ENGLISH

DALI-2 to KNX TP PRO Gateway

DALI-2 to KNX TP Application with 1 DALI Channel

USER MANUAL AND CONFIGURATION GUIDE
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1. Description and Order Codes

DALI-2 to KNX TP PRO Gateway.

Intesis DALI-2 to KNX TP Application with 1 DALI Channel.

ORDER CODE	LEGACY ORDER CODE
INKNXDAL0640300	INKNXDAL0640200

2. General Information

This manual contains the main features of this Intesis gateway and the instructions for its appropriate installation, configuration, and operation.

The contents of this manual should be brought to the attention of any person who installs, configures, or operates this gateway or any associated equipment.

Keep this manual for future reference during the installation, configuration, and operation.

- Product family: Network gateways - Lighting
- Product type: Gateway
- Name: DALI-2 to KNX TP PRO Gateway
- Order code: INKNXDAL0640300
- Number of communication objects: 2429
- When using KNX Secure:
  - Number of secure group addresses for use: 1000
  - Number of communication partners: 100

2.1. Web Access Sessions

A total of two sessions (login) can be managed.

One session is reserved for the admin user, and the other can be used as a normal user.

2.2. Admonition Messages and Symbols

CAUTION
Instruction that must be followed to avoid a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.

IMPORTANT
Instruction that must be followed to avoid a risk of reduced functionality and/or damage to the equipment or to avoid a network security risk.

NOTE
Additional information which may facilitate installation and/or operation.

TIP
Helpful advice and suggestions.

NOTICE
Remarkable Information.

2.3. 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 IEC 62386 standard.

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. In line with the latest DALI standard, devices with emergency light function (EN 62386-202) are also supported. The status and operating mode of emergency lights can be monitored and different prescribed testing procedures can be performed.

Via the connected gateway, that acts as a master, up to 64 individual DALI ECGs (servers) can be connected to a DALI segment. When the DALI is commissioned, the ECGs receive an automatically generated three-byte-long address. Based on the long address, a short address between 0 and 63 is assigned during the further commissioning process. As the address assignment is automatic, the device order is random. The individual ECGs/lights therefore need to be identified during the further commissioning process (see below).

The addressing of individual ECGs in the system is either based upon the short address (individual addressing) or upon a DALI group address (group addressing). For this purpose, any number of ECGs within a segment can be assigned to up to 16 groups. The group addressing in the DALI system guarantees that switch and dim processes of different lights within a system are performed simultaneously without imposition of time delays. In addition to short and group addresses, the light values of individual DALI ECGs can also be merged into scenes and addressed via scene addresses.

For a detailed description of the DALI system, please see the DALI handbook at the following link.

2.4. Inside the Package

ITEMS INCLUDED

- Intesis DALI-2 to KNX TP PRO Gateway with connected bus connector
- 1x heat shrinkable tubing 1.2 x 2cm for additional insulation of the bus cable
- Installation Guide

2.5. DALI-2 to KNX TP PRO Gateway Product Features

The Intesis DALI-2 to KNX TP PRO gateway is a multi-master application controller for controlling electronic ballasts with a DALI interface via the KNX installation bus. It supports ballasts according to EN 62386-102 ed1 (DALI-1), devices according to EN 62386-102 ed2 (DALI-2), as well as DALI-2 motion sensors and light sensors according to EN 62386-303 and EN 62386-304.

The device transforms switching and dimming commands from the connected KNX system into corresponding DALI telegrams or status and event information from the DALI bus into KNX telegrams.

The DALI-2 to KNX TP PRO gateway has a DALI output that can control up to 64 ECGs. In addition, up to 8 DALI-2 motion detectors with light sensors or other physical sensors and up to 8 DALI-2 push buttons can be connected. Multi-master operation, according to EN 62386-103 ed2, is permitted.

The required power supply for the connected ECGs, motion sensors, and input devices (push buttons) is provided directly from the device. Additional DALI power supplies are not required. When using sensors supplied via the DALI bus, it must be ensured that the current consumption of all connected DALI devices does not exceed the guaranteed value.

The device is available in a 4TE-wide DIN rail housing for direct installation in an electrical distribution board. The bus connection is made via a standard bus connector. Mains and DALI lines are connected via screw terminals on the device. Ethernet is connected via an RJ45 socket.

The ECGs can be controlled in 16 groups per gateway. In addition to group control, the DALI-2 to KNX TP PRO gateway also allows individual control of up to 64 ECGs.

In addition to controlling all standard operating devices, the DALI-2 to KNX TP PRO gateway also allows the operation of single-battery emergency lights (EN 62386-202). Emergency lighting systems with a central battery are also supported.

NOTE
The special interface for configuring the DALI segments is designed as a DCA (Device Control App) for the ETS5 and ETS6. Please, make sure that the corresponding etsapp binary file is installed in addition to the product database knxprod file. This is available for download at Konnex or on the product page.

Besides the pure gateway functions, the DALI-2 to KNX TP PRO gateway offers numerous additional features:

- Addressing of 16 DALI groups and/or individual addressing of up to 64 individual ECGs.
- Flexible DALI commissioning concept: directly on the device, via an integrated web server, or in the ETS5-6 (DCA).
- Coloured light control with the support of Device Type 8 (DT-8) ballasts and control via communication objects.
- Coloured light control depending on the ballast sub-type:
  - Colour temperature (DT-8, sub-type Tc)
  - XY coordinates colour (DT-8, sub-type XY)
  - RGB (DT-8, sub-type RGBWAF)
  - HSV (DT-8, sub-type RGBWAF)
  - RGBW (DT-8, sub-type RGBWAF)
- Automatic, time-controlled setting of light value, light colour, and colour temperature (also for Human Centric Lighting applications) for groups and/or individual ECGs.
- Automatic change of colour temperature depending on the light value (Dimm-To-Cold).
- Control of colour temperature via communication object for DT6, warm white, and cool white.
- Broadcast objects for simultaneous control of all connected ECGs (also possible for colour values).
- Various operating modes for groups, such as continuous mode, night mode, and staircase mode.
- Integrated operating hours counter for each group and/or individual ECG with alarm when EOL is reached.
- Individual fault detection with objects for each individual luminaire/ECG.
- Complex error evaluation on group/device level with error number and error rate calculation.
- Error threshold monitoring with individually adjustable threshold values.
- Scene module for up to 16 scenes, which can be assigned to KNX scenes 1 to 64 as required.
- Extensive scene programming, including the possibility of dimming scenes.
- Setting of colour in DT-8 luminaires via scenes for groups and/or individual ECGs.
- Effect module for sequence controls and lighting effects, including colour adjustment in DT-8 luminaires.
- Test mode for systems with emergency luminaires supplied by a central battery.

- Support of single-battery emergency lights (DT-1).
- Support of test procedures for emergency lights with time and date stamp.
- Quick Exchange Function for easy replacement of individual defective ECGs.
- Energy saving function that allows the ECG power supply to be switched off when light is switched off via additional switching actuators.
- Integrated web server with extensive options for commissioning and maintenance.
- Integrated visualization via web browser for direct operation and display.
- Cross-device summary of errors in the entire system.
- Manual operation of group and broadcast telegrams via operating keys and display on the device.
- Signaling of error states and status diagnosis via LEDs and display on the device.
- Call scenes and effects from the time control module.
- New and post installation directly into groups or if short address is externally configured.
- GTIN number reading of ECGs and input devices for easy identification.
- New IoT interface: API/MQTT.
- Web access limitation to one user and one admin account.
- Adjustable soft-start behavior.
- Enhanced concept for "virtual input devices" allows assignment of several instances.
- Extended functionality of the motion detector with 2-point light control.
- DALI-2 push buttons are supported as input devices with numerous KNX functions.
- Generic Type DALI-2 input devices are supported for various physical sensors.
- Internal linking of input devices directly with DALI groups.
- Support of Energy Reporting according to DALI Part 252.
- Constant light control.
- Calibration of light sensors in DCA.
- DALI push button function extension: one-button dimming.
- Description texts for input devices can be added.

2.6. Operating Concept

The gateway is equipped with three operating interfaces:

- Keys and display on the device
- ETS + DCA
- Web interface

NOTE
Selecting and using one of the operating concepts for all the commissioning and later configuration processes is recommended. The operating concepts cannot be used in parallel or simultaneously.

Any change in the ETS or DCA will only become visible when the website is called up again (with a renewed login). An already-loaded web page cannot update these changes online.

It is also important to ensure that changes made with the website are only visible in ETS after a synchronization in DCA, see the Synchronization between web pages and DCA (page 37) section.

Since an ETS download with the corresponding configuration of parameters and group assignment is necessary, the following procedure is recommended:

1. Parameter setting and group assignment with ETS.
2. Commissioning of the ballasts and allocation to groups with the DCA.
3. Configuration of scenes, effects, and timer commands with the DCA or the web interface.
4. Status and error diagnosis with the DCA or web interface.

3. KNX Secure

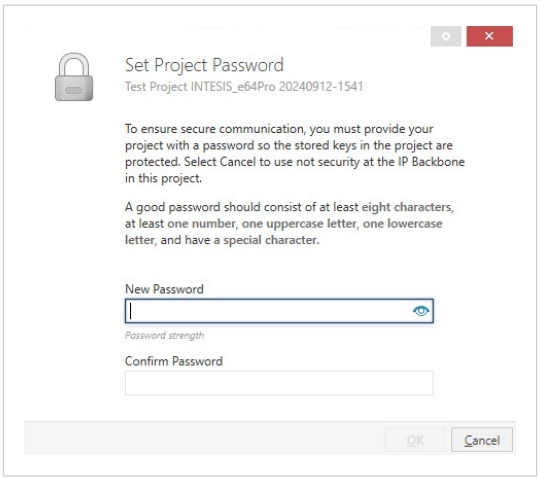
The KNX standard has been extended with KNX Secure.

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 DALI-2 to KNX TP PRO gateway is equipped with a KNX Secure stack. In order to use a device safely, the ETS project must first be protected with a password.

Figure 1. Set Project Password dialog



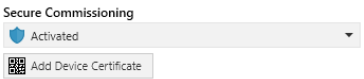
NOTICE
You will only be prompted for a project password if the DALI gateway is the first secure device added to the project.

WARNING
Keep the password safe. This is important because if you lose your password, you will not be able to access your project data.

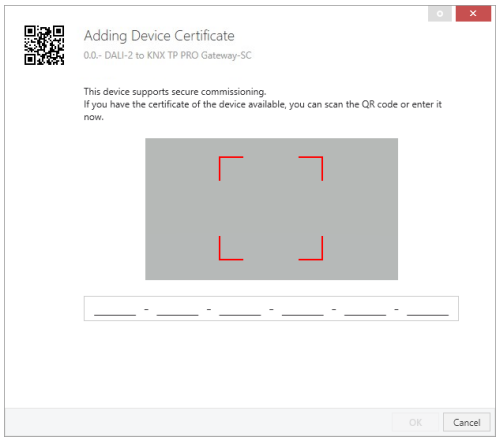
NOTE
Safe devices can only be downloaded with an interface that supports longer telegrams (long frames).

3.1. Secure Usage

The secured usage is shown in the ETS as follows:



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



The certificate consists of the serial number and an initial FDSK (Factory Default Setup Key).

This code is only used for the initial commissioning with the ETS. During the first download, the ETS replaces this key. This prevents unauthorized persons from gaining access to the installation despite knowing the initial key.

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

NOTE
A removable sticker is also supplied, which the user can place in their documentation.

NOTE
The unit is designed to use up to 1000 group addresses in secure communication. Up to 100 communication partners can communicate with the DALI-2 to KNX TP PRO gateway via secured group communication.

3.2. Unsecured Usage

The DALI-2 to KNX TP PRO gateway can also be configured as a "traditional" device in the ETS. In this case, group communication with other devices can also be carried out as usual, and 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, thus reactivating the initial key.

To do so, follow these steps:

1. Remove the KNX connector.
2. Keep the commissioning KNX push-button pressed.
3. Re-connect the KNX connector.
4. Keep the KNX push-button pressed for about seven seconds after the KNX power supply connection.

4. Colour Control

The DALI-2 to KNX TP PRO gateway supports ECGs for colour control (Device Type 8 according to EN 62386-209). Such devices allow for multi-channel colour control (RGB) and thereby enable the mixing of a light colour or the setting of a colour temperature via DALI.

4.1. Features of DALI Device Type 8

ECGs for colour control (DT-8) are offered by a wide range of manufacturers. These devices usually allow direct control of LED modules with multi-colour LEDs. The most common ones are modules with red, green, and blue (RGB) LEDs and modules with two different white tones (tunable white).

IMPORTANT
This gateway does not support DT-8 ECGs for the sub-type PrimaryN.

LED modules with a further integrated white channel (RGBW) are also available on the market. Whilst it is 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 a separate DALI short address must be assigned for each of these devices. This means that two (for tunable white), three (for RGB), or even four short addresses would be required to control a module. With a maximum number of 64 available short addresses per DALI segment, ,the number of lights that can be used would be greatly reduced should this approach be adopted. With a DT-8 device, however, a single short address is required for all colour channels, and the maximum possible range of 64 lights can be controlled.

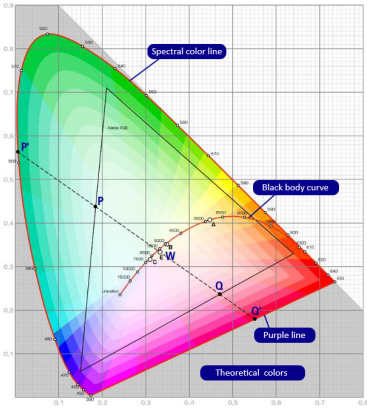
The DALI EN 62386-209 standard defines different colour control methods for DT-8 devices. Normally, a certain device supports only one of these possible methods.

NOTE
Check the specifications of the respective device or lamp manufacturer.

4.2. Colour Display via xy Coordinates

The display of a colour via two nominated coordinates in a so-called colour space is a common method. By means of the xy coordinates, any point in this space is accessible and as a result any colour can be defined. The diagram used in the DALI standard is the colour space chromaticity diagram according to the 1931 CIE (Commission internationale de l'éclairage) standard, shown in the following graphic.

Figure 2. CIE 1931 Colour space (Source: Wikipedia)



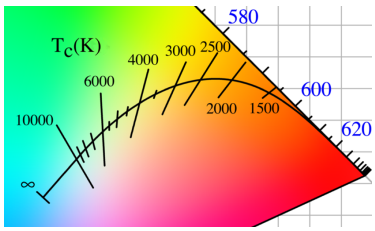
In devices that support the xy coordinates method, the colour is set using two values between 0,0 and 1,0. Because of an LED's physical properties, however, not every colour is practically possible, even in an RGB LED. In practice, it is common to set the closest achievable value.

NOTE
Please pay attention to the instructions of the ECG or lamp manufacturer. The xy values supported by the lamp are usually specified here. Using xy values outside of the specified range can lead to incorrect values and non-reproducible colours.

4.3. Colour Display via Colour Temperature

One subset of all the possible colours in the colour space displayed above are the different white tones. The white tones are found on one line across the whole colour space. The points on this so-called black body locus (BBL) or Planckian locus are usually defined via a colour temperature in Kelvin. This makes it possible to exactly determine the white tone of a light between warm (reddish) and cool (blueish) with just one value. The colour temperature principle is, therefore, perfect for the control of white light fixtures (tunable white).

Figure 3. Black body locus (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, the most common colour temperatures are between 2000 and 8000 Kelvins.

4.4. Colour Display via three or four Colour Channels (RGBWAF)

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

Unlike the methods described above, the colour definition in this case is not exact but depends greatly on the specific physical attributes of the LEDs used to create the colour (wavelength, intensity, and more). Nonetheless, indicating the primary colour percentages within a system is useful for describing a colour relative to other colours. In some DT-8 ballasts, the colour is set by defining three (RGB) or four (RGBW) values between 0 and 100%.

According to the DALI standard EN 62386-209, up to six colours (RGBWAF) can theoretically be drawn upon. However, the DALI-2 to KNX TP PRO gateway only supports a maximum of four colours, in line with the ECGs currently available on the market.

4.5. Colour Display via Two DT-6 LED Types

This method allows a colour temperature to be set via two DT-6 groups. For example, LED strips with a warm colour (3000K) are assigned to a master group and LED strips with a cold colour (6000K) are assigned to a slave group.

With this assignment, only the master group with one colour temperature is controlled. The device automatically calculates the control of the warm and cold LED to achieve the desired colour.

5. Operating Modes

Each group and individual ECG offers different operating modes, which can be set individually on the parameter page.

5.1. Normal Mode

In normal mode, ECGs can be dimmed and switched without restrictions both via individual and group control. The control of each ECG and each group is backed on three communication objects (switching, dimming, and value setting). For DT-8 ECGs, numerous additional objects for light colour control are available.

An ECG can only be assigned to a single DALI group. The DALI-2 to KNX TP PRO gateway does not support multi-group assignments on a DALI level. If such assignment is required, please use KNX communication objects for this purpose. Separate status objects inform about the switch and value status both at group and individual level.

5.2. Permanent Mode

If you would like to run an individual ECG or a whole group permanently with a certain light value (e.g., a permanently lit corridor or workshop), you can choose the permanent mode option. The ECG or group is automatically set to the required value after you program or switch on the gateway. Switch and dim objects remain hidden. Light status and failure and service functions, however, are also available in permanent mode.

NOTE
Should a device in this mode not be running at the preset light level because of a special operation (for example, an identification process on the device display) or failure (for example, the ECG was without power when the gateway was started), the light level will be automatically corrected after 60 seconds.

5.3. Staircase Mode

This operating mode is supported only by groups.

In staircase mode, the value set via a switch, dim, or value telegram is automatically changed to the switch-off value after a programmable time. The lights can be switched off immediately, in two steps (within a minute), or through dim-down (within a minute).

In staircase mode, each additionally received telegram re-starts the internal timer. The lights switch off when the timer runs out after the most recently received telegram. The staircase mode can be disabled or enabled via an additional object. If the staircase mode is disabled, the group behaves like in normal mode and does not automatically switch off. If the mode is disabled while the switch-off timer is already running, the timer stops, and the group remains at the currently set value. If the mode is enabled again, the timer starts from the beginning.

5.4. Night Mode

The night mode is very similar to the staircase mode. The only difference is that the automatic switch-off is dependent on the central night object of the gateway. If the night object is not set (day), the group behaves like in normal mode. If the object is set (night), the group either switches off after a programmable time or goes into permanent mode.

5.5. Panic Mode (Special Case)

The panic mode can be activated via a central object for the whole gateway. All groups and ECGs that have been enabled for panic mode permanently switch to a programmable panic light value on receipt of the object. They can no longer be controlled individually. When the panic mode is switched off, the devices return to the previous light value or the switch on / switch off value and can be controlled individually again.

NOTE
Scene and time scheduling modules are de-activated when panic mode is active.

5.6. Test Mode for Central Battery Emergency Lights

The DALI-2 to KNX TP PRO gateway supports installations with central battery emergency luminaires through its internal function. Any ECG (except those of the self-contained battery type) can be configured as an emergency light (even when assigned to a group). You can choose a test time between 15 minutes and four hours. If the gateway receives the central battery test object, the respective lights change to a programmable value for this time period. They can no longer be switched or dimmed via the corresponding objects. The discharge time and capacity of the central battery can thereby be tested under pre-defined conditions.

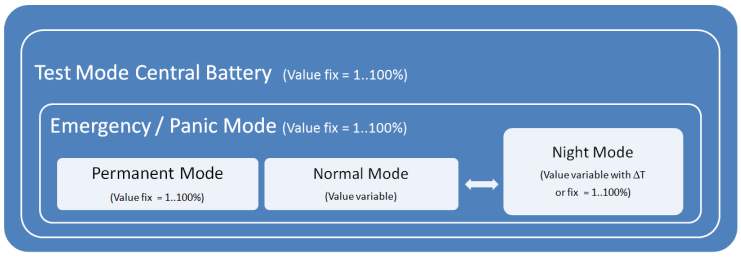
To avoid the possibility of individual ECGs within a group being switched via group telegrams or scenes, the group assignment is dissolved for the duration of the test mode. When the test has finished, groups and scenes are automatically reprogrammed onto the ECGs. Should the gateway lose power during the test mode, the unprogrammed devices are marked and automatically programmed when power returns. Test mode, however, does not continue, so it has to be restarted.

When the test mode is completed normally, the devices return to the previous light value or the switch on / switch off value and can be controlled individually again.

5.7. Operating Mode Hierarchy

Some of the individual operating modes described above have higher functions and roles for the system's operation as a whole. Therefore, a hierarchy of operating modes needs to be prioritized. The central battery test mode has the highest priority, followed by the panic mode. The permanent, normal, and night modes have the same priority level in the hierarchy.

Figure 4. Mode priorities



Manual mode is enabled by default, and can always be used for service and maintenance functions. It can be disabled, however, by means of ETS parameters. For more information, see the Parameter Page: Special Functions (page 172) section.

6. Light Control Module

The DALI-2 to KNX TP PRO gateway with the connected DALI-2 light sensors (motion detectors with light sensors) offers the possibility to apply a direct light control via threshold (2-point light control) or a constant light control. The light control ensures that the light is switched on or controlled when the light value measured by the sensor falls below a minimum set value. For the output, a corresponding communication object is available as one bit (only 2-point light control) or one byte (constant light control).

The control can also act directly internally on the device's 16 DALI groups. Linking the communication object is not necessary in this case, which leads to a considerable reduction in the bus load compared to constant light control via a KNX sensor. The selection and setting of the main and, if necessary, up to two sub-groups and the weighting of the sub-groups are carried out via ETS parameters.

If direct control of internal DALI groups is used for light control, a parameter can be set to determine whether a change of the light value of the group (main or sub-group) that is to be carried out by an external command outside the light control deactivates the control or switches off the automatic mode.

Some of these commands can be:

- Group On/Off, dimming, value setting via communication object
- Group part of a scene and scene activation
- Group in panic or test mode
- Broadcast switching, value setting

In such a case, the control must first be reset to automatic mode via the communication object Disable/ Automatic. In addition to activating the control via the object, the control can also be activated automatically after an adjustable period of time (fallback mode). The status of the control (active/not active) is provided via the existing status object.

IMPORTANT
Higher-priority operating modes (see Operating Mode Hierarchy (page 14)) of the respective group, such as:

- Emergency/panic operation
- Test mode central battery
- Permanent mode

as well as blocking via the group's blocking object, will always prevent the control from changing the group, even if the parameter mentioned above is not set.

Light control can also be activated depending on the presence detection of a linked DALI-2 motion detector. In this case, the light is only switched on if the value falls below the setpoint and the detector has reported "Presence." If the sensor reports "Vacant ➜ no more movement detected," the light switches off, and light control is stopped.

In semi-automatic mode, which can be set via parameters, control is only started if an external trigger is issued via the semi-automatic object in addition to presence detection.

6.1. Light Control via Threshold

A parameter can also set the light switch-off behavior of a light controller with presence detection. Either the controller always switches off the light if there is enough extraneous light (> setpoint), or the controller only switches off when the "Vacant" state is reached (i.e., switching off is independent of the light value).

In the first case of a 2-point light control, it should be noted that the light switched on by the control requires a threshold value shift. If, for example, artificial light is added when the daylight threshold value falls below 200 lux, the threshold value is exceeded again by the artificial light component. To avoid the controller switching off again immediately, the added artificial light must be taken into account by the controller, and the threshold value must be raised accordingly. For this purpose, the light value is measured before and after switching on, and the difference is added to the threshold value. The light is only switched off again if the corresponding corrected value is exceeded.

Since, depending on the type of lamp and ballast used, it takes a few seconds for the new light value to reach the final value, the delay time until the second measurement after the light is switched on can be set via parameters.

It should be noted that a maximum delay of 15 seconds (default value: 6 seconds) can be selected here. If the group is set so that the final value is not reached within this time (e.g., with a dimming time at the switch-on greater than 15 seconds), the control cannot function because no correct artificial light component is considered.

If a deactivated controller is reset to automatic mode with artificial light already switched on (e.g., after deactivation by manually switching on the group) via the communication object Disable/Automatic, no threshold value adjustment occurs. In this case, only the previously adjusted threshold value (parameter modified by object value if applicable) is relevant for the 2-point control. In corresponding lighting conditions, it is, therefore, possible that the manually set light is first switched off after activation, as the artificial light component is already above the light threshold. If, however, the daylight component is below the threshold after switching off, the controller will switch the light on again. After switching on, the artificial light component is considered, and the light remains on due to the threshold shift. If the light switch-off behavior of a light controller with presence detection is set to "Switching off is independent of the light value," this effect of brief switching off cannot occur because switching off is not caused by the light value but by the "Vacant" state exclusively.

6.2. Constant Light Control

With the DALI-2 to KNX TP PRO gateway, constant light control can also be implemented directly via the connected DALI-2 sensors. With constant light control, the light value measured by the sensor is compared with the desired setpoint value, and the lighting level is automatically adjusted to the setpoint value. The illuminance of the artificial light component set by the DALI gateway is adjusted to the optimum value depending on the incidence of daylight (through windows or skylights).

As with 2-point control, the controller can be activated directly depending on presence detection by a connected DALI-2 motion detector. The controller is only activated if the sensor has detected movement and reports "Presence." If no more movement is detected ("Vacant"), the light and control are switched off. As with the 2-point controller, semi-automatic operation is also possible.

With the control concept implemented in the DALI-2 to KNX TP PRO gateway, the dimming value is successfully increased or reduced until the measured actual value reaches the setpoint value. To prevent a change that is too frequent, a hysteresis symmetrical to the setpoint value can be set. If a light level is reached within the hysteresis range, no further light adjustment takes place.

The maximum increment used for the approach and the time between sending a new output value can be set via parameters. The start value, which is set first when the control is activated, can also be parameterized. As an alternative to a fixed start value, the device can also calculate the switch-on value automatically. In this case, the device takes the measured daylight into account when switching on and only activates as much light as is necessary as the start light.

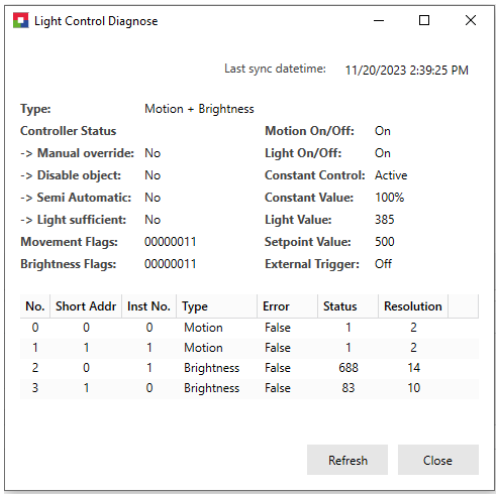
It should be considered that the start value can only be calculated automatically if the device has been calibrated beforehand (see Chapter 5.4). As long as no calibration has been carried out and no plausible calibration data is available, the start value set in the ETS is always used when starting the control.

6.3. Light Control Diagnostic

In the DCA view, a diagnostic window with detailed information can be opened to monitor the light control's current status.

This operation requires a connection to the DALI-2 to KNX TP PRO gateway and a previously executed "State Sync" operation. By pressing "State Sync", all diagnostic data will be read from the device.

Right-clicking on one of the eight motion detectors in the left tree opens the diagnostic window. For this to be possible, the clicked motion detector must be enabled for light control in the ETS parameters.



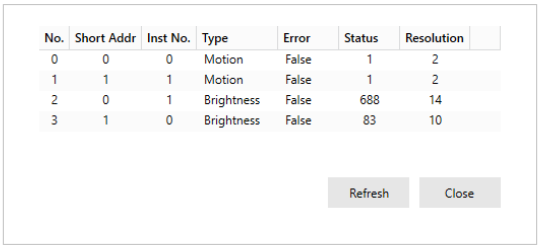
This diagnostic window displays the following values of the light control system:

Table 1. Light control diagnostic information

Property	Content
Type	Type of control unit, usually Motion + Brightness
Controller Status • Manual override • Disable object • Semi-Automatic • Light sufficient	Information about the current status of the controller
Movement Flags	The connected instance that indicates movement. If there are five connected instances, one bit can be set for each to indicate that movement has been detected.

Property	Content
Brightness Flags	The connected instance that indicates a brightness value. If there are five connected instances, one bit can be set for each to indicate that a brightness value has been detected.
Motion On/Off	Shows the motion status
Light On/Off	Shows the Light Output status
Constant Control	Shows the constant controller status
Constant Value	Shows the constant controller output
Light Value	Shows the current corrected light value
Setpoint Value	Shows the current setpoint value
External Trigger	Shows the status of the external trigger

The lower part of the window provides information about all the instances linked to the motion/brightness detector in ETS.



NOTICE
Values do not update automatically. Press the **Refresh** button to update current values/status.

6.4. Calibration of Constant Light Control

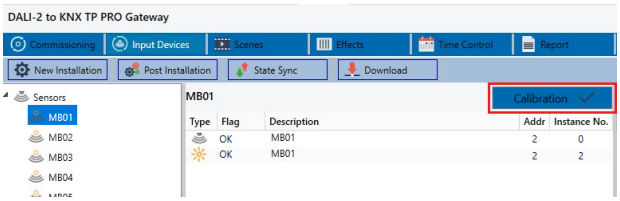
The light values measured by the connected DALI-2 sensors do not usually correspond to the illuminance actually present at the workplace. The sensors' measuring point is on the ceiling, so the illuminance is measured at the ceiling level. In addition, the specific properties of the room (reflection factors of furniture, floors, walls, etc.) can have a considerable influence on the light measurement.

Therefore, manual calibration of the sensor values is usually essential for the control system to function correctly. The actual lighting conditions at the workplace are measured with a lux meter, and the values measured by the DALI-2 sensor are adjusted using the measured values.

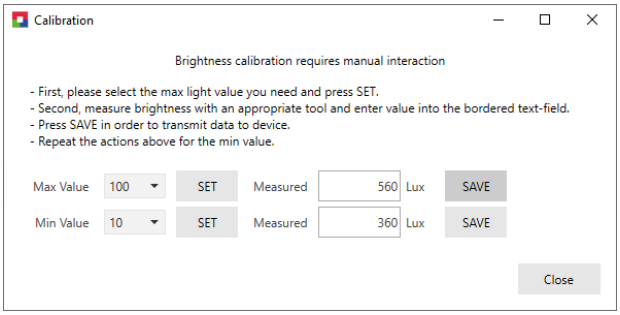
The DALI-2 to KNX TP PRO gateway offers a user-friendly method for calibrating the light values directly in the DCA. Nevertheless, certain requirements must be met so the calibration process can be activated via the corresponding button in the DCA:

- Constant light control has been activated for this ETS detector in the ETS parameters.
- the **Calibration via DCA** option has been activated in the brightness tab of the ETS parameters.

The calibration process can be activated via the corresponding button in the DCA.



Pressing the calibration button opens a new window:



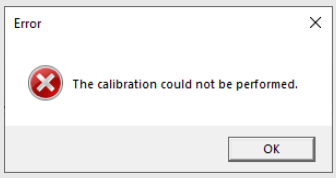
A successful calibration requires performing it in a darkened scenario, preferably completely without daylight.

Calibration is carried out in four steps:

1. The artificial light is switched on to a max. value between 70 and 100%. By pressing the **SET** button, the light of all groups involved is switched on according to the ETS configuration and the assigned groups.
2. The measured value is then entered, and the SAVE button is pressed. This saves the first interpolation point.
3. The second interpolation point is recorded at a minimum value between 10 and 30%.
4. The measuring device is also read here, and the value is entered and saved by pressing the SAVE button.

This completes the calibration, and a linear approximation is calculated using these two reference points. The value measured in the brightness sensor is now corrected using this calibration function.

NOTICE
If the calibration cannot be carried out, the following error message appears:



In that case, the calibration process should be repeated. When the calibration cannot be carried out, the brightness correction is reset, and a 1:1 assignment is activated in the gateway. This means that the same value measured by the sensor on the ceiling is used to calculate the control.

7. Analysis and Service Functions

7.1. Energy Reporting According to DALI Part 252

The DALI-2 to KNX TP PRO Gateway supports device type 51 ECGs to read energy or power values directly from the ECGs and make the information available on the KNX side.

The standard defines a minimum cycle time of 30 seconds for reading out the energy data. In the event of a status change, the correct consumption should, therefore, be available at the latest after this time. Depending on the ECG manufacturer, this time can vary and be adjusted via an ETS parameter. The DALI-2 to KNX TP PRO Gateway also calculates the consumption per group and device automatically.

7.2. Recording Operating Hours

The DALI-2 to KNX TP PRO Gateway allows for the individual recording of each lamp's operating hours (burning time) for each group and individual ECGs. The internal recording is precise to the second. The value is available externally via communication objects (DPT 13.100).

The recording of operating hours is independent of the dim value. This means that any light value higher than 0% contributes to an increase in a group's operating hours. The counter can be reset, for example, when a lamp is changed. To reset the counter, the value 1 is written on the "reset operating hours" communication.

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

IMPORTANT
In accordance with KNX standards, the operating hours are sent in seconds. These, however, can be changed into other units.

7.3. Failure Recognition at ECG Level

A major advantage of DALI technology is the individual recognition of light failures or faulty ECGs. The DALI-2 to KNX TP PRO Gateway supports this function.

For error analysis, the gateway cyclically interrogates all connected ECGs for ECG and lamp faults. The polling cycle can be configured. If the time is one second (standard setting) and there are 64 connected ECGs, the complete process of scanning all ECGs for light and ECG failures takes 128 seconds (one second per ECG and failure type). It can, therefore, take up to about two minutes before a fault that has occurred is recognized. For each ECG, a communication object is available to send the information to the KNX bus (1-bit or 1-byte object). In addition, the failure status can also be checked on the DCA in the ETS.

Furthermore, the error status of all Telegram Object Entries (TOEs) is clearly displayed on the web page of the gateway.

IMPORTANT
If the parameter setting value for "Polling cycle for failures" is "No query," all failure queries are disabled. In this case, no ECG, converter, or lamp failures are recognized. This setting is only useful for service purposes when an extreme reduction of the DALI busload is required.

7.4. Failure Analysis at Group Level

If ECGs and/or converters are merged into groups, numerous group-specific failure data are available in addition to the individual ECG data. For this purpose, different communication objects are available for each group. In addition to general information such as whether there is a failure within a group and of what type, the complete number of faulty devices within the group and the failure rate can be listed via a communication object. An alarm object is sent when a certain failure rate is exceeded. A complex object with a data summary further adds to the analysis options.

For details of group-specific communication objects, please see the description of the communication objects in the Group Objects (page 131) section.

The failure information for a group is also clearly displayed on the website of the integrated web server.

7.5. Failure Analysis at Device Level

Failure analysis objects similar to those at the group level are also available at the device level (i.e., for all ECGs connected to the gateway). The failure rate or number of faulty ECGs in the whole DALI segment can be made available via communication objects. In contrast to the group level, the percentage and number of failures can be broken down further according to failure type at gateway level. The alarm threshold for the failure rate can be individually set for ECG, light, and converter failures.

For further details regarding the communication objects, please see the communication objects description in the General Objects Analysis and Service (page 125) section.

As before, the failure information for the entire gateway is also displayed on the website.

8. Webserver Commissioning and operation

8.1. Commissioning and operation

In addition to the DCA, you can also easily commission the DALI via the integrated web server. For this purpose, connect the DALI-2 to KNX TP PRO Gateway to the IP network. An RJ-45 socket is located above the KNX bus connector at the bottom left-hand side of the device.

Connect the device to an IP network switch, hub, or router using a standard patch cable. You can also use a WLAN access point as a network coupler. This means that you can commission the DALI via a portable notebook, tablet PC, or smartphone.

Once the network is physically connected, you must assign an IP address to the DALI-2 to KNX TP PRO Gateway to enable access via the web browser. By default, the gateway is set to DHCP address assignment. If there is a DHCP server in the network, the device automatically receives an IP address after initialization. This address is shown on the device display. If no DHCP service is available or you would rather use a fixed IP address, you must set the address via ETS. You may also need to configure the subnet mask and standard gateway parameters (for direct access via the Internet). Those two parameters can only be configured in the ETS.

Once the IP address has been assigned correctly, load the device website via any common web browser.

IMPORTANT
Please take care that you open an HTTPS connection via **https://<IP address>**

HMTL5 functionality is required for all browsers used. Google Chrome, Mozilla Firefox, and Microsoft Edge have all been tested in their current versions (at the time of writing).

8.2. Safety Aspects

The communication with the web server in the DALI-2 to KNX TP PRO Gateway is encrypted via HTTPS.

Each device has a self-signed SSL certificate. This certificate contains, among other things, the owner's name, his public key, the period of validity, and the name of the certification authority.

The SSL certificate in the device was signed by the certification authority and can be verified using the corresponding public key of the certification authority.

For the device's SSL certificate to be considered trustworthy, the browser or PC must know the certificate of the certification authority to confirm its trustworthiness. The operating system manages a list of all "trusted certification authorities," so-called CA root certificates.

If a secure connection is established in the browser, the browser first checks whether a CA root certificate can confirm this certificate. If the check is positive, a closed lock is usually displayed in the browser line to confirm security. If the device certificate cannot be confirmed, a security warning will appear and must be accepted manually.

The gateway has its own CA root certificate. If this CA root certificate is imported into the operating system, the browser will recognize the device as "trustworthy," as this CA root certificate confirms the device certificate.

The device makes the CA root certificate available via an administrator page. The procedure for loading this certificate and then installing it on the PC is explained in the following chapter.

8.3. Import of the CA Root Certificate

As explained in the security aspects, the device enables the CA root certificate to be loaded.

To do this, log in to the website as **Administrator** and select the ADMINISTRATOR menu item. You can find the **Load the root certificate** entry below the actions. This allows the root certificate to be stored on the PC. See also the Download Issuer Certificate (page 27) section.

To import this certificate, proceed as follows:

- Install the security certificate:
  1. Right-click the exported file in the location where it was saved and select "Install Certificate."
  2. The storage location is queried in the next step. You can select **Current User** or **Local Computer**. Click on **Next**.
  3. Next, select the **Save all certificates to the following store** option and click **Browse**.
  4. Select the **Trusted Root Certification Authorities** folder as the certificate store and click **OK**.
- After completion, the message "The import process was successfully completed" is displayed.

NOTE
The browser must be restarted to be able to check this new issuer certificate when calling up a website.

8.4. User Accounts

Two user accounts are managed in the DALI-2 to KNX TP PRO Gateway: an administrator user with all rights and a normal user with restricted rights. A total of two sessions (login) can be managed. One session is reserved for the admin user, and the other can be used by a normal user.

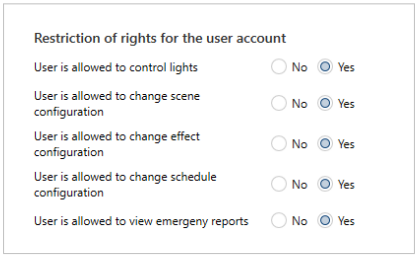
8.4.1. Administrator

This user role has all rights. Only the administrator is permitted to commission new installations or subsequent installations of ballasts or motion detectors.

IMPORTANT
Only one administrator can be logged on at a time.

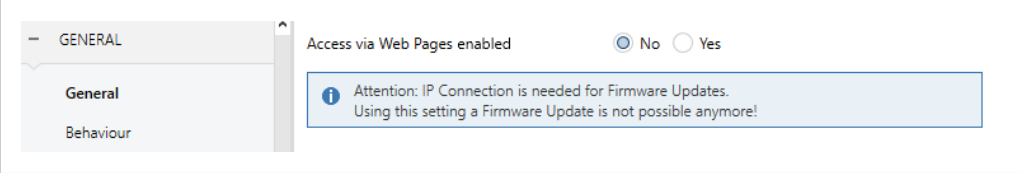
8.4.2. Normal User

The rights of the normal user can be set in even more detail with the ETS. Basically, commissioning is blocked for this user. It has, however, all operating rights to switch lights, configure scenes, effects, schedules, and view status information by default.



8.5. Password Management and Login

For security reasons, the device blocks access to the web server by default. Therefore, an ETS configuration and a download are necessary before using the IP interface.



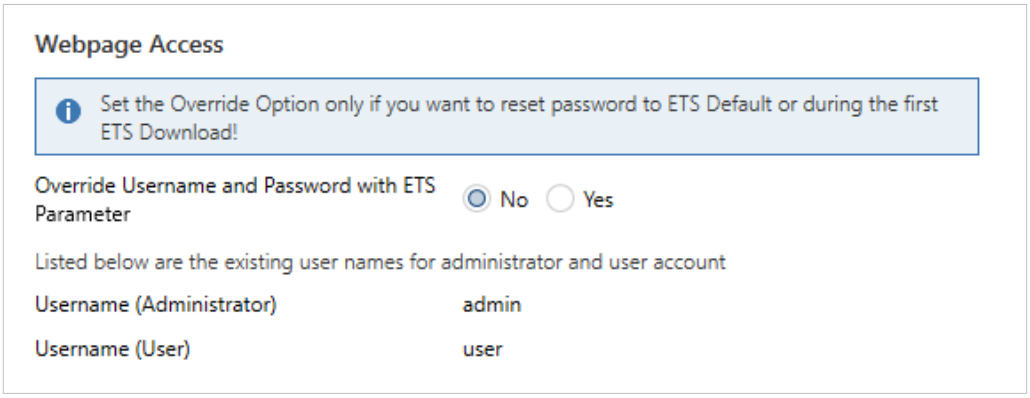
After setting the network configuration, the web server can be activated. By default, the following accesses are provided with the corresponding access data:

Table 2. Web Server Access data

Account	Login Name	Password
Admin Account	admin	dali
User Account	user	user

NOTE
Note that after downloading, the passwords for the accesses must be changed again to secure passwords.

After doing that, the passwords should not be reset with the ETS. Therefore, it is strongly recommended that you set the corresponding parameter to "No" before the next ETS download:

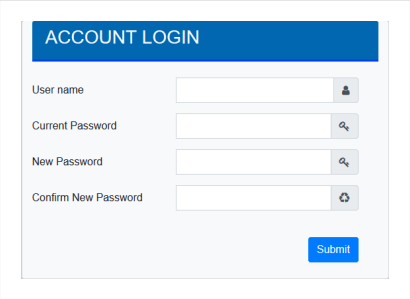


After the first ETS download and the parameter "Overwrite login name and password" has been set to "Yes", the authentication is carried out with these values. Afterwards, a prompt appears asking you to change the password.

