour in the channel can be changed using this object. Increase the angle with Bit 3 set, decrease the angle with Bit 3 deleted. Bit 0 ... 2 deleted is interpreted as a stop telegram. This means that the entire circumference of the circle can be circulated, and every colour can be set.				
51	CH1, Colour Fading HSV Hue (H)	Dimming relative	4 Bit 3.007	CW
Use this object to change the hue of a channel. Bit 3 is set to increase the angle and deleted to decrease the angle. Bit 0 ... 2 deleted is interpreted as a stop telegram. As the whole colour circle is accessible, any colour can be set.				
52	CH1, Colour Fading HSV Saturation (S)	Dimming relative	4 Bit 3.007	CW
See change of hue above. The value between 0 and 100 % is increased incrementally				

56	CH1, Colour Temperature	Status	2 Byte 7.600	CRT
Sends the set colour temperature as channel status.				
57	CH1, Colour HSV Hue (H)	Status	1 Byte 5.003	CRT
Sends the configured hue as channel status.				
58	CH1, Colour HSV Saturation (S)	Status	1 Byte 5.003	CRT
Sends the configured saturation as channel status.				
61	CH1, Colour Temperature relative	Status	1 Byte 5.001	CRT
Sends the set relative colour temperature as channel status.				

7.2.2.7 Colour Temperature + RGBW



Figure: Colour temperature + RGBW (Source: Wikipedia)

7.2.2.7.1 Colour Temperature + RGBW (6 Byte combined object DPT 251.600)

Object	Object name	Function	Type	Flags
43	CH1, Colour RGBW	Value	6 Byte 251.600	CW
The colour can be set as RGB in the channel via this object.				
44	CH1, Colour Temperature	Value	2 Byte 7.600	CW
Sets the colour temperature in the channel.				
45	CH1, Colour Temperature relative	Value	1 Byte 5.001	CW
Sets the colour temperature in the channel relatively between 0 and 100 %. The value range 0 to 100 % is automatically converted to the possible colour temperature range.				
50	CH1, Colour Temperature Fading	Dimming relative	4 Bit 3.007	CW
Changes the colour temperature in the channel. Bit 3 is set to dim up and deleted to dim down. Bit 0 ... 2 refer to the increment size. Bit 0 ... 2 deleted is interpreted as a stop telegram.				
55	CH1, Colour RGBW	Status	6 Byte 251.600	CRT

Sends the set RGB colour as channel status.				
56	CH1, Colour Temperature	Status	2 Byte 7.600	CRT
Sends the set colour temperature as channel status.				
61	CH1, Colour Temperature relative	Status	1 Byte 5.001	CRT
Sends the set relative colour temperature as channel status.				

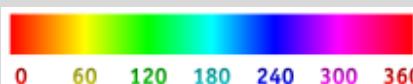
7.2.2.7.2 Colour Temperature + RGBW (RGBW separate objects)

Object	Object name	Function	Type	Flags
44	CH1, Colour Temperature	Value	2 Byte 7.600	CW
Sets the colour temperature in the channel.				
45	CH1, Colour Temperature relative	Value	1 Byte 5.001	CW
Sets the colour temperature in the channel relatively between 0 and 100 %. The value range 0 to 100 % is automatically converted to the possible colour temperature range.				
46	CH1, Colour RGB Red	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for red (R) are transmitted.				
47	CH1, Colour RGB Green	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for green (G) are transmitted.				
48	CH1, Colour RGB Blue	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for blue (B) are transmitted.				
49	CH1, Colour White	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for white (W) are transmitted.				
50	CH1, Colour Temperature Fading	Dimming relative	4 Bit 3.007	CW
Changes the colour temperature in the channel. Bit 3 is set to dim up and deleted to dim down. Bit 0 ... 2 refer to the increment size. Bit 0 ... 2 deleted is interpreted as a stop telegram.				
51	CH1, Colour Fading RGB Red	Dimming relative	4 Bit 3.007	CW
Use this object to change the colour red in the channel. Bit 3 is set to increase the red component and deleted to decrease the red component. Bit 0 ... 2 refer to the increment size. Bit 0 ... 2 deleted is interpreted as a stop telegram.				

52	CH1, Colour Fading RGB Green	Dimming relative	4 Bit 3.007	CW
Use this object to change the colour green in the channel. Description as for colour change (red).				
53	CH1, Colour Fading RGB Blue	Dimming relative	4 Bit 3.007	CW
Use this object to change the colour blue in the channel. Description as for colour change (red).				
54	CH1, Colour Fading White	Dimming relative	4 Bit 3.007	CW
Use this object to change white in the channel. Description as for colour change (red).				
56	CH1, Colour Temperature	Status	2 Byte 7.600	CRT
Sends the set colour temperature as channel status.				
57	CH1, Colour RGB Red	Status	1 Byte 5.001	CRT
Sends the set colour red as channel status.				
58	CH1, Colour RGB Green	Status	1 Byte 5.001	CRT
Sends the set colour green as channel status.				
59	CH1, Colour RGB Blue	Status	1 Byte 5.001	CRT
Sends the set colour blue as channel status.				
60	CH1, Colour White	Status	1 Byte 5.001	CRT
Sends the set white as channel status.				
61	CH1, Colour Temperature relative	Status	1 Byte 5.001	CRT
Sends the set relative colour temperature as channel status.				

7.2.2.7.3 Colour Temperature + RGBW (HSVW separate objects)

Object	Object name	Function	Type	Flags
44	CH1, Colour Temperature	Value	2 Byte 7.600	CW
Sets the colour temperature in the channel.				
45	CH1, Colour Temperature relative	Value	1 Byte 5.001	CW
Sets the colour temperature in the channel relatively between 0 and 100 %. The value range 0 to 100 % is automatically converted to the possible colour temperature range.				