The following rules apply to the new password:

- Must have at least 8 characters
- Must contain uppercase and lowercase letters
- Must contain at least one digit
- Must contain at least one special character

Figure 5. Password change window

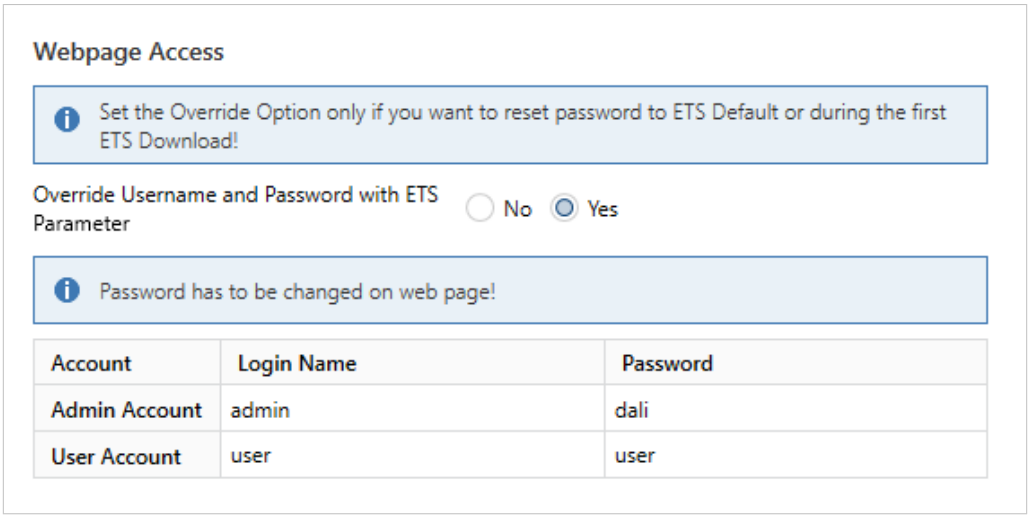


Once updated, you can log in with the new password.

NOTICE
The user name is only defined with the ETS configuration. Therefore, it would be possible to assign a customer-specific login name for the administrator or the standard user. However, it is recommended to use the default "admin" and "user" names.

8.5.1. Forgotten Password

In case you forget the password, it can be reset via an ETS download with the ETS and the corresponding parameter:



Account	Login Name	Password
Admin Account	admin	dali
User Account	user	user

This is followed by a password change, as described in the previous chapter.

8.6. Log in to the Website

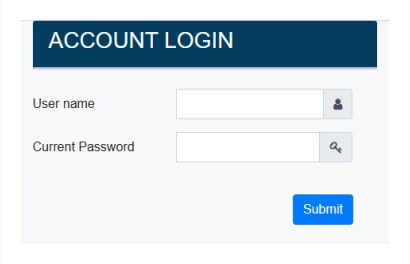
Once the IP connection to the gateway is established, the website can be accessed by entering the IP address in the address field of the browser. The website can be accessed with user or administrator rights.

IMPORTANT
Please take care that you open an HTTPS connection via **https://<IP Address>**

When logged in as **user**, the website's function is restricted, and configuration commands are blocked. This login should be used if the website is used for visualization and operation. If the website is also used for DALI commissioning, the login as administrator is required. All following illustrations and descriptions of the web pages refer to the administrator representation.

The user name is used in the login window to decide whether the administrator or normal user roles should be activated.

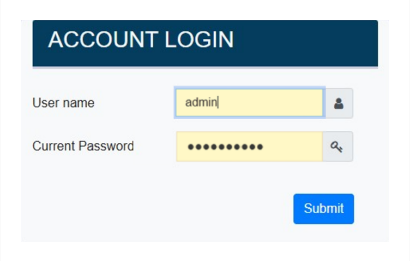
Figure 6. Account Login



NOTICE
The user name is defined in the ETS. By default, **admin** and **user** are used.

Under certain circumstances, it is advisable to save the login data in the browser. You will be prompted to do so. If you accept, login data will be pre-filled from then on.

Figure 7. Stored Account Login



NOTICE
If there is no login after one minute, a subsequent login is reported as a **forbidden request** for security reasons. The correct URL must then be loaded again, and the user must log on again.

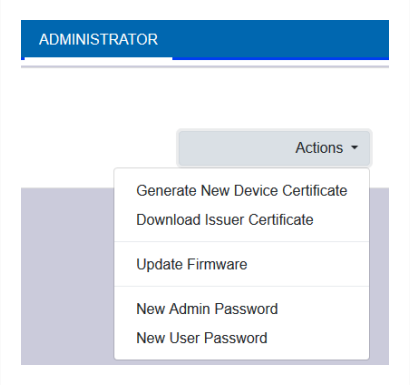
NOTICE
For security reasons, access to the website will be blocked for one minute if four incorrect login attempts are detected.

IMPORTANT
Up to four sessions can be managed. If all four sessions are logged in with **user**, the role of **administrator** is also acknowledged with the response **No Session available**. In this case, the logged-in **users** must first be logged out.

8.7. Administration of the Website

For administration, please log in to the website as **Administrator** and select the menu item **ADMINISTRATOR**.

Figure 8. Administrator menu, available options



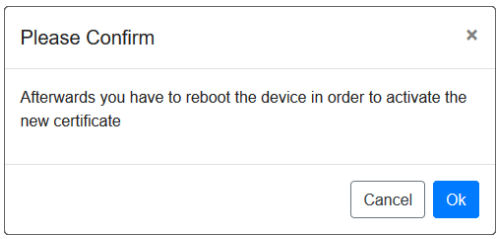
8.7.1. Generate New Device Certificate

The gateway is delivered with a certificate. This certificate has a lifetime of five years. There are different reasons to renew the certificate:

- The IP address of the device has changed (after initial commissioning).
- The certificate is no longer valid and must be renewed.

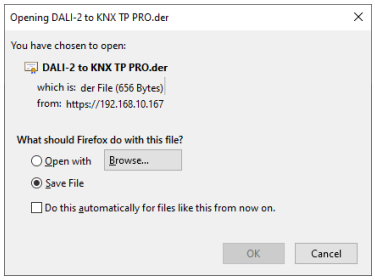
To regenerate a certificate, you must be logged in as an administrator. Under the tab **Administration**, you can generate a new certificate.

After creating the certificate, the device must be manually restarted for the new certificate to become active.



8.7.2. Download Issuer Certificate

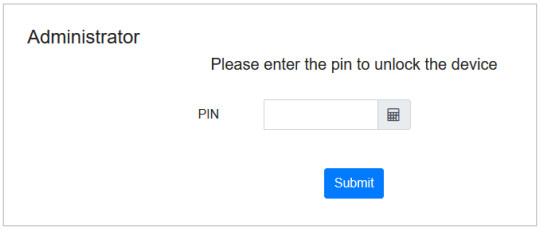
This option allows you to download a copy of the issuer certificate to the PC.



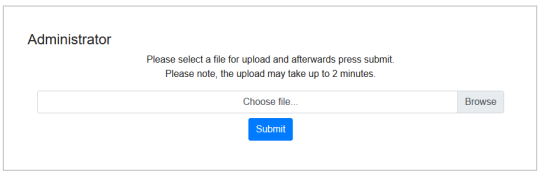
Afterward, select a storage location to install the issuer certificate on the PC Import of the CA Root Certificate (page 23). The certificate will be saved in a **.DER** format.

8.7.3. Firmware Update

The device firmware can be updated here. The PIN is requested for security reasons; it has already been configured in the ETS.



Once the pin has been entered correctly, a new window appears to select the firmware package.



NOTICE
The firmware update process can take up to two minutes.

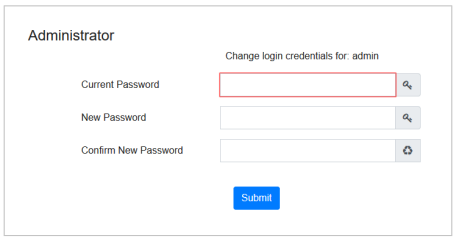
An error can interrupt the transmission under unpredictable conditions. The following errors could be reported. In that case, please contact the manufacturer.

Table 3. Transmission Error Codes

Error Code	Error Description
701	Device is not unlocked via PIN
702	Signature could not be verified
703	Device type does not match
704	Manufacturer does not match
705	Invalid Request ID
709	General error

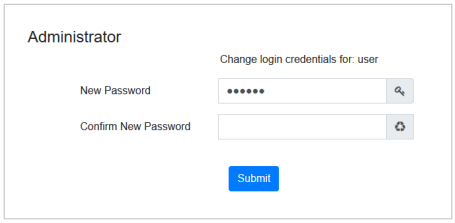
8.7.4. New Admin Password

The administrator's password can be changed in this menu item.



8.7.5. New User Password

The user's password password can be changed in this menu item.



8.7.6. API/MQTT Access Configuration

Settings and instructions for using MQTT are explained in chapter API/MQTT (page 246). When using the API/MQTT, please observe the safety instructions in chapter Disclaimer for Cyber Security (page 269).

8.8. Language Setting on Website

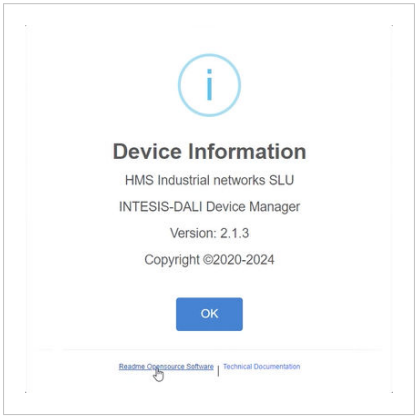
The English language is selected by default. The language can be changed directly on the device using the buttons, see submenu chapter Language Sub-menu (page 119).

IMPORTANT
The available languages are English and German.

8.9. Calling the Start Page

The website consists of a header and a menu bar, which are always visible. The header displays the logo, the installation location if it has been defined in the ETS configuration, and the login name.

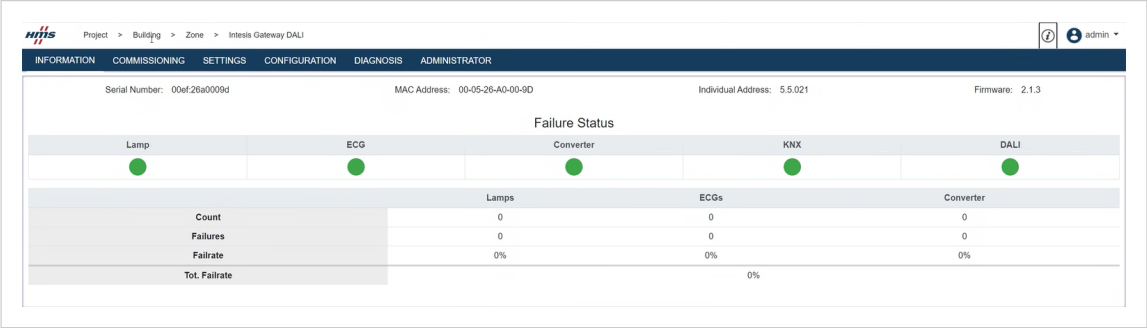
The info button displays a popup window with the version, a link to the technical documentation and a link to use the OpenSource sources.



The menu line consists of the following entries:

- Information
- Commissioning (only in the admin login)
- Settings
- Configuration
- Diagnosis
- Administrator (only in the admin login)

Initially, the overview page with the basic information of the devices is displayed:



The following properties of the gateway are displayed in the upper line:

- Serial number
- MAC address
- KNX address
- Firmware version
- DNS name

The current error situation is also displayed. A distinction is made between the following types of error:

- Lamp fault
- ECG error
- Converter error
- KNX error
- DALI error

The table below shows the number of connected devices and their error rate.

8.10. Actions on the Website

The website allows for different actions. A distinction is made between configuration commands, such as new installation and switching commands.

For configuration commands, acknowledgment after processing is necessary. If this cannot be received because of errors, the process is aborted after a five-minute timeout.

8.11. Automatic Log-off

An inactive session, i.e., a login as a user or administrator without active operation, is automatically logged off after five minutes. After this time, the login window appears again. This is particularly useful for the administrator session so that it is not blocked indefinitely.

NOTE
Keyboard inputs, mouse movements, and clicks are considered active operations.

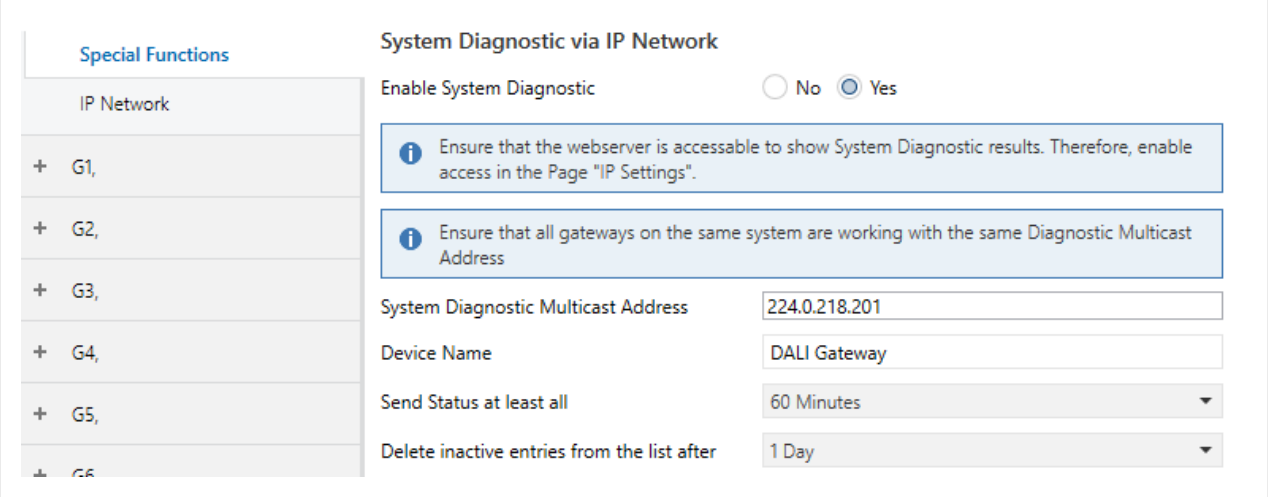
9. System Diagnostics

A system with several DALI gateways allows a simple automated overview of the fault status of all connected gateways. The complete overview is available in each gateway and can be displayed on the website.

When a gateway is restarted, it reports with status information and is automatically transferred to the list of other devices. The current status is automatically sent with every error status change. Further parameter settings are described in the next chapter.

9.1. Requirements and Function

To activate the system diagnostics, the corresponding parameter must be set in the ETS.



All gateways must be configured with the same multicast address to communicate with each other. Each event (value change and error message) is automatically sent to the group of participating gateways. This allows each gateway to store and monitor the status of the other gateways. This data is only stored temporarily and is collected again after a restart.

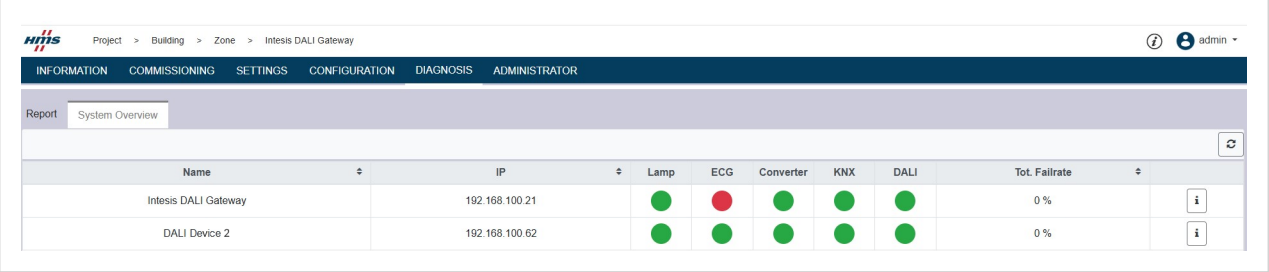
Another parameter can be used to define the time after which the status should be sent if no change has occurred during this time and no automated event is reported. The inactive entries (inactive gateways) are deleted after a predefined time, which can be set via the ETS.

NOTICE
After restarting a gateway, the device status is initially sent to this multicast address. After that, it is sent at each change or after the time set in the ETS. The system diagnostics broadcast service cannot be fully protected against spoofing. If in doubt about the correct device segment status, please login to the corresponding device web interface directly.

NOTE
The parameters are also described in the Parameter Page: Special Functions (page 172)section.

9.2. Viewing the Diagnostic Information

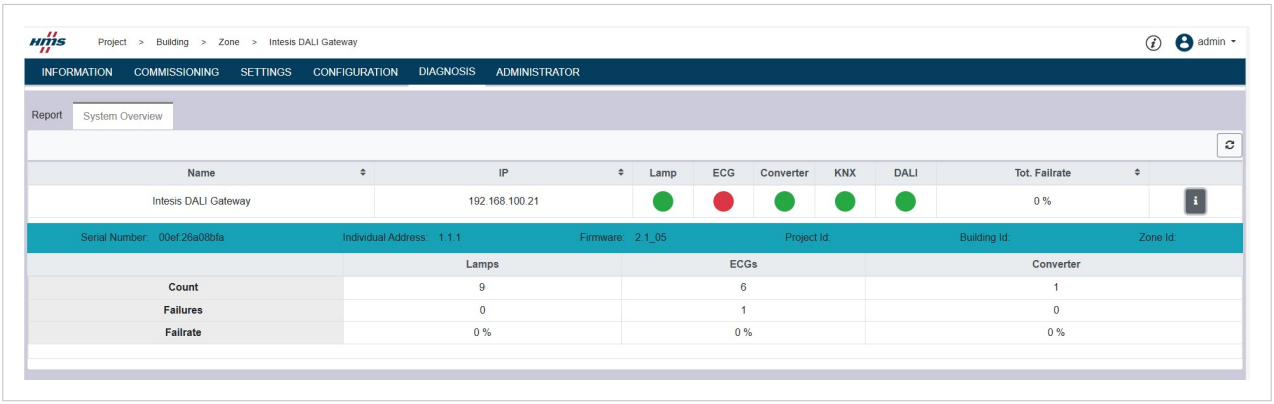
The diagnostic view is displayed on the website. To do this, select **Diagnosis** in the main menu and **System Overview** in the following submenu.



All DALI gateways that are working in the same system and are enabled according to the requirements are displayed in a list. The following information is displayed:

- Gateway name
- Gateway IP address
- Lamp error
- ECG error
- Converter error
- KNX error
- DALI error
- Failure rate

Clicking the **Info** button displays further information about the device's status in a detail window.



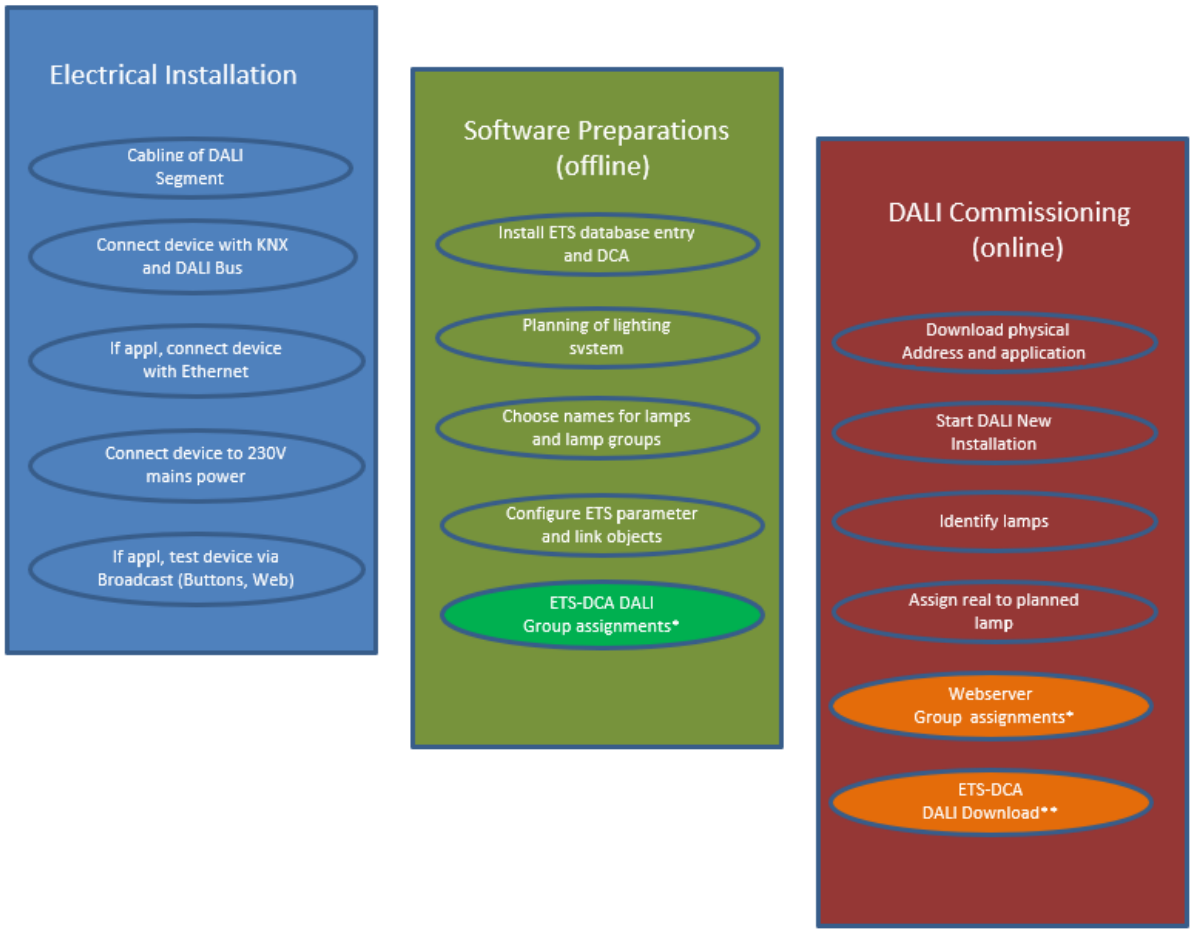
9.3. Website Access of Other Gateways

Each DALI gateway in the list can be opened in a second browser tab by clicking on the IP address.

NOTICE
The corresponding login data of the DALI gateway must be available.

10. Installation and commissioning concept

The following graphic shows the required steps to install and commission a DALI gateway.



* When commissioning via the DCA, the group assignment can already be done in the planning phase (offline). However, when commissioning through the web server, the system must be online.

** The DALI download is only required when commissioning via the DCA.

10.1. DALI New Installation

After wiring the DALI segment (see mounting and operating instructions) and subsequent software preparations such as installation, planning, and configuration (see below), which can be performed without connection to the gateway (i.e., offline), you are ready to start a new DALI installation.

IMPORTANT
A new installation is only possible with a connection to the DALI gateway and when the ECGs to be installed are connected and supplied with power.

As with every configuration process, the new installation is possible in a number of different ways:

- Configuration and execution via DCA (Device Control App) in the ETS
- Configuration and execution via the integrated web server (an Ethernet network connection is required)
- Configuration and execution via the pushbuttons and the display on the device

NOTE
Depending on the type of use, configuration data should be synchronized in the DCA. See Synchronization between web pages and DCA (page 37).

If you start a new installation, the ECGs connected to the DALI gateway are reset and automatically recognized and programmed by the gateway. During the programming process, each ECG is assigned a short address between 0 and 63 based on a random long address. As the long address is generated randomly, the short addresses and lights must be assigned afterward.

NOTICE
Exception: A new installation with externally configured devices is a special case. See below.

The new installation informs the gateway of the connected ECGs and enables it to contact them via the short address.

NOTE
Remember that every time a new installation is started, the ECGs are reset and thereby randomly allocated again. Any previous configuration is overwritten and deleted.

10.2. Identification and assignment of DALI ECGs

As the ECGs are assigned randomly following the new installation, individual ECGs must be identified and assigned as required. During the commissioning process, the ECGs are usually identified by setting an ECG/lamp to blinking mode. This means that, in the installation, the lamp can be identified visually to be assigned according to the user's preference. Instead of flashing, lights can also be turned on/off.

For self-contained emergency lights, according to DT-1, the identification is slightly different. As not all lights support switching on/off or may only switch in case of power loss, EN 62386-202 enables the activation of an identification status. When the gateway sets these ECGs to flashing mode, the identification status starts instead. The exact execution of this status is up to the manufacturer. Normally, the control LED connected to the converter flashes red or red-green for a few seconds. Please refer to the instructions for the emergency lights or converters used.

After an ECG has been identified, it can be assigned to the previously planned ECG. Again, there are different options for the assignment (DCA, web server, pushbuttons, and display on the device), which are described in the following chapters.

10.3. ETS-App (DCA)

The application for the DALI-2 to KNX TP PRO Gateway is based on the standard interface for configuring communication objects and parameters and a special interface for commissioning the DALI bus system. This special interface is designed as a DCA (Device Control App) for the ETS.

All required program data are automatically created when the App is imported.

NOTE
The DCA Tab is a product-specific app and it is not available for ETS demo versions. You can download it from the product page or the KNX shop: look for **Intesis-DALI Device Manager**.

If you have any questions about how to activate the DCA, read the DCA section of these articles:

- Installing and activating ETS5 Apps
- Installing and activating ETS6 Apps

Once installed, the ETS must be restarted. When the product is selected, an additional **DCA** tab is shown in the ETS.

Figure 9. DCA tab (ETS5)

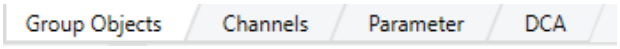
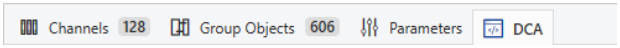


Figure 10. DCA tab (ETS6)



10.4. Parameterization

The parameters and the corresponding group addresses can now be configured as with any other KNX product. The parameters also allow for the configuration of various operating modes, which are described in more detail in the Operating Modes (page 13) section.

If the website is planned to be used later, it must first be enabled in the ETS parametrization. As the DALI-2 to KNX TP PRO Gateway also supports colour control, future ECGs or groups with the desired colour control should be configured in ETS. Only then will the corresponding communication objects be made available.

To better identify the types of ECGs or groups in the DCA and on the website, meaningful descriptive texts should also be defined. These texts are also displayed in the list of communication objects.

The DALI-specific configuration is performed in the DCA tab or on the webpage. You should start by planning and naming the ECGs you want to use and assigning them to the required groups. This work can be done offline without connection to the KNX or the DALI-2 to KNX TP PRO Gateway. The actual DALI commissioning is only possible online, which means that a connection to the device is required. During this process, the connected ECGs are recognized so that they can be assigned to the previously set-up configuration.

After the assignment, the special DALI configuration has to be loaded onto the gateway by using the **Program** button in the DCA tab, see the DCA Commissioning (page 40) or Website Commissioning (page 54) sections.

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

10.5. Synchronization between web pages and DCA

The web pages read the real data from the device each time they are called up and thus always display current configuration data. The DCA, on the other hand, works with the configuration data stored in the ETS.

A synchronization is needed if a configuration has been carried out with the webpage or directly with the buttons on the gateway, and you should continue working with the DCA later.

The menu items **Extras** and **Read device data** in the DCA are used for this purpose. More detailed information can be found in the DCA Extras (page 115) section.

11. Maintenance and Expansion

11.1. Quick Exchange of Individual ECGs

When a DALI segment is commissioned, the short address, group assignment (if applicable) and other configuration data are programmed into the ECG's internal memory. If you need to replace an ECG because of a fault, you need to program this data onto the new device.

The DALI-2 to KNX TP PRO Gateway offers a function that makes it possible to quickly and easily replace individual ECGs. The **ECG quick exchange** can be started from the DCA, the web server (when logged in as administrator), or on the gateway via push buttons and the display. The gateway first checks if any configured ECGs known to it have been reported as faulty. Then, the segment is searched for new, unknown devices. If a new device is found, all configuration details of the old ECG are automatically programmed onto the new one, and the installation is immediately ready for use again.

The ECG quick exchange, however, only works if just one ECG within a segment is faulty and replaced by a new one. If several devices are faulty, the ECGs must be identified, and you must use the post-installation function. Remember that the quick exchange is only possible for devices of the same type. You cannot, for example, replace an ECG for self-contained battery emergency lights with a device for LEDs.

If a quick exchange is not possible because of any of the conditions above, the gateway terminates the process with a failure code. The different failure codes have the following meaning:

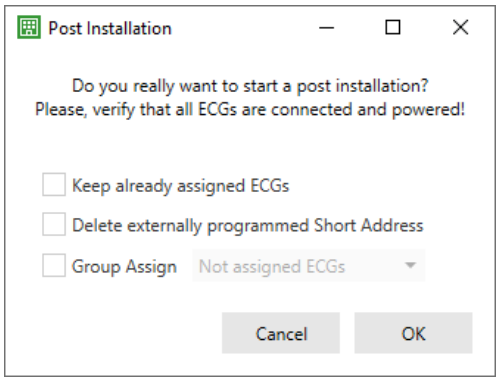
Table 4. Failure codes

Failure Type	Failure Description
7	No ECG fault
8	More than one ECG faulty
9	No new ECG can be found
10	ECG has the wrong device type
11	More than one new ECG

11.2. DALI Post-installation

If you want to expand an already commissioned DALI segment with new ECGs or replace several faulty ones, use the **Post Installation** function. This function can be activated on DCA, the gateway (push buttons, display), and the web browser when logged in as an administrator.

When you start the post-installation, the gateway first checks based on the DALI long address if all previously configured ECGs are still available in the segment. Usually, ECGs that no longer exist or cannot be found are deleted from the gateway's internal memory. Should unavailable ECGs be kept (i.e., if parts of the system are not temporarily powered), the deletion can be avoided by using an additional option.



By default, ECGs usually have the 0xFFFFFF long address assigned and no short address. ECGs might get a short address even if the long address is still 0xFFFFFF (for example, in case an external tool was used for programming). In that case, activate the **Delete externally programmed Short Address** checkbox to delete the short address.

After verification, the segment is searched for new ECGs. Newly found devices are inserted into any existing gaps or added on at the end.

IMPORTANT
Remember that the maximum number of ECGs for a segment is 64.

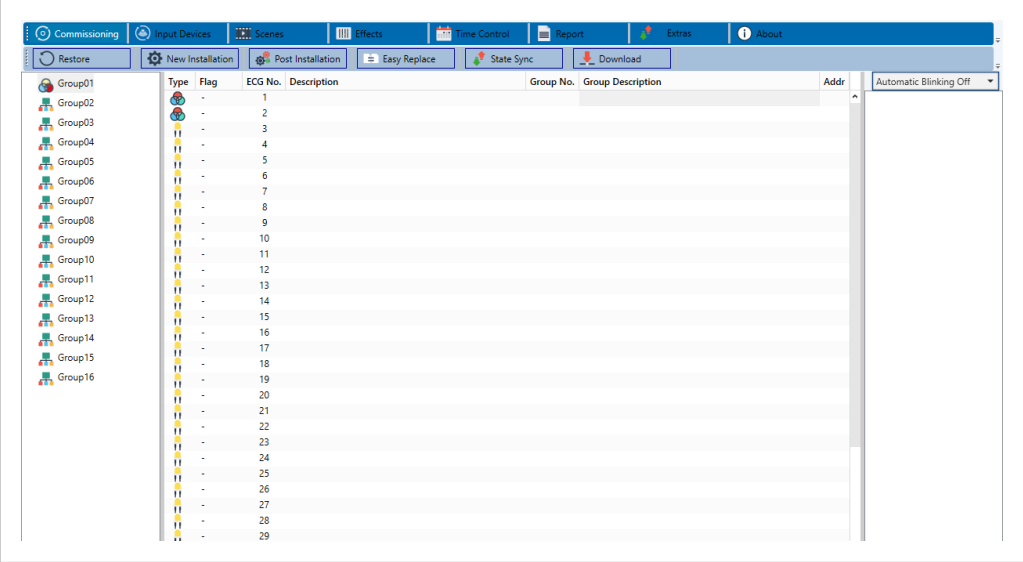
As the position (short address) of a newly found device is allocated randomly, you need to identify the lights after the installation and, if necessary, assign them to groups. Alternatively, you can automatically assign them to a group by selecting the **Group Assign** checkbox.

12. DALI Commissioning ECG

This section describes the commissioning with the DCA and the website.

12.1. DCA Commissioning

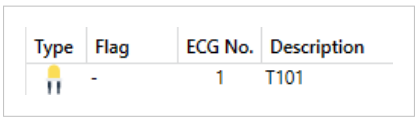
Following the physical installation and wiring of the DALI ECGs and lights and the electronic commissioning, the ECG configuration must be prepared and planned in the DCA. For this purpose, open the commissioning page in the DCA:



The group configuration is displayed in a tree structure on the left-hand side. The middle part shows a table for the ECG configuration and names. A list on the right-hand side shows the devices found in the system that have not yet been identified. During the planning phase, the list is empty as the ETS is not yet connected to the system.

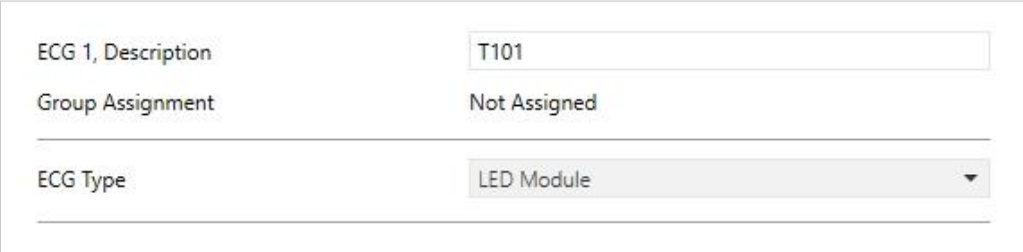
12.1.1. Preparation

The first step is to plan and name the ECGs. Click on the description field and enter a name (light number, room number, etc.).



NOTE
Maximum length is 20 characters.

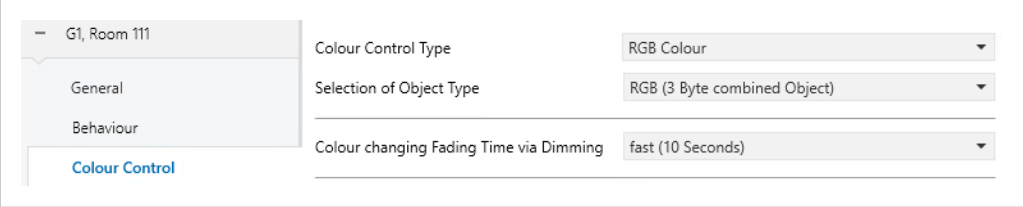
You should also set the correct ECG type in the parameters, like, for example, the LED Module, as shown in the following image:



This also leads to the corresponding display in the **Type** field in the DCA:

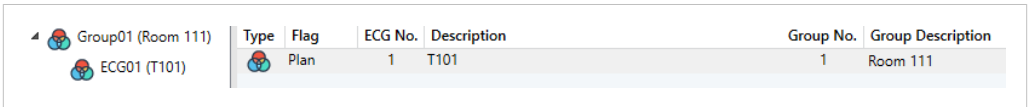
NOTE
The icon in the first column always reflects the ETS setting.

Next, you should define the group control type in the parameters, like, for example, colour control via RGB, as shown in the following image:



This leads to the corresponding display in the group tree in the DCA:

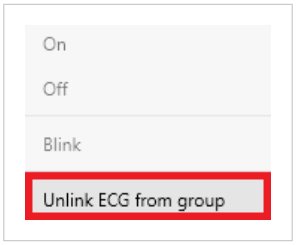
You can now assign the individual ECGs to the corresponding groups. Drag and drop the ECGs onto the corresponding group in the tree on the left-hand side.



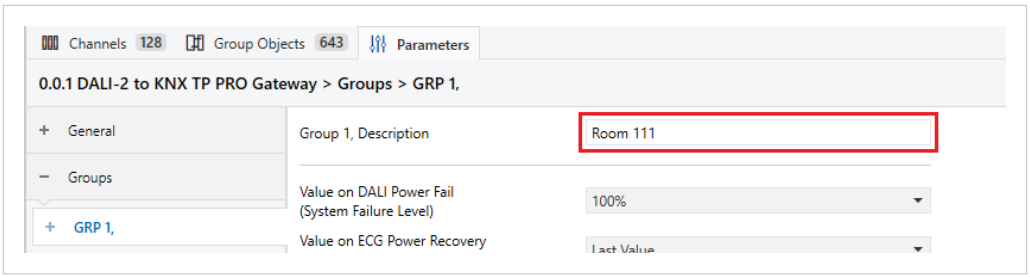
If an ECG is assigned to a group by drag and drop, the corresponding group number is automatically displayed in the **Group No.** field in the ECG configuration table. The icon of the group type is also automatically displayed.

NOTE
The icon in the first column of ECGs assigned to a group always reflects the type of the group, i.e., the group's icon replaces the icon of the ECG.

If a group assignment has to be removed, the command can be found in the context menu of the ECG configuration table:



You can enter a user-friendly name in the neighboring field **group description**. ECG and group names are automatically displayed both in the group configuration tree (displayed in brackets) and in the descriptions of the ETS communication objects. Alternatively, you can rename groups via the parameter page:



Easily recognizable names make it much easier for the system integrator when linking group addresses with communication objects.

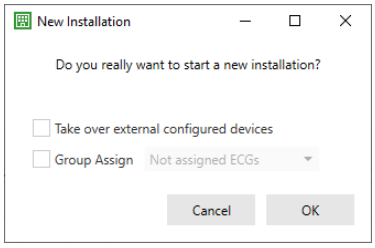
12.1.2. New Installation

Once the planning, parameter setting, and linking of group addresses have been completed, the DALI segment can be commissioned. To do so, please connect the commissioning PC with ETS to the KNX system via an interface (USB or IP). Once the connection is active, you must program the gateway's physical address. The plug-in and gateway communication is based on the physical address.

Use the **commissioning** page and the **new installation** button to start the teach-in process of the connected DALI segment.

During the teach-in process, all ECGs are automatically recognized, and each ECG is assigned a short address from 0 to 63. Depending on the connected DALI segment size, the process can take up to three minutes.

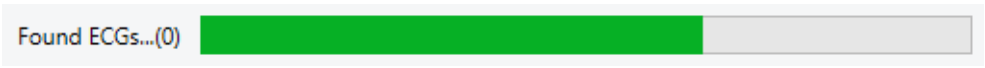
Two additional options are available when starting a new installation:



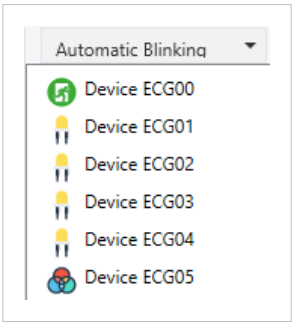
- **Take over external configured devices**: This allows you to take over and read an already externally configured system, such as ECGs and group assignments already programmed with a short address.
- **Group Assign**: Use this option to make a group selection directly during the new installation, so a time-consuming second step for group assignment is unnecessary.

> **IMPORTANT**
> It must be taken into account that with this option, the corresponding ETS number is assigned to each short address, i.e., short address 0 is assigned to ETS index 1.
>
> Example: Two found ECGs with short addresses 5 and 6 are assigned to ETS indexes 6 and 7.

A bar in the bottom right-hand corner indicates how far this process has progressed. At the same time, a display also informs about the current process and the number of ECGs that have been found so far.

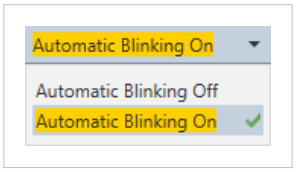


Once the process is complete, all found ECGs are displayed in the list of to-be-identified devices on the right.

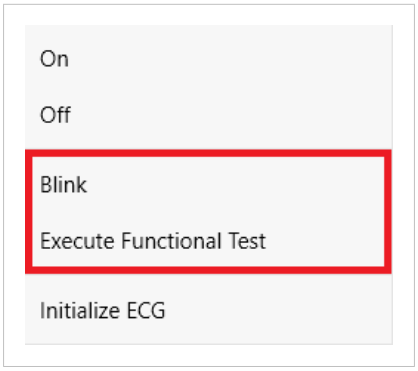


To identify the devices, switch the corresponding lamp on and off. If you select an ECG and press the right mouse button, a context menu appears from which you can select the required function.

Alternatively, you can also select **On** in the **Automatic Blinking** option. In that case, an ECG's flashing mode starts by itself when a device is selected.

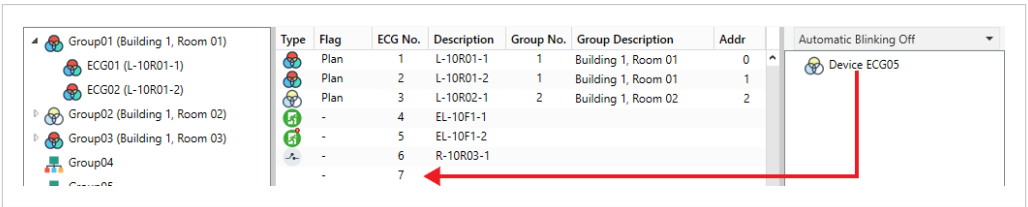


For self-contained battery emergency lights, selecting **blink** activates the identification process of the light. Usually, the status LED of the emergency light flashes during this process. Please pay attention to the description of the lights you are using. As the status LED does not work or is not visible for some lights, you can also start a function test. During the function test, the ECG usually switches the lights on for a few seconds.



The context menu is also available at the group level. During the identification process, switching certain groups or all connected lamps on or off might be useful. You can also send broadcast commands via the context menu to, for example, switch all lights on or off. You can find more information in the Operating DALI devices (page 49) section.

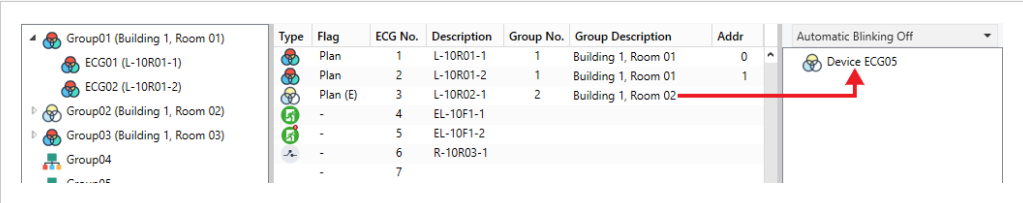
Once an ECG has been identified, you can drag and drop it onto the previously planned element in the ECG configuration table.



Once an ECG has been dragged into the ECG configuration table, it disappears from the list of non-identified ECGs. At the same time, the **Plan** flag in the configuration table shows that the ECG has been assigned to the planned element. The last column in the table shows the real ECG short address.

NOTE
Make sure that the short address is between 0 and 63.

If an ECG has been wrongly assigned, it can be moved back to the list of non-identified devices using the same drag-and-drop mechanism.



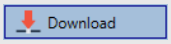
The element in the configuration table is now available again, and the ECG reappears in the list of non-identified devices from where it can now be moved to a different element if required.

NOTE

This can be confirmed by checking that the letter E (for empty) is shown in the flag cell of the corresponding element.

IMPORTANT

Remember that at this point, all performed operations are only displayed in the workspace. They are not immediately loaded onto the gateway. To start the process of downloading the settings onto the gateway and the ECGs, you must press the **Download** button.



The download process can take up to one minute. The progress bar shows the current status. Once the download is complete, all previously planned ECGs are programmed in the system with the DALI configuration. The respective devices are marked with an **OK** flag in the ECG configuration table.

IMPORTANT

Remember that the download on the commissioning page only programs the DALI configuration data onto the gateway and the ECGs. The actual ETS application with parameter settings and group addresses must still be downloaded onto the gateway before or after the DALI identification and commissioning. As usual, This is done via the normal ETS download process.

12.1.3. ECG and Group Detail Information

The following icons are displayed for the different ECG types in the DCA. A green background shows that this ECG has been configured as an emergency light with central battery.