46	CH1, Colour HSV Hue (H)	Value	1 Byte 5.003	CW
 0 60 120 180 240 300 360		Sets the colour via an HSV value. A value between 0° and 360° can be transmitted. Please remember that the used data type 5.003 only allows for a resolution of about 1.4°.		
47	CH1, Colour HSV Saturation (S)	Value	1 Byte 5.001	CW
Use this object to set the saturation. A value between 0° and 100% can be transmitted.				
49	CH1, Colour White	Value	1 Byte 5.001	CW
Sets the colour in the channel. The values for white (W) are transmitted.				
50	CH1, Colour Temperature Fading	Dimming relative	4 Bit 3.007	CW
The colour in the channel can be changed using this object. Increase the angle with Bit 3 set, decrease the angle with Bit 3 deleted. Bit 0 ... 2 deleted is interpreted as a stop telegram. This means that the entire circumference of the circle can be circulated and every colour can be set.				
51	CH1, Colour Fading HSV Hue (H)	Dimming relative	4 Bit 3.007	CW
Use this object to change the hue of a channel. Bit 3 is set to increase the angle and deleted to decrease the angle. Bit 0 ... 2 deleted is interpreted as a stop telegram. As the whole colour circle is accessible, any colour can be set.				
52	CH1, Colour Fading HSV Saturation (S)	Dimming relative	4 Bit 3.007	CW
See change of hue above. The value between 0 and 100 % is increased incrementally				
54	CH1, Colour Fading White	Dimming relative	4 Bit 3.007	CW
Use this object to change white in the channel. Description as for colour change (red).				
56	CH1, Colour Temperature	Status	2 Byte 7.600	CRT
Sends the set colour temperature as channel status				
57	CH1, Colour HSV Hue (H)	Status	1 Byte 5.003	CRT
Sends the configured hue as channel status.				
58	CH1, Colour HSV Saturation (S)	Status	1 Byte 5.003	CRT
Sends the configured saturation as channel status.				
60	CH1, Colour White	Status	1 Byte 5.003	CRT
Sends the set white as channel status.				
61	CH1, Colour Temperature relative	Status	1 Byte 5.001	CRT
Sends the set relative colour temperature as channel status.				

7.2.3 Channel objects – Time Settings

Object	Object name	Function	Type	Flags
35	CH1, Fixed Staircase Time	Start/Stop	1 Bit 1.010	CW
Use this object to start and stop the fix staircase time.				
35a	CH1, Variable Staircase Time	Time (s)	2 Byte 7.005	CW
Use this object to set a variable staircase time.				

7.2.4 Channel objects – Analysis and Service

Object	Object name	Function	Type	Flags
39	CH1, DALI Failure	Alarm	1 Bit 1.005	CRT
This object is used to report the presence of a DALI short-circuit in the channel.				
40	CH1, Failure	Status	1 Bit 1.005	CRT
This object is used to report the presence of a general failure in the channel.				
40a	CH1, ECG Failure	Status	1 Bit 1.005	CRT
This object is used to report the presence of an ECG error in the channel.				
41	CH1, Lamp Failure	Status	1 Byte 1.005	CRT
This object is used to report the presence of a lamp error in the channel.				
42	CH1, Failure Exceeds Threshold	Alarm	1 Bit 1.005	CRT
This object is used to report that the sum of all lamp failures detected in the DALI channel exceeds the threshold value set in the parameters.				
42a	CH1, Failure	Failure Rate in Total	1 Byte 5.010	CRT
This object is used to report the total of all lamp failures detected in the DALI channel.				
42b	CH1, Failure	Failure Rate in %	1 Byte 5.001	CRT
This object is used to report the lamp faults in the DALI channel as a percentage.				
62	CH1, Operating Hours	Reset	1 Bit 1.015	CW
Resets the operating hours in the channel via value "1".				
Note: Objects 62-64 are shown for the following parameter: Main → Channel 1 → C "Operating Hours Calculation" = "Yes".				

63	CH1, Operating Hours	Value in seconds	4 Byte 13.100	CRT
Counts the operating hours of the channel. By default, the value is transmitted in seconds according to DPT 13.100.				
63a	CH1, Operating Hours	Value in hours	4 Byte 12.102	CRT
Counts the operating hours of the channel. Value is transmitted in hours according to DPT 12.102. Note: The data type of the communication object can be changed in the parameter: General → Operating Hours.				
64	CH1, Lifetime Exceeded	Alarm	1 Bit 13.010	CRT
Shows whether the maximum life span set in the parameters has been exceeded. Note: If the threshold value is exceeded, an alarm is sent via this object (by sending the value "1"). An alarm is re-sent for every operating hour that is above the threshold value.				
67	CH1, Active Power	Value	4 Byte 14.056	CRT
This object represents the active power consumption in total from all connected device type 51 capable ECGs of the channel. Note: ECGs with device type 51 according to DALI Part 252 – Energy Reporting – which provide energy information are required.				

7.2.5 Channel objects – Special Functions and Scenes

Object	Object name	Function	Type	Flags
36	CH1, Lock object	Lock with 1	1 Bit 1.003	CW
With this object the channel can be locked and unlocked. Object = 0 → Channel control enabled Object = 1 → Channel control disabled Note: Object 36 is shown if: Channel 1 → Special Functions → Locking Function → "Enabled" → Enable Locking → at object value „1“				
36a	CH1, Lock object	Lock with 0	1 Bit 1.003	CW
With this object the channel can be locked and unlocked. Object = 0 → Channel control disabled Object = 1 → Channel control enabled Note: Object 36a is shown if: Channel 1 → Special Functions → Locking Function → "Enabled" → Enable Locking → at object value „0“				
65	CH1, Scene invoke	Scene No.	1 Byte 17.001	CW
This object can be used to call up the up to 16 scenes set for this channel.				
65a	CH1, Scene invoke/program	Scene No.	1 Bit 18.001	CW
This object can be used to call up and program the up to 16 scenes set for this channel.				

66	CH1, Activate Alarm with 1	ON/OFF	1 Bit 1.005	CW
----	----------------------------	--------	----------------	----

This object can be used to activate the alarm mode set for the channel.

Object = 0 → Alarm OFF

Object = 1 → Alarm ON

Note: Object 66 is shown if: Channel 1 → Special Functions → Alarm Function → “Enabled” → Enable Alarm → at object value „1“

66a	CH1, Activate Alarm with 0	ON/OFF	1 Bit 1.005	CW
-----	----------------------------	--------	----------------	----

This object can be used to activate the alarm mode set for the channel.

Object = 0 → Alarm ON

Object = 1 → Alarm OFF

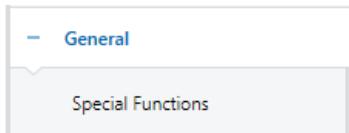
Note: Object 66a is shown if: Channel 1 → Special Functions → Alarm Function → “Enabled” → Enable Alarm → at object value „0“

8 ETS Parameters

The ETS parameters of the device are clearly organised on different parameter pages. In the following, parameter settings written in **bold** are standard values and default settings.

8.1 General

Two parameter pages are available under the heading "General". The parameters are described below.