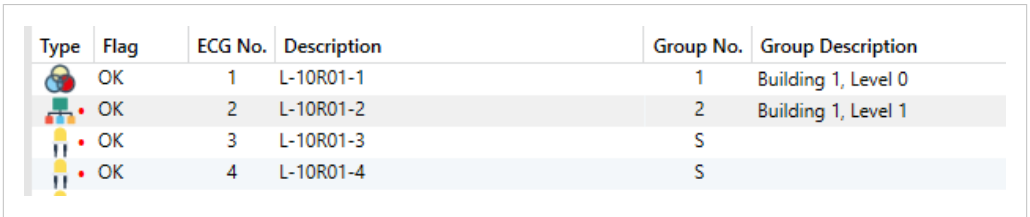
Table 5. ECG types icons

Icon	ECG Type
	ECG Type 0: Fluorescent lamp
	ECG Type 1: Emergency light switchable or Emergency light + colour temperature
	ECG Type 1: Non-switchable emergency light
	ECG Type 2: Discharge lamp
	ECG Type 3: Low voltage lamp
	ECG Type 4: Incandescent lamp
	ECG Type 5: 0..10V converter
	ECG Type 6: LED
	ECG Type 7: Relay module
	ECG Type 8: RGB colour module
	ECG Type 8: Tunable white colour module
	ECG Type 8: Tunable white + RGB colour module

12.1.4. Failure and Status Display

During the commissioning, lamps/ECGs are identified visually (on, off, or flashing). It is, therefore, crucial that all lamps and ECGs operate correctly. If the gateway identifies a lamp or ECG fault during the installation process, the affected ECG is highlighted in red. Failures are displayed for non-identified devices (located in the right tree):

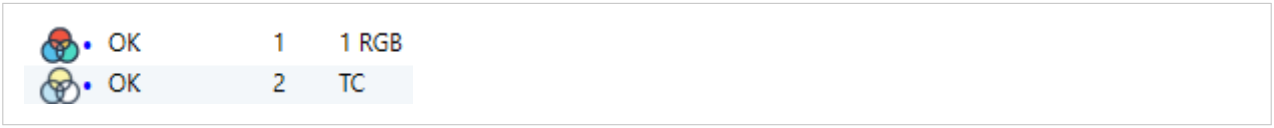
When an ECG has already been assigned (that is, it appears in the middle table), failures are marked with a red dot:



Type	Flag	ECG No.	Description	Group No.	Group Description
	OK	1	L-10R01-1	1	Building 1, Level 0
	OK	2	L-10R01-2	2	Building 1, Level 1
	OK	3	L-10R01-3	S	
	OK	4	L-10R01-4	S	

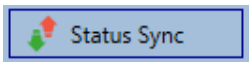
NOTE
Double-clicking the affected ECG will give you more information about the failure. Check the next section for more information.

If a lamp's lifetime exceeds the limit value set in the ETS parameters, the ECG will be marked with a blue dot.



OK	1	1 RGB
OK	2	TC

The view is not automatically updated, and it may take a few minutes for the gateway to recognize a fault. Therefore, we recommend that you press the **Status Sync** button a short while after the installation.



This ensures that the displayed status is updated with the actual status and that any failures that may have been detected in the meantime are displayed correctly.

IMPORTANT
The device is usually not detected if an ECG failure already exists during the initial installation search process. This means that the number of ECGs found does not correspond to the expected number. ECG failures are only displayed in the manner described above if the affected ECG has been previously programmed and is known to the gateway.

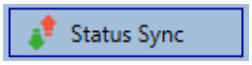
In addition to ECG failures, further ECG information is exported or displayed. This information includes:

- Long address
- Short address
- Device type
- Device subtype (important for DT-8 colour ECGs)
  - TC: Colour temperature
  - XY: xy coordinates colour
  - RGBW: RGB or HSV colour
- Device subtype (important for emergency DT-1 ECGs)
  - SW: Switchable emergency lights
  - NSW: Non-switchable emergency lights
- Failure status

For DT-8 ECGs with colour temperature control, the following information is also displayed:

- Min. temperature
- Max. temperature

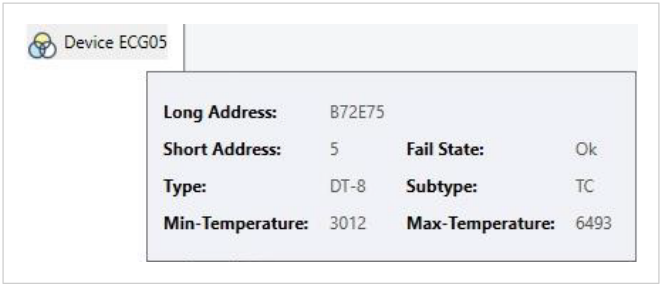
Press the **Status Sync** button to export and update the information.



The process can take a few seconds, as shown by the progress bar:

12.1.4.1. ECG info in the Right-hand Side Tree

A tooltip displays additional information about the ECGs. To activate the tooltip, hover over the position with the mouse pointer.



12.1.4.2. ECG info in the ECG Table

Double-click to open another window with further details:

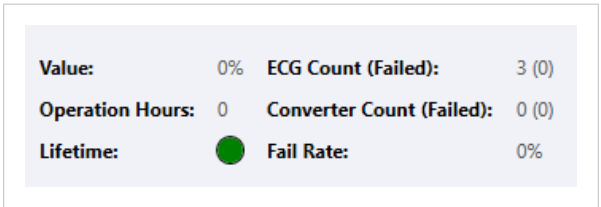
IMPORTANT
The icon in the detail window shows the real ECG type. Make sure that the ETS definition is the same as the actual type.

Detailed information:

- Long address
- Short address
- Type
- Subtype
- Failure status
- Min. temperature (only for the TC subtype)
- Max. temperature (only for the TC subtype)

12.1.4.3. Group Info in the Group Tree

Additional information for the group is displayed via a tooltip in the group tree.

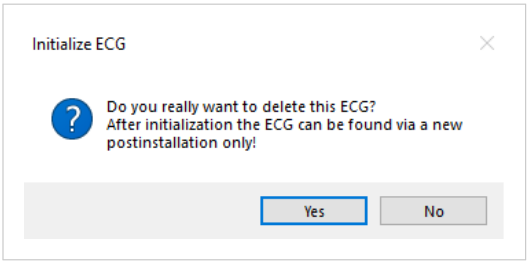


12.1.5. Operating DALI devices

DALI devices can be directly controlled in five different ways:

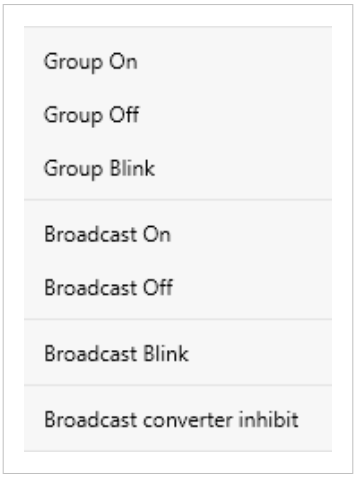
- **Broadcast**: Telegrams are sent to the DALI bus for all participating devices to react to. All ECGs execute the commands, even if they have not been commissioned yet. Therefore, these commands work independently of the status of the DALI system.
- **Group Control**: Group telegrams are sent to control a particular group. For this process to work correctly, the ECGs must have been assigned to groups, and the configuration must be downloaded onto the gateway.
- **ECG Control**: Individual control at ECG level.

- Use the context menu in the group tree on the left-hand side to disable converters. If the power supply for the connected emergency lights is turned off within 15 minutes after activating the converter inhibit mode, the lights are turned off instead of changing into emergency mode. This operating mode may be necessary during the commissioning and installation process to prevent constant emergency lighting and battery discharge.
- **Emergency (Converter) Start Functional Test**: Use the context menu in the right-hand side tree of the list to start a function test with the converters.
- **Initialize ECG**: This function is only available in the tree on the right and is used to delete an ECG completely. After this action, the ECG is no longer present, and it can only be found via a new post-installation. Because of this, the operator must confirm a confirmation dialog:

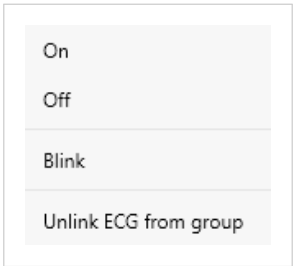


The DCA offers different options to activate these commands. The DALI system must be commissioned, and a connection to the gateway must be available for all options.

Group menu in the left-hand side tree:



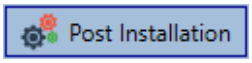
Context menu in the ECG table:



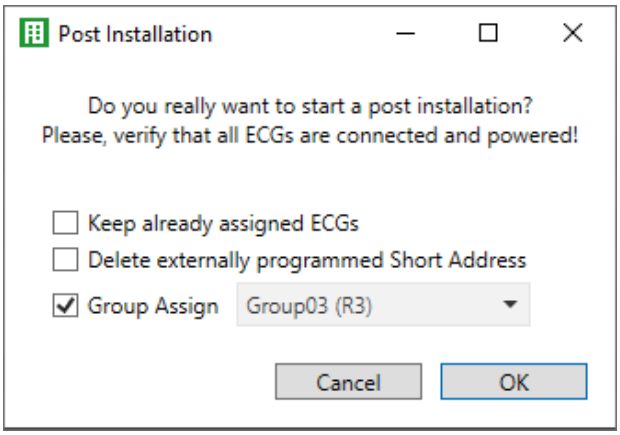
ECG Menu in the right-hand side tree:

12.1.6. Post Installation

Use the **post installation** function to expand an already commissioned DALI segment with new ECGs or to replace several faulty ones in the segment.



When you start the post installation in the ETS, the gateway first checks if all previously configured ECGs are still available in the segment. ECGs that no longer exist or cannot be found are usually deleted from the gateway's internal memory. Should unavailable ECGs be kept (i.e., if parts of the system are temporarily not powered,) the deletion can be avoided by using the **Keep already assigned ECGs** option.



By default, ECGs usually have the 0xFFFFFF long address assigned and no short address. It might be possible for an ECG to have a short address even if the long address is still 0xFFFFFF (for example, in case an external tool was used for programming). In that case, activate the **Delete externally programmed Short Address** checkbox to delete the short address.

After verification, the segment is searched for new ECGs. Newly found devices are inserted into any existing gaps or added on at the end.

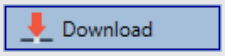
IMPORTANT
Remember that the maximum number of ECGs for a segment is 64.

As the position (short address) of a newly found device is allocated randomly, you need to identify the lights after the installation and, if necessary, assign them to groups.

NOTICE
If the **Switch ECG power supply via object** setting is enabled, the corresponding objects are sent before the post installation. Afterward, the ECG can be assigned again to a group.

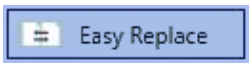
NOTICE
It is possible to select a group directly during the installation, so a time-consuming second step for group assignment can be avoided.

IMPORTANT
Remember that at this point, all operations performed are only displayed in the workspace. They are not immediately loaded onto the gateway. To start the process of downloading the settings onto the gateway and the ECGs, you must press the **Download** button.

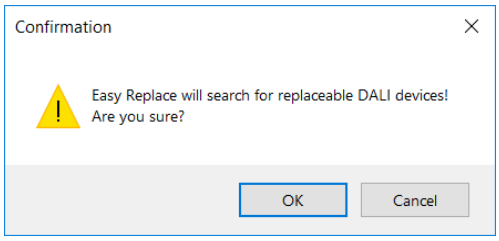


12.1.7. ECG Quick Exchange

You can also use the quick exchange function if you need to exchange an individual ECG because of a fault. The operator must confirm this action:



The execution of this function must be confirmed in a dialog window:



If the quick exchange cannot be completed due to external circumstances, the gateway terminates the process with a failure code. The different failure codes have the following meaning:

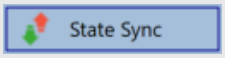
Table 6. Failure codes

Failure Type	Failure Description
7	No ECG fault
8	More than one ECG faulty
9	No new ECG can be found
10	ECG has the wrong device type
11	More than one new ECG

12.1.8. Status Sync

Use this function to read and display the status of all ECGs. For more information, consult the ECG and Group Detail Information (page 46) section.

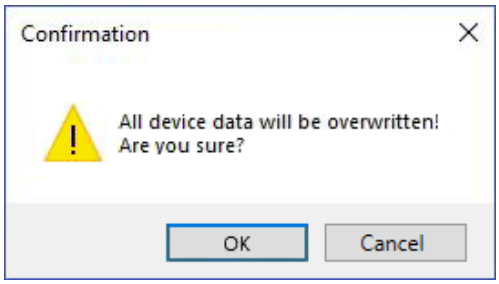
NOTE
The gateway polls the ECG status cyclically.



12.1.9. Restoring the DALI Configuration

This command is used to completely restore a DALI-2 to KNX TP PRO Gateway, for example, by replacing it with a completely unprogrammed device.

After actuation, a window appears where the overwriting of the device configuration must be confirmed.



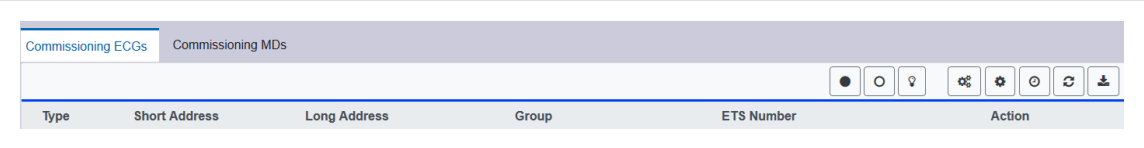
By confirming, all DALI-relevant data from the ETS is written onto the device.

IMPORTANT
Once this process is complete, the device must be restarted manually. This function only applies to the DALI configuration. It is, therefore, essential to carry out a normal ETS download for the ETS parameters and communication objects.

IMPORTANT
We recommend you do an ETS backup after you have completed the configuration.

12.2. Website Commissioning

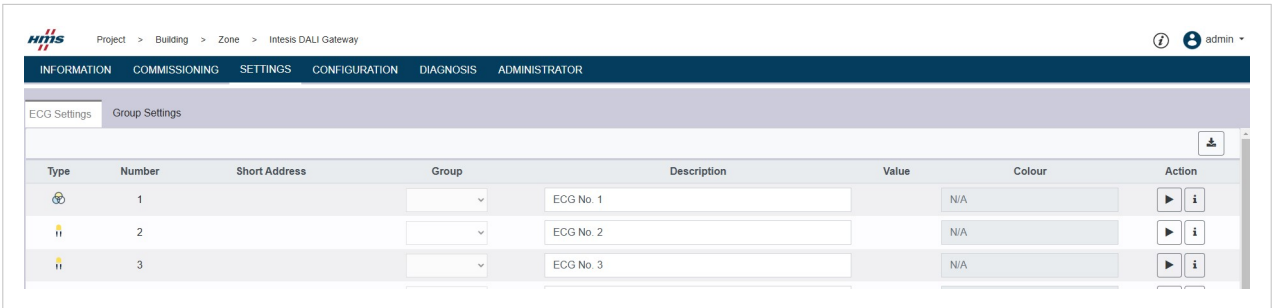
After the physical installation and wiring of the DALI ECGs and luminaires and the electrical commissioning, the ECG configuration must first be prepared and planned on the website. For this purpose, open the commissioning page:



A correct ETS configuration of the groups and ECG settings is important for commissioning via web. Here, the group type (normal or colour control) and also the individual ECG types should already be correctly defined.

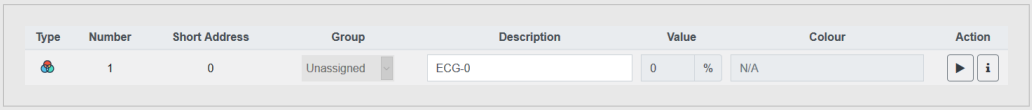
12.2.1. Preparation

The first step should be to plan and designate the ECGs and groups. For this purpose, a name (luminaire number, room number, and group designation or similar) can be entered in the description field on the **Settings** page.



IMPORTANT
It is useful to assign plausible descriptive text for the groups and the ECGs that will be used later as individual ECGs.

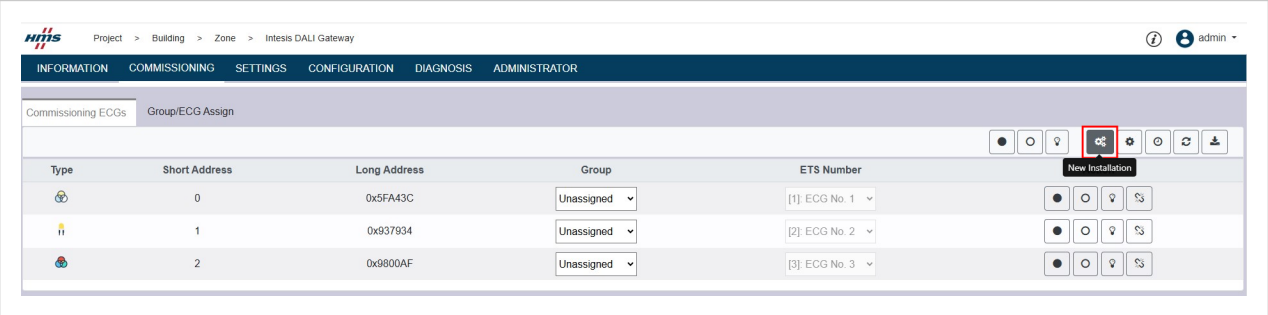
NOTE
The view under ECG settings is sorted by the ETS ECG number. These ECG numbers must also receive the corresponding planned settings and object assignments in ETS.

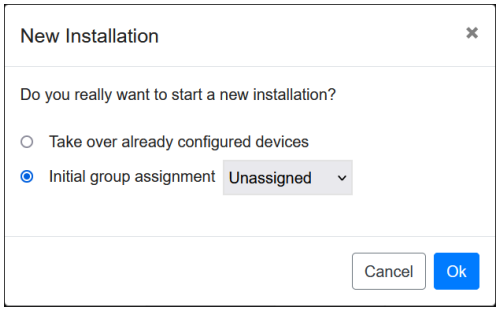


IMPORTANT
Please note that all performed operations are initially only displayed within the user interface but are not directly loaded into the DALI gateway. To start the save operation, the save button in the upper right corner must be pressed:

12.2.2. New Installation

After planning, setting the parameters, and linking the group addresses, the actual commissioning of the DALI segment takes place. The teach-in process of the connected DALI segment can then be started via the **Commissioning** page and the **New installation** ( ) button.

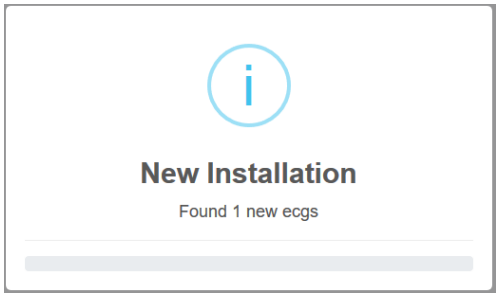




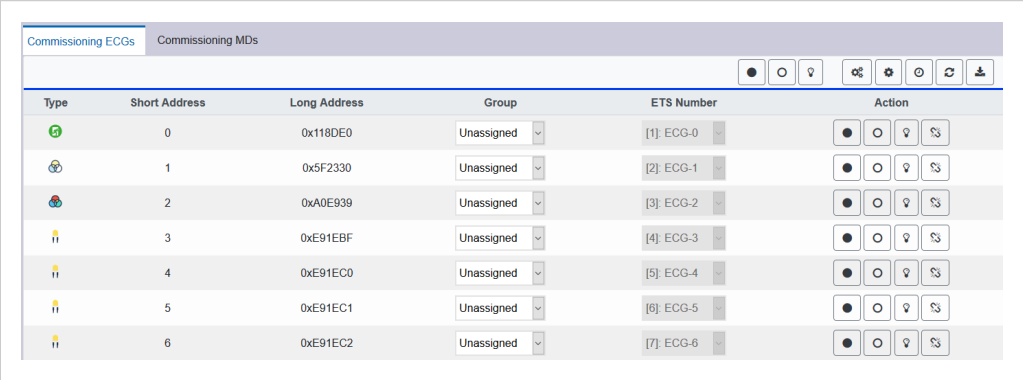
- **Take over already configured devices**: This allows you to take over and read an already externally configured system, such as ECGs and group assignments already programmed with a short address.
- **Initial group assignment**: Use this option to make a group selection directly during the new installation, so a time-consuming second step for group assignment is unnecessary.

> **IMPORTANT**
> It must be taken into account that with this option, the corresponding ETS number is assigned to each short address, i.e., short address 0 is assigned to ETS index 1.
>
> Example: Two found ECGs with short addresses 5 and 6 are assigned to ETS indexes 6 and 7.

During the teach-in process, all ECGs are automatically recognized, and each ECG is assigned a short address from 0 to 63. Depending on the connected DALI segment size, the process can take up to three minutes. Progress is shown in the popup window:

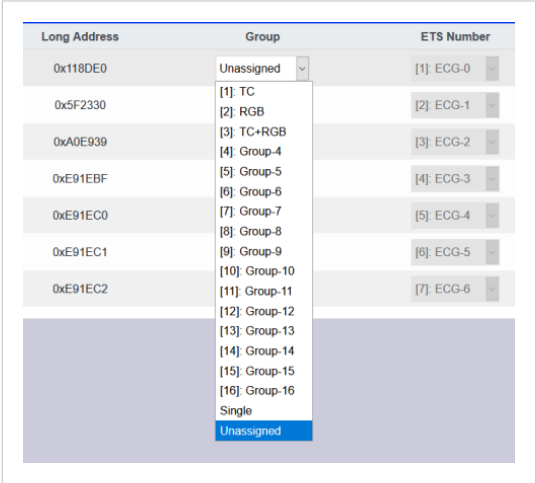


After completion of the teach-in process, all found ECGs are included in the table.



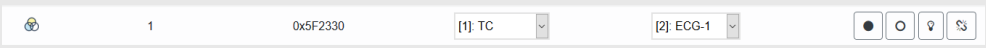
The identification is now done by switching the respective lights on and off.

Once an ECG has been identified, it can be assigned as an individual ECG or to a group in the dropdown menu:



The desired assignment to the ETS ECG number can then be selected.

NOTE
Example: ECG with control of colour temperature with short address 1 is assigned to group 1 (TC) and ETS ECG number 2:



Follow the same assignment procedure for all ECGs found.

NOTE
Keep in mind that the real short address is between 0 and 63.

IMPORTANT
Remember that, at this point, all performed operations are only displayed in the workspace. They are not immediately loaded onto the gateway. To start the process of downloading the settings onto the gateway and the ECGs, you must press the **Download** ( ) button.

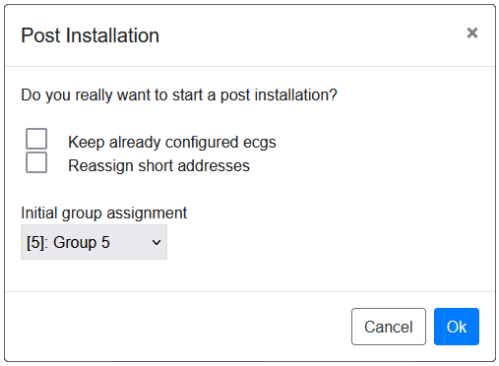
The programming process can take up to one minute.

IMPORTANT
It is important to note that the programming process on the commissioning side only programs the DALI configuration data in the gateway and ECGs. In addition, the actual ETS application with the parameter settings and group addresses must be loaded into the device before or after the DALI identification and commissioning. This is done as usual, via the normal loading process in the ETS.

12.2.3. Post Installation

If additional ECGs are to extend an already commissioned DALI segment or if several defective ECGs are to be replaced, the **post installation** function must be used.

When you start the post installation in the ETS, the gateway first checks if all previously configured ECGs are still available in the segment. ECGs that no longer exist or cannot be found are usually deleted from the gateway's internal memory. Should unavailable ECGs be kept (i.e., if parts of the system are not temporarily powered up), the deletion can be avoided by using the **Keep already configured ECGs** option.



By default, ECGs usually have the 0xFFFFFF long address assigned and no short address. It might be possible for an ECG to have a short address even if the long address is still 0xFFFFFF (for example, in case an external tool was used for programming). In that case, activate the **Reassign short addresses** checkbox to delete the short address.

After verification, the segment is searched for new ECGs. Newly found devices are inserted into any existing gaps or added on at the end.

IMPORTANT
Remember that the maximum number of ECGs for a segment is 64.

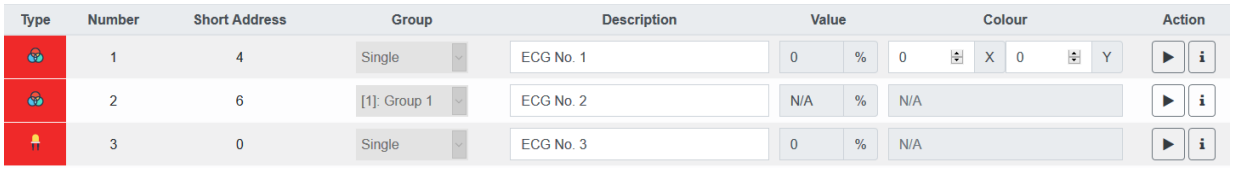
As the position (short address) of a newly found device is allocated randomly, you need to identify the lights after the installation and, if necessary, assign them to groups, the same way as with the new installation.

NOTICE
If the **Switch ECG power supply via object** setting is enabled, the corresponding objects are sent before the post installation. Afterward, the ECG can be assigned again to a group.

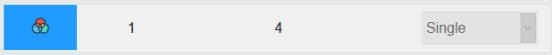
NOTICE
It is possible to select a group directly during the installation, so a time-consuming second step for group assignment can be avoided.

12.2.4. Failure and Status Display

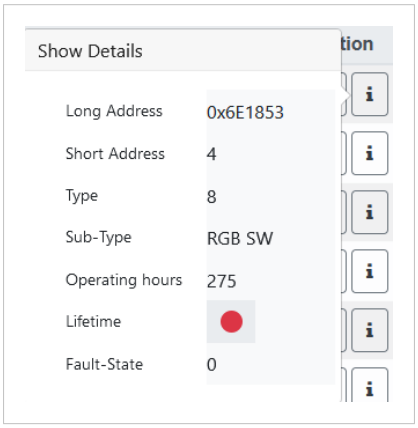
The identification of the luminaires/ECGs during commissioning is carried out visually (switch on, switch off, flashing) and is, therefore, only possible if the lamps and ECGs are working without errors. If a lamp or ECG fault is identified by the gateway during the installation process, the corresponding ECG is highlighted in red:



NOTE
If a lamp's lifetime exceeds the limit value set in the ETS parameters, the ECG will be highlighted in blue.



Detailed information is shown by pressing the **Info** button:



The displayed value for the fault state has the following meaning:

Table 7. Fault state values

Fault State	Fault Description
0 (no bit set)	No error
1 (Bit 0 set)	Lamp error
2 (Bit 1 set)	ECG error
4 (Bit 2 set)	Converter error (only with DT-1 units for emergency luminaires
8 (Bit 3 set)	Lifetime exceeded

NOTICE
The Lifetime exceeded fault state can occur simultaneously with the other fault states. For example, Lifetime exceeded + Lamp error = 0x1001 = a value of 9

12.2.5. Operating DALI Devices

The DALI devices can be controlled directly in various ways. The following functions are available in the menu bar:

- **Broadcast**:

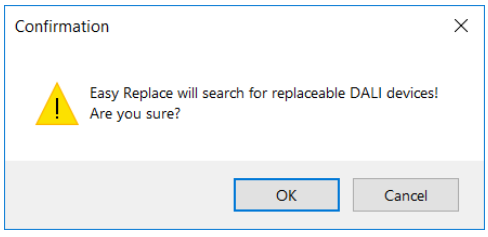
Telegrams are sent to the DALI bus for all participating devices to react to. All ECGs execute the commands, even if they have not been commissioned yet. Therefore, these commands work independently of the status of the DALI system.

- **Emergency (Converter) inhibit**:

Use the context menu in the group tree on the left-hand side to disable converters. If the power supply for the connected emergency lights is turned off within 15 minutes after activating the converter inhibit mode, the lights are turned off instead of changing into emergency mode. This operating mode may be necessary during the commissioning and installation process to prevent constant emergency lighting and battery discharge.

- **Easy Replace**:

You can also use the quick exchange function if you need to exchange an individual ECG because of a fault. The operator must confirm this action:



If the quick exchange cannot be completed due to external circumstances, the gateway terminates the process with a failure code. The different failure codes have the following meaning:

Table 8. Failure codes

Failure Type	Failure Description
7	No ECG fault
8	More than one ECG faulty
9	No new ECG can be found
10	ECG has the wrong device type
11	More than one new ECG

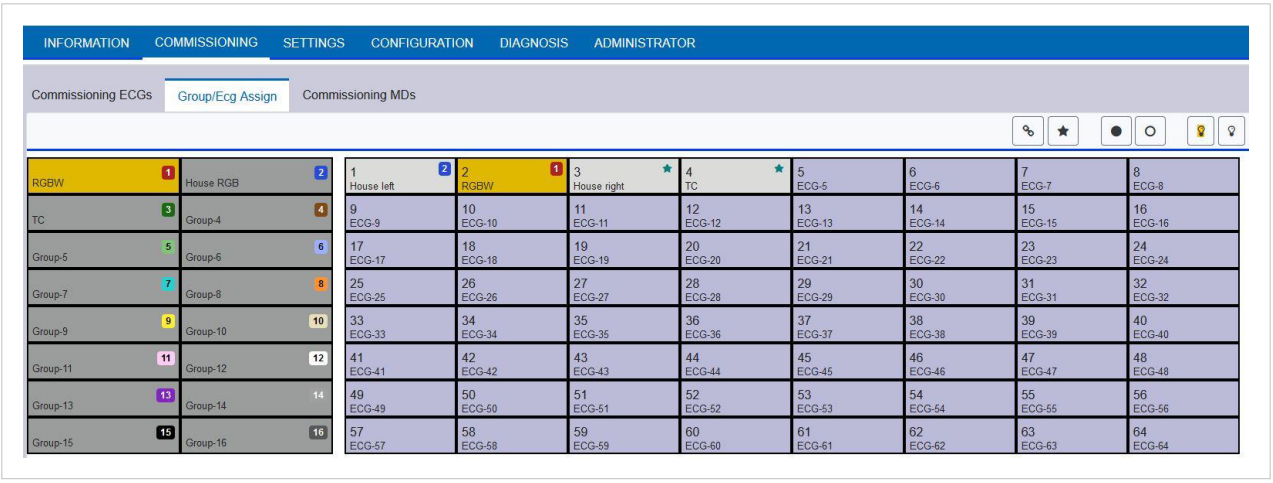
In each ECG row:

- **ECG Control**:

Single ECGs can be controlled directly. The button can be used to delete an ECG completely. After this action, the ECG is no longer present, and it can only be found via a new post-installation. Because of this, the operator must confirm this action through a dialog.

12.2.6. Group/ECG Assignment

ECGs can be easily assigned or reassigned to groups using the table from the **Group/ECG Assign** tab. Alternatively, ECGs can also be defined as individual ECGs. Groups are shown on the left side, and ECGs are shown on the right side.



Each group is numerically and colour-coded and contains the respective group name. Each ECG shows the ECG number and also the respective name. In addition, the ECGs show the group memberships with a numerical and colour tag. ECGs marked with an asterisk are single ECGs. Groups and ECGs that are switched on are displayed with a yellow background.

The following functions are available in the menu line:

- **Group assign command**:

This is used to assign one or more ECGs to a group. First, the group must be selected, followed by the ECGs to be assigned to it. The assignment happens immediately and is confirmed by a popup. Assigned ECGs get a numeric and coloured tag.

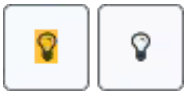
- **Single-ECG**:

This command is used to assign an ECG to a group. An asterisk marks single ECG assignments.

- **All On/Off**:

These broadcast commands switch all groups and ECG on or off.

- **Switch On/Off**:



These two commands are used to switch individual groups or ECGs on or off.

13. DALI Commissioning Input Devices

The DALI-2 to KNX TP PRO Gateway allows the configuration of input devices.

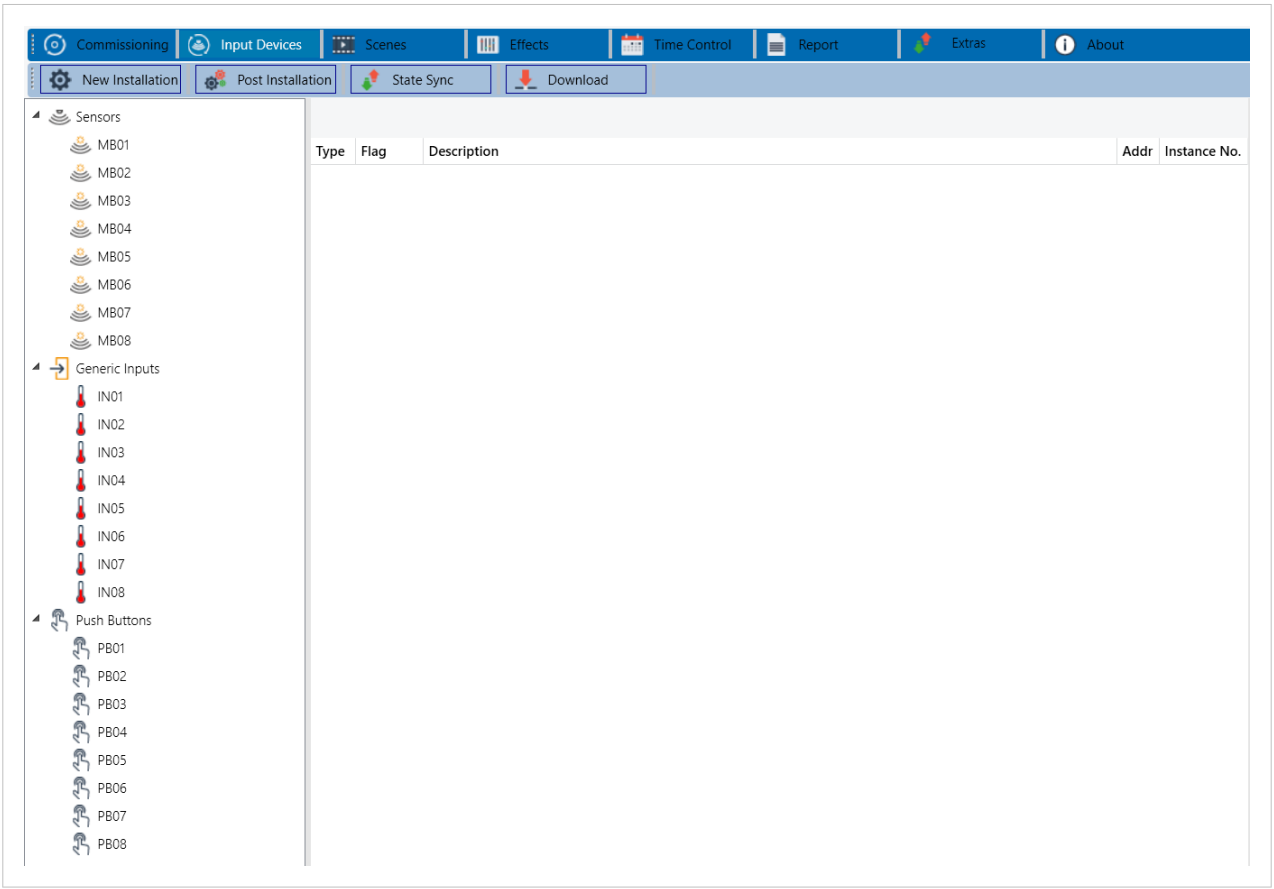
NOTICE
Only input devices that comply with the IEC 62386 part 301/302/303/304 standard are supported.

Each input device is identified by a short address, as with ECGs. This address is assigned during the new installation.

The DALI-2 to KNX TP PRO Gateway supports up to eight motion sensors and eight push buttons. Each input device can contain one or more instances. With motion sensors, it is common that at least one instance represents the motion and at least on other instance represents the brightness. The exact function of the respective instances is not specified and can be found in the specification of the respective input device.

13.1. DCA Commissioning

The assignment settings and programming of input devices can be done in the DCA. To do this, switch from the **Commissioning** page to the **Input Device** page.



13.1.1. Preparation

The first step should be the complete ETS configuration and naming. Refer to Motion/Brightness Detector (page 220) and the following section.

The different types of input devices are displayed with different icons depending on the ETS parameter.

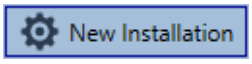
Table 9. Input device types

Icon	Description
	Motion Detector with Brightness
	Motion Detector without Brightness, according to Part 303
	Brightness, according to Part 304
	Temperature measurement
	Humidity measurement
	CO_2 measurement
	VOC measurement
	Sound measurement
	Generic measurement, depending on input device type
	Push button interface, according to Part 301
	Absolute input, according to Part 302

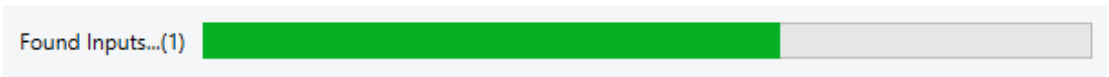
Icon	Description
	Push button, left button
	Push button, right button
	Power
	Energy
	Unknown instance type
	Generic input

13.1.2. New Installation

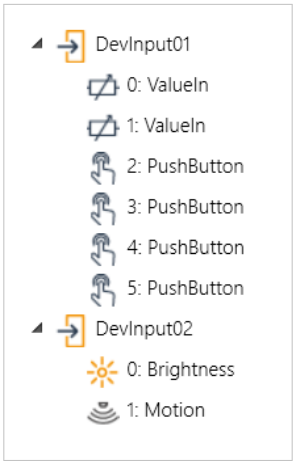
The teach-in process of the connected DALI segment can be started via the **Input Devices** page and the **New Installation** button.



During the teach-in process, all input devices are automatically detected, and each device is assigned a short address between 0 and 63. This process can take up to three minutes, depending on the size of the connected DALI segment. The progress is shown in the progress bar at the bottom right of the window. At the same time, a display informs about the number of motion detectors found so far and the current progress.



When the teach-in process is complete, all input devices found are entered in the list of devices still to be identified on the right-hand side of the DCA.

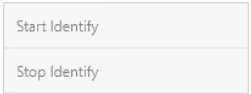


The following instances can be recognized:

Table 10. Recognizable instance types

Icon	Description
	Push button interface, according to Part 301 (instance type number 1)
	Absolute input, according to Part 302 (instance type number 2)
	Motion detector, according to Part 303 (instance type number 3)
	Brightness, according to Part 304 (instance type number 4)
	Generic input (instance type number 0)
	Unknown instance type

An identification process for the input device now carries out the identification. When activated, one LED usually flashes in the identified device.



NOTE
The way in which the connected input device displays its identification may vary depending on the manufacturer. For more information, read the manufacturer's input device documentation.

13.1.3. Assigning Description Texts

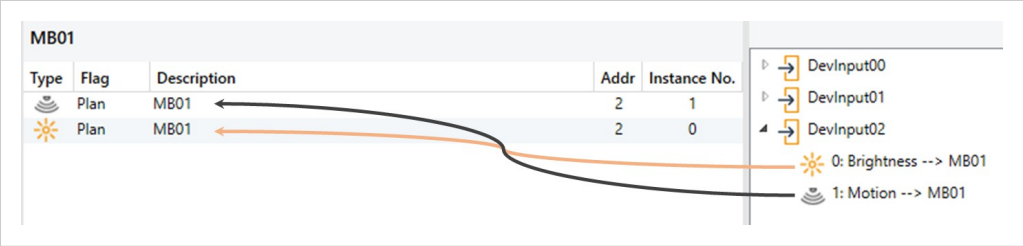
A description can be entered by right-clicking in the right tree of the found input devices.

NOTE
The maximum length allowed is 12 characters.

13.1.4. Assignment of Input Devices to ETS Items

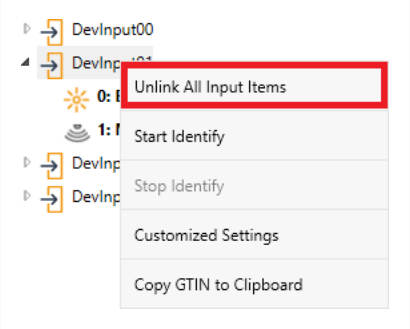
Once a device has been identified, it can be dragged and dropped to the corresponding ETS entry in the table. The assignment is based on the instance level. Each instance can be assigned to the required ETS item entry.

Once the assignment has been completed via drag-and-drop, the status is indicated by the Plan flag, and the link on the right-hand side is shown in normal font size.

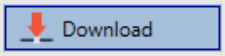


The ETS item entry can also be dragged back into the right-hand tree to delete an assignment.

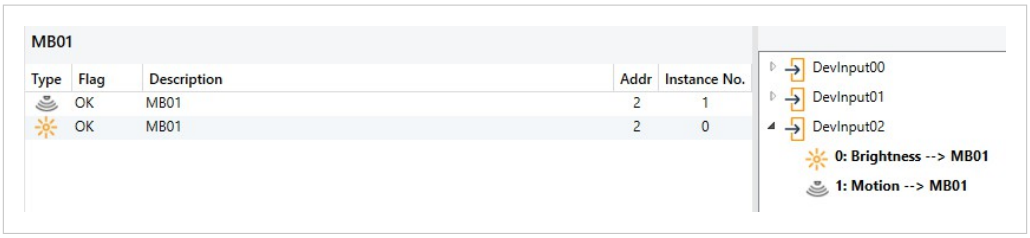
To delete all assignments of an input device's instances, the item **Unlink All Input Items** can be found in the device's context menu. The context menu of the input device is opened by pressing the right mouse button.



IMPORTANT
Please note that all performed operations are initially displayed only within the user interface and are not directly loaded into the gateway. Press the Download button to start the settings loading into the gateway and the input devices.



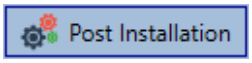
The programming process can take up to one minute. The progress bar provides information about the current status. When the loading process is complete, all previously planned input devices in the real system have been programmed with the DALI configuration. In the input device configuration table, the corresponding devices are marked with the **Ok** flag and the link on the right-hand side is shown in **bold** font size.



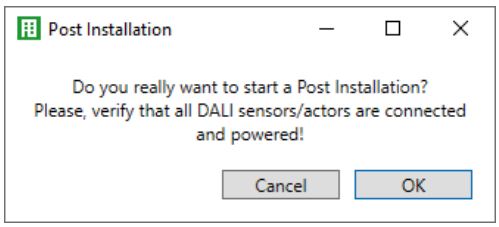
IMPORTANT
The programming process on both the commissioning and input devices sides only programs the DALI configuration data into the gateway and the ECGs/input sensors. In addition, the actual ETS application with the communication objects' parameter settings and group addresses must be loaded into the device before or after the DALI identification and commissioning. This is done as usual via the normal loading process in the ETS.

13.1.5. Post Installation

If you want to expand an already commissioned DALI segment with additional input devices or replace one or more faulty ones, use the **Post Installation** function.



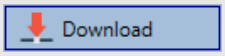
If a subsequent installation is started, the gateway first checks, based on the DALI long address, whether all previously configured input sensors are still present in the segment. Normally, input sensors that are no longer present or cannot be found are deleted from the gateway's internal memory during the subsequent installation.



NOTICE
Remember that the maximum number of motion detectors and push buttons is 8.

Since the position (short address) of the newly found devices was assigned randomly, the input devices must be identified after the subsequent installation in the same way as for a new installation.

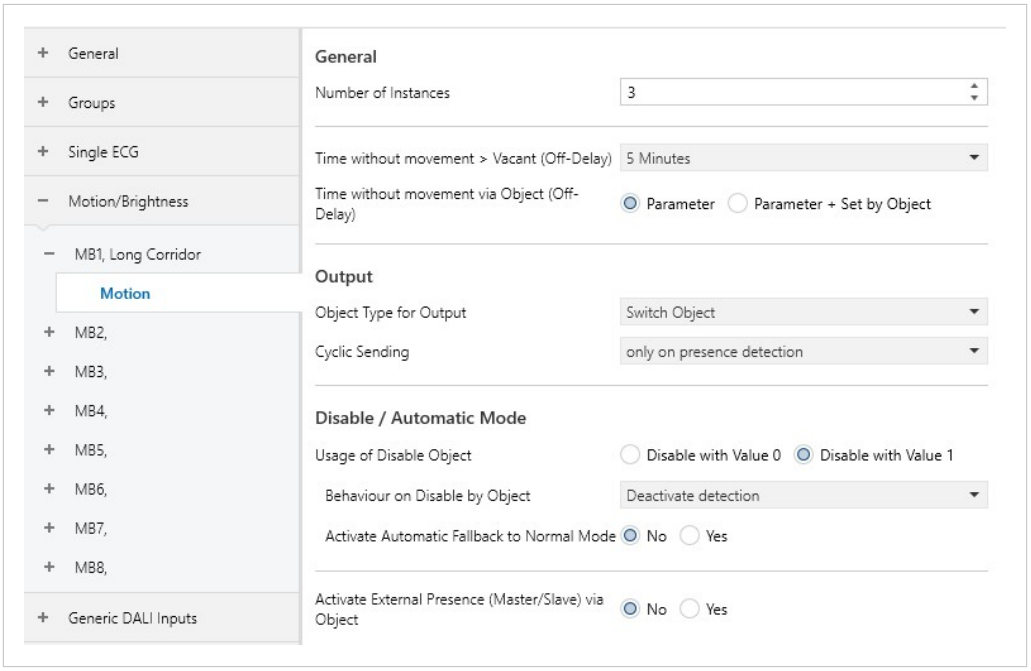
IMPORTANT
All performed operations are initially displayed only within the user interface but are not directly loaded into the gateway. Press the **Download** button to start the loading process of the settings into the gateway and the input devices.



13.1.6. Using More than One Instance

This new concept allows the configuration of one ETS item (Motion/Brightness or Push Button) with more than one instance.

A well-known use case is the master/slave concept in a long corridor. In such a situation, more than one movement detector must be installed, and they should work together to light the whole corridor. The corresponding ETS parameter must be set to support more than one instance.



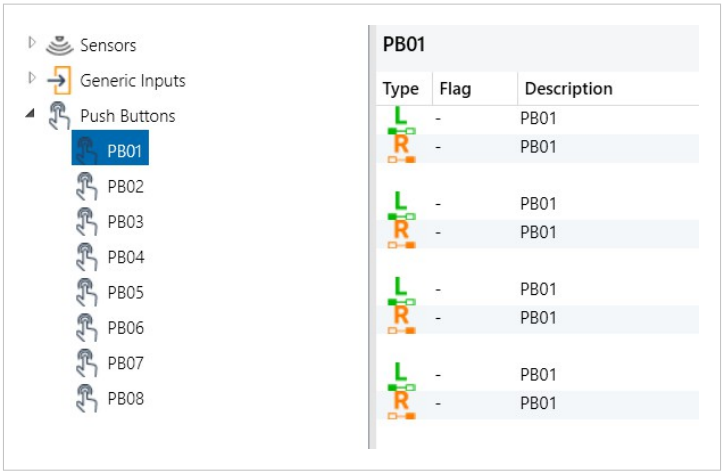
In the DCA view, each instance appears as a separate line to connect to an actual device.

In the image above, three instances of three different actual movement detectors are connected to one ETS movement detector. This way, the ETS movement detector is triggered whenever one of the three instances of the real devices detects a movement.

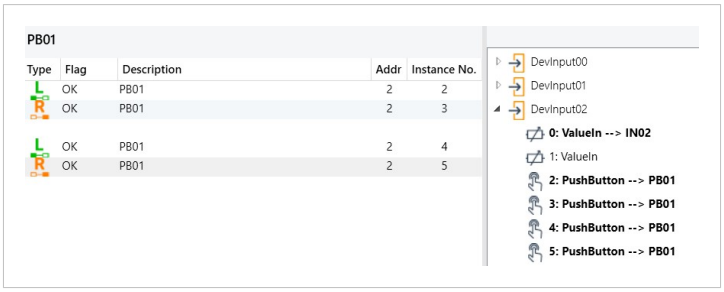
NOTE
More than one instance connected to an ETS entry works as an **OR** gate. All events detected by the real devices will trigger the functionality.

13.1.7. DALI Push Buttons / Push Button Interfaces

The DALI-2 to KNX TP PRO Gateway supports up to eight push buttons or push button interfaces with a maximum of eight keys or four pairs of keys.

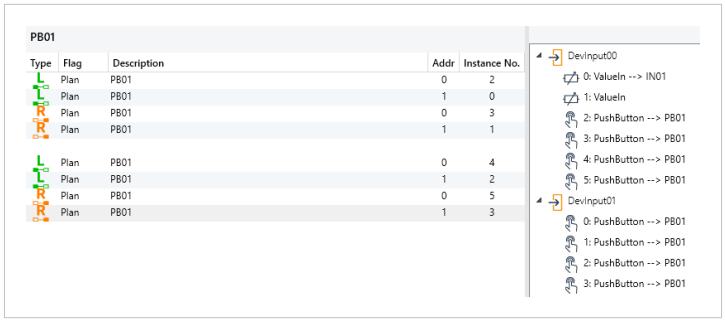


The ETS setting works in pairs; thus, the view in the DCA also displays the left and right buttons as a pair. If a four-fold button is configured, only two pairs are visible.



A push button in the ETS can also be parameterized with several instances:

This is useful, for example, to realize two actual DALI push buttons in one room with the same configuration or mode of operation:



IMPORTANT
For further information, refer to the input device manufacturer's handbook. The instance number of the DALI button can only be adapted by the manufacturer's documentation of this push button (interface).

13.1.8. Special Input Devices (Generic Inputs)

Many DALI-2 movement detectors also provide additional kinds of measurement. Some examples are:

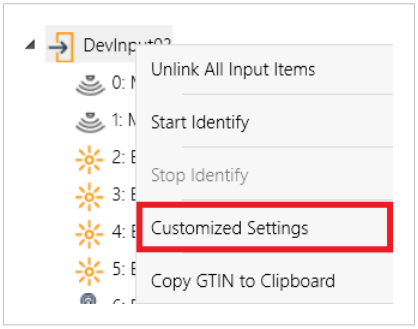
- Brightness
- Temperature
- Humidity
- Air quality

This information can also be assigned to ETS communication objects. Therefore, these generic inputs' ETS parameters must be defined accordingly. For more information, refer to the Generic DALI Inputs (page 232) section.

Once such a device has been identified, it can be dragged and dropped to the corresponding ETS entry in the table.

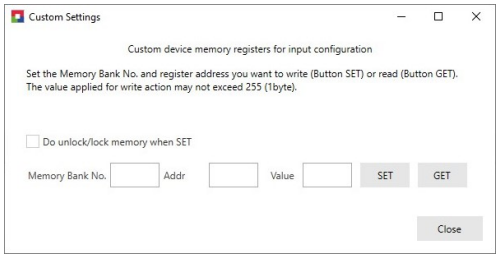
13.1.9. Customized Settings

On the right side of the DCA input device window, the context menu of each input device offers the possibility of defining device-specific settings.



In the previous section's example, an absolute input instance was assigned to an ETS temperature element. Unfortunately, no standard states the format and range of the transmitted value. That results in the situation that manufacturer-specific settings have to be configured in the input device, which is usually done by writing special values in special memory banks.

Click on **Customized Settings**:

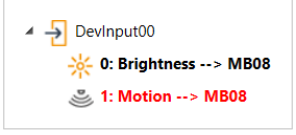


To define a special memory position, enter a **Memory Bank Number**, **Memory Address**, and the **Value** to be written or read. Usually, memory is locked and must be unlocked before any modification. Should that be the case, activate the **Do unlock/lock memory when SET** checkbox.

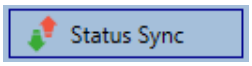
IMPORTANT
For further information, refer to the input device's manufacturer's manual. Before applying any modification, make sure you are using the right settings.

13.1.10. Failure and Status Display

An input device or even a single instance can report a failure during operation. If the gateway identifies a fault, the corresponding instance is highlighted in red:



Since the view is not automatically updated, and as it may take a few minutes for the DALI gateway to recognize a fault, we recommend that you press the **Status Sync** button to trigger a view update manually.

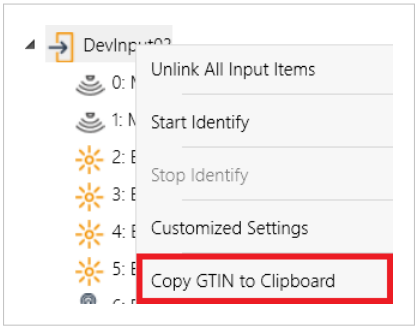


This ensures that the displayed status is updated with the actual status and any failures that may have been detected in the meantime are displayed correctly.

13.1.11. Retrieving the GTIN

Sometimes, it might be interesting to examine some data in the DALI Alliance's official product database, which can be found at the following link: DALI Alliance Product Database. The GTIN number, which is unique for each DALI-2 device, is a useful reference for locating a product.

On the right side of the DCA commissioning window, each input device's context menu allows you to copy the GTIN to the clipboard. This way, this information can be easily used when searching the DALI Alliance product database.

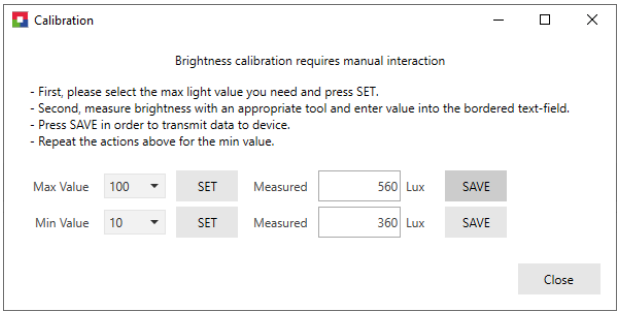


13.1.12. Calibration for Constant Light Control

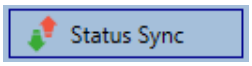
A button is displayed for manual calibration if the following conditions are met:

- Constant light control has been activated for this ETS detector in the ETS parameters.
- Calibration via DCA has been enabled in the brightness tab of the ETS parameters.
- Internal group use has been activated on the light control parameter page.

Selecting the button opens a window:



Since the view is not automatically updated before the first call, we recommend triggering a manual update by pressing the **Status Sync** button.



NOTICE
Refer to the Calibration of Constant Light Control (page 18) section for more information about the Constant Light Control function.

13.2. Website Commissioning

Due to the strong interaction with the ETS context and parameters, the commissioning of the input devices through the web interface is **not** supported.

14. The Scene Module

The DALI-2 to KNX TP PRO Gateway enables programming and invoking up to 16 internal light scenes. A scene is invoked via a 1-byte scene object. It is possible to adjust which of the 64 KNX scenes (with values from 0 to 63) invokes any of the 16 DALI scenes. This object can also be used to save scenes (Bit 7 set). The currently set value is saved as a scene value. In the case of DALI DT-8 devices, the currently set light colour or colour temperature also becomes part of the scene and is automatically adjusted whenever a scene is invoked. Generally, a scene can consist of groups and individual ECGs as long as these have not been assigned to a group.

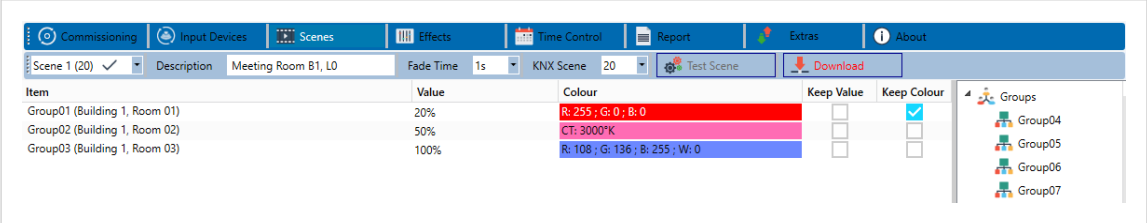
You can use either the DCA or the web interface to assign a group to a scene, delete a group from a scene, or assign a KNX scene number to a DALI scene. Both configuration methods can be used to set values and colours for invoking a scene.

By default, when a scene is called up, the programmed scene is jumped to immediately without dimming time. If a scene is to be dimmed, a dimming time can also be set for each scene. If a scene is in the process of dimming, switching an individual group (or an ECG) from the scene does not cause the entire scene to be dropped; only the group addressed is affected. All the other groups will continue the dimming process that was started by the scene call.

NOTE
A 4-bit dim object is available for each scene. This makes it possible to dim all the lights in a scene together.

14.1. Scene configuration via DCA

Scenes can be programmed and assigned in the DCA. For this purpose, move from the commissioning page to the **Scenes** page.



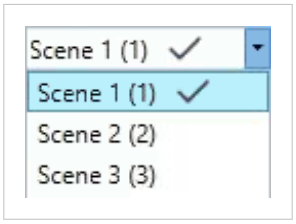
14.1.1. Configuration

You can enter a user-friendly name for each scene in the description field.

NOTE
The maximum length is 20 characters.

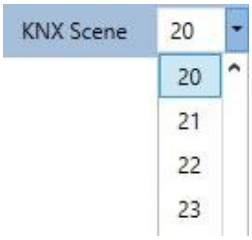
If you do not want a scene to start immediately but prefer dimming it up to its final value, you can set the dimming time individually for each scene. Remember that the dim time always refers to the total value range. Accordingly, a dim time of 30 seconds means a value change of 100% within these 30 seconds. If the value within a scene is only changed by 50%, the change is performed within 15 seconds.

Select the required scene from the dropdown on the left-hand side.



NOTE
A checkmark means that the scene has already been defined.

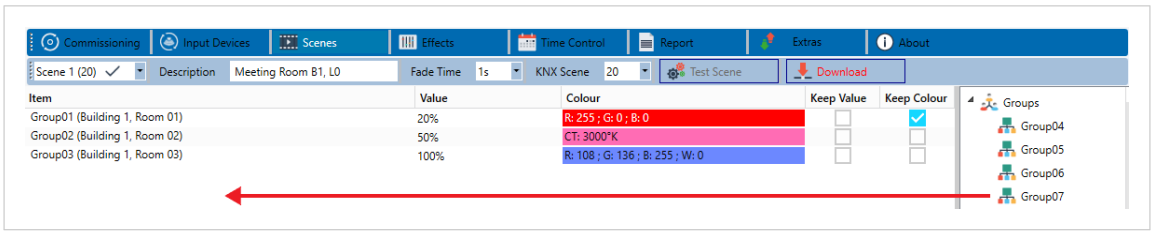
A scene is activated by a 1-byte scene object in correspondence with the DPT 18.001 (DPT_SceneControl). In the KNX standard, you can address up to 64 scenes using this datapoint. In contrast, there are only 16 scenes available in the DALI gateway. By default, each DALI scene is assigned to one of the KNX scenes, as in scene 1 of the DALI gateway is usually invoked by object value 0 (KNX Scene 1), scene 2 of the DALI gateway is usually invoked by object value 1 (KNX scene 2), and so on. This assignment can be modified In the DCA. This adjustment can be done in the headline of the scene editor:



In the example above, the selected DALI scene, with the value 147 assigned, can be invoked using object value 19 (KNX scene 20).

NOTICE
The assignment has to be unique. If different DALI scenes are assigned to the same KNX scene, only the first one will be activated/programmed.

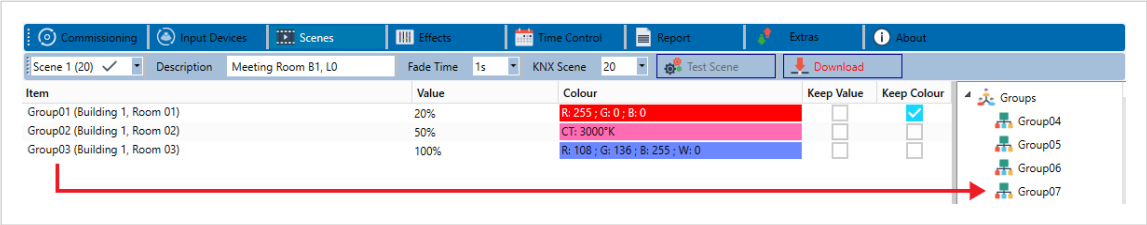
Using drag-and-drop, you can move the groups you want to use for this scene from the tree on the right-hand side into the field in the middle.



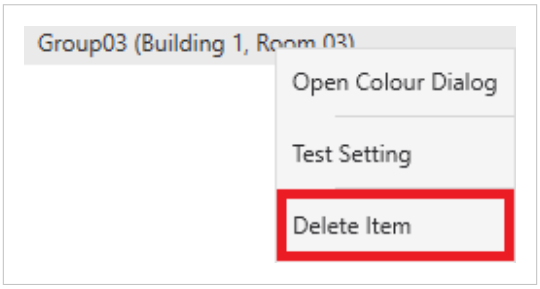
Use the input fields to enter the required values for this scene:

- **Value**: A brightness level between 0 and 100%
- **Colour**: Defines the colour according to the type of colour control defined for this group. Use the context menu or double-click to select a colour from the colour picker.
- **Keep Value**: When checked, the current value remains unchanged when this scene is invoked. The entry field for the value is disabled, and any entry in the value field is ignored.
- **Keep Colour**: When checked, the current colour remains unchanged when this scene is invoked. The colour entry field is disabled, and any entry in the colour field is ignored.

To delete an entry, select a group and use drag and drop to move it back to the tree on the right-hand side.



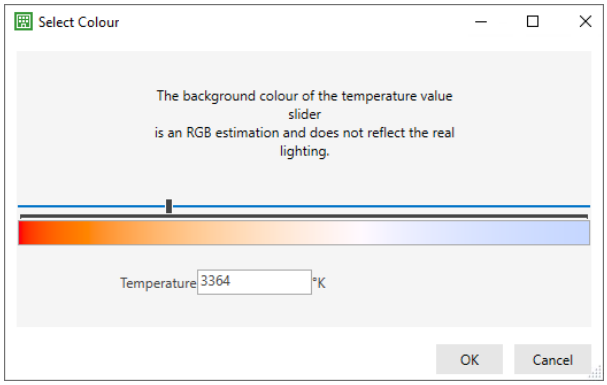
You can also delete an entry via the context menu. Right-click on a line for it to appear.



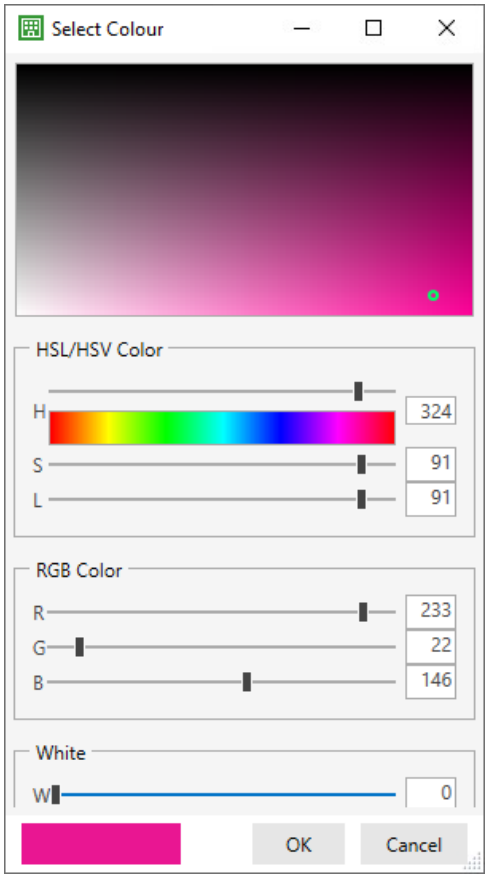
14.1.2. Colour Settings

Each group or ECG can only support one type of colour control.

- **Colour Temperature type**: The colour value is set in Kelvins. Use the input field or drag the slider control to select a value.

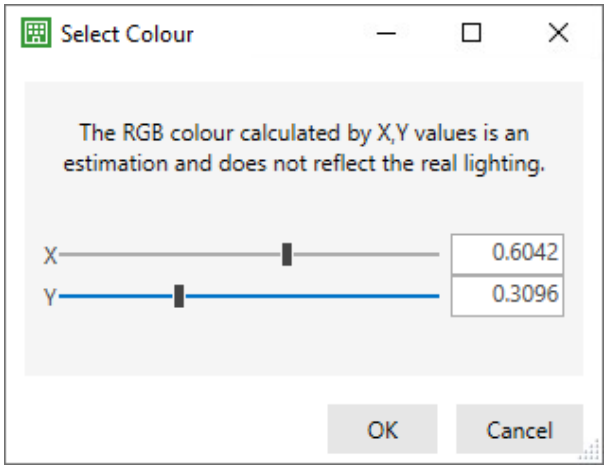


- **RGB, RGBW, or HSV type**: The colour value can be set via the RGB (red, green, and blue) or RGBW (red, green, blue, and white) and HSV (Hue, saturation, and value) values. You can also click on the colour picker or drag the colour bar slider to select the desired colour.



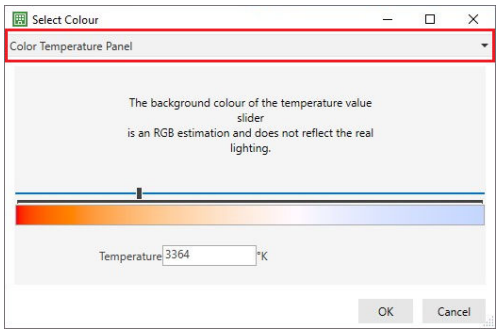
NOTICE
The **White** slider control is only available for the **RGBW** and **HSVW** types.

- **xy type**: This type uses the xy coordinates from the CIE 1931 colour space. You can use the input fields to enter the x and y coordinates directly or use the colour picker or the sliders to select the colour visually.



14.1.2.1. Groups with Flexible Colour Control Types

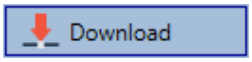
If a group in ETS is selected as **Colour Temperature + RGB** colour type, this group can be used in the scene with both controls. The value for this type is selected through the following dialog element:



Use the top dropdown menu to select the desired method to set a value.

14.1.3. Programming Scenes

Once all scene values have been set and assigned, you must download the scene onto the DALI ECGs. To do so, press the **Download** button in the top right corner.



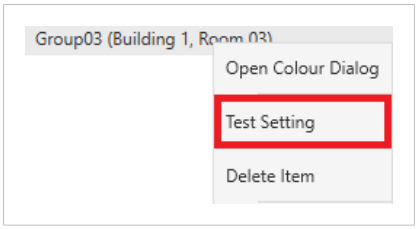
NOTE
If there are changes that have not yet been programmed into the gateway, the **Download** button turns red as a reminder:

This behavior applies to the **Scenes**, **Effects**, and **Time Control** modules.

A connection to the DALI-2 to KNX TP PRO Gateway is required. In principle, you can also plan individual scenes in the ETS 'offline,' independently of the DALI system. The DCA only has to be connected to the gateway for the duration of the programming.

14.1.4. Testing a Scene Event

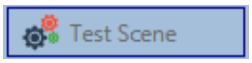
The quicker way to test an event's settings is to use the context menu that appears when right-clicking.



A connection to the DALI-2 to KNX TP PRO Gateway is required. The command setting the value and colour of the group is executed. This means you can check the correct properties before programming the whole scene. If **Keep Value** or **Keep Colour** is selected, the respective values are kept, and the new values are not activated.

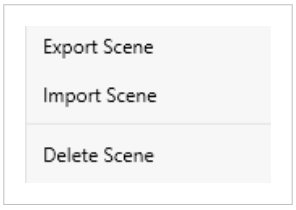
14.1.5. Testing the Scene as a Whole

After a scene has been programmed, the **Test Scene** button becomes active. Press the button to activate and execute the selected scene. A connection to the DALI-2 to KNX TP PRO Gateway is required.



14.1.6. Export/Import/Delete

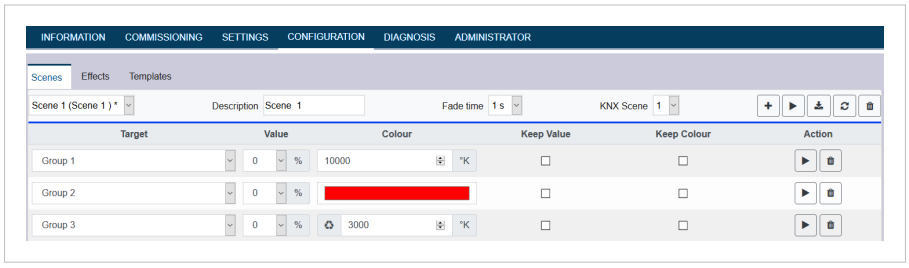
Scenes that have already been created can be exported so they can be reused. The created XML file can be saved separately to be used again in another project or another template. The commands for export or import can be found in the context menu.



The template is saved as an XML file in the desired target directory.

14.2. Scene Configuration via Web Server

The scene assignment settings and programming can be done from the web page via the web server. To do so, open the web page, switch to the configuration page, and select **Scenes**.



Up to 16 scenes can be configured here. Each scene can identified by a corresponding description text.

14.2.1. Configuration

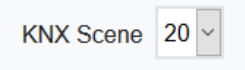
The desired scene can be selected in the dropdown menu on the left. An asterisk indicates that this scene has already been defined. Use the description field to assign a user-friendly name to the scene.

NOTE
The maximum length for the description field is ten characters.

A dimming time value can also be set individually for each scene if, when called, the scene should be dimmed to the end value instead of changing immediately.

NOTE
Remember that the dim time always refers to the total value range. Accordingly, a dim time of 30 seconds means a value change of 100% within these 30 seconds. If the value within a scene is only changed by 50%, the change is performed within 15 seconds.

A scene is activated by a 1-byte scene object in correspondence with the DPT 18.001 (DPT_SceneControl). In the KNX standard, you can address up to 64 scenes using this datapoint. In contrast, there are only 16 scenes available in the DALI gateway. By default, each DALI scene is assigned to one of the KNX scenes, as in scene 1 of the DALI gateway is usually invoked by object value 0 (KNX Scene 1), scene 2 of the DALI gateway is usually invoked by object value 1 (KNX scene 2), and so on. This assignment can be modified In the DCA. This adjustment can be done in the headline of the scene editor:



In the example above, the selected DALI scene, with the value 147 assigned, can be invoked using object value 19 (KNX scene 20).

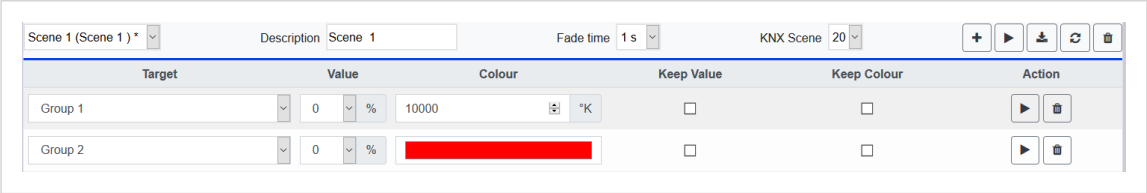
NOTICE
The assignment has to be unique. If different DALI scenes are assigned to the same KNX scene, only the first one will be activated/programmed.

The following actions are available for a selected scene:

- Add a new entry
- Test scene (the scene must first be loaded into the gateway)
- Save scene
- Reload configuration data
- Delete scene

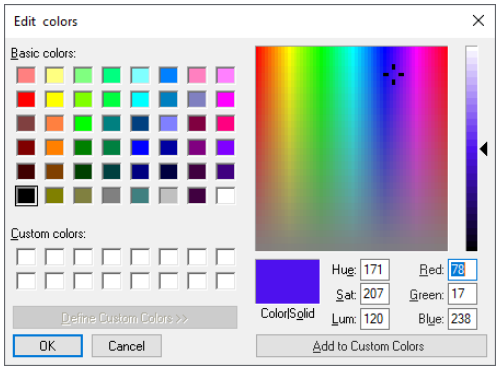
14.2.2. Colour Settings

If individual ECGs or groups are parameterized for colour control (DT-8), a colour can be set in addition to the light value. To do this, click in the **Colour** field of the desired ECG or group:

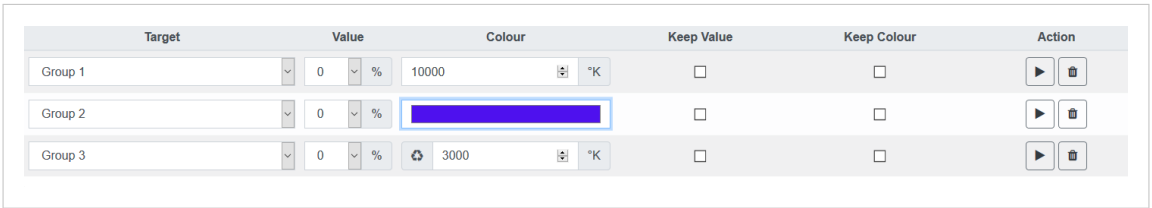


IMPORTANT
Setting a colour is only possible if the respective group or ECG has been enabled for colour control. Otherwise, the note **N/A** (not applicable) appears in the **Colour** field.

A window dialog opens for the colour selection.



Select the desired colour and click **OK** to set the colour for the group or individual ECG targeted by the scene.



Two additional flags can be used to set whether only the value setting or only the colour setting should be considered:

- **KV (Keep Value)**: Value remains as set; only colour is taken into account.
- **KC (Keep Colour)**: Colour remains set; only value is taken into account.

14.2.2.1. Groups with Variable Colour Control

If a group in ETS is selected as **Colour Temperature + RGB** colour type, this group can be used in the scene with both controls. The values for this type are selected through the following dialog elements:

Click on the icon on the left to alternate between the regular colour dialog and the colour temperature (Kelvins) dialog.

14.2.3. Programming the Scenes and Scene Test

Once all entries have been made for all desired scenes, the settings must be loaded from the browser into the gateway. To do so, press the **Save** button.

The scene data are then also transferred simultaneously to the connected ECGs.

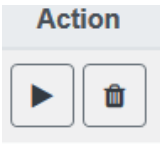
A descriptive text (maximum of ten characters) can also be assigned to the respective scene during programming. To do this, the name must be entered in the text field above the scene block before saving.

If the selected scene is to be activated for testing, this can be done using the **Test Scene** button.

The scene data can be loaded from the gateway into the web browser using the **Reload Scene** button.

14.2.4. Testing an event in the scene

A way to test the setting of an event is in the **Action** column. This event is sent to the DALI bus when the Play button is activated.



The command with the setting of the value and colour is executed for this group or ECG. This way, the desired property can be checked before programming the whole scene. If the **Keep Value** or **Keep Colour** properties are set, the corresponding values are not activated but are kept at the current value.

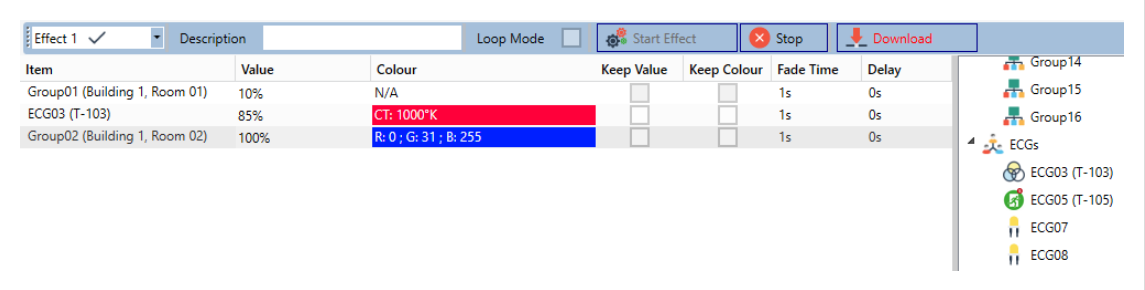
15. The Effect Module

In addition to light scenes, the DALI-2 to KNX TP PRO Gateway also enables the use of effects. An effect is essentially the process of control of the light values of different groups and individual ECGs. The individual light values can either be directly controlled or dimmed via a dim value. Remember that the value relates to a dim time between 0 and 100% (see the Configuration (page 74) section). The DALI-2 to KNX TP PRO Gateway enables 16 independent effects. An effect is started or stopped via a 1-byte object. Set bit 7 in the object to start the effect. Receiving the object with a deleted bit 7 stops the effect.

NOTE
500 effect steps can be programmed in total, which can be spread across 16 effects

15.1. Effect Configuration with the DCA

Effect programming and assigning can be done via the DCA. To do this, move from the commissioning to the **Effects** page.

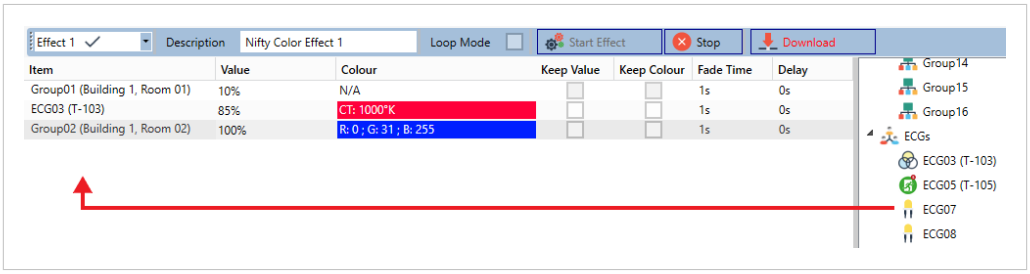


15.1.1. Configuration

On the **Effects** page, select the required effect from the dropdown. Assign a user-friendly name to the effect using the description field

NOTE
The maximum length allowed is 20 characters.

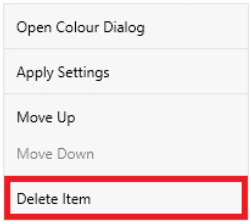
If the **Loop Mode** setting is checked, the effect is played endlessly and can only be stopped by a stop command. Drag the groups and individual ECGs required for this effect from the tree on the right-hand side into the middle field, listing the effect steps. The order of the list entries corresponds to the individual effect steps. To change the order within the list, drag the entries using the mouse.



Use the input fields to enter the required values for this effect:

- **Value**: Defines the brightness value between 0 and 100%. The value can be selected via a dropdown field.
- **Colour**: Defines the colour according to the type of colour control for this group. Double-click on the field or use the context menu to open a dialog window and select a colour from the colour picker.
- **Keep Value**: When checked, the current value remains unchanged when this effect is recalled. The entry field for the value is disabled, and any entry in the value field is ignored.
- **Keep Colour**: When checked, the current colour remains unchanged when this effect is recalled. The colour entry field is disabled, and any entry in the colour field is ignored.
- **Fade Time**: Defined the time needed to achieve the required setting. This entry can be used to define fading effects.
- **Delay**: Defines the time until the next event.

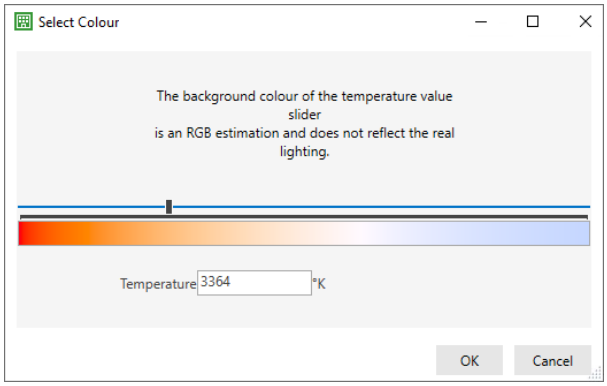
To delete an entry, select a group and drag it back into the tree on the right-hand side. Alternatively, use the **Delete Item** option of the context menu.



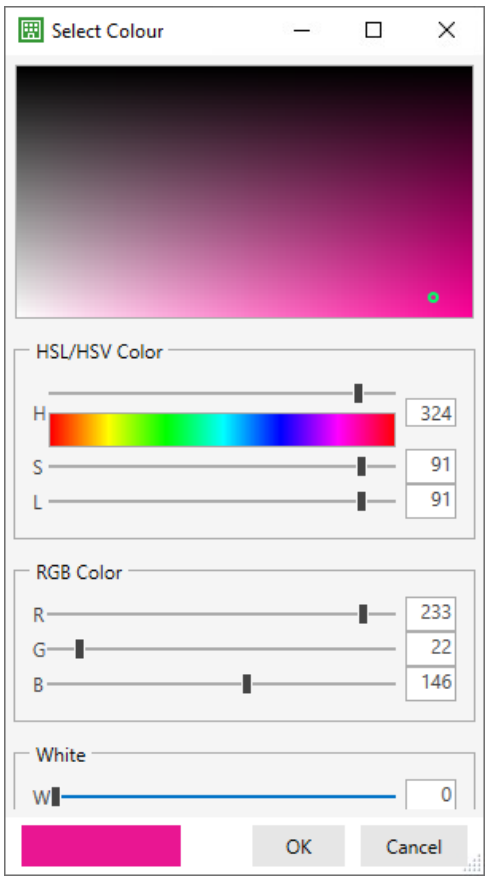
15.1.2. Colour Settings

Each group or ECG can only support one type of colour control.

- **Colour Temperature type**: The colour value is set in Kelvin. Use the input field or drag the slider control to select a value.

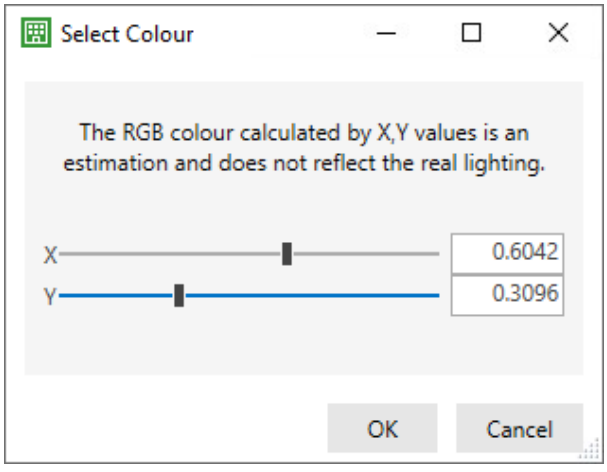


- **RGB, RGBW, or HSV type**: The colour value can be set via the RGB (red, green, and blue) or RGBW (red, green, blue, and white) and HSV (Hue, saturation, and value) values. You can also click on the colour picker or drag the colour bar slider to select the desired colour.



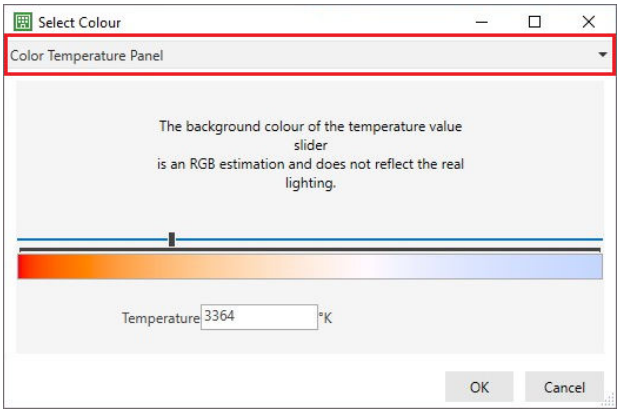
NOTICE
The **White** slider control is only available for the **RGBW** and **HSVW** types.

- **xy type**: This type uses the xy coordinates from the CIE 1931 colour space. You can use the input fields to enter the x and y coordinates directly or use the colour picker or the sliders to select the colour visually.



15.1.2.1. Groups with Flexible Colour Control Types

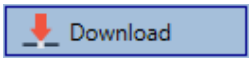
If a group in ETS is selected as **Colour Temperature + RGB** colour type, this group can be used in the scene with both controls. The value for this type is selected through the following dialog element:



Use the **Mode** dropdown menu to select the desired method to set a value.

15.1.3. Programming Effects

Once all effect values have been set and assigned, you must download the effect on the device. To do so, press the **Download** button in the top right corner.



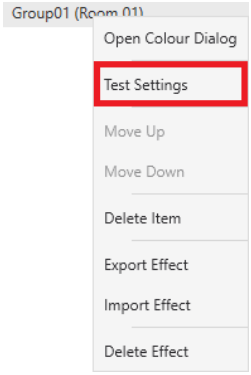
NOTE
If there are changes that have not yet been programmed into the gateway, the **Download** button turns red as a reminder:

This behavior applies to the **Scenes**, **Effects**, and **Time Control** modules.

A connection to the DALI-2 to KNX TP PRO Gateway is required. Individual effects can also be planned 'offline' in the ETS, independently of the DALI system. The DCA only needs to be connected to the gateway for the download.

15.1.4. Testing an Effect Event

The quicker way to test the settings for an effect is to use the context menu that appears via right-clicking.



A connection to the DALI-2 to KNX TP PRO Gateway is required. The command is performed with the value and colour settings that have been defined for this group or ECG. This allows you to check the correct properties before the whole effect is programmed. If **Keep Value** or **Keep Colour** is selected, the respective values will not be activated, and the current value will be retained.

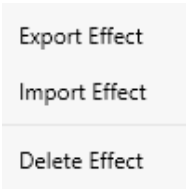
15.1.5. Testing the Whole Effect

After an effect has been programmed, the **Start Effect** button becomes active. Press the button to start the selected effect. A connection to the DALI-2 to KNX TP PRO Gateway is required.

Press the stop button to stop an endless effect (loop mode).