8.1.1 Parameter page: General

<ul style="list-style-type: none">- GeneralSpecial Functions+ Channels	<p>Central Functions</p> <p>Central Functions <input type="radio"/> No <input checked="" type="radio"/> Yes</p> <p>Sending Delay</p> <p>Senddelay for Status after KNX Recovery <input type="text" value="0"/> Seconds</p> <p>Light Status</p> <p>Light Status Send Condition <input type="text" value="Send on Change"/></p> <p>Send Condition in Dimming Mode <input type="text" value="If Change > 5 %"/></p> <p>Senddelay for Status Response general <input type="text" value="2"/> Hundred Milliseconds</p> <p>Failure Status</p> <p>Failure Status Send Condition <input type="text" value="Send on Change and after Busreset"/></p> <p>Operating Hours</p> <p>Data type to present operating hours <input checked="" type="radio"/> Seconds (DPT 13.100) <input type="radio"/> Hours (DPT 12.102)</p> <p>Softstart Behaviour</p> <p>General Softstart Behaviour <input type="text" value="Softstart 1 Second"/></p> <p>Energy Saving</p> <p>Energy Saving Objects enabled <input checked="" type="radio"/> No <input type="radio"/> Yes</p>
--	---

Central Functions

Parameter	Settings
Central Functions	No Yes
This parameter can be used to enable the central function in addition to the channel control. If this function is used, in second step it can also be activated individually for each channel.	
See "Channel X" → "Activation for Central Function" → "Yes".	
When the function is activated, the general communication objects 1 and 2 become visible.	

Sending Delay

Parameter	Settings
Senddelay for Status after KNX Recovery	0 Seconds 1 Second ... 90 Seconds
Sets a delay for sending status objects after KNX voltage recovery or a busreset. In installations with more than one gateway, different settings for this parameter can prevent all devices from sending at the same time.	

Light Status

Parameter	Settings
Light Status Send Condition	Send on Request Send on Change Send on Change and after Busreset
This parameter sets the light status sending conditions (switch status and value status) of the channels.	
Send Condition in Dimming Mode	If Change > 2% If Change > 5% If Change > 10% If Change > 20% inactive
Use this parameter to set whether and when you want to send a value status via a 4-bit dimming telegram during dimming (relative dimming). If you use the inactive setting, the value is only sent after the dimming process has been completed.	
Senddelay for Status Response general	0 Hundred Milliseconds 1 Hundred Milliseconds ... 255 Hundred Milliseconds
This parameter can be used to set the pause between the individual polls. If several devices are connected to the same line, this parameter should be set differently for all units.	

Failure Status

Parameter	Settings
Failure Status Send Condition	Send on Request Send on Change Send on Change and after Busreset
Defines the conditions under which the failure status objects of the device are to be sent.	

Operating Hours

Parameter	Settings
Data type to present operating hours	Seconds (DPT 13.100) Hours (DPT 12.102)
Using this parameter the operating hours can be presented as Seconds or Hours.	

Softstart Behaviour

Parameter	Settings
General Softstart Behaviour	No Softstart Softstart 1 Second Softstart 1.5 Seconds Softstart 2 Seconds
This parameter defines the general fading time if an ECG is switched on and off.	

Energy Saving

Parameter	Settings
Energy Saving Objects enabled	No Yes
When this function is activated, 4 Energy Saving objects are displayed. One of the objects can be assigned to each DALI channel to switch off the power supply to the ECGs when the lighting is switched off.	
Delay for Switching OFF the ECG Power	10 Seconds 30 Seconds 1 Minute ... 5 Minutes 10 Minutes
Delay time before switching off the power.	
Delay for Switching ON the ECGs	0.3 Seconds ... 0.8 Seconds ... 3.5 Second 4 Seconds
Delay until the DALI ECGs of a channel are switched on. During this time the actuator controlling the power supply must have switched safely.	

8.1.2 Special Functions

Manual Operation on Device

Activate Manual Operation No Yes

System Check

Device Status

Send "In operation" cyclically No Yes

Send "In operation" cyclically 5 Seconds 10 Seconds 30 Seconds 1 Minute 5 Minutes 10 Minutes 30 Minutes 1 Hour 2 Hours ... 47 Hours 48 Hours

Manual Operation on Device

Parameter	Settings
Activate Manual Operation	No Yes
This parameter activates or deactivates the manual operation modes available on the device.	
Note: "Yes" also enables the new and subsequent installation of ECGs on each individual channel on the device itself.	
Enable manual operation via object	No Yes
With activation by "Yes", an additional communication object 4 for enabling/disabling manual operation is displayed.	
Suspend manual operation automatically	No Yes
This parameter can be used to enable the automatic suspend of manual operation after a set time.	
Suspend manual operation after	1 Hour 2 Hours ... 47 Hours 48 Hours
Setting the time for automatic suspend of manual operation.	
Send status of manual operation via object	No Yes
If this parameter is enabled to "Yes", the additional communication object 5 for the manual mode status is displayed under General → special functions and can be queried.	

System Check

Parameter	Settings
System Check and automatic configuration after each Reboot	No Yes

This parameter enables the System Check and automatic reconfiguration after each Reboot.

Note: If you select 'No', the ECGs that are not recognised after a reset retain their short addresses. Newly recognised ECGs receive a new address, which is appended to the end of the address table. This can lead to the maximum number of ECGs on a channel being exceeded, although this is not physically the case.

If you select 'Yes', ECGs that are no longer found or respond after a reset are deleted and newly found ECGs receive their short address.

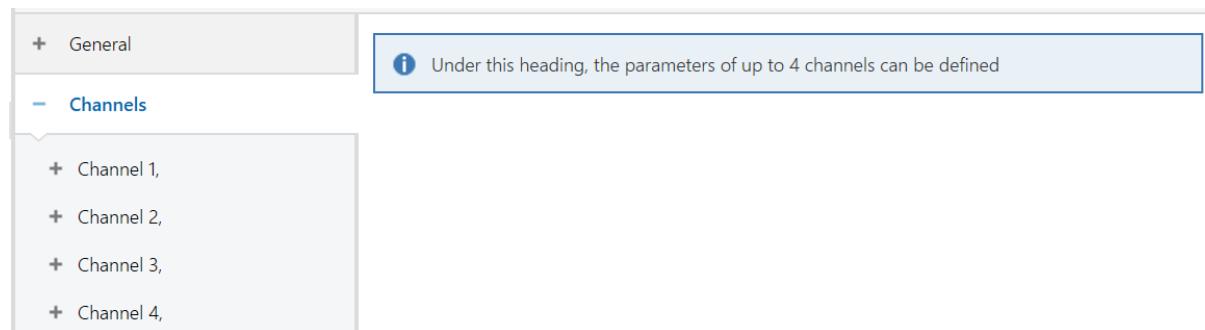
Device Status

Parameter	Settings
Send "In operation" cyclically	inactive 3 Seconds 4 Seconds ... 60 Seconds 90 Seconds

This parameter can be used to disable or set a time for cyclic sending a life signal "ON" telegram via communication object 3. The communication object is only displayed when a time is selected.

8.2 Parameter pages: Channels

There are 4 parameter pages, one for each of the 4 channels. The parameters are described in the next chapter.



8.2.1 Channel 1 (-4)

Only the parameters for the channel 1 are described. The parameters for the other 3 channels are to be considered analogously.

+ General	Channel 1, Description
- Channels	
- Channel 1,	<p>Central Functions</p> <p>Activation for Central Function <input type="radio"/> No <input checked="" type="radio"/> Yes</p> <p>Failure and download behaviour</p> <p>Value on DALI Power Fail (System Failure Level) <input type="text" value="100%"/></p> <p>Value on ECG Power Recovery (Power On Level) <input type="text" value="Last Value"/></p> <p>Behaviour on KNX Voltage Recovery <input type="text" value="Switch to Last Value"/></p> <p>Behaviour after KNX Download <input type="text" value="Switch to Last Value"/></p> <p>Dimming Curve</p> <p>Calculation of Dimming Values <input type="radio"/> linear <input checked="" type="radio"/> semi-logarithmic</p> <p>Analysis and Service</p> <p>Type of Failure Object <input checked="" type="radio"/> General Failure Object <input type="radio"/> Separate Failure Objects</p> <p>Additional Failure Objects <input checked="" type="radio"/> No <input type="radio"/> Yes</p> <p>Operating Hours</p> <p>Operating Hours Calculation <input type="radio"/> No <input checked="" type="radio"/> Yes</p> <p>Active Power</p> <p>Enable Active Power Reporting <input checked="" type="radio"/> No <input type="radio"/> Yes</p> <p>Energy Saving</p> <p><input type="radio"/> Enable Energy Saving Function in General Parameter</p>
+ Scenes	
+ Channel 2,	
+ Channel 3,	
+ Channel 4,	

Parameter	Settings
Channel 1, Description	„...“
Use this parameter to define a channel description. A text up to 20 bytes allowed. The description is shown for all communication objects and next to the corresponding channel in the 'Channel x,' menu. For example: „Room1“.	
CH1, Switching, Room 1	ON/OFF
CH1, Dimming, Room 1	Dimming relative
CH1, Dimming, Room 1	Dimming absolute
CH1, Fix Staircase Time, Room 1	Start/Stop
- Channel 1, Room 1	

Central Function

Parameter	Settings
Activation for Central Function	No Yes
When activated, the channel responds to central commands received via the 'Central Switching' and 'Central Set Value' objects.	

Failure and download behaviour

Parameter	Settings
Value on DALI Power Fail (System Failure Level)	0% 1% 5% ... 95% 100% Last Value
The parameter to set the value of a lamp during a DALI failure. The value is saved in the ECG and the device automatically switches to this value in case of DALI bus failure or short circuit on DALI bus.	
Value on ECG Power Recovery (Power-On Level)	0% 5% 10% ... 95% 100% Last Value
Use this parameter to set the value of a lamp after a return of ECG power supply. The value is saved on the ECG and the device automatically changes to the value when power is restored.	
Behaviour on KNX Voltage Recovery	Switch to Last Value Switch to On-Value Switch to Off-Value Switch to Value
Use this parameter to set a behaviour for all lamps in this channel on KNX voltage recovery.	

Value after KNX Recovery	0% 5% 10% ... 90% 95% 100%
Setting a value for the lamps of the channel after KNX bus recovery. Only with "Behaviour on KNX Voltage Recovery" → "Set Value"	
Behaviour after KNX Download	Switch to Last Value Switch to On-Value Switch to Off-Value Switch to Value
Use this parameter to set a behaviour for all lamps of a channel after KNX ETS application of device was download.	
Value after KNX Download	0% 5% 10% ... 90% 95% 100%
Use this parameter to set a value for the lamps of the channel after KNX Download.	

Dimming Curve

Parameter	Settings
Calculation of Dimming Values	linear semi-logarithmic
This parameter sets the dimming curve for the ECGs of this DALI channel.	

Analysis and Service

Parameter	Settings
Type of Failure Object	General Failure Object Separate Failure Objects
This parameter decides whether a general failure object (no. 40) is displayed for the channel or whether two separate objects for ECG failure object (no. 40) and lamp failure object (no. 41) are displayed.	
Additional Failure Objects	No Yes
This parameter activates an additional failure object (no. 42) for this channel. The error object can either display an exceeded error threshold, the number of errors in total or the error rate in percentage.	
Additional Failure Object for	Failure Threshold Exceeded Failure Number/Rate
Determines whether the additional failure object should be used as a 1 Byte object for number of failures/failure rate or as a 1 Bit object for exceeding the failure threshold.	

Threshold for Total Failures	1% ... 100% [1%]
Use this parameter to define the threshold value for exceeding the ECG failures.	
Function of Additional Failure Object	Total Number of Failures Failure Rate 0...100%
Use this parameter to select either total number of all failures in a channel or failure rate in %. This parameter is only visible if you select "Failure Number/Rate" as additional failure object in the parameter before.	

Operating Hours

Parameter	Settings
Operating Hours Calculation	No Yes
Use this parameter if you want to count the operating hours of a channel.	
Operating Hour Limit (hours)	1 ... 200.000 [50000]
This parameter can be used to define an individual service life for the lamps connected to this channel. If the defined time is exceeded, an alarm is sent via the object (no. 64).	

Active Power

Parameter	Settings
Enable Active Power Reporting	No Yes
This parameter activates the active power reporting for ECGs for this channel. ECGs with DT 51 according to DALI Part 252 – Energy Reporting – which provide energy information are required for this function. The active power consumption of all ECGs connected to this channel is output in total on the KNX object 67.	
Delay time to read energy data after value change	Only cyclically every hour 4 Seconds ... 32 Seconds ... 60 Seconds
This parameter can be used to define a delay time to read the energy data from ECG after value is change. An appropriate delay time should be set, as the ECGs only provide a correct measured value after a few seconds. This delay varies depending on the manufacturer.	

Energy Saving

Parameter	Settings
Energy Saving Objects enabled	No Yes
This parameter activates the option of assigning an Energy Saving object for this channel.	
Assigned Energy Saving Object	1.. 4 [1]
This parameter is used to assign one of the four energy saving objects to the channel.	