15.1.6. Export/Import/Delete

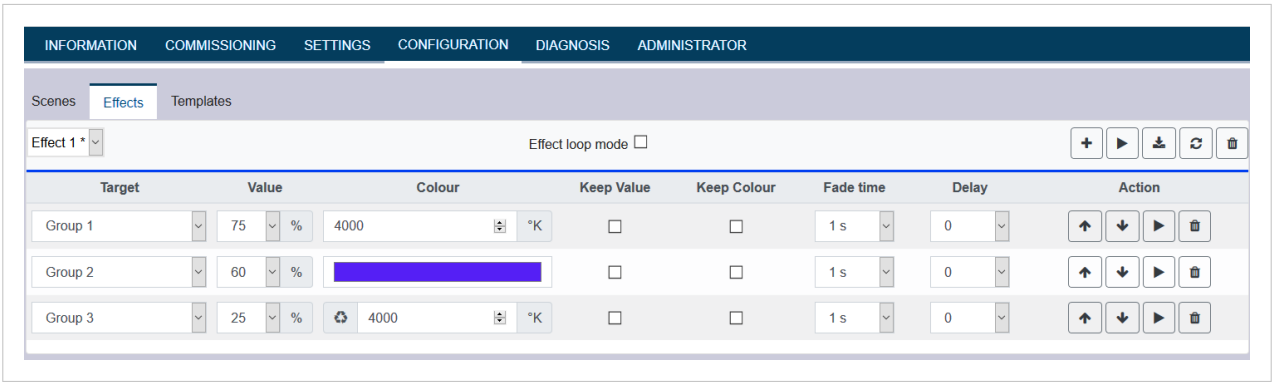
Effects that have already been created can be exported so they can be reused. The created XML file can be saved separately to be used again in another project or another template. The commands for export or import can be found in the context menu.



The template is saved as an XML file in the desired target directory.

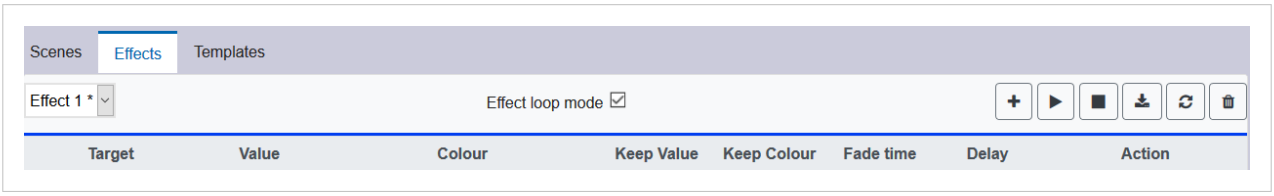
15.2. Effect Configuration via Web Server

The assignment settings and the effects programming can be done from the website via the web server. After starting the web page, switch to the configuration page and select **Effects**.



15.2.1. Configuration

The desired effect can be selected in the dropdown menu on the left. An asterisk indicates that this effect has already been defined. if the **Effect loop mode** setting is checked, the effect is played endlessly and can only be stopped with a stop command.



The following actions are available for a selected effect:

- Add a new entry
- Test effect (the effect must first be loaded into the gateway)
- Stop effect
- Save effect
- Reload configuration data
- Delete effect

Use the **Plus** button to add new entries to the selected effect. In the dropdown element, select the desired group or single ECG.

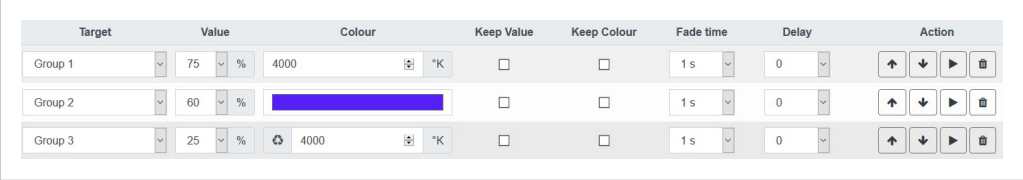
The order of the entries in the list corresponds to the order of the individual effect steps. To change this order, use the **Move Up** or **Move Down** buttons in the action column:

Use the input fields to enter the required values for this effect:

- **Value**: This field defines the light value between 0 and 100%. The value can be selected via a dropdown field.
- **Colour**: Defines the colour according to the type of colour control for this group. Click on the field to open a dialog window and select a colour from the colour picker.
- **Keep Value**: When checked, the current value remains unchanged when this effect is recalled. The entry field for the value is disabled, and any entry in the value field is ignored.
- **Keep Colour**: When checked, the current colour remains unchanged when this effect is recalled. The colour entry field is disabled, and any entry in the colour field is ignored.
- **Fade Time**: Defined the time needed to achieve the required setting. This entry can be used to define fading effects.
- **Delay**: Defines the time until the next event.
- **Delete**: Use the **Trashcan** button in the action column to delete an entry.

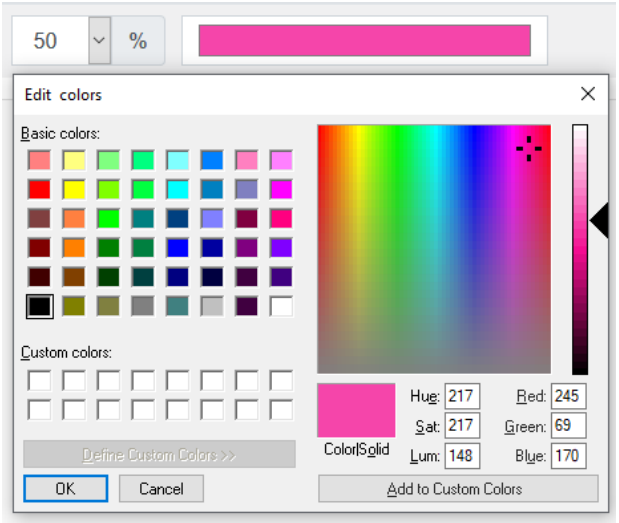
15.2.2. Colour Settings

If individual ECGs or groups are parameterized for colour control (DT-8), a colour can be set in addition to the light value. To do this, click in the **Colour** field of the desired ECG or group:

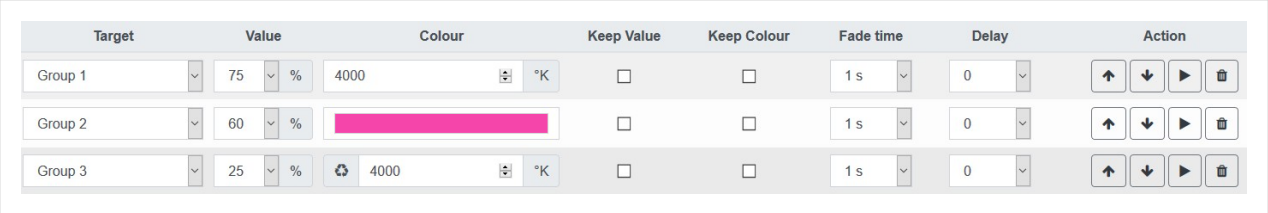


IMPORTANT
Setting a colour is only possible if the respective group or ECG has been enabled for colour control. Otherwise, the note **N/A** (not applicable) appears in the **Colour** field.

A window dialog opens for the colour selection.



Select the desired colour and click **OK** to set the colour for the group or individual ECG targeted by the effect.



Two additional flags can be used to set whether only the value setting or only the colour setting should be considered:

- **KV (Keep Value)**: Value remains as set; only colour is taken into account.
- **KC (Keep Colour)**: Colour remains set; only value is taken into account.

15.2.2.1. Groups with Variable Colour Control

If a group in ETS is selected as **Colour Temperature + RGB** colour type, this group can be used in the effect with both controls. The values for this type are selected through the following dialog elements:

Click on the icon on the left to alternate between the regular colour dialog and the colour temperature (Kelvins) dialog.

15.2.3. Programming the Effects and Effect Test

Once all entries have been made for all desired effects, the settings must be loaded from the browser into the gateway. To do so, press the **Save** button.

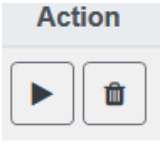
If the selected effect should be activated for testing, this can be done using the **Test Effect** button.

If the effect has enabled Effect loop mode, you can use the stop button to exit the loop.

The effect data can be loaded from the gateway into the web browser using the **Reload Effect** button.

15.2.4. Testing an event in an effect

A way to test the setting of an event is in the **Action** column. This event is sent to the DALI bus when the Play button is activated.



The command with the setting of the value and colour is executed for this group or ECG. This way, the desired property can be checked before programming the whole effect. If the **Keep Value** or **Keep Colour** properties are set, the corresponding values are not activated but are kept at the current value.

16. Time Control Module for Values and Colours

The DALI-2 to KNX TP PRO Gateway offers an integrated time control module for using the colour setting options of DT-8 devices. With this module, users can automatically set a defined light colour and potentially a light value depending on the current time and date. A template combines different actions that will trigger an event at a configurable time.

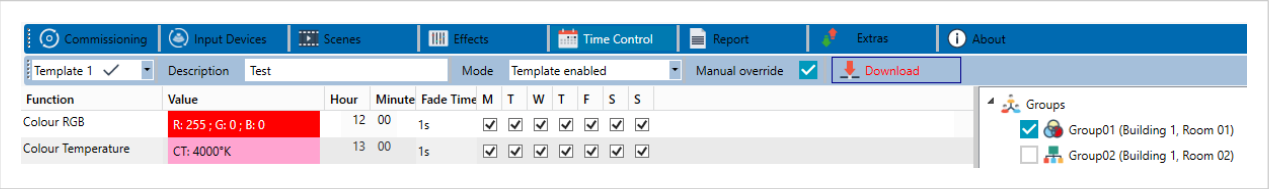
NOTE
Up to 16 templates are available.

Time control of DT-8 colour ECGs is particularly interesting for white light control. Changes in colour temperature over a day have a positive effect on well-being and efficiency in the workplace. Educational institutions, hospitals, and many other settings use daytime-dependent white light control.

The time control module can also be used to implement general temporal colour changes in DT-8 devices. For example, a building facade can be illuminated in red light for the first half of the night and blue for the second half. The dimming value can also be adjusted automatically depending on the time.

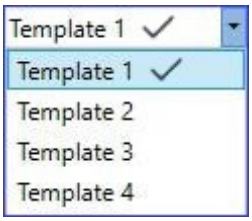
16.1. Time Schedules Configuration with DCA

Time control can be programmed and assigned in the DCA. To do so, go to the **Time Control** page.



16.1.1. Configuration

Use the dropdown on sthe left-hand side to select a template.



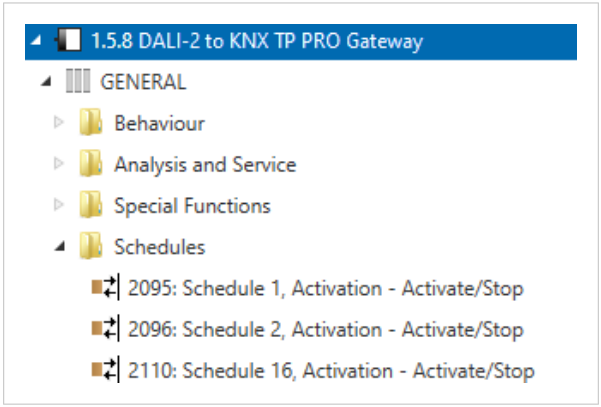
NOTE
A checkmark means that the template has already been defined.

Enter a user-friendly name for the template in the description field. The name will be shown in brackets in the dropdown list for information purposes.

NOTE
The maximum length is 20 characters.

You can also define the behavior of the template:

By default, all templates are enabled. Templates can be disabled directly or can be enabled or disabled via a communication object. The corresponding objects are displayed when selecting the **Template controlled by KNX-Object** option. See the Time Control Objects (page 128) section.

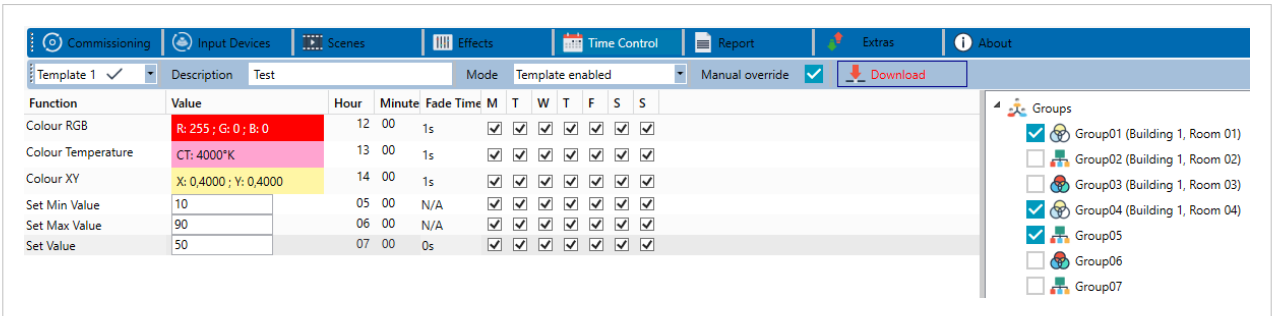


The **Manual Override** option temporarily disables a group in this template. For more information, refer to the Manual Override (page 100) section.

You can use the tree on the right to select the DALI groups you want to include in the template.

The middle part of the page is used to create an action list. All selected groups will perform an action at the configured time automatically. A context menu is available to control and create action lists.

NOTE
A maximum of 300 actions can be stored on a gateway if all templates are used.



NOTE
You can change the order within the list by dragging the entries with the mouse.

A total of 11 function types are available for time control:

NOTE
For more information, check the Types of Action (page 96) section.

Action lists are created and operated via the context menu. Right-click on an action to invoke the context menu. The following options are available for editing and creating action lists:

- **Import Template**: See Export/Import/Delete (page 100).
- **Export Template**: See Export/Import/Delete (page 100).
- **Empty Template**: Removes the configuration of this template.
- **Open Colour Dialog**: Calls up a colour picker, allowing you to select the desired colour or colour temperature.

  NOTICE
  This option is only active when working with colour-related functions. Otherwise, it is greyed out.

- **Add action**: Creates a new action and adds it to the end of the list.
- **Insert action**: Creates a new action, inserting it next to the current one.
- **Copy & Add action**: Copies the selected action and adds it to the end of the list.
- **Remove action**: Deletes the selected action.
- **Sort by time**: Sorts the action list into ascending chronological order.
- **Sort by function**: Sorts the action list according to the function entries.
- **Test action**: Executes the selected action for all selected groups within a template immediately, regardless of any potentially configured transition time.
- **Test group action**: Executes the selected action for a selected group within a template immediately, regardless of any potentially configured transition time. You can also select the group via the context menu.

  NOTE
  A connection to the DALI-2 to KNX TP PRO Gateway is required for both test actions.

16.1.2. Types of Action

Once an action has been created, set the corresponding function via the selection box. For each function, you can select a value, the time of the action, and (if you would like the value to slowly cross-fade) a transition time. If you do not want the action to be performed daily, please enter the days of the week when you want to schedule the action. Remember that only specific value ranges make sense for each function. In principle, any value can be entered in the value field. However, if this value exceeds the possible range, it is automatically limited to the maximum value.

NOTICE
For example, if you enter 200 for the **Set value** function, the maximum value of 100% is automatically entered.

The following functions are possible for an action:

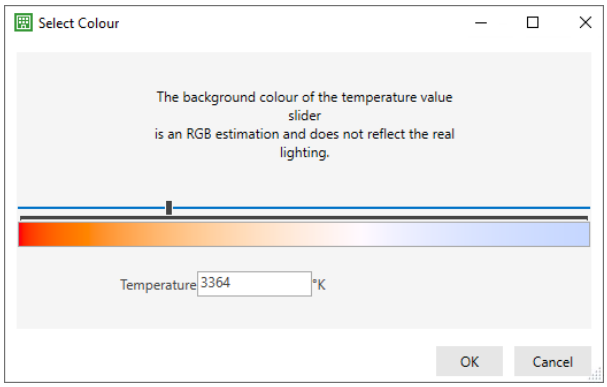
- **Set Value**: Sets the brightness level of a group (0 .. 100%).
- **Set Min Value**: Sets the minimum dim value of the selected group for relative (4-bit) and absolute (8-bit) dimming. Any minimum dim value set in the ETS parameters is automatically overwritten when this action is used. The permitted value range is between 0 and 100%.

  NOTE
  This value is reset to the ETS setting after an ETS download.

- **Set Max Value**: Sets the maximum dim value of the selected group for relative (4-bit) and absolute (8-bit) dimming. Any maximum dim value set in the ETS parameters is automatically overwritten when this action is used. The permitted value range is between 0 and 100%.

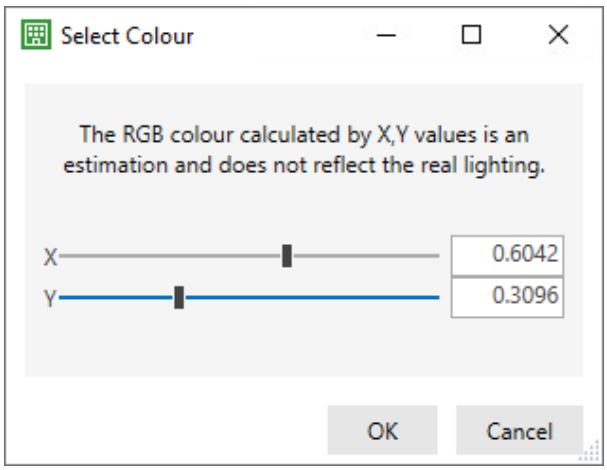
  NOTE
  This value is reset to the ETS setting after an ETS download.

- **Colour Temperature**: This function sets the colour temperature of DT-8 devices that support the colour temperature setting (TC). The colour on the ECG also changes if the lamp is turned off during the action. You can enter the colour temperature range. The value range permitted is between 1000 and 10000 Kelvin.



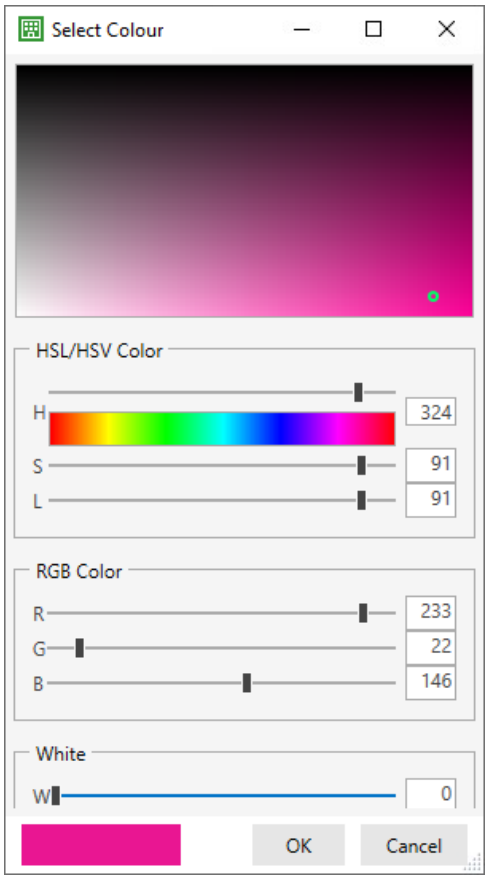
NOTE
Consider the physical limits of the connected ECGs and lights when configuring this setting.

- **Colour XY**: Sets the xy colour coordinates of DT-8 devices that support the xy colour space. On the ECG, the colour is also changed if the lamp is turned off during the action. The x and y coordinates of the colour can be entered separately. The permitted value range for x and y goes from 0.0000 to 1.0000.



NOTE
When configuring this setting, consider the physical limits of the connected ECGs and lights. Not every colour on the colour spectrum can be set.

- **Colour RGBW**: Sets the colour values of DT-8 devices that support RGB or RGBW colour. The colour is also changed on the ECG if the lamp is turned off during the action. The values for each colour can be entered separately. The permitted value range for each channel goes from 0 to 255. The final colour is a mixture of the different primary colours according to their percentage.



- **Colour RGB**: Sets the colour values of DT-8 devices that support RGB colour. The colour is also changed on the ECG if the lamp is turned off during the action. The values for each colour can be entered separately. The permitted value range for each channel goes from 0 to 255. The final colour is a mixture of the different primary colours according to their percentage.
- **Colour HSV**: Sets the colour values of DT-8 devices that support RGB colour. In this case, however, the value is entered using hue (H), saturation (S), and brightness (V, for Value) levels. The colour is also changed on the ECG if the lamp is turned off during the action. The permitted value range for the hue is between 0 and 360°, and the range for saturation and brightness is between 0 and 100%.
- **Colour HSVW**: This option specifies a separate white value (separate channel) in addition to the HSV values mentioned above.
- **Set Max On Value**: Sets the maximum ON value of the selected group or ECG. Any maximum ON value set in the ETS parameters is automatically overwritten when this action is used. The permitted range is between 0 and 100%.

NOTE
This value is reset to the ETS setting after an ETS download.

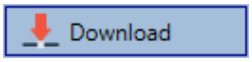
- **Call Scene**: This function starts the desired scene between the 16 scenes available.
- **Start/Stop Effect**: This function starts or stops the desired effect. A maximum of 16 effects is available.

In principle, every group and ECG can be added to a template independently of the ECG device types used in the group. While the Set Value, Set Min Value, and Set Max Value functions work for all device types (including, for example, DT-0 type fluorescent lights and DT-6 LED modules), the Colour Temperature, Colour XY, Colour RGBW, Colour RGB, Colour HSV, and Colour HSVW colour control functions can only be executed by the DT-8-type connected devices.

Other device types will ignore these actions. This also applies to the selected method. For example, a DT-8 device with xy control will ignore an RGBW action and vice versa. If the DT-8 devices within a group or template use different methods but are to perform a colour change at the same time, you need to set up two actions with different functions for the same point in time:

Function	Value	Hour	Minute	Fade Time	M	T	W	T	F	S	S
Colour HSV	H: 246° ; S: 92% ; V: 92%	11	00	1s	☑	☑	☑	☑	☑	☑	☑
Colour Temperature	CT: 2200°K	11	00	1s	☑	☑	☑	☑	☑	☑	☑
Set Value	66	11	00	0s	☑	☑	☑	☑	☑	☑	☑

Once an action table within a template is complete, you need to save the template into the gateway. To do so, press the download button.



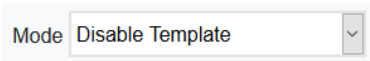
NOTE
If there are changes that have not yet been programmed into the gateway, the **Download** button turns red as a reminder:

This behavior applies to the **Scenes**, **Effects**, and **Time Control** modules.

IMPORTANT
Time-dependent actions can only be performed if they have been saved to the gateway. You can, however, test individual actions via the test button without saving them on the gateway. This does not change the data on the device.

16.1.3. Disable/Enable

A template can be enabled or disabled in the editor header.

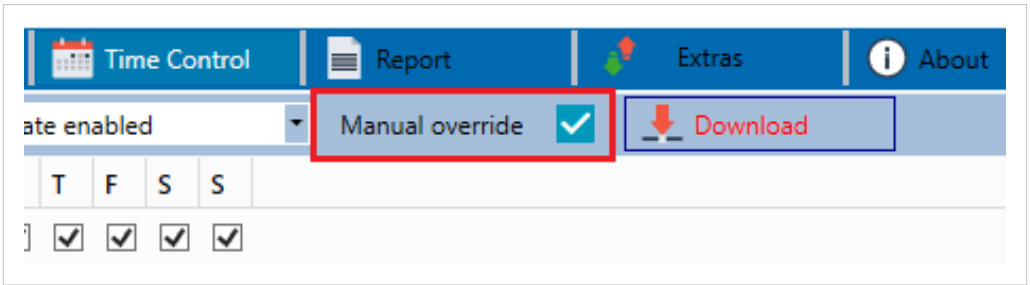


This makes it possible to prepare a template while entirely disabling its execution. This way, you can, for example, create two templates: one for a building in normal mode and one for the holiday period. You can now enable the required template without modifying any of the actions. It is even easier to control time dependencies via external objects. If you select this setting for a template, you can control it via the 2095FF external objects.

16.1.4. Manual Override

By default, actions are triggered immediately when the action time is reached, regardless of any previously executed commands (automatic mode).

However, if the Manual Override flag is set in a time program, the automatic mode can be stopped by manual intervention for individual groups/ECGs of the template. Thus, the automatic mode is manually overridden.

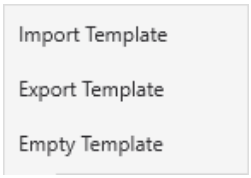


This function is particularly interesting for Human Centric Lighting (HCL) control applications. If the brightness or colour of an element (group or individual ECG) is changed, the automatic operation for this element stops. No automatic colour adjustment will then be performed at the next action time. The user's change will remain until the automatic mode is activated again.

The activation of the automatic mode according to the template takes place at the reception of the next 1-bit Off or On telegram belonging to the element or at the switching off of the element by another command (e.g., scene value = 0 or broadcast = 0). When an On telegram is received, the last colour value regularly desired by an action is set. When an Off telegram is received, the group or individual ECG is switched off, and the automatic system continues to run in the background. Furthermore, a manual override is always resolved at midnight, and automatic mode is automatically reactivated.

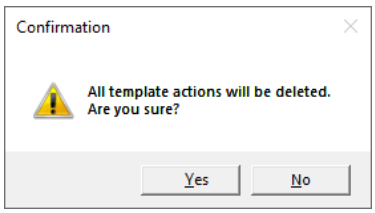
16.1.5. Export/Import/Delete

Existing templates can be exported and reused. The resulting XML file can be saved separately for reuse in another project or template. The export and import commands can be found in the context menu.



The template is saved as an XML file in the selected destination folder.

The third option, called **Empty Template**, can be used to delete all the actions currently defined in the template at once. When this option is selected, a confirmation dialog appears to prevent accidental deletion.



16.2. Time Schedules configuration via Web Server

Assignment settings and schedule programming can be done from the website via the web server. After starting the web page, switch to the configuration page and select **Templates**.

16.2.1. Configuration

Use the dropdown on the left-hand side to select a template.

NOTE
An asterisk means that the template has already been defined.

Two additional options are available:

- **Mode**: The behavior of the template can be defined. Refer to the Disable/Enable (page 99) section.
- **Manual override**: Consult the Manual Override (page 100) section.

The following actions are available for a selected template:

- Read the current date/time
- Add a new entry
- Save template
- Reload configuration data
- Delete template
- Assign Groups and/or ECGs
- Sort entries
- Import the configuration from an XML file
- Export the configuration from an XML file

It is especially important for the time schedule functionality to ensure that the gateway is working with the correct date and time information. By clicking on the following icon, the current date/time information is being displayed:

Use the **Plus** button to add new entries to the selected template. Then, you can select the desired action type in the dropdown element.

NOTE
See the next chapter for more information on action types.

Depending on the action type, values and colours, as well as the execution time, including the desired weekdays, can be selected.

16.2.2. Types of Action

Once an action has been created, set the corresponding function via the selection box. For each function, you can select a value, the time of the action, and (if you would like the value to slowly cross-fade) a transition time. If you do not want the action to be performed daily, please enter the days of the week when you want to schedule the action. Remember that only specific value ranges make sense for each function. In principle, any value can be entered in the value field. However, if this value exceeds the possible range, it is automatically displayed with a red border to indicate the mismatching input value.

The following functions are possible for an action:

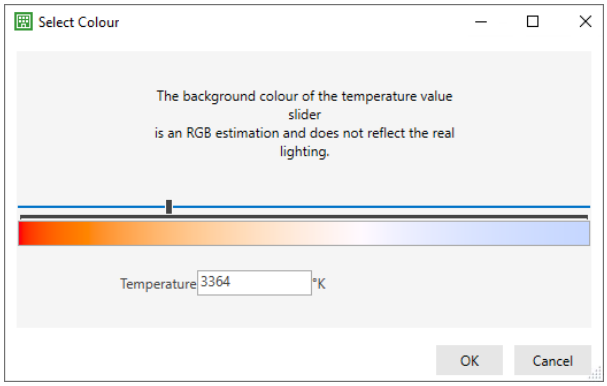
- **Set Value**: Sets the brightness level of a group (0 .. 100%).
- **Min-Value**: Sets the minimum dim value of the selected group for relative (4-bit) and absolute (8-bit) dimming. Any minimum dim value set in the ETS parameters is automatically overwritten when this action is used. The permitted value range is between 0 and 100%.

  NOTE
  This value is reset to the ETS setting after an ETS download.

- **Max-Value**: Sets the maximum dim value of the selected group for relative (4-bit) and absolute (8-bit) dimming. Any maximum dim value set in the ETS parameters is automatically overwritten when this action is used. The permitted value range is between 0 and 100%.

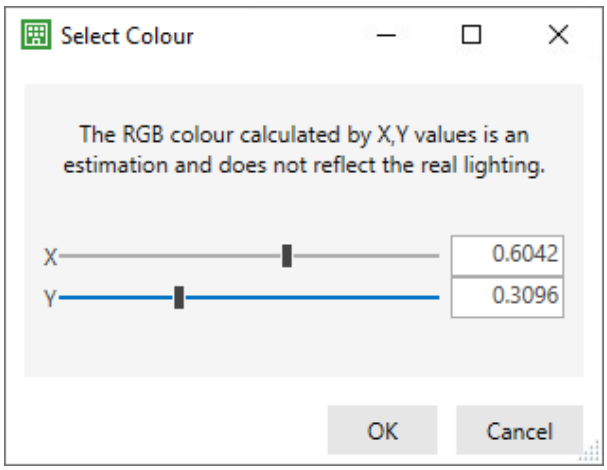
  NOTE
  This value is reset to the ETS setting after an ETS download.

- **Colour Temperature**: This function sets the colour temperature of DT-8 devices that support the colour temperature setting (TC). The colour on the ECG also changes if the lamp is turned off during the action. You can enter the colour temperature range. The value range permitted is between 1000 and 10000 Kelvin.



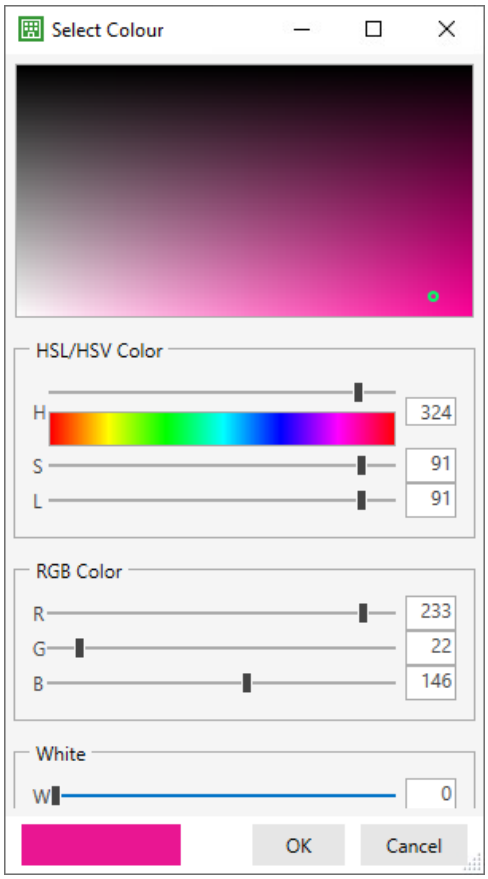
NOTE
Consider the physical limits of the connected ECGs and lights when configuring this setting.

- **Colour XY**: Sets the xy colour coordinates of DT-8 devices that support the xy colour space. On the ECG, the colour is also changed if the lamp is turned off during the action. The x and y coordinates of the colour can be entered separately. The permitted value range for x and y goes from 0.0000 to 1.0000.



NOTE
When configuring this setting, consider the physical limits of the connected ECGs and lights. Not every colour on the colour spectrum can be set.

- **Colour RGBW**: Sets the colour values of DT-8 devices that support RGB or RGBW colour. The colour is also changed on the ECG if the lamp is turned off during the action. The values for each colour can be entered separately. The permitted value range for each channel goes from 0 to 255. The final colour is a mixture of the different primary colours according to their percentage.



- **Colour RGB**: Sets the colour values of DT-8 devices that support RGB colour. The colour is also changed on the ECG if the lamp is turned off during the action. The values for each colour can be entered separately. The permitted value range for each channel goes from 0 to 255. The final colour is a mixture of the different primary colours according to their percentage.
- **Colour HSV**: Sets the colour values of DT-8 devices that support RGB colour. In this case, however, the value is entered using hue (H), saturation (S), and brightness (V, for Value) levels. The colour is also changed on the ECG if the lamp is turned off during the action. The permitted value range for the hue is between 0 and 360°, and the range for saturation and brightness is between 0 and 100%.
- **Colour HSVW**: This option specifies a separate white value (separate channel) in addition to the HSV values mentioned above.
- **Set Max On Value**: Sets the maximum ON value of the selected group or ECG. Any maximum ON value set in the ETS parameters is automatically overwritten when this action is used. The permitted range is between 0 and 100%.

NOTE
This value is reset to the ETS setting after an ETS download.

- **Call Scene**: This function starts the desired scene between the 16 scenes available.
- **Start/Stop Effect**: This function starts or stops the desired effect. A maximum of 16 effects is available.

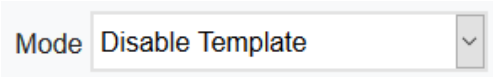
In principle, every group and ECG can be added to a template independently of the ECG device types used in the group. While the Set Value, Set Min Value, and Set Max Value functions work for all device types (including, for example, DT-0 type fluorescent lights and DT-6 LED modules), the Colour Temperature, Colour XY, Colour RGBW, Colour RGB, Colour HSV, and Colour HSVW colour control functions can only be executed by the DT-8-type connected devices.

Other device types will ignore these actions. This also applies to the selected method. For example, a DT-8 device with xy control will ignore an RGBW action and vice versa. If the DT-8 devices within a group or template use different methods but are to perform a colour change at the same time, you need to set up two actions with different functions for the same point in time:

Function	Value	Hour	Minute	Fade Time	M	T	W	T	F	S	S
Colour HSV	H: 246° ; S: 92% ; V: 92%	11	00	1s	☑	☑	☑	☑	☑	☑	☑
Colour Temperature	CT: 2200°K	11	00	1s	☑	☑	☑	☑	☑	☑	☑
Set Value	66	11	00	0s	☑	☑	☑	☑	☑	☑	☑

16.2.3. Disable/Enable

A template can be enabled or disabled in the editor header:



This makes it possible to prepare a template while entirely disabling its execution. This way, you can, for example, create two templates: one for a building in normal mode and one for the holiday period. You can now enable the required template without modifying any of the actions. It is even easier to control time dependencies via external objects. If you select this setting for a template, you can control it via the 2095FF external objects.

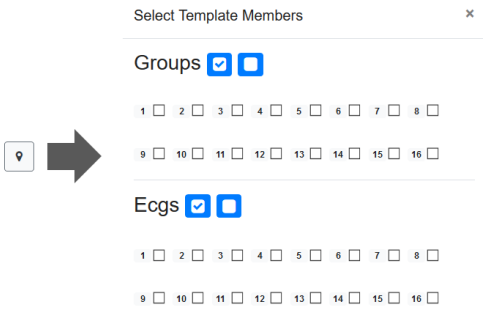
Upon receiving the object, the value determines whether a template is disabled or enabled.

16.2.4. Manual Override

Refer to the Manual Override (page 100) section.

16.2.5. Assignment of Groups and ECGs

Use the **Assignment** button to select the groups to work with this schedule.



16.2.6. Programming the Time Programs

Once all entries for all desired templates have been made, the settings must be loaded from the browser into the gateway. To do so, press the **Save** button.

16.2.7. Export/Import

Existing templates can be exported and reused. The resulting XML file can be saved separately for reuse in another project or template. To export and import templates, use the following buttons:

 Import a time program

 Export a time program

The template is saved as an XML file in the selected destination folder.

16.3. Timer

To ensure the safe operation of the time control module, the gateway requires the exact time and date. KNX must provide this in the form of a 3-byte communication object. The precision of the DALI gateway's internal time calculation is limited. Therefore, it is essential to update the time at least once a day. When the application is started, the device automatically sends a read request for time and date to the KNX bus.

The time control module remains completely disabled until an updated time has been received. Actions are only performed after receipt of a valid time. Remember that the 3-byte time object also transmits information about the current weekday (Monday - Sunday; for some KNX timers, this is configurable). The weekday is not checked if a 3-byte object is received without this information. This means that an action that has, in fact, only been enabled for Saturday and Sunday would also be performed on Monday.

Since the date is not calculated internally, the DALI gateway automatically sends a read request to the date object at 00:01 and at 00:04. Simultaneously, the time object is also automatically queried. A further read request is sent at 03:01. This avoids potential failures when the clock changes to daylight saving time and vice versa.

17. Self-contained Battery Emergency Lights

The DALI-2 to KNX TP PRO Gateway also supports ECGs for controlling self-contained battery emergency lights (device type 1, according to IEC 62386-202). Such devices contain a battery within the lamp that will operate the light for a certain time period in case of a power supply loss.

Principally, a distinction is made between switchable and non-switchable devices for self-contained battery lamps. A switchable device can be directly connected to a lamp like a regular ECG. In normal mode, the light (usually an LED) can be switched and dimmed via DALI. The standard switch parameters and objects are available for these devices.

In contrast to the switchable device, a non-switchable device (also known as a converter) can only control the connected lamp in an emergency. The light usually is either always on or always off. As these devices do not allow direct switching, no objects are available for this purpose.

During both new and post-installation, the DALI-2 to KNX TP PRO Gateway automatically recognizes whether the connected device is a switchable or non-switchable ECG.

Sometimes, special non-switchable converters are used together with regular DALI ECGs in a light. These lights are, therefore, called emergency lights with two DALI devices. The two ECGs make a device pair that shares a common light. The non-switchable device uses DALI communication to query the device status and initiate mandatory test phases. The switchable device controls the light in normal mode.

However, because of the DALI structure regarding its random assignment of short addresses, pairing a regular device with a non-switchable device does not occur automatically. It has to be performed manually on the parameter page in the ETS. The assignment is crucial for failure analysis, as non-switchable devices usually share the connected lamp with a regular device. Without the assignment, a lamp failure may be double-counted.
In addition, the regular ECG in a pair is usually automatically disconnected from the power supply when the emergency light is tested. This loss of function generates an ECG failure. However, by making a pair, the gateway recognizes automatically whether a real ECG failure has occurred or whether the corresponding converter has simply been tested. Only real ECG failures are taken into consideration for the analysis.

17.1. Identification of self-contained Battery Emergency Lights

After a new installation or reinstallation of single-battery emergency lights, the identification process is started when blinking mode is selected. Usually, the emergency light's status LED flashes. The behavior may change, however, so we recommend checking out the light's documentation. Since the status LED may not be executed or even visible in some light models, a function test can be started alternatively. During the function test, the ECG usually switches the luminaire on for a few seconds.

17.2. Converter Inhibit Mode

Self-contained battery emergency lights always change into emergency mode if a power supply fails. The internal battery then powers the lamp. However, it may sometimes become necessary to cut off the power supply, for example, during maintenance work or the commissioning phase of a building. In those cases, to prevent the lights from switching into emergency mode, the converters connected to the DALI-2 to KNX TP PRO Gateway can be disabled via the push buttons and display on the device.

NOTE
Check the Converter Inhibit Mode Sub-menu (page 123) section for more information.

This converter inhibit mode is only available for all connected devices simultaneously. If the power supply is turned off within 15 minutes after activating the mode, the connected lights remain switched off and do not change into emergency mode. When the power resumes, the lights return to normal. All converters are automatically reset to normal mode if the 15 minutes run out without a power loss.

17.3. Test Mode for Self-contained Battery Emergency Lights

The DALI-2 to KNX TP PRO Gateway supports the execution and recording of mandatory tests for self-contained battery emergency lamps.

IMPORTANT
The legal regulations and norms vary depending on the counter. Make sure that you meet all country-specific requirements.

The DALI-2 to KNX TP PRO Gateway supports functional, long-duration, and battery status tests. Functional and duration tests can be started externally via KNX telegrams (1-byte telegrams, see below) or via the gateway's web interface. Alternatively, you may choose to set automatic test intervals. This means that tests are performed automatically via the connected converters.

NOTE
Check the converters's documentation for the exact function.

Once a test has been completed, the test results are available on the KNX bus via communication objects and may be recorded in the visualization. The corresponding objects are updated with the test result and automatically sent after every new test.

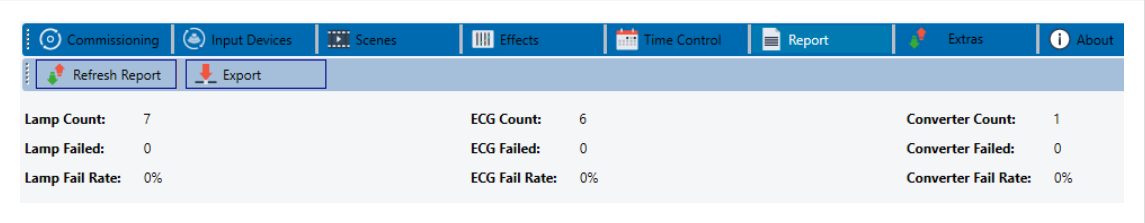
NOTE
Check the Objects for Emergency (page 128) section for the exact function.

Alternatively, test results can be displayed on the website if you select the corresponding converter.

17.4. Emergency Test Results

17.4.1. DCA Report

The **Report** tab displays statistical data on the fault status of the connected ECGs and the test reports of the connected emergency luminaires. In the upper part, the following information is displayed:



- Lamp Count
- ECG Count
- Converter Count
- Lamp Failed
- ECG Failed
- Converter Failed
- Lamp Fail Rate
- ECG Fail Rate
- Converter Fail Rate

Press the **Refresh Report** button to display the test reports, which show the result of the last emergency lighting test for all emergency lights.

This information is obtained directly from the emergency lights via a DALI command.

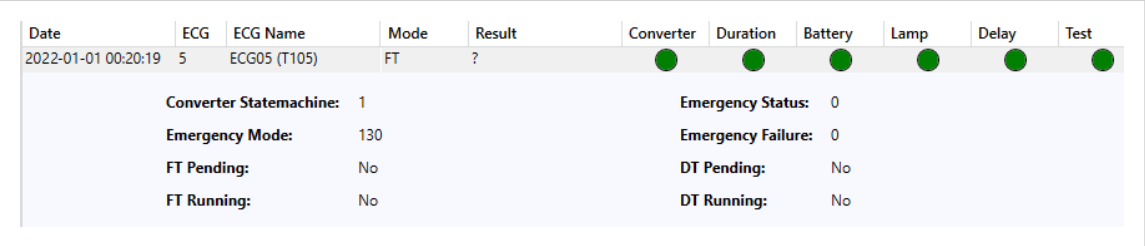
Table 11. Test Report information

Element	Description
Date	The date on which the test takes place.
ECG	Number of ECGs (ETS definition).
ECG Name	Name of the ECG assigned by the ETS.
Mode	• **FT**: Function test • **DT**: Duration test • **BT**: Battery test
Result	During a battery test, the battery status is displayed; during a duration test, the time of the test is displayed.
Converter	• **Green**: No failure • **Red**: The converter was faulty during the test (DALI QUERY 252: bit 0)

Element	Description
Duration	• **Green**: No failure • **Red**: Duration of the battery is insufficient (DALI QUERY 252: bit 1)
Battery	• **Green**: No failure • **Red**: Battery fault (DALI QUERY 252: bit 2)
Lamp	• **Green**: No failure • **Red**: Emergency light is faulty (DALI QUERY 252: bit 3)
Delay	• **Green**: No failure • **Red**: Maximum delay time has been exceeded during function or duration test (DALI QUERY 252: bit 4 or 5)
Test	• **Green**: OK

17.4.1.1. Detailed Information about Emergency Lights

Double-click on an emergency light (converter) to display detailed information.