8.2.2 Behaviour

- General
- Special Functions
- Channels
- Channel 1, **Behaviour**
- Colour Control
- Special Functions
- Time Settings
- + Scenes
- + Channel 2,
- + Channel 3,
- + Channel 4,

Operating Mode

Operating Mode Normal Mode Normal / Night Mode

Behaviour

Switch-On Value	100%
Switch-On Behaviour	Follow Softstart Behaviour
Switch-Off Value	0%
Switch-Off Behaviour	Follow Softstart Behaviour
Behaviour: Set Value	Follow Softstart Behaviour
Time for Dimming	5 Seconds
Max. Value	100%
Min. Value	0%
Min/Max Value is valid for	Dimming & Value Object
Switch-On via Dimming/Value	Switch ON with Value Object

Operating Mode

Parameter	Settings
Operating Mode	Normal Mode Normal/Night Mode
The Normal Mode enables normal operation and behaviour of the channel. If Normal/Night Mode is selected, further settings for night mode can be parameterized.	
Behaviour in Night Mode	Delayed Switch-Off automatically Activate Permanent Mode and Ignore Telegrams
This parameter defines the behaviour for the Night Mode when Night Mode is activated.	
Automatic Switch-Off after	5 s 7 s ... 1 min ... 50 min 1 h
After the time defined here, this channel is automatically switched off.	
Switch-Off Pre-Warning	No Yes
This parameter can be used to activate or deactivate an additional pre-warning.	

Pre-Warning starts before end	5 Seconds 10 Seconds ... 2 Minutes 5 Minutes
A time can be set here for a pre-warning before the switch-off time expires.	
Note: Automatic Switch-Off Time must be longer than Pre-Warning Start Time	
Pre-Warning Behaviour	Delayed Switch-Off in 2 steps Delayed Dimm-Off Mode Delayed Blinking Mode
This setting can be used to set one of three pre-warning behaviours.	
Delayed Switch-Off in 2 steps: The light is delayed switched off in two steps	
Delayed Dim-Off Mode: The light is dimmed down with a delay	
Delayed Blinking Mode: Switching off the light is signalled by a delayed blinking light	
Value in Permanent Mode	0% 5% ... 50% ... 95% 100%
This parameter defines the value for permanent mode during the night mode.	

Behaviour

Parameter	Settings
Switch-On Value	1% 5% ... 95% 100% Last Value
This parameter defines the switch on value for the ECGs of the channel.	
Switch-On Behaviour	Follow Softstart Behaviour Dimm to Value in 3 Seconds Dimm to Value in 4 Seconds ... Dimm to Value in 10 Minutes
This parameter defines the switch-on behaviour of the ECGs. The default setting "Follow Softstart Behaviour" uses the setting that is set under the "General" -> "Soft Start Behaviour" parameter. Individual dimming times can be set for this channel using the other selection options.	
Switch-Off Value	0% 5% ... 95% 99%
This parameter defines the switch off value for the ECGs of the channel.	

Switch-Off Behaviour	Follow Softstart Behaviour Dimm to Value in 3 Seconds Dimm to Value in 4 Seconds ... Dimm to Value in 10 Minutes
This parameter defines the switch-off behaviour of the ECGs. The default setting "Follow Softstart Behaviour" uses the setting that is set under the "General" -> "Soft Start Behaviour" parameter. Individual dimming times can be set for this channel using the other selection options.	
Value-Set Behaviour	Follow Softstart Behaviour Dimm to Value in 3 Seconds Dimm to Value in 4 Seconds ... Dimm to Value in 10 Minutes
This parameter defines the value-set behaviour of the ECGs. The default setting "Follow Softstart Behaviour" uses the setting that is set under the "General" -> "Soft Start Behaviour" parameter. Individual dimming times can be set for this channel using the other selection options.	
Time for Dimming	3 Seconds 4 Seconds 5 Seconds ... 30 Seconds 60 Seconds
Use this parameter to set the dimming time for relative dimming in relation to a value range from 0 to 100%.	
Max. Value	50% 55% 95% 100%
Use this parameter to configure the maximum dimming value that can be set through relative dimming.	
Min. Value	0% 0.5% 1% ... 45% 50%
Use this parameter to configure the minimum dim value that can be set through relative dimming.	
Min/Max Value is valid for	Dimming Object Value Object Dimming & Value Object
Use this parameter to select the object that minimum and maximum values are valid for. It is possible to set, for example, 60% via dimming and 100% via value setting.	
Switch ON via Dimming/Value	No Switch ON with Dimming Object Switch ON with Value Object Switch ON with Dimming & Value Object
Use this parameter to select whether a switched off group should be switched on when receiving a relative 4 Bit dimming object, a value setting object or both.	

8.2.3 Colour Control

Parameter	Settings
Colour Control Type	none Colour temperature RGB colour RGBW colour Colour temperature + RGB Colour temperature + RGBW
This parameter can be used to set which colour control should be used in this channel. Please make sure that the ECGs in this group also support this type of control.	

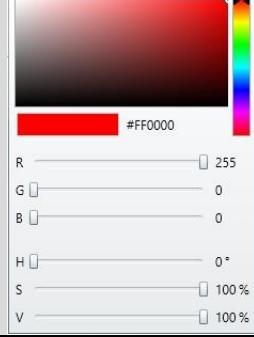
8.2.3.1 Colour Temperature

Parameter	Settings
Colour Temperature warm	1.000 K ...5.000 K [2000 K]
Parameter for setting the colour temperature warm.	
Colour Temperature cold	5.010 K ...20.000 K [6000 K]
Parameter for setting the colour temperature cold.	
Dimming up to cold colour	No Yes
You can use this parameter to activate or deactivate the dimming to cold function. An activated function means that the colour temperature is changed from the set warm colour temperature to the set cold colour temperature during relative dimming from 0 % to 100 %.	
Colour changing Fading Time via Dimming	fast (10 Seconds) standard (20 Seconds) slow (40 Seconds)
This parameter is used to set the colour fading time via 4 bit dimming relative (warmer/cooler).	
Colour changing Fading Time	immediately 1 Second, 5 Seconds ... 60 Seconds, 90 Seconds
Use this parameter to set the fade time of the colour when a relative (1 Byte in percent) or absolute (2 Byte in Kelvin) colour temperature value is set.	
Behaviour when Switching On	Keep last Object Value Use fixed adjustable value
Use this parameter to set the behaviour for the colour temperature when switching on.	
Colour Temperature when Switching ON	1.000 K ...20.000 K [3000 K]
If the "Behaviour when Switching On" parameter has been set to " Use fixed adjustable value ", a fixed colour temperature for switching on can be set here.	
Switch ON by changing colour value	No Yes
Setting whether the channel should switch on automatically when the colour value changes.	