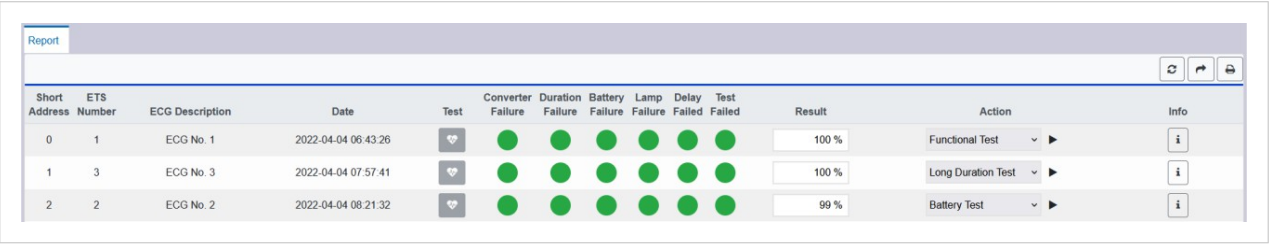
- **Converter Status**: Status according to DTP 244.600:
  - **0**: Unknown
  - **1**: Normal mode active, all OK
  - **2**: Inhibit mode active
  - **3**: Hardwired inhibit mode active
  - **4**: Rest mode active
  - **5**: Emergency mode active
  - **6**: Extended emergency mode active
  - **7**: Functional test (FT) in progress
  - **8**: Duration test (DT) in progress
- **Emergency Status**: Status according to DALI Query_Emergency_Status 253
- **Emergency Mode**: Status according to DALI Query_Emergency_Status 250
- **Emergency Failure**: Status according to DALI Query_Emergency_Status 252

17.4.1.2. Exporting Test Results

Press the **Export** button to save the test results in an XML file. The file can be saved in any location.

17.4.2. Website Report

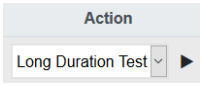
The emergency lights' test results can be displayed on the website via the web server. After starting the web page, switch to the **Diagnostics** page and select **Report**.



This table lists all configured emergency luminaires:

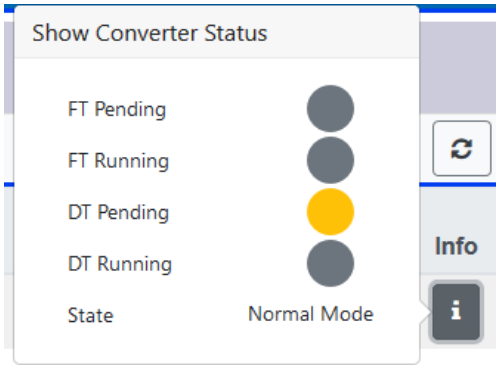
Table 12. Test Report Information

Element	Description
Short Address	The real address of the ECG
ETS Number	Number of the ECG (ETS definition)
ECG Description	The name given to this ECG by the ETS
Date	Date of the last test result
Test	Function Test (FT) Duration Test (DT) Battery Test (BT)
Converter Failure	• **Green**: No error • **Red**: The converter was faulty during the test (DALI QUERY 252: bit 0)
Duration Failure	• **Green**: No failure • **Red**: Duration of the battery is insufficient (DALI QUERY 252: bit 1)
Battery Failure	• **Green**: No failure • **Red**: Battery fault (DALI QUERY 252: bit 2)
Lamp Failure	• **Green**: No failure • **Red**: Emergency light is faulty (DALI QUERY 252: bit 3)
Delay Failed	• **Green**: No failure • **Red**: Maximum delay time has been exceeded during function or duration test (DALI QUERY 252: bit 4 or 5)
Test Failed	• **Green**: OK

Element	Description
Result	During a battery test, the charge state of the battery is displayed; during an endurance test, the time of the test is displayed
Action	Here, you can choose between function, duration, and battery test. The test is started with the following key: 
Info	See the next section

17.4.2.1. Detailed information on an Emergency Lamp

Pressing the **Info** button on the Website Report (see the previous section), we can obtain detailed information on an emergency lamp:



17.4.2.2. Exporting the Test Results in XML

Press the **Export** button to save the test results in an XML file. The file can be saved in any location.

17.4.2.3. Exporting the Test Results as HTML Print

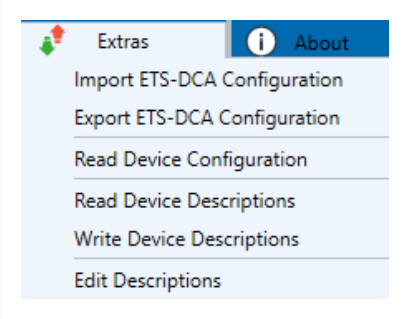
Press the **Print** button to summarize the test results in a ready-to-print HTML page.

The current status is displayed in the **Status** column. If a test is pending or has been started, this is indicated by the DTW or FTW abbreviations, meaning Duration Test Waiting and Function Test Waiting, respectively. The last completed tests display the date and time information and the results.

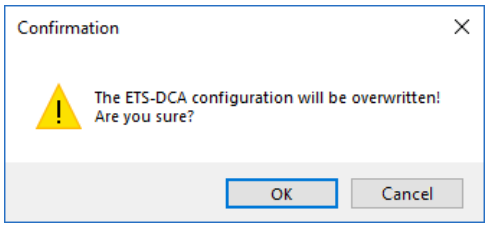
Date	Short Address	ECG Number	Test Type	Result	Status
2022-04-01 07:29:39	0	1	DT	90 min	FTW
2022-03-31 22:59:03	1	3	DT	60 min	
2022-04-01 14:29:08	2	2	BT	64 %	

18. DCA Extras

The **Extras** menu item offers additional special functions:



- **Import ETS-DCA Configuration**: Load a previously saved gateway configuration into the ETS.



> **NOTE**
> Remember that this data will overwrite all DCA data in the ETS. Press the **Restore** button under commissioning to load the configuration onto the DALI gateway. For more information, refer to the Restoring the DALI Configuration (page 53) section.

Other important ETS parameters besides the DALI configuration are also written back. These include:

- Group assignment of the ECGs
- Device types and selection of colour control
- Type of input devices
- Type of light control

- **Export ETS-DCA Configuration**: The ETS DCA configuration can be saved as an XML file.
- **Read Device Configuration**: All data from the DALI gateway is exported and transferred to the ETS-DCA configuration.

> **NOTE**
> This is especially important if you have previously worked with the website. Description texts are not read automatically. The separate menu item Read Device Descriptions must be selected to do this.

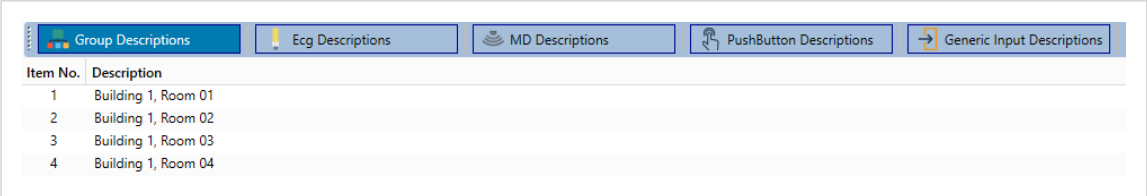
- **Read Device Descriptions**: The description texts of the ECGs, groups, and scenes can also be saved on the gateway. The descriptions on the device are available on the gateway's web server. If the web server was previously used for commissioning, the texts are transferred to the ETS.

> **NOTE**
> Remember that the maximum length for the names is 20 characters.

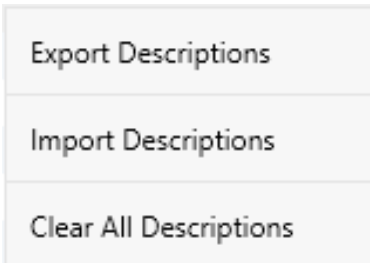
- **Write Device Descriptions**: The description texts of the ECGs, groups, and scenes can be saved on the gateway. The descriptions on the device are available on the gateway's web server.
- **Edit Descriptions**: The description texts of the ECGs, groups, and input devices can be defined separately under this menu item. See the next section for more information.

18.1. Menu: Edit Descriptions

The description texts can be entered separately for each category:



In addition, it is possible to import, export, or delete texts by right-clicking on a line to invoke the context menu:



Two formats are available for exporting descriptions:

- XML
- TXT

By default, the XML format is selected. The following is an example of the group export:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<GRP_TEXT>
<text index="1" description="Room 1" />
<text index="2" description="Room 2" />
<text index="3" description="Room 3" />
<text index="4" description="Room 4" />
<text index="5" description="" />
<text index="6" description="" />
<text index="7" description="" />
<text index="8" description="" />
<text index="9" description="" />
<text index="10" description="" />
<text index="11" description="" />
<text index="12" description="" />
<text index="13" description="" />
<text index="14" description="" />
<text index="15" description="" />
<text index="16" description="" />
</GRP_TEXT>
```

NOTICE
You can omit the corresponding indices for the entries you do not need to overwrite.

NOTICE
When using the TXT format, it should be noted that this file is read in line by line. Therefore, an entry that is not to be changed must be defined as an empty line. An entry that is to be deleted is marked with single quotation marks.

19. Commissioning/operating via Display and Push Buttons

You can commission the connected DALI segment and set and change some functions and tests via the three push buttons (Move, Set/Prg, and ESC) and the 2x12 character display on the front of the gateway. The user concept is menu-based. Depending on the menu position, you can select two sub-levels. The current menu position is shown on the display. To navigate within the menu, press the push buttons briefly.

The **Move** key selects the next menu item within a level. With a short push on the **Prg/Set** button, you reach the respective subordinate level. Pressing the ESC key leaves the selected level and returns to the superordinate level.

19.1. Main Menu Level 1

The main menu (level 1) has the following structure:

DALI-2 to KNX TP PRO - V1.0	The product name and firmware version are displayed. The sub-menu can be used to set the display language.
NETWORK IP ADDRESS	This submenu displays the IP address set in the ETS or assigned by the DHCP server.
NEW INSTALLATION	When a DALI segment is newly installed, use the sub-menu to reset the connected DALI devices and automatically search for ECGs **NOTE** Unlike with a new installation started through the DCA or the web server, the ECGs are directly assigned 1:1 to the real ECGs in this case.
POST INSTALLATION	Use this sub-menu to start the automatic search process and possibly adjust the configuration following a post-installation of DALI ECGs.
ECG EASY REPLACEMENT	Use this sub-menu to activate the ECG quick exchange function and possibly program and integrate individually replaced ECGs into the system.
GROUP ASSIGNMENT	Identifies ECGs and assigns them to DALI groups.
GROUP TEST	Switches programmed groups for test purposes.
SCENE TEST	Tests individually programmed scenes.
SYSTEM TEST	Use this sub-menu to load any existing system failures individually.
MAINTENANCE ECG/LAMP	Resets operating hours.
CONVERTER INHIBIT MODE	Activates the converter inhibit mode in the installation phase.

To perform a function or change a configuration within a sub-menu, go to the respective position and change to programming mode. Hold the **Prg/Set** button for over two seconds to change to programming mode. Once the function is in programming mode, a ➔ symbol appears in the display. If the programming mode is active, change a parameter or setting using the **Move** button. Press the **Prg/Set** button again briefly to complete the process, save the set parameter, or activate the function.

19.2. Level 2 Sub-menu

19.2.1. Language Sub-menu

The language sub-menu has the following structure:

DALI-2 to KNX TP PRO Gateway - v1.0	The product description and firmware version are displayed. The display language can be set in the sub-menu.
LANGUAGE **ENGLISH**	The currently set display language is shown. Hold the **Prg/Set** button to change into programming mode. Use the **MOVE** button to choose from one of the following languages: German, English, French, Spanish, Italian, Dutch, Swedish, or Danish. Press the **Prg/Set** button briefly again to save the configuration. The display now works in the selected language.  **NOTE** The change will apply after the device is restarted.

19.2.2. IP Network/address Sub-menu

The IP/address sub-menu has the following structure:

NETWORK **IP ADDRESS**	Press the **Prg/Set** button briefly to change from the IP ADDRESS main menu to the sub-menu.
DHCP: 192. **168.004.xxx**	This sub-menu displays the IP address currently set in the ETS or assigned by the DHCP server.

19.2.3. New Installation Sub-menu

The new installation sub-menu has the following structure:

NEW **INSTALLATION**	Press the **Prg/Set** button briefly to change from the NEW INSTALLATION main menu to the SEARCH ECGs via PROG-MODE.
SEARCH ECGs **VIA PROG-MODE**	Use this sub-menu to reset the connected DALI devices and automatically search for ECGs during a new installation.
FOUND **ECGs: xx**	If ECGs have been found in the DALI segment after the search, the number of detected devices is displayed here.

19.2.4. Post-installation Sub-menu

The post-installation sub-menu has the following structure:

POST-INSTALLATION	Press the Prg/Set button briefly to change from the POST-INSTALLATION main menu to the SEARCH ECGs via PROG-Mode sub-menu.
SEARCH ECGs via PROG-Mode	Hold the **Prg/Set** button to change into programming mode. Press the **Prg/Set** button briefly again to start the verification and search process. The device searches for the connected ECGs via their long address and automatically compares them to the previous configuration.
DELETED ECGs: x	If ECGs have been removed from the DALI segment, the entries are deleted from the gateway. The number of deleted devices is displayed during the verification process.
NEW ECGs: x	After that, the DALI segment is searched for newly installed devices. Newly added devices are automatically reset, and any previously programmed parameters and group assignments are deleted. The search process may take a few minutes, depending on the number of connected ECGs. The display shows the number of newly found devices during the search process.
DELETED/NEW ECGs: x/x	Once the whole process (verification and search) is complete, the display shows both the deleted and the newly found ECGs (deleted devices / new devices from left to right). Press the **ESC** button (or wait about 30 seconds) to return to the level above.

19.2.5. ECG Quick Exchange Sub-menu

The ECG Quick Exchange sub-menu has the following structure:

ECG QUICK EXCHANGE	Press the **Prg/Set** button briefly to change from the ECG QUICK EXCHANGE main menu to SEARCH ECGs via PROG-MODE the sub-menu
SEARCH ECGs via PROG-MODE	Hold the **Prg/Set** button to change into programming mode. Press the **Prg/Set** button again to start the quick exchange. The device first checks if one or several ECGs in the system are faulty. It then looks for newly connected ECGs in the segment. The quick exchange is only possible if just one ECG in the segment is faulty and one new ECG is found.
ECG xx REPLACED	If the process is successful, the number of the replaced ECG is shown on the display.
ERROR TYPE xx	If the search process cannot be completed because the necessary conditions for the quick exchange are not fulfilled, an error code is shown on the display. The displayed error codes have the following meaning: • **Failure type 7**: No faulty ECG • **Failure type 8**: More than one faulty ECG • **Failure type 9**: No new ECG found • **Failure type 10**: ECG has the wrong device type • **Failure type 11**: More than one new ECG Press the **ESC** button or wait about 30 seconds to return to the above level.

19.2.6. Group Assignment Sub-menu

The group assignment sub-menu has the following structure:

GROUP **ASSIGNMENT**	Press the **Prg/Set** button briefly from the group assignment main menu to the sub-menu. Within this menu, the individual ECGs that were found during the search process can be assigned to 16 DALI groups, and previous assignments can be modified.
ECG NR.: xx **GROUP: --**	Press the **MOVE** button briefly to run through the different ECGs. The number of the selected ECG is shown in the first display line. As long as the ECG is selected, the connected lamp is flashing. The programmer can thereby determine which lamp is assigned to the number.
CONV. NR.: xx **GROUP: --**	If the selected device is a converter for emergency lights, the selection sets the device into identification mode, and the display shows the word CONV. For identification purposes, the function LED on the converter flashes during the test. Check the converter's user manual for more information.
CONV. NR.: xx **GROUP: xx**	Hold the **Prg/Set** button to change into programming mode. Press the **MOVE** button briefly to select the group you want to assign the ECG to. If the group is selected, press the **Prg/Set** button briefly to confirm and save the setting. Press the **ESC** button or wait about 30 seconds to return to the above level.

19.2.7. Group Test Sub-menu

The group test sub-menu has the following structure:

GROUP **TEST**	Press the **Prg/Set** button briefly to change from the group test main menu to the sub-menu. Within the menu, groups can be switched individually or all together (ALL GROUPS TEST = BROADCAST) to test the installation.
GROUP: X **TEST**	Press the **MOVE** button briefly to run through the individual groups. The number of the selected group is shown in the first display line.
GROUP: X **---> OFF**	Hold the **Prg/Set** button to enter programming mode. Press the MOVE button briefly to select whether to turn the group on or off. Briefly press the **Prg/Set** button to execute the selected command. Press the **ESC** button or wait about 30 seconds to return to the above level.

19.2.8. Scene Test Sub-menu

The scene test sub-menu has the following structure:

SCENE **TEST**	Press the **Prg/Set** button briefly to change from the scene test main menu to the sub-menu. Within the menu, you can invoke all scenes for test purposes or program newly set light scenarios into the scene.
SCENE: X **TEXT**	Press the **MOVE** button briefly to run through the individual scenes. The number of the selected scene is shown in the first display line.
SCENE: X **----> INVOKE**	Hold the **Prg/Set** button to change into programming mode. Press the **MOVE** button briefly to choose whether you would like to invoke or save a scene. Press the **Prg/Set** button briefly to execute the selected command and invoke or save the scene. Press the **ESC** button or wait about 30 seconds to return to the above level.

19.2.9. System Test Sub-menu

The system test sub-menu has the following structure:

SYSTEM **TEST**	Press the **Prg/Set** button briefly to change from the system test main menu to the sub-menu. Within the menu, you can check for any potential failures.
DALI **NO ERROR**	If there is no failure, this is shown on the display. The system can recognize the following failures; They are shown on the display at the same time the red FAILURE LED is set off:
DALI **ERROR**	• DALI short-circuit. • Lamp fault. The lamp or ECG number is shown. • ECG failure. The ECG number is shown. • No KNX bus. **NOTE** No further failures can be recognized in the case of a DALI short-circuit. For all other failure types, several failures can be recognized simultaneously. You can toggle between different failures within the menu by briefly pressing the **MOVE** button.
LAMP xxx **NO ERROR**	The number of the ECG is displayed for lamp failures, which helps locate the failure quickly.
ECG xx **NO ERROR**	The number of the ECG is displayed for ECG failures, which helps locate the failure quickly.
KNX **NO ERROR**	This is shown on the display If there are no failures.

19.2.10. Maintenance ECG/lamp Sub-menu

The maintenance ECG/lamp sub-menu has the following structure:

MAINTENANCE **ECG/LAMP**	Press the **Prg/Set** button briefly to change from the maintenance ECG/lamp main menu to the sub-menu. Within the menu, you can start the burn-in of a lamp and reset the reader for its operating hours.
ECG NR.: xx **xxx h**	Press the **MOVE** button briefly to run through the individual ECGs. The first display line shows the number of the selected ECG, and the second line shows the number of operating hours since the last reset.
ECG NR.: xx **RESET**	Hold the **Prg/Set** button to change into programming mode. Press the **Prg/Set** button briefly to execute the selected command. Press the **ESC** button or wait about 30 seconds to return to the above level.

19.2.11. Converter Inhibit Mode Sub-menu

The converter inhibit mode sub-menu has the following structure:

CONVERTER **INHIBIT MODE**	Press the **Prg/Set** button briefly to change from the converter inhibit mode main menu to the sub-menu. You can turn on the inhibit mode within the menu for all connected self-contained battery emergency lights. If the mains power supply is turned off within 15 minutes of activating the inhibit mode, the lights do not change into emergency mode but remain switched off. This could be required during the initialization phase of a building to prevent the emergency lights from being constantly turned on.
INHIBIT MODE **via PROG-MODE**	Hold the **Prg/Set** button to change into programming mode.
INHIBIT **CONVERTER?**	Press the **Prg/Set** button briefly to activate the inhibit mode. Press the **ESC** button or wait about 30 seconds to return to the above level.

20. ETS Communication Objects

The DALI-2 to KNX TP PRO Gateway communicates via the KNX bus using a powerful System-B-type communication stack. Altogether, 2110 communication objects are available, described below, separated by function block.

NOTE
Up to 1000 group addresses can be used in encrypted form. See the Secure Usage (page 7) section.

20.1. General Objects

20.1.1. General Objects Behavior

Object	Object name	Function	Type	Flags
1	Time	Time	3 bytes - 10.001	C, W, T
This object is used to set the time. A central timer must provide the time and update it at least twice daily.				
2	Date	Date	3 bytes - 11.001	C, W, T
This object is used to set the date. A central timer must provide the date and update it at least twice daily. Leap years and change-over to and from daylight saving time are not considered during internal time and date calculations. Therefore, please ensure the timer sends the correct date on these occasions.				
10	Activate Panic Mode	Activate/Stop	1 bit - 1.010	C, W
Use this object to activate or stop the Panic mode via the bus.				
11	Activate Test mode	Activate/Stop	1 bit - 1.010	C, W
Use this object to activate or stop the Test mode via the bus.				
12	Activate Night mode	Activate/Stop	1 bit - 1.010	C, W
Use this object to activate or stop the night mode via the bus.				

20.1.2. General Objects Analysis and Service

Object	Object name	Function	Type	Flags
13	General failures	Yes/No	1 bit - 1.005	C, R, T
This object reports the presence of a general failure in the connected DALI segment, regardless of its type.				
14	DALI failure	Yes/No	1 bit - 1.005	C, R, T
This object is used to report the presence of a DALI short-circuit in the connected DALI segment.				
15	General Failure Exceeds Threshold	Yes/No	1 bit - 1.005	C, R, T
This object is used to report that the total of all lamp, ECG, and converter failures recognized by the gateway exceeds the set threshold.				
16	General Failure in Total	Value	1 byte - 5.010	C, R, T
This object is used to report the total number of lamp, ECG, and converter failures recognized by the gateway. Remember that a failure is counted just once for each connected device. A simultaneous lamp failure in case of an ECG or converter failure cannot be recognized or counted.				
16a	General Failure in %	Value	1 byte - 5.001	C, R, T
This object is used to report the failure rate as a percentage of all lamp, ECG, and converter failures recognized by the gateway. Remember that a failure is counted just once for each connected device. A simultaneous lamp failure in case of an ECG or converter failure cannot be recognized or counted.				
17	Lamp Failure Exceeds Threshold	Yes/No	1 bit - 1.005	C, R, T
This object reports that the gateway recognizes more lamp failures than the set threshold.				
18	Lamp Failure Total	Value	1 byte - 5.010	C, R, T
This object reports the total amount of lamp failures recognized by the gateway.				
18a	Lamp Failure in %	Value	1 byte - 5.001	C, R, T
Alternatively, this object reports the failure rate as a percentage of all lamps in the DALI segment.				
19	ECG Failure Exceeds Threshold	Yes/No	1 bit - 1.005	C, R, T
This object reports that the gateway recognizes more ECG failures than the set threshold.				
20	ECG Failure in Total	Value	1 byte - 5.010	C. R. T
This object reports the total amount of ECG failures recognized by the gateway.				
20a	ECG Failure in %	Value	1 byte - 5.001	C, R, T
Alternatively, this object reports the failure rate as a percentage of all ECGs in the DALI segment.				
21	Converter Failure Exceeds Threshold	Yes/No	1 bit - 1.005	C, R, T
This object reports that the gateway recognizes more converter failures than the set threshold.				
22	Converter Failure in Total	Value	1 byte - 5.010	C, R, T
This object reports the total amount of converter failures recognized by the gateway.				
22a	Converter Failure in %	Value	1 byte - 5.001	C, R, T
Alternatively, this object reports the failure rate as a percentage of all converters in the DALI segment.				
23	Status On/Off Group 1 – Group 16	Status	4 bytes - 27.001	C, R, T
This object activates the status display for groups 1 – 16.				

Object	Object name	Function	Type	Flags
24	Status On/Off ECG 1 – ECG 16	Status	4 bytes - 27.001	C, R, T
This object sends the switch status for ECGs 1 – 16. Each value above zero percent is interpreted as ON.				
25	Status On/Off ECG 17 – ECG 32	Status	4 bytes - 27.001	C, R, T
This object sends the switch status for ECGs 17 – 32. Each value above zero percent is interpreted as ON.				
26	Status On/Off ECG 33 – ECG 48	Status	4 bytes - 27.001	C, R, T
This object sends the switch status for ECGs 33 – 48. Each value above zero percent is interpreted as ON.				
27	Status On/Off	Status	4 bytes - 27.001	C, R, T
This object sends the switch status for ECGs 49 – 64. Each value above zero percent is interpreted as ON.				
28	Status Failure Lamp/ECG	Status	1 Byte - 238.600	C, R, T

This object sends the switch status of individual lamps in the DALI segment when the system is started or when a change has occurred. Bits 0 - 5 refer to the ECG address. Bit 7 represents an ECG failure and bit 6 a lamp failure. For example:

Description	Bit	7	6	5	4	3	2	1	0
ECG 5 / ECG Failure		1	0	1	0	0	1	0	0
ECG 6 / Lamp failure		0	1	0	0	0	1	0	1

If a value is received where bit 7 and bit 6 are set, it is interpreted as a status query. For example:

Description	Bit	7	6	5	4	3	2	1	0
ECG 5 / Query		1	1	1	0	0	1	0	0

The gateway responds with the current status of the queried ECG.

Description	Bit	7	6	5	4	3	2	1	0
ECG 5 / ECG 5 Failure		1	0	1	0	0	1	0	0

NOTICE
Remember that the ECG address corresponds to the ECG number minus one. See DALI bus system properties (page 3).

29	Total Active Power	Value	4 bytes - 14.056	C, R, T
This object provides the total active power of all installed ECGs of device type 51 according to DALI part 252.				
29a	Total Active Energy	Value	4 bytes - 13.010	C, R, T
This object provides the total active energy of all installed ECGs of device type 51 according to DALI part 252.				
2406 - 2413	Sensor x, Input Device Error	Yes/No	1 bit	C, R, T
These objects transmit the error status of an ETS sensor (motion detector or generic input). An ETS sensor can be linked to different instances of different real input devices. As soon as a linked instance reports an error, this is communicated via these objects.				

Object	Object name	Function	Type	Flags
2414 - 2421	Generic x Input Device Error	Yes/No	1 bit	C, R, T
These objects transmit the error status of an ETS Generic element. As soon as a linked instance reports an error, this is communicated via these objects.				
2422 - 2429	Push Button x Input Device Error	Yes/No	1 bit	C, R, T
These objects transmit the error status of an ETS push button. An ETS push button can be linked to different instances of different real input devices. As soon as a linked instance reports an error, this is communicated via these objects.				

20.1.3. General Objects Special Functions

Object	Object name	Function	Type	Flags
34	Scene invoke / program	Start/Program	1 bytes - 18.001	C, W

Scenes can be called up or programmed via this object. Up to 16 scenes are available in the gateway. To program a scene, the top bit must be set:

	Start	Program
Scene 1	0	128
Scene 2	1	129
...		
Scene 16	15	143

35 - 50	Scene x, Dimming	Brighter/Darker	4 bits - 3.007	C, W

This object allows you to dim scenes 1 to 16 relatively. A set bit 4 indicates dimming up, and an unset bit 4 indicates dimming down. Bits 1 to 3 indicate the respective step sizes, and unset bits 1 to 3 are interpreted as a stop telegram.

NOTICE
When dimming the scenes, the minimum and maximum values of the respective groups defined with the ETS are also taken into account.

51	Effects Start / Stop	Start/Stop	1 byte	C, W

Effects can be started or stopped via this object. Up to 16 effects are available in the gateway. The top bit must be set to start an effect. Stopping takes place when bit 7 is deleted.

	Effect Off	Effect On
Effect 1	0	128
Effect 2	1	129
...		
Effect 16	15	143

20.1.3.1. Objects for Energy Saving

Each group and ECG can be de-energized via a separate actuator. Up to 16 energy-saving objects are provided in the parameters for this purpose.

Object	Object name	Function	Type	Flags
52 - 67	Energy Saving Object 1 - 16	On/Off	1 bit - 1.001	C, R, T
With the appropriate parameter assignment, this object is switched off when associated groups or ECGs are switched off. This allows a separate power supply to be switched off. If the associated groups or ECGs are controlled again with a value higher than 0%, this object is switched on again beforehand. In this case, a minimum time delay is programmed so that the ECGs are ready for operation again. See the Parameter Page: Special Functions (page 172) section.				

20.1.3.2. Objects for Emergency

Two types of communication objects are offered on the device. The selection is defined on the **Parameters→General→Special Functions→Emergency** section:

Objects are explained with the respective ECGs.

20.1.4. Time Control Objects

Using a communication object, each of the 16 templates in the colour control module can be enabled or disabled. These need to be enabled under time control in the DCA

NOTE
See the Disable/Enable (page 99) section for more information.

Object	Object name	Function	Type	Flags
68	Template 1, Activation	Activate/Stop	1 bit - 1.010	C, W
Template 1 is activated via this object. The template is active when the value is 1 and will be executed according to schedule.				
83	Template x, Activation	Activate/Stop	1 bit - 1.010	C, W
Template x is activated via this object. The template is active when the value is 1 and will be executed according to schedule.				

20.2. Broadcast Objects

Object	Object name	Function	Type	Flags
3	Broadcast, Switching	On/Off	1 bit - 1.001	C, W
Using this object, all connected lights can be switched on or off together. If connected ECGs are in a special state, such as test mode or panic mode, they are not switched. In this case, switching occurs through sequential addressing on the DALI bus, and a delay between the first and last luminaires may be visible. If there is no special state, switching occurs simultaneously using DALI broadcast telegrams. The broadcast switching function always switches to 0 or 100%. The **Switch-On Value** and **Switch-Off Value** settings for groups and electronic ballasts are not considered. **NOTICE** This object is only visible if the **Enable Broadcast** setting is selected in the Special Functions settings. For more information, check the Parameter Page: Special Functions (page 172) section.				
4	Broadcast, Set Value	Value	1 byte - 5.001	C, W
Using this object, all connected lights can be set to one value. If connected ECGs are in a special state, such as Test mode or panic mode, they are not changed. In this case, switching takes place by sequential addressing on the DALI bus, and a delay between the first and last luminaires may be visible. If no special state exists, the values are set simultaneously using DALI broadcast telegrams. **NOTICE** This object is only visible if the **Enable Broadcast** setting is selected in the Special Functions settings. Broadcast can also be released for colour control. In this case, up to four additional objects, numbers 3-7, are displayed. Check the Parameter Page: Special Functions (page 172) section for more information. The different colour control objects are described in detail in the Colour Control (page 10) section.				

20.2.1. Broadcast Objects for Colour Control

Object	Object name	Function	Type	Flags
5	Broadcast, (RGB) Red	Value	1 byte - 5.001	C, W
This object can be used to set the broadcast colour control. The values for red (RGB) are transferred here.				
5a	Broadcast, (RGB)	Value	3 bytes - 232.600	C, W
Send the (RGB) colour via this object.				
5b	Broadcast, (HSV) Hue	Value	1 byte - 5.001	C, W
Send the (HSV) Hue value via this object.				
5c	Broadcast, (RGBW)	Value	6 bytes - 251.600	C, W
This object sends the set (RGBW) colour as a value.				
5d	Broadcast, Set Colour X	Value	2 bytes - 7.600	C, W
Send the (xy Colour) x coordinate value via this object.				
6	Broadcast, (RGB) Green	Value	1 byte - 5.001	C, W
This object can be used to set the broadcast colour control. The values for green (RGB) are transferred here.				
6a	Broadcast, (HSV) Saturation	Value	1 byte - 5.001	C, W
Send the (HSV) Saturation value via this object.				
6b	Broadcast, Set Colour Y	Value	2 bytes - 7.600	C, W
Send the (xy Colour) y coordinate value via this object.				
7	Broadcast, (RGB) Blue	Value	1 byte - 5.001	C, W
This object can be used to set the broadcast colour control. The values for blue (RGB) are transferred here.				
8	Broadcast, White	Value	1 byte - 5.001	C, W
This object can be used to set the broadcast colour control. The values for white are transferred here.				
9	Broadcast, Colour Temperature	Value	2 bytes - 7.600	C, W
Send the colour temperature value via this object.				

20.3. Group Objects

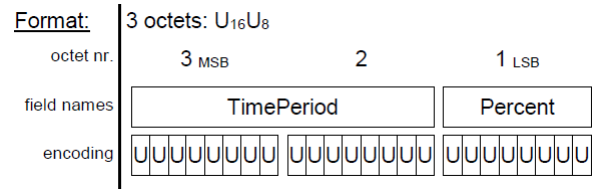
A set of communication objects is available for each one of the up to 16 possible groups. The following objects are available:

NOTE
Group 1 is used as an example.

20.3.1. Group Objects Behavior

Object	Object name	Function	Type	Flags
85	G1, Switching	On/Off	1 bit - 1.001	C, W
Use this object to switch group 1 on or off.				
86	G1, Dimming	Brighter/Darker	4 bits - 3.007	C, W
Used for the relative dimming of group 1. Bit 4 is set to dim up and unset to dim down. Bits 1 to 3 refer to the increment size. Unset bits 1 to 3 is interpreted as a stop telegram.				
87	G1, Value Setting	Value	1 byte - 5.001	C, W
This object can be used to set group 1 to the corresponding value.				
88	G1, Value Setting	Value/Time	3 bytes - 225.001	C, W

IMPORTANT
Object 50 is shown for the following parameter: G1 → Behavior → Additional SetValue Object incl-Dimming Time. Use this object to set group 1 to the required value and dime time.



The time is defined in multiples of 100 ms. Due to the DALI properties, the accepted value range goes from 1s to 200s. Values outside this range are accordingly restricted.

NOTE
For example, a dim time of 10 seconds is coded as follows:

10 s = 10x10x100 ms

Object	Object name	Function	Type	Flags
89	G1, Enable	Yes/No	1 bit - 1.003	C, W

This object enables the operation of group 1:

Object Value	Status
0	Disabled
1	Enabled

IMPORTANT
Object 51 is shown for the following parameter: G1 → General → Function of Additional object

89a	G1, Disable	Yes/No	1 bit - 1.003	C, W

This object disables the operation of group 1:

Object Value	Status
0	Enabled
1	Disabled

90	G1, Status	On/Off	1 bit - 1.001	C, R, T

Sends the switch status of the group. Any value higher than zero percent is interpreted as ON.

91	G1, Status	Value	1 byte - 5.001	C, R, T

Sends the value status of the group.

20.3.2. Group Objects Colour Control

Different colour control options are supported:

- Colour Temperature
- RGB
- HSV
- RGBW
- XY
- Colour Temperature + RGB
- Colour Temperature + RGBW

Only one type of colour control can be selected per group. All ECGs in the group that support this type can be controlled, other ECG types will not react to the command.

NOTE
Make sure to only include ECGs with the same colour control in a group.

Depending on the selected type of colour control, different objects are displayed.

20.3.2.1. Colour Temperature

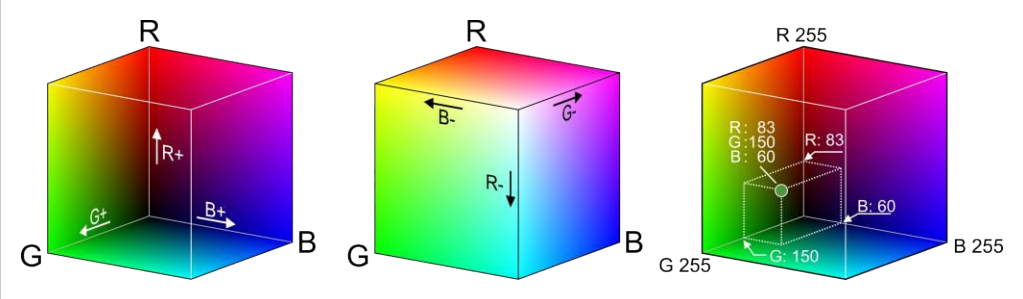
The colour temperature can be set in Kelvins. Colour temperatures below 3000 K are called warm white, above 5000 K are referred to as cool white, and between 3000 and 5000 K are considered neutral white.

Object	Object name	Function	Type	Flags
96	G1, Colour Temperature	Value	2 bytes - 7.600	C, W
Sets the colour temperature in the group.				
97	G1, Colour temperature relative	Value	1 byte - 5.001	C, W
Sets the colour temperature in the group relatively between 0 and 100%. The value range from 0 to 100% is automatically converted to the possible colour temperature range.				
102	G1, Colour Control Fading	Warmer/Cooler	4 bits - 3.007	C, W
This object allows you to change the colour in the group. Set bit 3 to increase the angle, and unset bit 3 to decrease it. Bit 0 to 3 unset is interpreted as a stop telegram. This means that you can circulate the entire circumference of the circle and set every colour.				
108	G1, Colour Temperature	Status	2 bytes - 7.600	C, R, T
Sends the set colour temperature as a group status.				
113	G1, Colour Temperature Relative	Status	1 byte - 5.001	C, R, T
Sends the relative colour temperature as group status.				

20.3.2.2. RGB

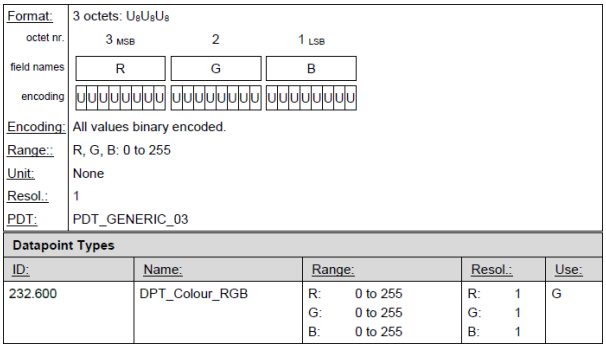
The RGB colour space is called additive colour space, as the colour perception is created by mixing the three primary colours.

Figure 11. RGB cubes (source: Wikipedia)



20.3.2.2.1. RGB (DPT 232.600)

Object	Object name	Function	Type	Flags
95	G1, Colour RGB	Value	3 bytes - 232.600	C, W
Sets the colour in the group as RGB.				
107	G1, Colour RGB	Status	3 bytes - 232.600	C, R, T
Use this object to send the set colour of the group as a status.				



Format:	3 octets: $U_8U_8U_8$
octet nr.	3 MSB 2 1 LSB
field names	R G B
encoding	UUUUUUUU UUUUUUUU UUUUUUUU
Encoding:	All values binary encoded.
Range::	R, G, B: 0 to 255
Unit:	None
Resol.:	1
PDT:	PDT_GENERIC_03

Datapoint Types

ID:	Name:	Range:	Resol.:	Use:
232.600	DPT_Colour_RGB	R: 0 to 255 G: 0 to 255 B: 0 to 255	R: 1 G: 1 B: 1	G

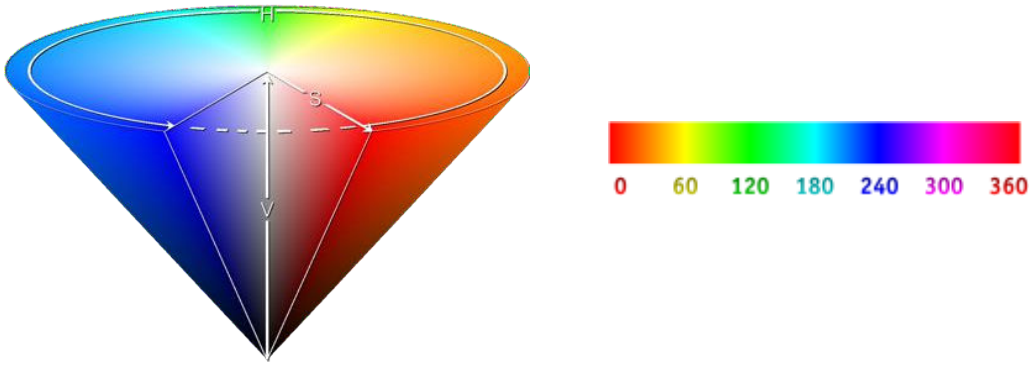
20.3.2.2.2. RGB (Separate Objects)

Object	Object name	Function	Type	Flags
98	G1, Colour (RGB) Red	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for red (R) are transmitted.				
99	G1, Colour (RGB) Green	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for green (G) are transmitted.				
100	G1, Colour (RGB) Blue	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for blue (B) are transmitted.				
103	G1, (RGB) Fading Red	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (R) in the group. Bit 4 is set to increase the red component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bit 1 to 3 unset is interpreted as a stop telegram.				
104	G1, (RGB) Fading Green	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (G) in the group. Bit 4 is set to increase the green component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bit 1 to 3 unset is interpreted as a stop telegram.				
105	G1 (RGB) Fading Blue	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (B) in the group. Bit 4 is set to increase the blue component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bit 1 to 3 unset is interpreted as a stop telegram.				
109	G1, Colour (RGB) Red	Status	1 byte - 5.001	C, R, T
Sends the selected colour (R) as a group status.				
110	G1, Colour (RGB) Green	Status	1 byte - 5.001	C, R, T
Sends the selected colour (G) as a group status.				
111	G1, Colour (RGB) Blue	Status	1 byte - 5.001	C, R, T
Sends the selected colour (B) as a group status.				

20.3.2.3. HSV

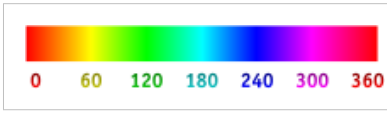
The colour is set as an HSV value. This consists of hue, saturation, and value. The value (V) is set via the value object number 60/61. Additional objects are displayed for hue (H) and saturation (S). The hue is entered as a value between 0 and 360° and rotates around the colour circle, making reaching all of the circle's colours easy.

Figure 12. 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.

20.3.2.3.1. HSV (Separate Objects)

Object	Object name	Function	Type	Flags
98	G1, Colour (HSV) Hue	Value	1 byte - 5.003	C, W
Sets the colour in the group via an HSV value. A value between 0 and 360° can be transmitted.  **NOTE** Remember that the data type 5.003 used only allows for a resolution of about 1,4°.				
99	G1, Colour (HSV) Saturation	Value	1 byte - 5.001	C, W
Use this object to set the saturation. A value between 0 and 100% can be transmitted.				
103	G1, Colour (HSV) Fading Hue	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the hue of a group. Bit 3 is set to increase the angle and unset to decrease it. Bits 1 to 3 unset is interpreted as a stop telegram. As the whole colour circle is accessible, any colour can be set.				
104	G1, Colour (HSV) Fading Saturation	Brighter/Darker	4 bits - 3.007	C, W
See change of hue above. The value between 0 and 100% is increased incrementally.				
109	G1, Colour (HSV) Hue	Status	1 byte - 5.003	C, R, T
Sends the configured hue as a group status.				

Object	Object name	Function	Type	Flags
110	G1, Colour (HSV) Saturation	Status	1 byte - 5.001	C, R, T
Sends the configured saturation as a group status.				

20.3.2.4. RGBW

20.3.2.4.1. RGBW (6-byte Object, Object DPT 251.600)

Object	Object name	Function	Type	Flags
95	G1, Colour RGBW	Value	6 bytes - 251.600	C, W

Use this object to set the colour in the group as RGBW. In the upper bytes, enter the white, blue, green, and red colour values between 0 and 100%. Four bits in the first byte determine whether the corresponding colour values are valid.

Datapoint Type					
DPT_Name:	DPT_Colour_RGBW				
DPT Format:	$U_8U_8U_8U_8r_8r_4B_4$		DPT_ID:	251.600	
Field	Description	Supp.	Range	Unit	Default
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.	None.
m_G	Shall specify whether the colour information green in the field G is valid or not.	M	{0,1}	None.	None.
m_B	Shall specify whether the colour information blue in the field B is valid or not.	M	{0,1}	None.	None.
m_W	Shall specify whether the colour information white in the field W is valid or not.	M	{0,1}	None.	None.

107	G1, Colour RGBW	Status	6 bytes - 251.600	C, R, T
Sends the set colour of the group as a status.				

20.3.2.4.2. RGBW (Separate Objects)

Object	Object name	Function	Type	Flags
98	G1, Colour (RGB) Red	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for red (R) are transmitted.				
99	G1, Colour (RGB) Green	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for green (G) are transmitted.				
100	G1, Colour (RGB) Blue	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for blue (B) are transmitted.				
101	G1, Colour White	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for white (W) are transmitted.				
103	G1, (RGB) Fading Red	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (R) in the group. Bit 4 is set to increase the red component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bit 1 to 3 unset is interpreted as a stop telegram.				
104	G1, (RGB) Fading Green	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (G) in the group. Bit 4 is set to increase the green component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bit 1 to 3 unset is interpreted as a stop telegram.				
105	G1 (RGB) Fading Blue	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (B) in the group. Bit 4 is set to increase the blue component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bit 1 to 3 unset is interpreted as a stop telegram.				
106	G1, Fading White	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (W) in the group. Bit 4 is set to increase the white component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bit 1 to 3 unset is interpreted as a stop telegram.				
109	G1, Colour (RGB) Red	Status	1 byte - 5.001	C, R, T
Sends the selected colour (R) as a group status.				
110	G1, Colour (RGB) Green	Status	1 byte - 5.001	C, R, T
Sends the selected colour (G) as a group status.				
111	G1, Colour (RGB) Blue	Status	1 byte - 5.001	C, R, T
Sends the selected colour (B) as a group status.				
112	G1, Colour White	Status	1 byte - 5.001	C, R, T
Sends the selected white colour (W) as a group status				

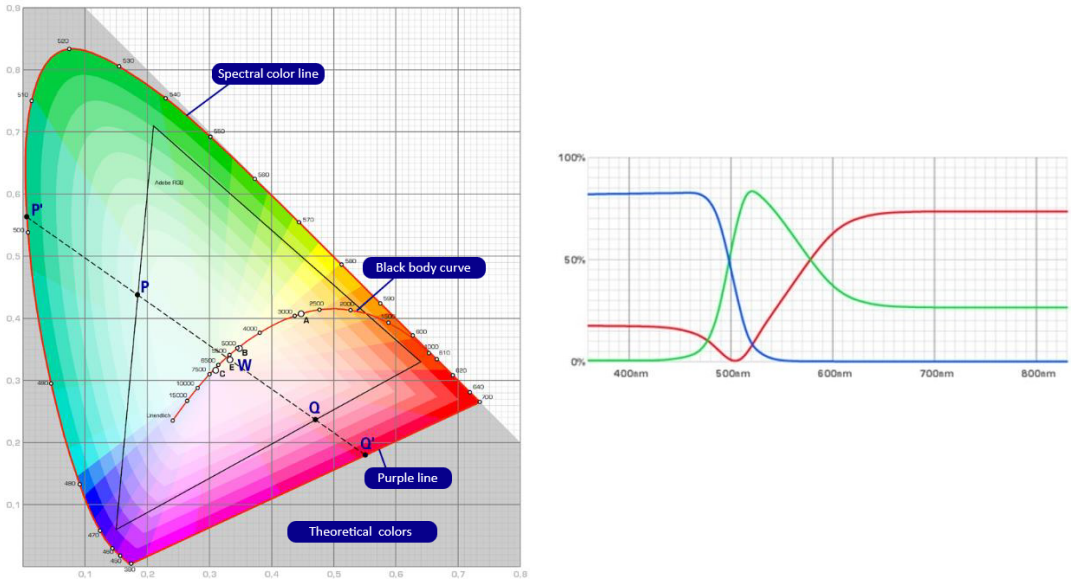
20.3.2.5. HSVW (Separate Objects)

See the HSV (Separate Objects) (page 136) section.

20.3.2.6. XY Colour

The colour is determined through an xy value between 0 and 1:

Figure 13. HSV Colour value (Source: Wikipedia)



In KNX, this value range is converted to a range 0..65535 (2-byte integer). The value 65535, therefore, corresponds to value 1 in the graphic.

20.3.2.6.1. XY (Combined Objects)

Object	Object name	Function	Type	Flags
95	G1, Colour XY	Value	6 bytes - 242.600	C, W

Use this object to set the colour in the group via xy coordinates. The brightness level is entered in the second byte via a value between 0 and 100%, followed by the y and x coordinates between 0 and 65535. 2 bits in the lower byte indicate whether the XY values and the brightness are valid.

Datapoint Types		
ID:	Name:	Use:
242.600	DPT_Colour_xyY	FB

Data fields	Description	Range	Unit	Resol.
x-axis	x-coordinate of the colour information	0 to 65 535	None.	None.
y-axis	y-coordinate of the colour information	0 to 65 535	None.	None.
Additional encoding information The x – and y – ordinate of the xyY colour scheme have a value between 0 and 1. This value shall be linearly mapped onto the range from 0 to 65 535, by multiplying the unencoded coordinate value by 65 535 and and rounding to the earest integer value. For decoding, the inverse operation shall be done.				
Brightness	Brightness of the colour	0 % to 100 %	%	None.
Additional encoding information The brightness shall be encoded as in DPT_Scaling (5.001).				
C	This field shall indicate whether the colour information in the fields x-axis and y-axis is valid or not.	0: invalid 1: valid	None.	None.
B	This field shall indicate whether the Brightness information in the field Brightness is valid or not.	0: invalid 1: valid	None.	None.

107	G1, Colour XY	Status	6 bytes - 242.600	C, R, T

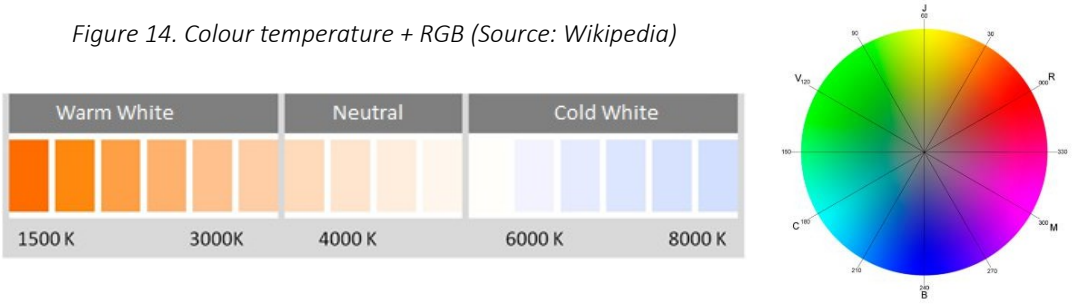
This object is used to send the set xy coordinates as a status of the group.

20.3.2.6.2. XY (Separate Objects)

Object	Object name	Function	Type	Flags
95	G1, Colour X	Value	2 bytes - 7.001	C, W
Use this object to set the X value between 0 and 65535.				
98	G1, Colour Y	Value	2 bytes - 7.001	C, W
Use this object to set the Y value between 0 and 65535.				
107	G1, Colour X	Status	2 bytes - 7.001	C, R, T
This object sends the set X value as a group's status.				
109	G1, Colour Y	Status	2 bytes - 7.001	C, R, T
This object sends the set Y value as a group's status.				

20.3.2.7. Colour Temperature + RGB

Figure 14. Colour temperature + RGB (Source: Wikipedia)



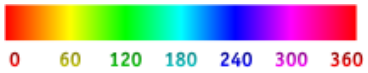
20.3.2.7.1. Colour Temperature + RGB (3-byte combined objects DPT 232.600)

Object	Object name	Function	Type	Flags
95	G1, Colour RGB	Value	3 bytes - 232.600	C, W
This object allows you to set the colour in the group as RGB. The lower bytes contain the colour values for white, blue, green, and red, which range from 0 to 100%. In the fifth byte, four bits indicate whether the corresponding colour values are valid.				
96	G1, Colour Temperature	Value	2 bytes - 7.600	C, W
Sets the colour temperature in the group				
97	G1, Colour Temperature Relative	Value	1 byte - 5.001	C, W
Sets the colour temperature in the group relatively between 0 and 100%. The value range from 0 to 100% is automatically converted to the possible colour temperature range.				
102	G1, Colour Control Fading	Warmer/Cooler	4 bits - 3.007	CW
This object changes the colour temperature in the group. Bit 4 is set to dim up and unset to dim down. Bits 1 to 3 refer to the increment size. Bit 1 to 3 unset is interpreted as a stop telegram.				
107	G1, Colour RGB	Status	3 bytes - 232.600	C, R, T
Use this object to send the set RGB colour of the group as a status.				
108	G1, Colour Temperature	Status	2 bytes - 7.600	C, R, T
This object sends the set colour temperature as a group status.				
113	G1, Colour Temperature Relative	Status	1 byte - 5.001	C, R, T
This object sends the set relative colour temperature as a group status.				

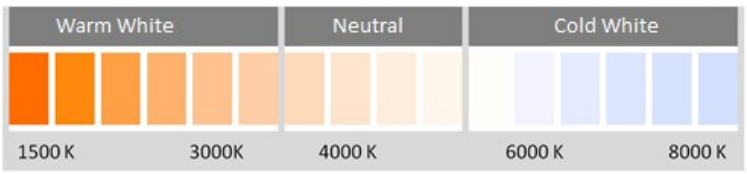
20.3.2.7.2. Colour Temperature + RGB (RGB Separate Objects)

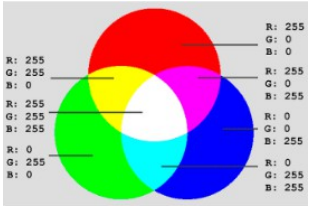
Object	Object name	Function	Type	Flags
96	G1, Colour Temperature	Value	2 bytes - 7.600	C, W
Sets the colour temperature in the group.				
97	G1, Colour Temperature Relative	Value	1 byte - 5.001	C, W
Sets the colour temperature in the group relatively between 0 and 100%. The value range from 0 to 100% is automatically converted to the possible colour temperature range.				
98	G1, Colour (RGB Red)	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for red (R) are transmitted.				
99	G1, Colour (RGB Green)	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for green (G) are transmitted.				
100	G1, Colour (RGB Blue)	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for blue (B) are transmitted.				
102	G1, Colour Control Fading	Value	1 byte - 5.001	C, W
This changes the colour temperature in the group. Bit 4 is set to dim up and unset to dim down. Bits 1 to 3 refer to the increment size. Bits 1 to 3 unset are interpreted as a stop telegram.				
103	G1, Colour (RGB) Fading Red	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (R) in the group. Bit 4 is set to increase the red component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bit 1 to 3 unset are interpreted as a stop telegram.				
104	G1, Colour (RGB) Fading Green	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (G) in the group. Bit 4 is set to increase the green component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bit 1 to 3 unset are interpreted as a stop telegram.				
105	G1 Colour (RGB) Fading Blue	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (B) in the group. Bit 4 is set to increase the blue component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bit 1 to 3 unset are interpreted as a stop telegram.				
108	G1, Colour Temperature	Status	2 bytes - 7.600	C, R, T
This object sends the colour temperature as a group status.				
109	G1, Colour (RGB Red)	Status	1 byte - 5.001	C, R, T
Sends the selected red colour (R) as a group status.				
110	G1, Colour (RGB Green)	Status	1 byte - 5.001	C, R, T
Sends the selected green colour (G) as a group status.				
111	G1, Colour (RGB Blue)	Status	1 byte - 5.001	C, R, T
Sends the selected blue colour (B) as a group status.				
113	G1, Colour temperature relative	Status	1 byte - 5.001	C, R, T
Sends the set relative colour temperature as a group status.				

20.3.2.7.3. Colour Temperature + RGB (HSV Separate Objects)

Object	Object name	Function	Type	Flags
96	G1, Colour Temperature	Value	2 bytes - 7.600	C, W
Sets the colour temperature in the group.				
97	G1, Colour Temperature Relative	Value	1 byte - 5.001	C, W
Sets the colour temperature in the group relatively between 0 and 100%. The value range from 0 to 100% is automatically converted to the possible colour temperature range.				
98	G1, Colour (HSV) Hue	Value	1 byte - 5.003	C, W
Sets the colour in the group via an HSV value. A value between 0 and 360° can be transmitted.  **NOTE** Remember that the data type 5.003 used only allows for a resolution of about 1,4°.				
99	G1, Colour (HSV) Saturation	Value	1 byte - 5.001	C, W
Use this object to set the saturation. A value between 0 and 100% can be transmitted.				
102	G1, Colour Control Fading	Warmer/Cooler	4 bits - 3.007	CW
This object allows you to change the colour in the group. Set bit 3 to increase the angle, and unset bit 3 to decrease it. Bits 1 to 3 unset is interpreted as a stop telegram. This means that the entire circumference of the circle can be circulated, and every colour can be set.				
103	G1, Colour Control Fading Hue	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the hue of a group. Bit 3 is set to increase the angle and unset to decrease it. Bits 1 to 3 unset is interpreted as a stop telegram. As the whole colour circle is accessible, any colour can be set.				
104	G1, Colour Control Fading Saturation	Brighter/Darker	4 bits - 3.007	C, W
See change of hue above. The value between 0 and 100% is increased incrementally.				
108	G1, Colour Temperature	Status	2 bytes - 7.600	C, R, T
Sends the set colour temperature as a group status.				
109	G1, Colour (HSV) Hue	Status	1 byte - 5.003	C, R, T
Sends the configured hue as a group status.				
110	G1, Colour (HSV) Saturation	Status	1 byte - 5.003	C, R, T
Sends the configured saturation as a group status.				
113	G1, Colour Temperature Relative	Status	1 byte - 5.001	C, R, T
Sends the set relative colour temperature as a group status.				

20.3.2.8. Colour Temperature + RGBW