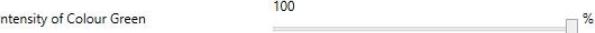
8.2.3.2 RGB Colour

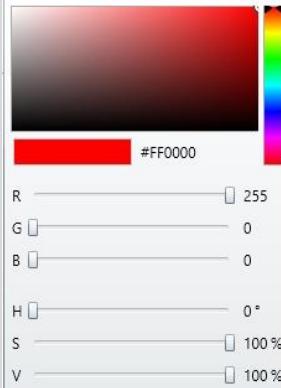
Parameter	Settings
Selection of Object Type	RGB (3 Byte combined object) RGB (separate objects) HSV (separate objects)
When selecting "RGB colour", these types of control are supported.	
Colour changing Fading Time via Dimming	fast (10 seconds) standard (20 seconds) slow (40 seconds)
This parameter is used to set the fading time via 4 bit dimming relative.	
Colour changing Fading Time	immediately 1 Second, 5 Seconds ... 60 Seconds, 90 Seconds
This parameter is used to set the fading time of the colour via an absolute value.	
Correction Value for special LED	<p>Intensity of Colour Red <input type="range" value="100"/> %</p> <p>Intensity of Colour Green <input type="range" value="100"/> %</p> <p>Intensity of Colour Blue <input type="range" value="100"/> %</p>
Under certain circumstances, the intensity of the colours red, green, blue may not be exactly matched to the illuminants and the ballast. In order to carry out a subsequent correction, the weighting of the individual colours can be changed here. An intensity of 100% means that this colour is controlled to 100%.	
Behaviour when Switching ON	Keep last Object Value Use fixed adjustable value
This parameter is used to decide whether the last valid colour value should always be used or basically the colour that was set with the ETS parameter below. Note: in case of "Keep last Object Value" - Attention: in case of an invalid object value, the preset colour of the ETS is used.	
Colour Value when Switching ON (RGB)	<input type="text" value="#FF0000"/> 
 <input type="text" value="#FF0000"/> R <input type="range" value="255"/> 255 G <input type="range" value="0"/> 0 B <input type="range" value="0"/> 0 H <input type="range" value="0"/> 0° S <input type="range" value="100%"/> 100 % V <input type="range" value="100%"/> 100 %	Only with setting "Use fixed adjustable value". This parameter defines the RGB colour when switching on. To do this, a window for colour selection is displayed via the button  in the ETS.
Switch ON by changing colour value	No Yes
Setting whether the channel should switch on automatically when the colour value changes.	

8.2.3.3 RGBW Colour

Parameter	Settings
Selection of Object Type	RGB (6 Byte combined Object) RGB (separate objects) HSV (separate objects)
When selecting "RGBW colour", these types of control are supported.	
Colour changing Fading Time via Dimming	fast (10 seconds) standard (20 seconds) slow (40 seconds)
This parameter is used to set the fading time via 4 bit dimming relative.	
Colour changing Fading Time	immediately 1 Second, 5 Seconds ... 60 Seconds, 90 Seconds
This parameter is used to set the fading time of the colour via an absolute value.	
Correction Value for special LED	 Intensity of Colour Red Intensity of Colour Green Intensity of Colour Blue
Under certain circumstances, the intensity of the colours red, green, blue may not be exactly matched to the illuminants and the ballast. In order to carry out a subsequent correction, the weighting of the individual colours can be changed here. An intensity of 100 % means that this colour is controlled to 100 %.	
Behaviour when Switching ON	Keep last Object Value Use fixed adjustable value
This parameter is used to decide whether the last valid colour value should always be used or basically the colour that was set with the ETS parameter below. Note: in case of "Keep last Object Value" - Attention: in case of an invalid object value, the preset colour of the ETS is used.	
Colour Value when Switching ON (RGB)	 #FF0000
 Only with setting "Use fixed adjustable value". This parameter defines the RGB colour when switching on. To do this, a window for colour selection is displayed via the button  in the ETS.	
Additional White	255 
This parameter defines the White value, additional to the RGB colour when switching on.	
Switch ON by changing colour value	No Yes
Setting whether the channel should switch on automatically when the colour value changes.	

8.2.3.4 Colour Temperature + RGB

Parameter	Settings
Selection of Object Type	RGB (3 Byte combined Object) RGB (separate objects) HSV (separate objects)
When selecting "RGB colour", these types of control are supported.	
Colour Temperature warm	1.000 K ... 5.000 K [2000 K]
Parameter for setting the colour temperature warm.	
Colour Temperature cold	5.010 K ... 20.000 K [6000 K]
Parameter for setting the colour temperature cold.	
Dimming up to cold colour	No YES
You can use this parameter to activate or deactivate the dimming to cold function. An activated function means that the colour temperature is changed from the set warm colour temperature to the set cold colour temperature during relative dimming from 0 % to 100 %.	
Colour changing Fading Time via Dimming	Fast (10 seconds) Standard (20 seconds) Slowly (40 seconds)
This parameter is used to set the fading time via 4 bit dimming relative.	
Colour changing Fading Time	immediately 1 Second, 5 Seconds ... 60 Seconds, 90 Seconds
This parameter is used to set the fading time of the colour via an absolute value.	
Correction value for special LED	<p>Intensity of Colour Red </p> <p>Intensity of Colour Green </p> <p>Intensity of Colour Blue </p>
Under certain circumstances, the intensity of the colours red, green, blue may not be exactly matched to the illuminants and the ballast.	
In order to carry out a subsequent correction, the weighting of the individual colours can be changed here. An intensity of 100 % means that this colour is controlled to 100 %.	
Behaviour when Switching ON	Keep last Object Value Use fixed value for Colour Temperature Use fixed value for Colour Use fixed values for Colour Temperature + Colour
This parameter is used to decide whether the last valid colour value should always be used or basically the colour temperature that was set with the ETS.	
Note: in case of "Keep last Object Value" - Attention: in case of an invalid object value, the preset colour of the ETS is used.	
Colour Temperature when Switching ON	1.000 K ... 20.000 K [3000 K]
With the settings "Use fixed value for Colour Temperature" or "... Colour Temperature + Colour", a fixed switch-on value can be set here.	

Colour Value when Switching ON (RGB)	#FF0000 
	<p>Only with setting “Use fixed value for Colour” or “... Colour Temperature + Colour”.</p> <p>This parameter defines the RGB colour when switching on. To do this, a window for colour selection is displayed via the button  in the ETS.</p>
Switch ON by changing colour value	No Yes
Setting whether the channel should switch on automatically when the colour value changes.	

8.2.3.5 Colour Temperature + RGBW

Parameter	Settings
Selection of Object Type	RGBW (6 Byte combined object 251.600) RGBW (separate objects) HSVW (separate objects)
When selecting "Colour Temperature + RGBW", these types of control are supported.	
Colour Temperature warm	1.000 K ... 5.000 K [2000 K]
Parameter for setting the colour temperature warm.	
Colour Temperature cold	5.010 K ... 20.000 K [6000 K]
Parameter for setting the colour temperature cold.	
Dimming up to cold colour	No Yes
You can use this parameter to activate or deactivate the dimming to cold function. An activated function means that the colour temperature is changed from the set warm colour temperature to the set cold colour temperature during relative dimming from 0 % to 100 %.	
Colour changing Fading Time via Dimming	Fast (10 seconds) Standard (20 seconds) Slow (40 seconds)
This parameter is used to set the fading time via 4 bit dimming relative.	
Colour changing Fading Time	immediately 1 Second, 5 Seconds ... 60 Seconds, 90 Seconds
This parameter is used to set the fading time of the colour via an absolute value.	

Correction value for special LED	 Intensity of Colour Red Intensity of Colour Green Intensity of Colour Blue
Under certain circumstances, the intensity of the colours red, green, blue may not be exactly matched to the illuminants and the ballast. To carry out a subsequent correction, the weighting of the individual colours can be changed here. An intensity of 100 % means that this colour is controlled to 100 %.	
Behaviour when Switching ON	<p>Keep last Object Value</p> <p>Use fixed value for Colour Temperature</p> <p>Use fixed value for Colour</p> <p>Use fixed values for Colour Temperature + Colour</p>
This parameter is used to decide whether the last valid colour value should always be used or basically the colour temperature that was set with the ETS. Note: in case of "Keep last object value" - Attention: in case of an invalid object value, the preset colour of the ETS is used.	
Colour Temperature when Switching ON	1.000 K ...20.000 K [3000 K]
With the settings "Use fixed value for Colour Temperature" or "...Colour Temperature + Colour", a fixed switch-on value can be set here.	
Colour Value when Switching ON (RGB)	 #FF0000
 #FF0000	<p>Only with setting "Use fixed value for Colour" or "... Colour Temperature + Colour".</p> <p>This parameter defines the RGB colour when switching on. To do this, a window for colour selection is displayed via the button  in the ETS.</p>
Additional White	 255
This parameter defines the White value, additional to the RGB colour when switching on.	
Switch ON by changing colour value	<p>No</p> <p>Yes</p>
Setting whether the channel should switch on automatically when the colour value changes.	

8.2.4 Special Functions

Alarm Function

Parameter	Settings
Alarm Function	Disabled Enabled
This Parameter activates the alarm function of the channel.	
Enable Alarm	At object value „0“ At object value „1“
This parameter is used to set whether the alarm function is triggered with an object value="0" or value="1".	
Behaviour at start of Alarm	No Change Switch to On-Value Switch to Off-Value Switch to selectable Brightness
This parameter defines the behaviour at the start of the alarm function.	
Value in Alarm Mode	1% 5% ... 50% ... 95% 100%
The parameter sets the brightness value while alarm function is activated.	
Behaviour at end of Alarm	No Change Switch to On-Value Switch to Off-Value Switch to selectable Brightness Switch to state received during alarm mode
This parameter defines the behaviour at the end of the alarm function.	

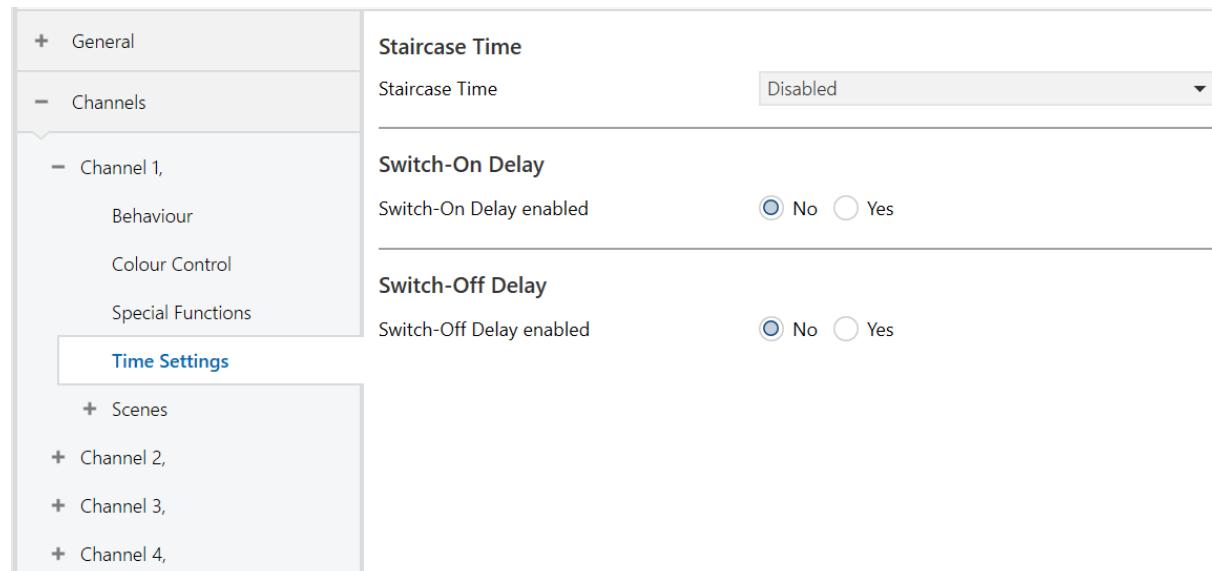
Value after Alarm Mode	0% 1% ... 50% ... 95% 100%
The parameter sets the selectable brightness value after alarm function is deactivated.	
Behaviour after KNX Recovery	Disabled Enabled As before bus voltage failure
The parameter defines the behaviour for the alarm state after KNX recovery.	

Locking Function

Parameter	Settings
Locking Function	Disabled Enabled
This Parameter activates the locking function of the channel.	
Enable Locking	At object value „0“ At object value „1“
This parameter is used to set whether the locking function is triggered with an object value="0" or value="1".	
Behaviour at start of Locking	No Change Switch to On-Value Switch to Off-Value Switch to selectable Brightness
This parameter defines the behaviour at the start of the locking function.	
Value at start of Locking	0% 1% ... 50% ... 95% 100%
The parameter sets the brightness value while locking function is activated.	
Behaviour at end of Locking	No Change Switch to On-Value Switch to Off-Value Switch to selectable Brightness Switch to state received during disable (lock)
This parameter defines the behaviour at the end of the locking function.	

Value at end of Locking	0% 1% ... 50% ... 95% 100%
The parameter sets the selectable brightness value after locking function is deactivated.	
Behaviour after Download	Disable Enable As before download
This parameter defines the behaviour of the locking function after downloading the ETS application.	
Behaviour after KNX Recovery	Disabled Enabled As before bus voltage failure
This parameter defines the behaviour of the locking function after KNX bus voltage recovery.	

8.2.5 Time Settings



Staircase Time

Staircase Time

Switch-On Delay

Switch-On Delay enabled No Yes

Switch-Off Delay

Switch-Off Delay enabled No Yes

Staircase Time

Parameter	Settings
Staircase Time	Disabled Fix Variable
This parameter allows you to set a fixed or variable time for a staircase function.	
Note: Staircase Timer not available in Operating Mode "Normal/Night" (see Channel → Behaviour)	
Manual Switch Off allowed	No Yes
This parameter can be used to allow the staircase lighting to be switched off manually or not. Only with setting "Fix".	
Automatic Switch-Off after	5 s 7 s ... 1 min ... 50 min 1 h
This parameter can be used to adjust the switch-off delay time for the staircase function.	
Time extension	Not retriggerable Retriggerable Retriggerable and adding
This parameter defines a possible retrigger or maximum number of retriggers of the delay time.	
Max. Number of Additions	2 ... 5 [2]
This parameter is used to set the maximum number of additions.	
Switch-Off Pre-Warning	No Yes
This parameter allows to set a pre-warning before the light is switched off.	
Pre-Warning starts before end	5 Seconds 10 Seconds 20 Seconds 30 Seconds 1 Minute 2 Minutes 5 Minutes
This parameter defines the pre-warning point in time before the light will be switched off.	
Note: "Switch-Off" time must be longer than the "Pre-Warning" time	
Pre-Warning Behaviour	Delayed Switch-Off in 2 steps Delayed Dimm-Off Mode Delayed Blinking Mode
This parameter defines the behaviour for the pre-warning before light will be switched off.	
Note: The light flashes twice briefly during the pre-warning	

Switch-On Delay

Parameter	Settings
Switch-On Delay enabled	No Yes
This parameter can be used to activate a switch-On delay time.	
On-Delay Mode	Not retriggerable Retriggerable
This parameter defines whether the On-Delay Mode can be retriggered.	
On-Delay Time	0 ms ... 1 s ... 1 h
This parameter can be used to adjust the On-Delay time.	
Output during On-Delay	No Change 0 ... 100 %
Setting which brightness value is present at the output during the delay.	
Delay works on Switch Object	<input checked="" type="checkbox"/>
If the parameter is ticked, the On-Delay reacts in conjunction with the switch object.	
Delay works on Value Object	<input checked="" type="checkbox"/>
If the parameter is ticked, the On-Delay reacts in conjunction with the value object.	

Switch-Off Delay

Parameter	Settings
Switch-Off Delay enabled	No Yes
This parameter can be used to activate a switch-off delay time.	
Off-Delay Time	0 ms ... 1 s ... 1 h
This parameter can be used to adjust the off-delay time.	
Delay works on Switch Object	<input checked="" type="checkbox"/>
If the parameter is ticked, the off-delay reacts in conjunction with the switch object.	
Delay works on Value Object	<input checked="" type="checkbox"/>
If the parameter is ticked, the off-delay reacts in conjunction with the value object.	

8.2.6 Scenes

Scenes

Number of Scenes

Enable learning of scenes Yes No

Overwrite Scene Values by KNX Download Yes No

Scene 1,

Scene 2,

Up to 16 scenes are available for each channel. These can be invoked and programmed via the scene object of the respective channel. A separate menu appears for each activated scene, in which the scene can be further configured (here using the example of '2 scenes').

Scenes

Parameter	Settings
Number of Scenes	1 ... 16 [No Scenes]
Parameter for setting whether and how many scenes can be used with this channel. Up to 16 scenes are available per channel.	
Enable learning of scenes	No Yes
This parameter defines if scenes can only be invoked or also be programmed by the scene object.	
Note: This parameter changes the type of scene communication object from "invoke" to "invoke / program"	
Overwrite Scene Values by KNX Download	No Yes
This parameter defines if scenes can be overwritten with the learned value with a KNX Download. If "Yes", the learned values are overwritten with the ETS values. If "No", the learned values continue to apply.	

8.2.6.1 Scene 1 ... 16

Only the parameters for scene 1 are described below. The others behave in the same way.

Scene 1 (-16)

Parameter	Settings
Scene	Disabled Enable
This parameter enables or disables the scene.	
Description	„...“
Use this parameter to define a scenes description. A text up to 20 bytes allowed. The text appears next to the corresponding scene in the 'Scene x, ...' menu. Example with "Scene 1" → "Dining room":	
<ul style="list-style-type: none"> - Scenes Scene 1, Dining room 	
Scene Number	Scene 1 ... 64 [Scene 1]
Use this parameter to assign a scene number to this internal scene.	

Set Value

Parameter	Settings
Keep Current Value	No Yes
This parameter decides whether the currently set value is retained or whether a value is set by calling up the scene.	
Value	0% ... 100% [0%]
Setting the new value.	

Set Colour Temperature

Parameter	Settings
Keep Current Colour Temperature	No Yes
This parameter decides whether the currently set colour temperature value is retained or whether a new colour temperature is set by calling up the scene.	
Colour Temperature	1000 K ... 20.000 K [4000 K]
Setting the new value.	

RGB(W) / HSV(W) Value

Parameter	Settings
Keep Current Colour Value	No Yes
This parameter decides whether the currently set colour value is retained or whether a new colour is set by calling up the scene.	
Colour RGB / HSV	#000000 
 #FF0000 R: 255 G: 0 B: 0 H: 0° S: 100% V: 100%	Note: Colour RGB or Colour HSV depends on the selection of the “Colour Control Type” for the channel. This parameter defines the RGB / HSV colour when the scene will be invoked. To do this, a window for colour selection is displayed via the button  in the ETS.
Additional White Value	255 0.. 255 [255]
This parameter defines the additional white value when the scene will be invoked.	
Note: Parameter only appears with a selection “RGBW” in the “Colour Control Type” for the channel.	

9 Appendix

9.1 Legal provisions

The above-described devices must not be used with devices, which serve directly or indirectly the purpose of human, health- or lifesaving. Further the devices must not be used if their usage can occur danger for humans, animals, or material assets.

Do not let the packaging lying around careless. Plastic foil/bags etc. can become a dangerous toy for children.

9.2 Disposal

Do not throw the waste equipment in the household waste. The appliance contains electrical components which must be disposed of as electronic waste. The housing is made of recyclable plastic.

9.3 Assembly



Danger to life due to electric current!

All work on the device may only be carried out by qualified electricians. The country-specific regulations and the applicable KNX guidelines must be observed.

The devices are approved for operation in the European Union and in the United Kingdom. The products are respectively marked with the CE and UKCA symbols.

Use in the USA and Canada is prohibited!

Before starting work on the device, always disconnect it from the power supply by turning off the circuit breaker or removing the fuse. After installation, all live terminals and connections must be completely covered by the control panel cover to prevent accidental contact. It must be ensured that the control panel cover may not be opened without tools.

9.4 History

V1.0 First Version of the technical manual

DB V1.0

03/2025