20.3.2.8.1. Colour Temperature + RGBW (6-byte combined objects DPT 251.600)

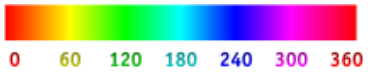
Object	Object name	Function	Type	Flags
95	G1, Colour RGBW	Value	6 bytes - 251.600	C, W
This object allows you to set the colour in the group as RGB. The lower bytes contain the colour values for white, blue, green, and red, which range from 0 to 100%. In the fifth byte, four bits indicate whether the corresponding colour values are valid.				
96	G1, Colour Temperature	Value	2 bytes - 7.600	C, W
Sets the colour temperature in the group				
97	G1, Colour Temperature Relative	Value	1 byte - 5.001	C, W
Sets the colour temperature in the group relatively between 0 and 100%. The value range from 0 to 100% is automatically converted to the possible colour temperature range.				
102	G1, Colour Control Fading	Warmer/Cooler	4 bits - 3.007	CW
This object changes the colour temperature in the group. Bit 4 is set to dim up and unset to dim down. Bits 1 to 3 refer to the increment size. Bit 1 to 3 unset is interpreted as a stop telegram.				
107	G1, Colour RGBW	Status	3 bytes - 251.600	C, R, T
Use this object to send the set RGB colour of the group as a status.				
108	G1, Colour Temperature	Status	2 bytes - 7.600	C, R, T
This object sends the set colour temperature as a group status.				
113	G1, Colour Temperature Relative	Status	1 byte - 5.001	C, R, T
This object sends the set relative colour temperature as a group status.				

20.3.2.8.2. Colour Temperature + RGBW (RGBW Separate Objects)

Object	Object name	Function	Type	Flags
96	G1, Colour Temperature	Value	2 bytes - 7.600	C, W
Sets the colour temperature in the group.				
97	G1, Colour Temperature Relative	Value	1 byte - 5.001	C, W
Sets the colour temperature in the group relatively between 0 and 100%. The value range from 0 to 100% is automatically converted to the possible colour temperature range.				
98	G1, Colour (RGB Red)	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for red (R) are transmitted.				
99	G1, Colour (RGB Green)	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for green (G) are transmitted.				
100	G1, Colour (RGB Blue)	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for blue (B) are transmitted.				
101	G1, Colour White	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for white (W) are transmitted.				
102	G1, Colour Control Fading	Value	1 byte - 5.001	C, W
This changes the colour temperature in the group. Bit 4 is set to dim up and unset to dim down. Bits 1 to 3 refer to the increment size. Bits 1 to 3 unset are interpreted as a stop telegram.				
103	G1, Colour (RGB) Fading Red	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (R) in the group. Bit 4 is set to increase the red component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bits 1 to 3 unset are interpreted as a stop telegram.				
104	G1, Colour (RGB) Fading Green	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (G) in the group. Bit 4 is set to increase the green component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bits 1 to 3 unset are interpreted as a stop telegram.				
105	G1 Colour (RGB) Fading Blue	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the colour (B) in the group. Bit 4 is set to increase the blue component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bits 1 to 3 unset are interpreted as a stop telegram.				
106	G1, Colour Fading White	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the white in the group. Bit 4 is set to increase the blue component and unset to decrease it. Bits 1 to 3 refer to the increment size. Bits 1 to 3 unset are interpreted as a stop telegram.				
108	G1, Colour Temperature	Status	2 bytes - 7.600	C, R, T
This object sends the colour temperature as a group status.				
109	G1, Colour (RGB Red)	Status	1 byte - 5.001	C, R, T
Sends the selected red colour (R) as a group status.				
110	G1, Colour (RGB Green)	Status	1 byte - 5.001	C, R, T
Sends the selected green colour (G) as a group status.				
111	G1, Colour (RGB Blue)	Status	1 byte - 5.001	C, R, T
Sends the selected blue colour (B) as a group status.				

Object	Object name	Function	Type	Flags
112	G1, Colour White	Status	1 byte - 5.001	C, R, T
Sends the selected white as a group status.				
113	G1, Colour temperature relative	Status	1 byte - 5.001	C, R, T
Sends the set relative colour temperature as a group status.				

20.3.2.8.3. Colour Temperature + RGBW (HSVW Separate Objects)

Object	Object name	Function	Type	Flags
96	G1, Colour Temperature	Value	2 bytes - 7.600	C, W
Sets the colour temperature in the group.				
97	G1, Colour Temperature Relative	Value	1 byte - 5.001	C, W
Sets the colour temperature in the group relatively between 0 and 100%. The value range from 0 to 100% is automatically converted to the possible colour temperature range.				
98	G1, Colour (HSV) Hue	Value	1 byte - 5.003	C, W
Sets the colour in the group via an HSV value. A value between 0 and 360° can be transmitted.  **NOTE** Remember that the data type 5.003 used only allows for a resolution of about 1,4°.				
99	G1, Colour (HSV) Saturation	Value	1 byte - 5.001	C, W
Use this object to set the saturation. A value between 0 and 100% can be transmitted.				
101	G1, Colour White	Value	1 byte - 5.001	C, W
Sets the colour in the group. The values for white (W) are transmitted.				
102	G1, Colour Control Fading	Warmer/Cooler	4 bits - 3.007	CW
This object allows you to change the colour in the group. Set bit 3 to increase the angle, and unset bit 3 to decrease it. Bits 1 to 3 unset is interpreted as a stop telegram. This means that the entire circumference of the circle can be circulated, and every colour can be set.				
103	G1, Colour Control Fading Hue	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the hue of a group. Bit 3 is set to increase the angle and unset to decrease it. Bits 1 to 3 unset is interpreted as a stop telegram. As the whole colour circle is accessible, any colour can be set.				
104	G1, Colour Control Fading Saturation	Brighter/Darker	4 bits - 3.007	C, W
See change of hue above. The value between 0 and 100% is increased incrementally.				
106	G1, Colour Fading White	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the white in the group. The values for white are transmitted here.				

Object	Object name	Function	Type	Flags
108	G1, Colour Temperature	Status	2 bytes - 7.600	C, R, T
Sends the set colour temperature as a group status.				
109	G1, Colour (HSV) Hue	Status	1 byte - 5.003	C, R, T
Sends the configured hue as a group status.				
110	G1, Colour (HSV) Saturation	Status	1 byte - 5.003	C, R, T
Sends the configured saturation as a group status.				
112	G1, Colour White	Status	1 byte - 5.003	C, R, T
Sends the set white as a group status.				
113	G1, Colour Temperature Relative	Status	1 byte - 5.001	C, R, T
Sends the set relative colour temperature as a group status.				

20.3.3. Group Objects Analysis and Service

Object	Object name	Function	Type	Flags
92	G1, Failure Status	Yes/No	1 bit - 1.001	C, R, T
IMPORTANT Object 92 is shown for the following parameter: **G1→Analysis and Service→Type of Failure Status Object**. This object is used to send the failure status for lamp, ECG, and converter failures within the group.				
94	G1, Failure Exceeds Threshold	Yes/No	1 bit	C, R, T
This object is used to report that the total of all lamp failures recognized in the DALI segment exceeds the set threshold.				
94a	G1, Failure Threshold in Total	Value	1 byte - 5.010	C, R, T
This object reports the failure rate for the total number of lamps in the DALI segment.				
94b	G1, Failure Threshold in %	Value	1 byte - 5.001	C, R, T
Alternatively, this object is used to report the failure rate as a percentage of the total number of lamps in the DALI segment.				
114	G1, Operating Hours Reset	Yes/No	1 bit - 1.015	C, W
Resets the operating hours in a group via value **1**. **NOTE** Objects 76-78 are shown for the following setting: **G1→Analysis and Service→ Operation Hour Calculation = Yes**.				
115	G1, Operating Hours (Seconds)	Value	4 bytes - 13.100	C, W
This object counts the group's operating hours. According to DPT 13.100, the value is transmitted in seconds.				
115a	G1, Operating Hours (Hours)	Value	4 bytes - 12.102	C, W
This object counts the group's operating hours. According to DPT 12.102, the value is transmitted in hours.				
116	G1, Life Time Exceeded	Yes/No	1 bit - 1.005	C, W
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.				
117	G1, Active Power	Value	4 bytes - 14.056	C. R. T
This object provides the total active power of all ECGs of device type 51 assigned to this group according to DALI part 252.				
117a	G1, Active Energy	Value	4 bytes - 13.010	C, R, T
This object provides the total active energy of all ECGs of device type 51 assigned to this group according to DALI part 252.				

20.4. Single ECG Objects

20.4.1. Single ECG Objects Behavior

A communication object is available for each of the up to 64 connected ECGs and corresponding lamps to display the failure status.

NOTE
We use ECG1 as an example.

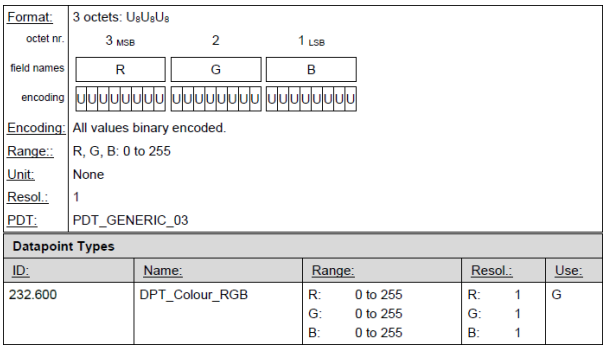
<table>
<tr><th>Object</th><th>Object name</th><th>Function</th><th>Type</th><th>Flags</th></tr>
<tr><td>629</td><td>ECG1, Switching</td><td>On/Off</td><td>1 bit - 1.001</td><td>C, W</td></tr>
<tr><td colspan="5">Use this object to switch an ECG on or off. The ECG must not be in any special mode (test mode, emergency lights, panic/emergency mode).</td></tr>
<tr><td>630</td><td>ECG1, Dimming</td><td>Brighter/Darker</td><td>4 bits - 3.007</td><td>C, W</td></tr>
<tr><td colspan="5">This object is used for the relative dimming of an ECG not in a special mode (test mode, emergency lights, panic/emergency mode). Bit 4 is set to dim up and unset to dim down. Bits 1 to 3 refer to the increment size. Unset bits 1 to 3 are interpreted as a stop telegram.</td></tr>
<tr><td>631</td><td>ECG1, Set Value</td><td>Value</td><td>1 byte - 5.001</td><td>C, W</td></tr>
<tr><td colspan="5">Sets the value of ECG1 unless it is in a special mode (test mode, emergency lights, panic/emergency mode).</td></tr>
<tr><td>632</td><td>ECG1, Enable</td><td>Yes/No</td><td>1 bit - 1.003</td><td>C, W</td></tr>
<tr><td colspan="5">This object enables the operation of ECG1:

<table><tr><th>Object Value</th><th>Status</th></tr><tr><td>0</td><td>Disabled</td></tr><tr><td>1</td><td>Enabled</td></tr></table>
IMPORTANT
Object 562 is shown for the following parameter: ECG1 → General → Function of Additional object</td></tr>
<tr><td>632a</td><td>ECG1, Disable</td><td>Yes/No</td><td>1 bit - 1.003</td><td>C, W</td></tr>
<tr><td colspan="5">This object disables the operation of ECG1:

<table><tr><th>Object Value</th><th>Status</th></tr><tr><td>0</td><td>Enabled</td></tr><tr><td>1</td><td>Disabled</td></tr></table></td></tr>
<tr><td>633</td><td>ECG1, Status</td><td>On/Off</td><td>1 bit - 1.001</td><td>C, R, T</td></tr>
<tr><td colspan="5">Sends the ECG switch status. Any value higher than zero percent is interpreted as ON.</td></tr>
<tr><td>634</td><td>ECG1, Status</td><td>Value</td><td>1 byte - 5.001</td><td>C, R, T</td></tr>
<tr><td colspan="5">Sends the ECG value status.</td></tr>
</table>

20.4.2. Single ECG Objects Colour Control

Object	Object name	Function	Type	Flags
636	ECG1, Colour Temperature	Value	2 bytes - 7.600	C, W
Sets the ECG1 colour temperature.				
636a	ECG1, Colour RGB	Value	3 bytes - 232.600	C, W
Sets the ECG1 colour as RGB.				
636b	ECG1, Colour RGBW	Value	6 bytes - 251.600	C, W
Use this object to set the ECG1 colour as RGBW. In the upper bytes, enter the white, blue, green, and red colour values between 0 and 100%. Four bits in the first byte determine whether the corresponding colour values are valid.				



Format:	3 octets: $U_8U_8U_8$
octet nr.	3 MSB 2 1 LSB
field names	R G B
encoding	UUUUUUUU UUUUUUUU UUUUUUUU
Encoding:	All values binary encoded.
Range::	R, G, B: 0 to 255
Unit:	None
Resol.:	1
PDT:	PDT_GENERIC_03

Datapoint Types

ID:	Name:	Range:	Resol.:	Use:
232.600	DPT_Colour_RGB	R: 0 to 255 G: 0 to 255 B: 0 to 255	R: 1 G: 1 B: 1	G

Datapoint Type					
DPT_Name:	DPT_Colour_RGBW				
DPT Format:	$U_8U_8U_8U_8r_8r_4B_4$		DPT_ID:	251.600	
Field	Description	Supp.	Range	Unit	Default
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.	None.
m_G	Shall specify whether the colour information green in the field G is valid or not.	M	{0,1}	None.	None.
m_B	Shall specify whether the colour information blue in the field B is valid or not.	M	{0,1}	None.	None.
m_W	Shall specify whether the colour information white in the field W is valid or not.	M	{0,1}	None.	None.

Object	Object name	Function	Type	Flags
636c	ECG1, Colour XY	Value	6 bytes - 242.600	C, W

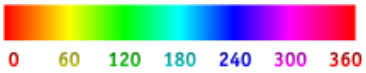
Use this object to set the colour in the group via xy coordinates. The brightness level is entered in the second byte via a value between 0 and 100%, followed by the y and x coordinates between 0 and 65535. 2 bits in the lower byte indicate whether the XY values and the brightness are valid.

Datapoint Types		
ID:	Name:	Use:
242.600	DPT_Colour_xyY	FB

Data fields	Description	Range	Unit	Resol.
x-axis	x-coordinate of the colour information	0 to 65 535	None.	None.
y-axis	y-coordinate of the colour information	0 to 65 535	None.	None.
Additional encoding information The x – and y – ordinate of the xyY colour scheme have a value between 0 and 1. This value shall be linearly mapped onto the range from 0 to 65 535, by multiplying the unencoded coordinate value by 65 535 and and rounding to the earest integer value. For decoding, the inverse operation shall be done.				
Brightness	Brightness of the colour	0 % to 100 %	%	None.
Additional encoding information The brightness shall be encoded as in DPT_Scaling (5.001).				
C	This field shall indicate whether the colour information in the fields x-axis and y-axis is valid or not.	0: invalid 1: valid	None.	None.
B	This field shall indicate whether the Brightness information in the field Brightness is valid or not.	0: invalid 1: valid	None.	None.

636d	ECG1, Colour (HSV) Hue	Value	1 byte - 5.001	C, W

Sets the colour in the group via an HSV value. A value between 0 and 360° can be transmitted.



NOTE
Remember that the data type 5.003 used only allows for a resolution of about 1,4°.

637	ECG1, Colour Temperature Relative	Value	1 byte - 5.001	C, W

Sets the ECG1 colour temperature relatively between 0 and 100%. The value range from 0 to 100% is automatically converted to the possible colour temperature range.

637a	ECG1, Colour (HSV) Saturation	Value	1 byte - 5.001	C, W

Use this object to set the saturation. A value between 0 and 100% can be transmitted.

638	ECG1, White Colour	Value	1 byte - 5.001	C, W

Sets the ECG1 colour. The values for white (W) are transmitted.

Object	Object name	Function	Type	Flags
639	ECG1, Colour Control Fading	Warmer/Cooler	4 bits - 3.007	C, W
This object allows you to change the ECG1 colour. Set bit 4 to increase the angle, and unset bit 4 to decrease it. Unset bits 1 to 3 are interpreted as a stop telegram. This means that the entire circumference of the circle can be circulated, and every colour can be set.				
639a	ECG1, colour (HSV) Fading Hue	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change the hue of the ECG1. Bit 4 is set to increase the angle and unset to decrease it. Bits 1 to 3 unset is interpreted as a stop telegram. As the whole colour circle is accessible, any colour can be set.				
640	ECG1, Colour (HSV) Fading Saturation	Brighter/Darker	4 bits - 3.007	C, W
See change of hue above. The value between 0 and 100% is increased incrementally.				
641	ECG1, Colour Fading White	Brighter/Darker	4 bits - 3.007	C, W
Use this object to change ECG1's white colour.				
642	ECG1, Colour Temperature	Status	2 bytes - 7.600	C, R, T
This object sends the set colour temperature as an ECG1 status.				
642a	ECG1, Colour RGB	Status	3 bytes - 232.600	C, R, T
This object sends the set RGB colour as an ECG1 status.				
642b	ECG1, Colour RGBW	Status	6 bytes - 251.600	C, R, T
This object sends the set RGBW colour as an ECG1 status.				
642c	ECG1, Colour XY	Status	6 bytes - 242.600	C, R, T
This object sends the set xy colour coordinates as an ECG1 status.				
642d	ECG1, Colour (HSV) Hue	Status	1 byte - 5.001	C, R, T
This object sends the set (HSV) hue colour as an ECG1 status.				
643	ECG1, Colour Temperature Relative	Status	1 byte - 5.001	C, R, T
This object sends the relative colour temperature as an ECG1 status.				
643a	ECG1, Colour (HSV) Saturation	Status	1 byte - 5.001	C, R, T
This object sends the set (HSV) saturation colour as an ECG1 status.				
644	ECG1, Colour White	Status	1 byte - 5.001	C, R, T
This object sends the set white (W) colour as an ECG1 status.				

20.4.3. Single ECG Emergency Setting

20.4.3.1. Objects according to the new KNX standard

Object	Object name	Function	Type	Flags
645	Converter 1, Test start	Start	1 byte - 20.611	C, W

Use this object to start a long-duration test, function test, and battery status query of the converter. The individual bits have the following meaning:

20.611 DPT_Converter_Test_Control **Encoding**

- 0: Reserved, no effect
- 1: Start Function Test (FT) According to DALI Cmd. 227
- 2: Start Duration Test (DT) According to DALI Cmd. 228
- 3: Start Partial Duration Test (PDT) - **Not supported**
- 4: Stop Test According to DALI Cmd. 229
- 5 to 255: Reserved, no effect

NOTE
Simultaneous tests with the same DALI converter are supported. This DPT controls a test of a DALI converter and allows a running test to be stopped.

IMPORTANT
The gateway does not support the Partial Duration Test; therefore, this command is inactive.

646	Converter 1, Test result	Test	6 bytes - 245.600	C, R, T

This object reports the converter status according to the KNX Datapoint Type 245.600.

6.12 DPT_Converter_Test_Result

Format:	6 octet: $N_4N_4N_4N_2N_2N_2U_{16}U_8$
octet nr.	6_{MSB} 5 4 3 2
field names	LTRF LTRD LTRP 0 0 0 0 SF SD SP 0 0 LDTR
encoding	N N N N N N N N N N N N r r r r N N N N N N r r U U U U U U U U U U U U U U U U
octet nr.	1_{LSB}
field names	LPDTR
encoding	U U U U U U U U
Unit:	None.
Resol.	(not applicable)
PDT:	PDT_GENERIC_06

Object	Object name	Function	Type	Flags

Data Field	Description	Encoding	Range
LTRF	Last Test Result FT: Test result of the last function test	• 0: Unknown • 1: Passed in time • 2: Passed max delay exceeded • 3: Failed, test executed in time • 4: Failed, max delay exceeded • 5: Test manually stopped • 6 .. 15: Reserved, do not use	0 .. 15
LTRD	Last Test Result DT: Test result of the last duration test	• 0: Unknown • 1: Passed in time • 2: Passed max delay exceeded • 3: Failed, test executed in time • 4: Failed, max delay exceeded • 5: Test manually stopped • 6 .. 15: Reserved, do not use	0 .. 15
LTRP	Last Test Result PDT: Test result of last partial duration test	**IMPORTANT** The gateway does not support the Partial Duration Test; therefore, this command is inactive.	
SF	Start Method of Last FT	• 0: Unknown • 1: Started automatically • 2: Started by the gateway • 3: Reserved Updated after a test has been finished	0 .. 3
SD	Start method of Last DT	• 0: Unknown • 1: Started automatically • 2: Started by the gateway • 3: Reserved Updated after a test has been finished	0 .. 3
SP	Start Method of Last PDT	**IMPORTANT** The gateway does not support the Partial Duration Test; therefore, this area is unused and stays at zero.	
LDTR	Contains the battery discharge time as the result of the last successful duration	DPT 7.006 DPT_TimePeriodMin	0 .. 510

Object	Object name	Function	Type	Flags

Data Field	Description	Encoding	Range
	test (DT), according to DALI Cmd. 243	The maximum value of 510 minutes should be interpreted as 510 minutes or longer.	
LPDTR	Last PDT Result: Provides the remaining battery charge level after the last PDT	**IMPORTANT** The gateway does not support the Partial Duration Test; therefore, this area is unused and stays at zero.	

647	Converter 1, Status	Status	2 bytes - 244.600	C, R, T

This object reports the converter status according to the KNX Datapoint Type 244.600

6.11 DPT_Converter_Status

Format:	2 octets: $N_4B_4N_2N_2N_2N_2$
octet nr.	2_{MSB} 1_{LSB}
field names	CM HS FP DP PP CF
encoding	NNNNBBB NNNNNNNN
Unit:	None.
Resol.	(not applicable)
PDT:	PDT_GENERIC_02

Datapoint Types		
ID:	Name:	Usage:
244.600	DPT_Converter_Status	FB

Data Field	Description	Encoding	Range
CM	Converter Mode according to the DALI converter state machine	• 0: Unknown • 1: Normal mode active, all OK • 2: Inhibit mode active • 3: Hardwired inhibit mode active • 4: Rest mode active • 5: Emergency mode active • 6: Extended emergency mode active • 7: FT in progress • 8: DT in progress • 9 .. 15: Reserved, shall be 0	0 .. 15
HS	Hardware Status	• Bit 0: Hardwired Inhibit is active • Bit 1: Hardwired switch is on • Bits 2 and 3: Reserved, shall be 0	0 .. 1
FP	Function Test Pending	• 0: Unknown • 1: No test pending • 2: Test pending	0 .. 3

Object	Object name	Function	Type	Flags
Data Field	**Description**	**Encoding**		**Range**
		• 3. Reserved **NOTE** The information about a running test is given in the Converter Mode field. **NOTE** The **Unknown** status may, for instance, occur at power-up.		
DP	Duration Test Pending	• 0: Unknown • 1: No test pending • 2: Test pending • 3: Reserved **NOTE** The information about a running test is given in the Converter Mode field. **NOTE** The **Unknown** status may, for instance, occur at power-up.		0 .. 3
PP	Partial Duration Test Pending	**IMPORTANT** The gateway does not support the Partial Duration Test; therefore, this area is unused and stays at zero.		
CF	Converter Failure	Indicates that one or more failures were detected. Further information about the type of failure can be found in the Training Center Tool (CTR) within the ETS. • 0: Unknown • 1: No failure detected • 2: Failure detected • 3: Reserved Updated after a test has been finished		0 .. 3
648	Converter 1, Battery Info	Status	2 bytes - 7.001	C, R, T
This object reports the battery status according to the KNX Datapoint Type 246.600.				

Object	Object name	Function	Type	Flags

6.13 DPT_Battery_Info

Format:	2 octets: $r_5B_3U_8$
octet nr.	2_{MSB} 1_{LSB}
field names	0 0 0 0 0 BS | BCL
encoding	r r r r r B B B | N N N N N N N N
Unit:	None.
Resol.	(not applicable)
PDT:	PDT_GENERIC_02

Datapoint Types

ID:	Name:	Usage:
246.600	DPT_Battery_Info	FB

Data Field	Description	Encoding	Range
BS	Battery Status	• Bit 0: Battery Failure According to DALI Cmd. 252 • Bit 1: Battery Duration Failure According to DALI Cmd. 252 • Bit 2: Battery Fully Charged • Bit 3 to 7: Reserved, must be 0	0 .. 1
BCL	Battery Charge Level, indicates the recent charge level	• 0: Deep discharge point • ... • 254: Fully charged • 255: Unknown or not supported According to DALI Cmd. 241	0 .. 255

20.4.3.2. Objects According to Earlier Versions

Object	Object name	Function	Type	Flags
645	Converter 1, Test Start	Start	1 byte	C, W
This object is used to start a long-duration test, function test, or battery status query of the converter. The individual bits have the following meanings: • Bit 0: Start function test • Bit 1: Function test pending • Bit 2: Start duration test • Bit 3: Duration test pending • Bit 4: Query battery status • Bit 5: Battery status query pending • Bit 6: Function test running • Bit 7: Duration test running				
646	Converter 1, Test result	Test	3 bytes	C, R, T
This object is used to analyze the results of function and duration tests and the battery status. The individual bits have the following meaning: • Bits 23 .. 16: If test is function or battery test: Battery status 0 .. 100% If test is duration test: Test time of duration test in steps of two minutes • Bit 15: Failure during duration test • Bit 14: Failure during function test • Bit 13: Maximum time for duration test exceeded • Bit 12: Maximum time for function test exceeded • Bit 11: Faulty Emergency lamp • Bit 10: Faulty Battery • Bit 9: Battery operating hours too short • Bit 8: Faulty Converter • Bit 7: Duration test pending • Bit 6: Function test pending • Bit 5: Duration test running • Bit 4: Function test running • Bit 3: Test failure during the last test • Bit 2: Last test was battery query • Bit 1: Last test was duration test • Bit 0: Last test was function test				

20.5. Motion Detector/Brightness Sensor Objects

A set of communication objects is available for each of the up to eight possible motion detectors. The following objects are available:

NOTE
MB1 is used as an example.

Object	Object name	Function	Type	Flags
2165	MB1, Movement Switching	On/Off	1 bit - 1.001	C, R, T
The output is switched when motion is detected.				
2165a	MB1, Movement Set Value	Value	1 byte - 5.001	C, R, T
A certain value can be sent when motion is detected.				
2165b	MB 1, Movement Set Scene	Activate	1 byte - 17.001	C, R, T
When motion is detected, an assigned scene is started				
2167	MB1, Movement Off	On/Off	1 bit - 1.001	C, W
Input: The presence can be switched off directly via this object and the detector is reset.				
2168	MB1, Time without movement > Vacant	Time (s)	2 bytes - 7.005	C, R, W
Input: Time without movement to be set using this object. **IMPORTANT** Input values of less than 10 seconds will be limited to 10 seconds. Minimal value is 10 seconds.				
2169	MB1, External Motion (Presence)	Yes/No	1 bit - 1.001	C, W
Input: This object can be used to hold the presence state by some other external information. As long as this input is on, the motion stays on presence mode.				
2171	MB1, Brightness	Brightness	2 bytes - 9.004	C, R, T
Sends the value of the detected brightness to the bus as an object.				
2172	MB1, Brightness is below the Threshold	Yes/No	1 bit - 1.005	C, R, T
Sends an object to the bus when the value falls below the threshold.				
2173	MB1, Failure Status	Status	1 bit - 1.005	C, R, T
Sends the failure status as an object on the bus.				
2174	MB1, Semi-Auto Mode	Start	1 bit - 1.010	C, W
Start the regulation in Semi-Auto Mode				
2175a	MB1, Control Output	On/Off	1 bit - 1.001	C, R, T
Output: The value sent when brightness is below setpoint (threshold).				
2175b	MB1, Control Output	Value	1 byte - 5.001	C, R, T
Output: The value sent when brightness deviates from the setpoint.				

Object	Object name	Function	Type	Flags
2176	MB1, Disable Automatic	On/Off	1 bit - 1.001	C, W
Input: Using this object, the Light Control or Movement Detection can be activated/enabled or deactivated/ disabled. Light Control is activated by default and upon restarting the device.				
2177	MB1, Automatic Status	Inactive/Active	1 bit - 1.011	C, R, T
Output: This object indicates the status of the Light Control				
2178	MB1, Brightness Setpoint	Value	2 bytes - 9.004	C, R, W
Input: The setpoint of brightness can be adjusted here.				
2179	MB1, Brightness Setpoint Dimming	Up/Down	4 bits - 3.007	C, W
Input: The setpoint of brightness can be changed via dimming.				

20.6. Generic DALI Input Objects

A set of communication objects is available for each of the up to eight possible generic inputs. The following objects are available:

NOTE
GI1 is used as an example.

Object	Object name	Function	Type	Flags
2301	GI1, Temperature	Value	2 bytes - 9.001	C, R, T
The output transmits the current temperature.				
2301a	GI1, Humidity	Value	2 bytes - 9.007	C, R, T
The output transmits the current humidity.				
2301b	GI1, Air Quality	CO2	2 bytes - 9.008	C, R, T
The output transmits the current CO_2 value.				
2301c	GI1, Air Quality	VOC	2 bytes - 9.008	C, R, T
The output transmits the current Volatile Organic Compound (VOC) value.				
2301d	GI1, Scaling	Value	1 byte - 5.001	C, R, T
The output transmits the current scaling value.				
2301e	GI1, Sound [db]	Value	1 byte - 5.010	C, R, T
The output transmits the current decibel (db) value.				
2301f	GI1, Generic 2-byte Unsigned	Value	1 byte - 5.00x	C, R, T
The output transmits the current generic value.				
2301g	GI1, Generic 2-byte Float	Value	2 bytes - 9.00x	C, R, T
The output transmits the current generic value.				
2302	GI1, xxxx is Above Threshold	Yes/No	1 bit - 1.005	C, R, T
The output sends an alarm status.				
2303	GI1, xxxx is Below Threshold	Yes/No	1 bit - 1.005	C, R, T
The output sends an alarm status.				
2302a	GI1, xxxx Alarm 1	Yes/No	1 bit 1.005	C, R, T
The output sends an alarm status.				
2302b	GI1, xxxx Alarm 2	Yes/No	1 bit - 1.005	C, R, T
The output sends an alarm status.				

20.7. Push Button Objects

A set of communication objects is available for each of the up to eight possible push buttons. Each push button can have up to 4 button pairs. The following objects are available:

NOTE
PB1, Pair 1 is used as an example.

Table 13. The push button pair works as a connected pair

Object	Object name	Function	Type	Flags
2325	PB1, Pair 1, Switching	On/Off	1 bit - 1.001	C, T
The output transmits the Switching command.				
2326	PB1, Pair 1, Dimming	Up/Down	4 bit - 3.007	C, T
The output transmits the dimming command.				
2325a	PB1, Pair 1, Shutter	Step	1 bit - 1.009	C, T
The output transmits the step (open/close) command for the blinds				
2326a	PB1, Pair 1, Shutter	Up/Down	1 bit - 1.008	C, T
The output transmits the shutter command for moving Up/Down.				
2325b	PB1, Pair 1, Value	Value	1 byte - 5.001	C, W, T, U
The output transmits the fixed value defined by parameter.				
2325c	PB1, Pair 1, Value	Value	1 byte - 5.001	C, W, T, U
The output transmit the variable value defined by parameter.				
2325d	PB1, Pair 1, Presence	On/Off	1 bit - 1.018	C, T
The output transmits the presence.				

Table 14. The push button pair works with single buttons

Object	Object name	Function	Type	Flags
2325	PB1, Pair 1, Switching Left Button	Toggle On Off	1 bit - 1.001	C, W, T, U C, T
The output transmits the Switching command.				
2326	PB1, Pair 1, Switching Right Button	Toggle On Off	1 bit - 1.001	C, W, T, U C, T
The output transmits the switching command.				
2325a	PB1, Pair 1, Switching Left Button	Value	1 byte - 5.001	C, T
The output transmits the value.				
2326b	PB1, Pair 1, Switching Right Button	Value	1 byte 5.001	C, T
The output transmits the value.				
2325a	PB1, Pair 1, Scene Left Button	 Invoke Invoke/Program	1 byte 17.001 18.001	C, T
The output transmits the scene command.				
2326b	PB1, Pair 1, Scene Right Button	 Invoke Invoke/Program	1 byte 17.001 18.001	C, T
The output transmits the scene command.				

20.8. Generic KNX Input Objects

Communication objects are available for up to 16 generic KNX information. The following objects are available:

NOTE
KNXI1 is used as an example.

Object	Object name	Function	Type	Flags
2389	KNXI1	Boolean	1 bit - 1.001	C, W, U

The input is read according to the selected Datapoint Type:

Boolean	[1] 1.xxx
Scaling	[5.1] DPT_Scaling
Unsigned	[5.10] DPT_Value_1_Ucount
unsigned	[5.4] DPT_Percent_U8
Signed	[6.10] DPT_Value_1_Count
Signed	[6.1] DPT_Percent_V8
Float	[9] 9.xxx
Float	[9.1] DPT_Value_Temp
Float	[9.6] DPT_Value_Pres
Float	[9.24] DPT_Power
Float	[9.22] DPT_PowerDensity
Float	[9.5] DPT_Value_Wsp
Float	[9.4] DPT_Value_Lux
Float	[9.7] DPT_Value_Humidity
Float	[9.10] DPT_Value_Time1
Float	[9.21] DPT_Value_Curr
Float	[9.20] DPT_Value_Volt
Float	[9.8] DPT_Value_AirQuality
Float	[9.9] DPT_Value_AirFlow
Float	[9.27] DPT_Value_Temp_F
Unsigned	[7.1] DPT_Value_2_Ucount
Unsigned	[7.13] DPT_Brightness
Signed	[8.1] DPT_Value_2_Count
Float	[14] 14.xxx
Float	[14.68] DPT_Value_Common_Temperature
Float	[14.58] DPT_Value_Pressure
Float	[14.56] DPT_Value_Power
Float	[14.31] DPT_Value_Energy
Float	[14.33] DPT_Value_Frequency
Float	[14.10] DPT_Value_Area
Unsigned	[12.1] DPT_Value_4_Ucount
Signed	[13.1] DPT_Value_4_Count

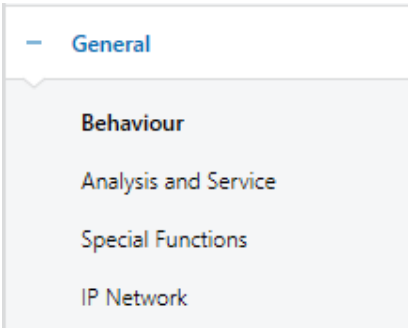
Object	Object name	Function	Type	Flags
Signed	[13.10] DPT_ActiveEnergy			
Signed	[13.13] DPT_ActiveEnergy_kWh			
Signed	[13.2] DPT_FlowRate_m3/h			

21. ETS Parameters

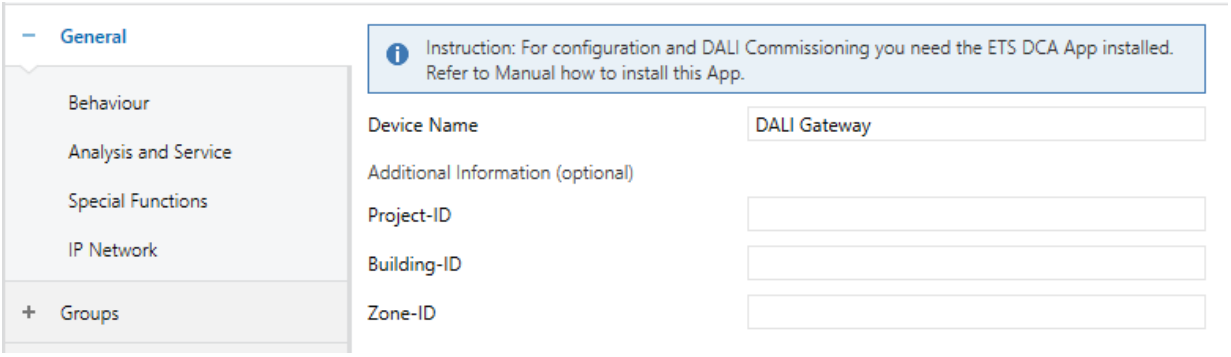
The device's ETS parameters are distributed across different parameter pages. To simplify the overview, only the parameter pages of the selected device in the function tree are displayed.

21.1. General

Five parameter pages are available under the **General** heading. The parameters are described below.

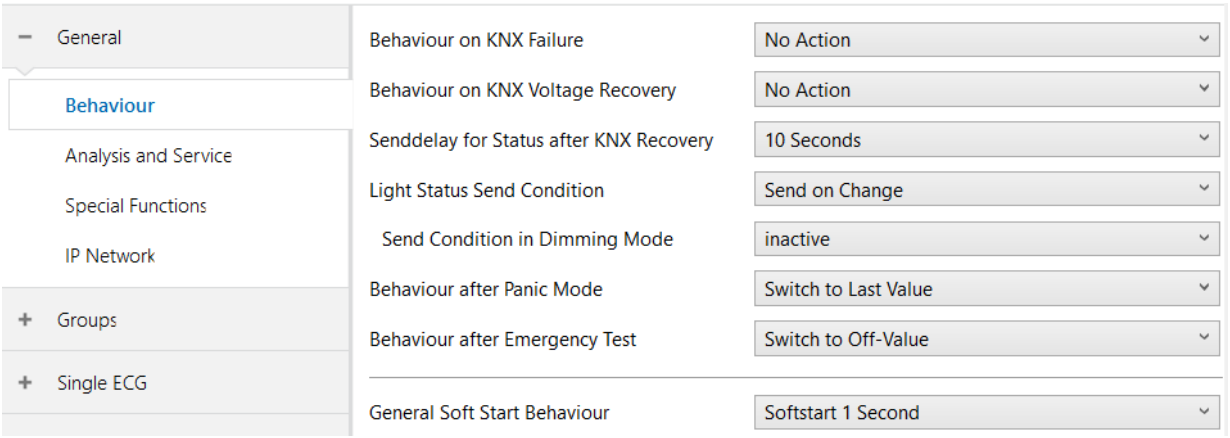


21.1.1. Parameter Page: General



Parameter	Settings
Device Name	DALI-2 to KNX TP PRO Gateway
You can assign your own device name here. DALI-2 to KNX TP PRO Gateway is preset.	
Additional information (optional):	• Project-ID • Building-ID • Zone-ID
Space for additional installation instructions (optional) **NOTICE** The maximum length allowed for each field is 20 characters.	

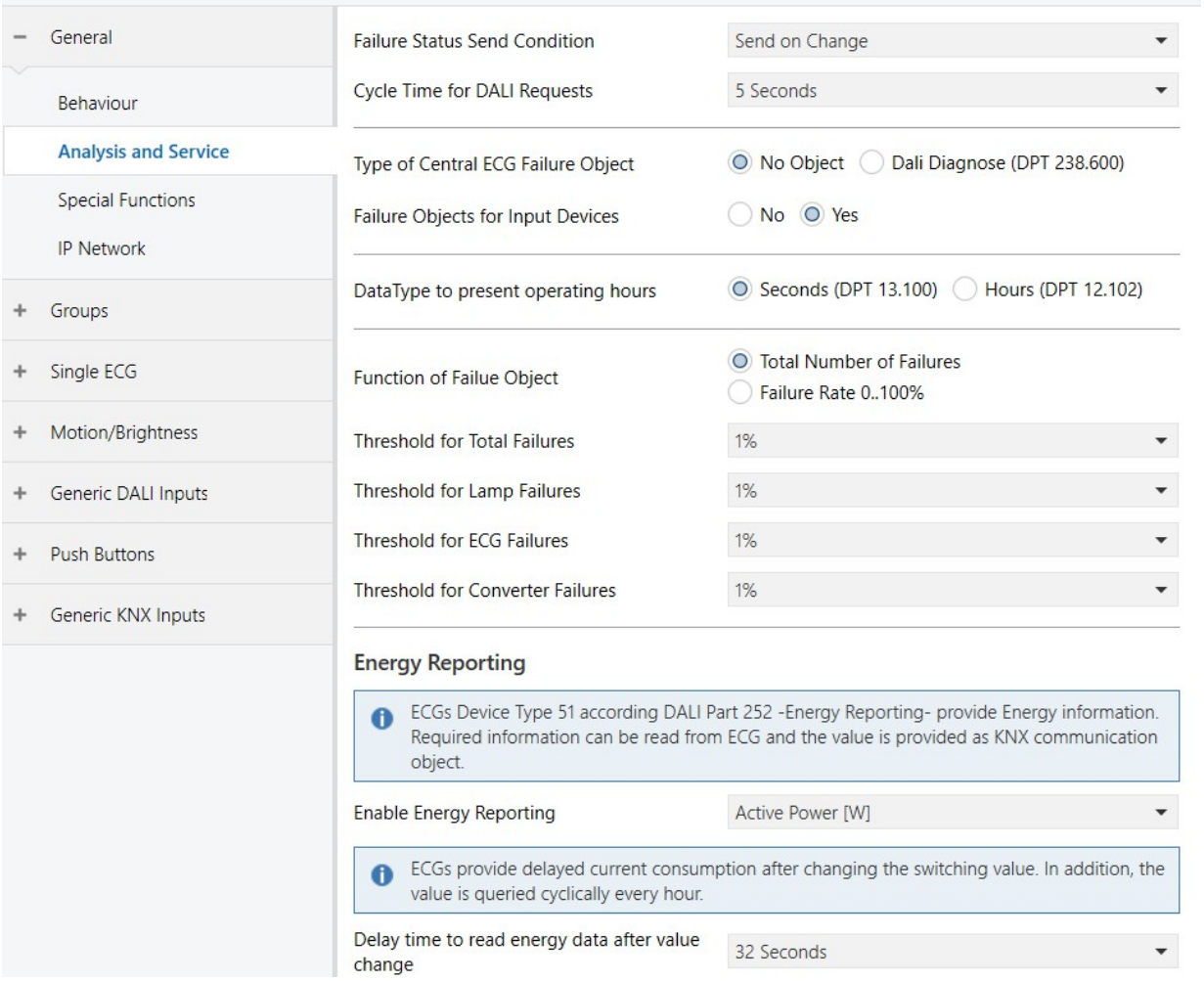
21.1.2. Parameter Page: Behaviour



Parameter	Settings
Behaviour of KNX Failure	• **No Action** • Switch to On-Value • Switch to Off-Value • Switch to Panic Value
Use this parameter to set the behavior of the connected ECGs/lamps when a KNX failure occurs.	
Behaviour on KNX Voltage Recovery	• **No Action** • Switch to Last Value • Switch to On-Value • Switch to Off-Value
Use this parameter to set the behavior of the connected ECG/lamps on KNX voltage recovery or bus reset.	
Send delay for Status after KNX Recovery	• immediately • 5 Seconds • **10 Seconds** • 15 Seconds • 20 Seconds • 30 Seconds • 40 Seconds • 50 Seconds • 60 Seconds
Sets a delay for sending status objects after KNX voltage recovery or a bus reset. In installations with more than one gateway, different settings for this parameter can prevent all devices from starting to send at the same time.	

Parameter	Settings
Light Status Send Condition	• Send on Request • **Send on Change** • Send on Change and after busreset
Determines the connected ECGs and groups' light status send conditions (switch status and value status).	
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 would like a value status to be sent via a 4-bit dimming telegram during dimming (relative dimming). If you use the **inactive** setting, the value is only sent after completing the dimming process.	
Behaviour after Panic Mode	• Switch to Off-Value • Switch to On-Value • **Switch to Last Value**
Use this parameter to determine which light value ECGs/lamps will adopt after the panic mode. If you use the **Switch to Last Value** option, the value before the panic mode is saved, and the lamp returns to this value afterward.	
Behaviour after Emergency Test	• Switch to Off-Value • Switch to On-Value • **Switch to Last Value**
Use this parameter to determine which light value ECGs/lamps will adopt after the emergency test. If you use the **Switch to Last Value** option, the value before the emergency test is saved, and the lamp returns to this value afterward.	
General Soft Start Behavior	• 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/off.	

21.1.3. Parameter Page: Analysis and Service

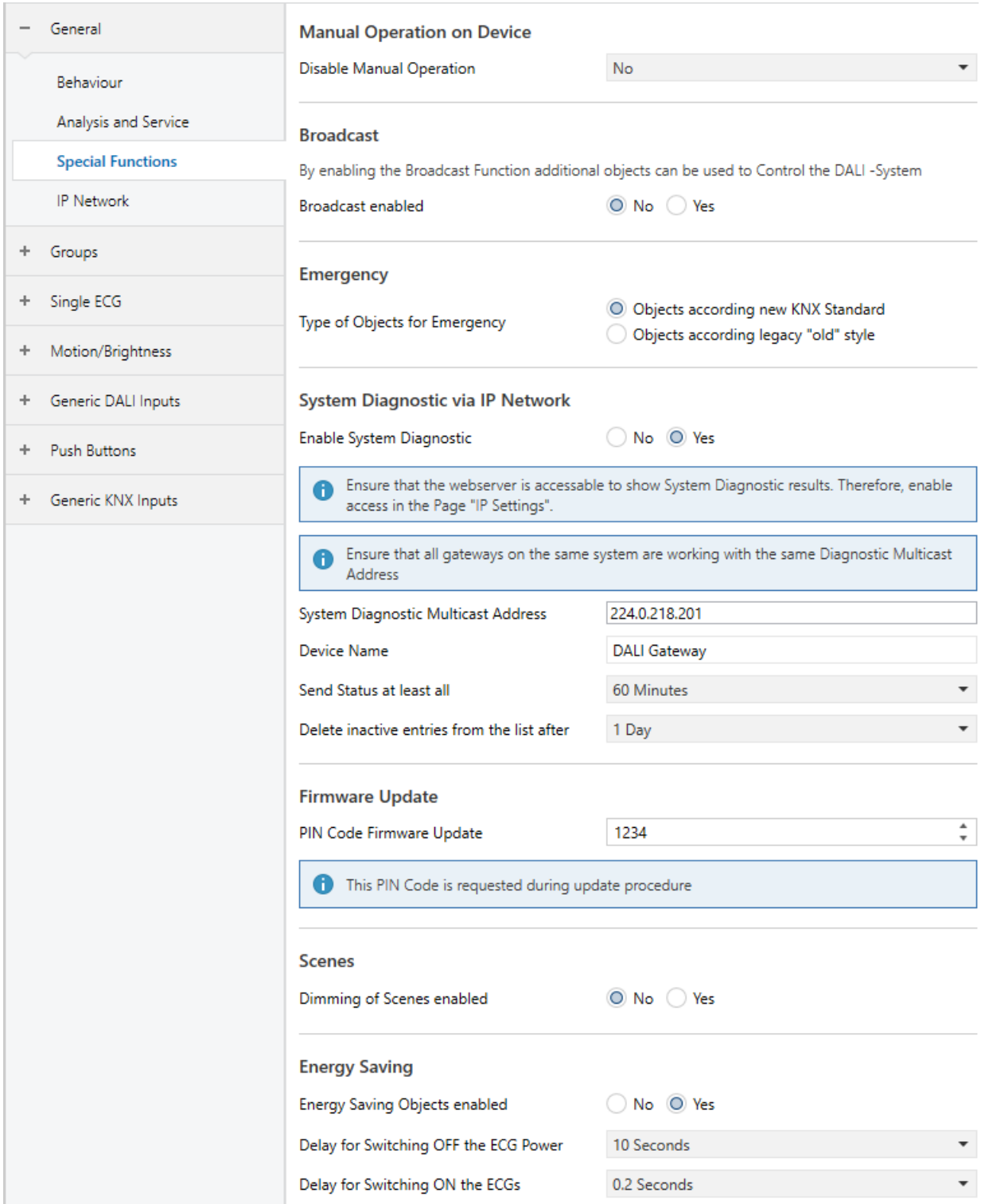


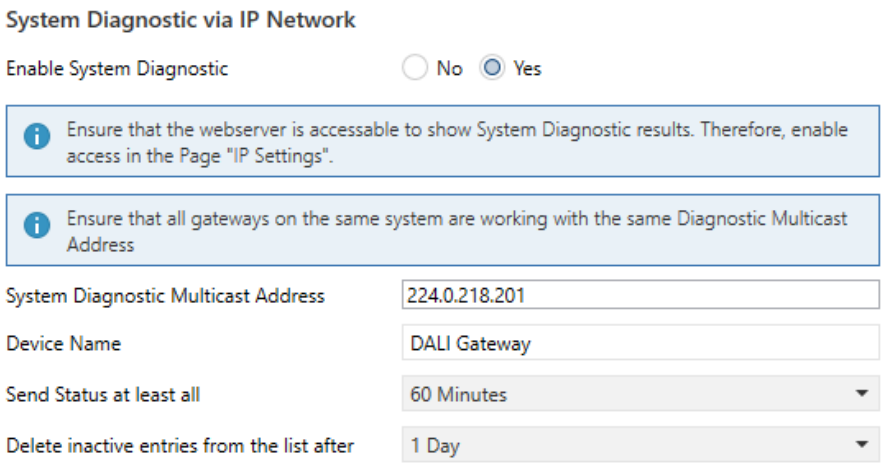
Parameter	Settings
Failure Status Send Condition	• Send on Request • **Send on Change** • Send on Change and after Busreset
Sets the conditions under which the failure status objects of the connected ECGs and groups are to be sent.	
Cycle Time for DALI Request	• No Request • 0.5 Seconds • 1 Second • 2 Seconds • 3 Seconds • 4 Seconds • 5 Seconds • 6 Seconds • 7 Seconds • 8 Seconds • 9 Seconds • 10 Seconds
To analyze ECG and lamp failures, periodic requests must be sent to the ECGs via DALI telegrams. Use this parameter to set the cycles for these periodic requests. **IMPORTANT** If you use the **No Request** option, ECG and lamp failures will no longer be recognized, and emergency luminaires can no longer be evaluated. Therefore, you should use this setting only during service or in special cases.	
Type of Central ECG Failure Object	• **No Object** • Dali Diagnose (DPT 238.600)
Use this parameter to select whether to use the central failure object (object number 28, DPT 238.600) for ECG and lamp failures.	
Failure Objects for Input Devices	• **No** • Yes
The error objects can be shown via this parameter. These objects, eight objects for motion detectors and generic inputs and eight objects for pushbuttons, are summarized at the end of the object list.	
Data Type to present operating hours	• **Seconds (DPT 13.100)** • Hours (DPT 12.102)
The operating hours can be presented as seconds or hours using this parameter.	
Function of Failure Object	• **Total Number of Failures** • Failure Rate 0 .. 100%
Use this parameter to select whether you want to use the failure analysis objects (objects 16, 18, 20, and 22) to report the total amount of failures or the failure rate in %.	

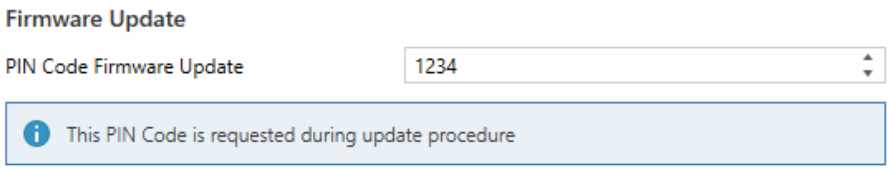
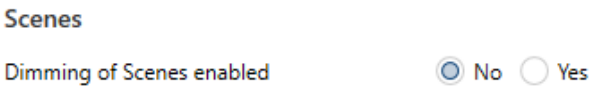
Parameter	Settings
Threshold for Total Failures	• **1%** • 2% • 3% • ... • 100%
This parameter configures a threshold value for the general failure alarm object (object 16). The threshold value considers all failures (ECG, lamp, and converter failures) independently of the failure type and relates them to the total number of connected ECGs and converters.	
Threshold for Lamp Failures	• **1%** • 2% • 3% • ... • 100%
Configures a threshold value for the lamp failure alarm object (object 18). The threshold value considers all lamp failures in relation to the total number of connected lamps in the DALI segment.	
Threshold for ECG Failures	• **1%** • 2% • 3% • ... • 100%
Configures a threshold value for the ECG failure alarm object (object 20). The threshold value considers all ECG failures in relation to the total number of connected ECGs in the DALI segment.	
Threshold for Converter Failures	• **1%** • 2% • 3% • ... • 100%
Configures a threshold value for the converter failure alarm object (object 22). The threshold value considers all converter failures in relation to the total number of connected converters in the DALI segment.	
Enable Energy Reporting	• **No** • Active Power [W] • Active Energy [Wh]
Device Type 51 devices provide energy information according to DALI part 252 - Energy Reporting. The Required information can be read from the ECG, and the value is provided as a KNX communication object. This parameter defines the type of reporting.	

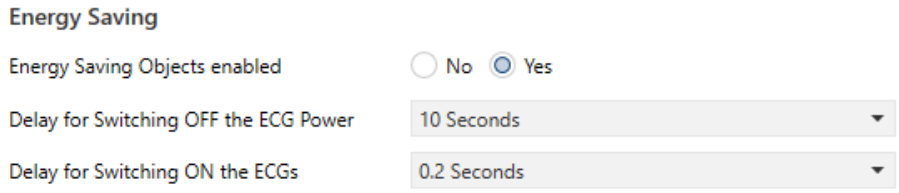
Parameter	Settings
Delay time to read energy data after value change	• Only cyclically every hour • 4 Seconds • 8 Seconds • 12 Seconds • 16 Seconds • 20 Seconds • 28 Seconds • 32 Seconds • 36 Seconds • 40 Seconds • 60 Seconds
The ECG provides energy information with a delay. This delay depends on how the ECG calculates the energy, and therefore, this value can be defined according to the ECG type. **IMPORTANT** Due to this background, the power value is always calculated with a time delay. In addition, the value is queried cyclically every hour. For more details, refer to the Energy Reporting According to DALI Part 252 (page 20) section.	

21.1.4. Parameter Page: Special Functions

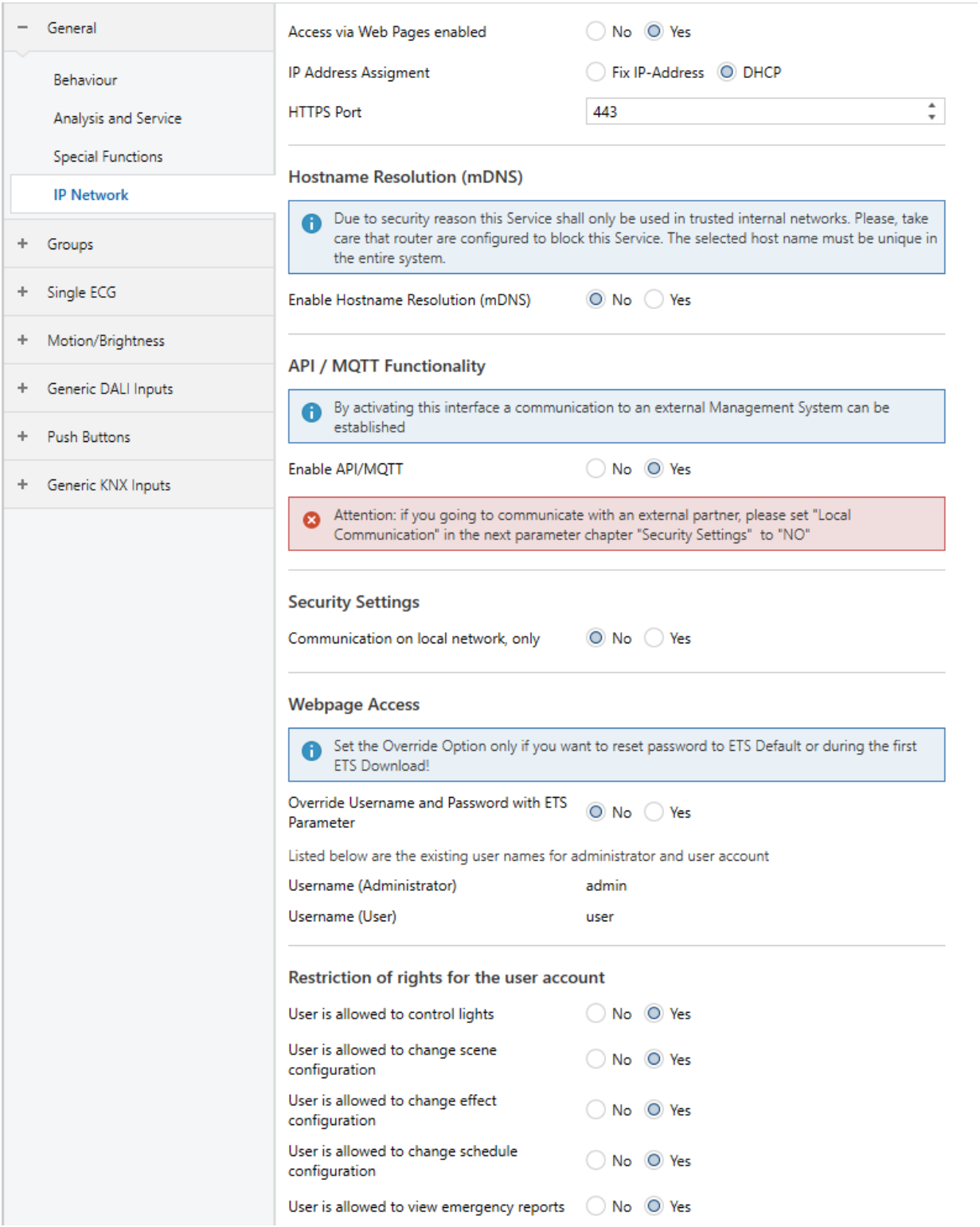


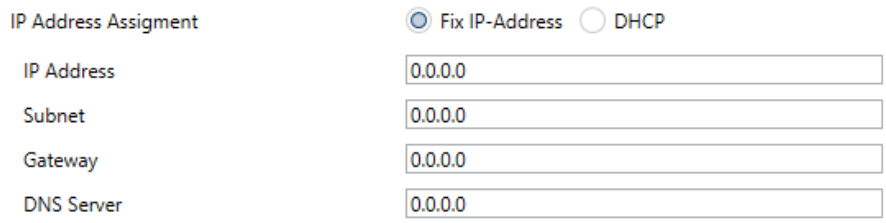
Parameter	Settings
Disable Manual Operation	• **No** • Yes, all settings disabled • Yes, without installation
This parameter can be used to enable manual operation directly on the device.	
Broadcast enabled	• **No** • Yes
This parameter can be used to enable the broadcast function in addition to group control. Activating it enables a new **Broadcast** tab. See the Broadcast (page 180) section. **NOTE** When activating the broadcast function, additional objects can be used to control the DALI system, and further parameters appear.	
Type of Objects for Emergency	• **Objects according new KNX Standard** • Objects according legacy "old" style
Select the object type to be used for emergency-type ECGs, according to the latest KNX standard or legacy style. **NOTICE** The emergency-type ECGs are those identified as self-contained Battery Lamp types.	
Enable System Diagnostics	• **No** • Yes
Allows system diagnostics over the network.  **NOTE** To show system diagnostic results, the web server must be accessible. Therefore, the **Access via Web Pages enabled** and the **Communication on local network, only** parameters must be set to Yes. Check the Parameter Page: IP Network (page 176) section for more information.	
System Diagnostics Multicast Address	**224.0.218.201**
All gateways belonging to the system must communicate via the same multicast address.	

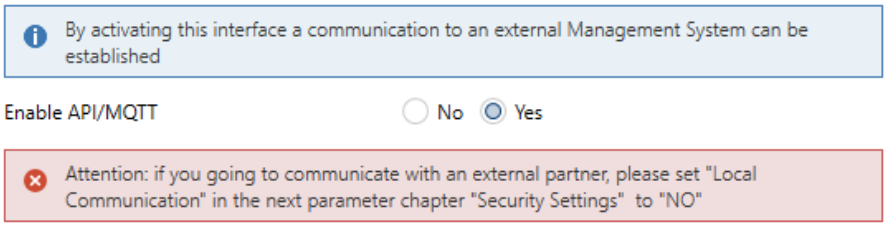
Parameter	Settings
Device Name	DALI Gateway
The device name already defined in the **General** parameters section is displayed here, where It can also be modified directly. This name will be displayed on the web page.	
Send Status at least all	• No • 30 Minutes • **60 Minutes** • 90 Minutes • 120 Minutes
An additional parameter can be used to define after what time the status is to be sent if there has been no change during this time, and thus, no automated event is reported.	
Delete inactive entries from the list after	• 6 Hours • 12 Hours • **1 Day** • 2 Days • 3 Days • 4 Days
The inactive entries (non-active gateways) are deleted after this time.	
Pin Code Firmware Update	1234
 This number is requested during a firmware update. See Firmware Update (page 28).	
Dimming of Scenes enabled	• **No** • Yes
	

Parameter	Settings
Energy Saving Objects enabled	• **No** • Yes
 When this function is activated, an energy-saving object can be selected for both groups and ECGs to switch off the power supply when the lighting is switched off.	
Delay for Switching OFF the ECG Power	• **10 seconds** • 30 seconds • 1 Minute • 2 Minutes • 5 Minutes • 10 Minutes
Delay before switching off the power.	
Delay for Switching ON the ECGs	• 0.1 Seconds • 0.2 Seconds • 0.3 Seconds • 0.4 Seconds • 0.5 Seconds • 0.6 Seconds • 0.7 Seconds • 0.8 Seconds • 0.9 Seconds • 1 Second • 1.1 Seconds • 1.2 Seconds • 1.4 Seconds • 1.6 Seconds • 1.8 Seconds • 2 Seconds
Delay until the ECGs are switched on. During this time, the actuator controlling the power supply must have switched safely.	

21.1.5. Parameter Page: IP Network



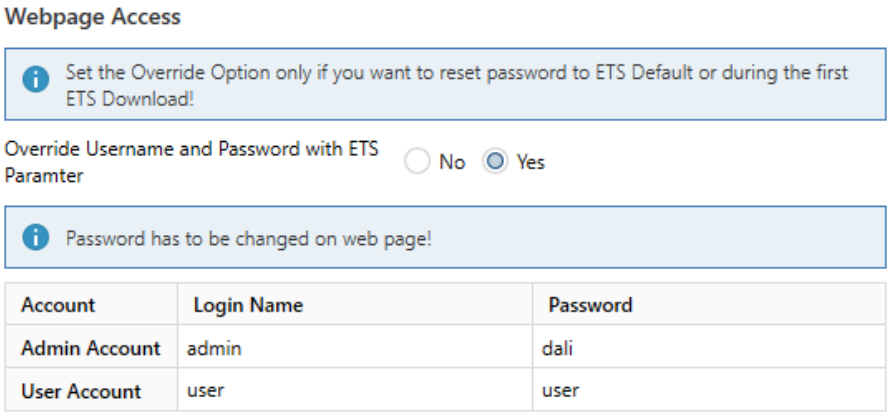
Parameter	Settings
Access via Web Pages enabled	• **No** • Yes
This can be used to disable the basic use of web operations for security reasons. **IMPORTANT** An IP connection is required for the firmware update. If this option is disabled, firmware update is not possible.	
IP Address Assignment	• Fixed IP Address • DHCP
Determines whether the device is given a fixed IP address or a dynamic IP address via DHCP. When selecting the **fixed IP Address** option, the following additional parameters appear:  	
HTTPS Port	**443**
The device has an HTTPS web server to visualize the status or to carry out commissioning. the port is set to the default value for HTTPS, which is **443**.	
Hostname Resolution (mDNS)	
Enable Hostname Resolution (mDNS)	• **No** • Yes
If enabled, the device can be found by the name defined in the next parameter.	
Hostname	dali
This parameter defines the hostname. **NOTE** The default name is **dali** **NOTICE** Due to security reasons, this service should only be used in trusted internal networks. Take care that the router is configured to block this service. The selected host name must be unique in the entire system.	

Parameter	Settings
API / MQTT Functionality	
Enable API/MQTT	• **No** • Yes
This parameter can enable the API/MQTT feature. MQTT can be used to communicate with an external broker and provide data to other management systems.  **NOTICE** Pay attention to the hint shown in the red box, especially if you want to communicate with an external partner. **NOTE** Settings and instructions for using MQTT are covered in the API/MQTT (page 246) section.	
Security Settings	
Communication on local network, only	• **No** • Yes
This parameter can be used to restrict the web server's ability to operate and control the device via the web. By default, only requests from the local network are accepted.	

Parameter	Settings
Webpage Access	
Override Username and Password with ETS Parameter	• No • **Yes**

This option can be used to reset the passwords.

NOTE
For more information, check the KNX Secure (page 7) section.



Admin Account	Login Name (16 characters), Password (8 characters)

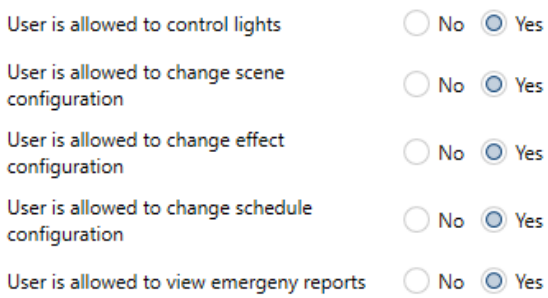
The standard login name is **admin**, and the default login name is ‘admin’. The default password , **dali** , must be changed on the website and can be up to 8 characters long.

NOTE
An empty password is not permitted.

User Account	Login Name (16 characters), Password (8 characters)

The standard login name is **user**. The default password **, user**, must be changed on the website and can be up to 8 characters long.

NOTE
An empty password is not permitted.

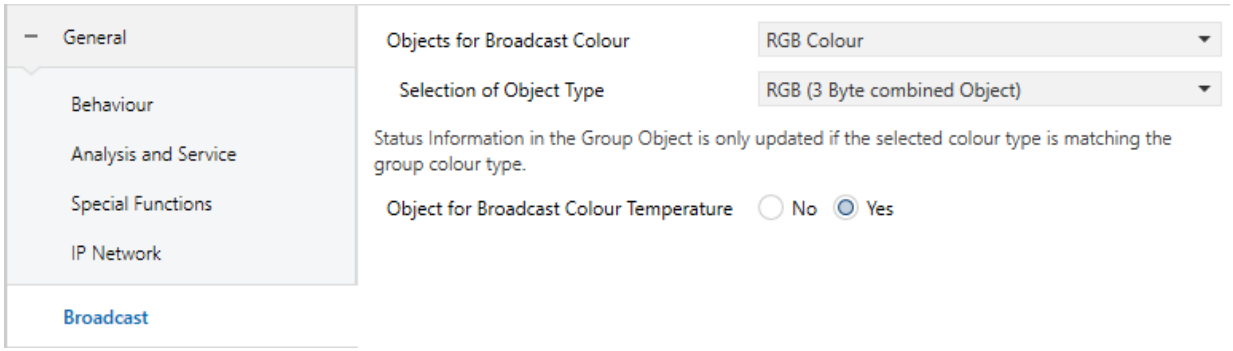
Restriction of rights for the user account	

User rights can be enabled or restricted here.

21.2. Broadcast

This tab is displayed if the **Broadcast enabled** option has been activated.

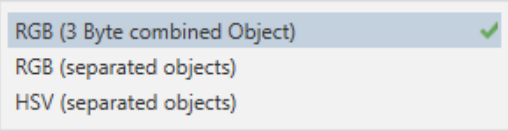
NOTE
See Parameter Page: Special Functions (page 172)



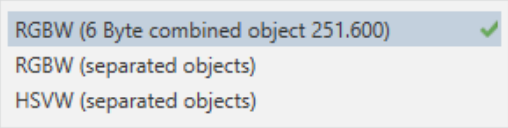
Parameter	Settings
Objects for Broadcast Colour	• **None** • RGB Colour • RGBW Colour • XY Colour

This defines what communication objects are to be displayed for broadcast colour control:

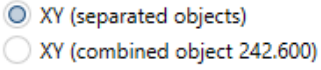
Upon selecting an option, an additional selection window is shown:



RGB Colour selected



RGBW Colour Selected



XY Colour Selected

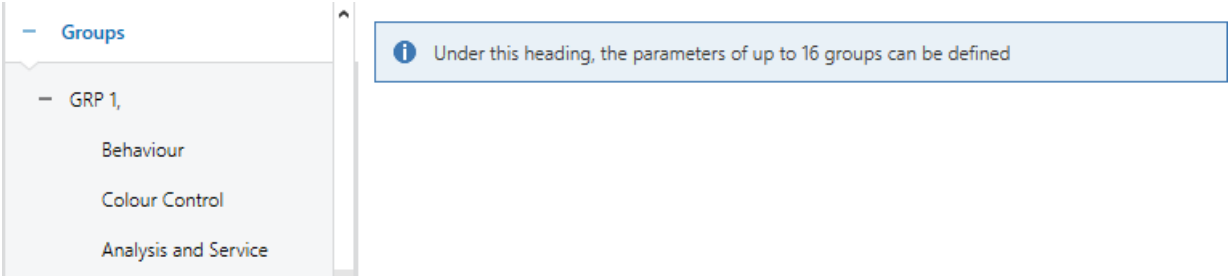
NOTE
The status information is only updated if the type of the colour control matches the type defined in the group.

Object for Broadcast Colour Temperature	• No • **Yes**

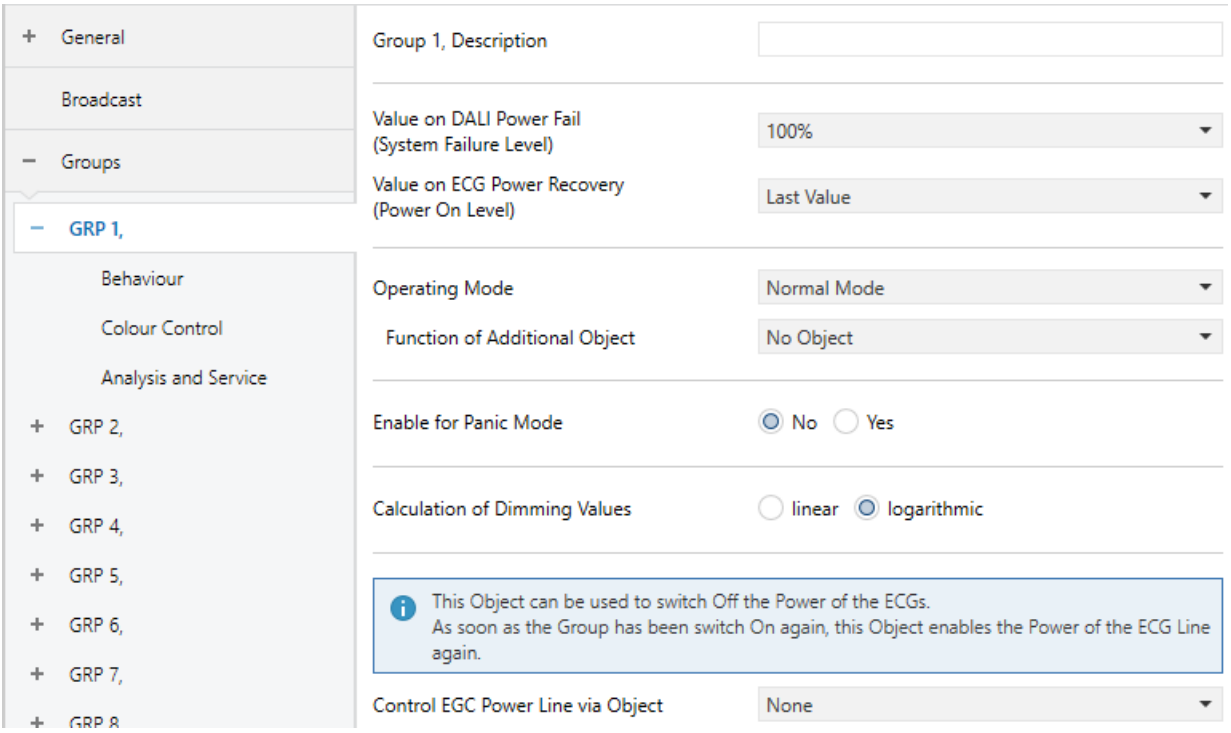
Activate this object to enable broadcast colour temperature.

21.3. Groups

There are four parameter pages are available under the **Groups** heading. The parameters are described below.



21.3.1. General Group1 (2 .. 16)



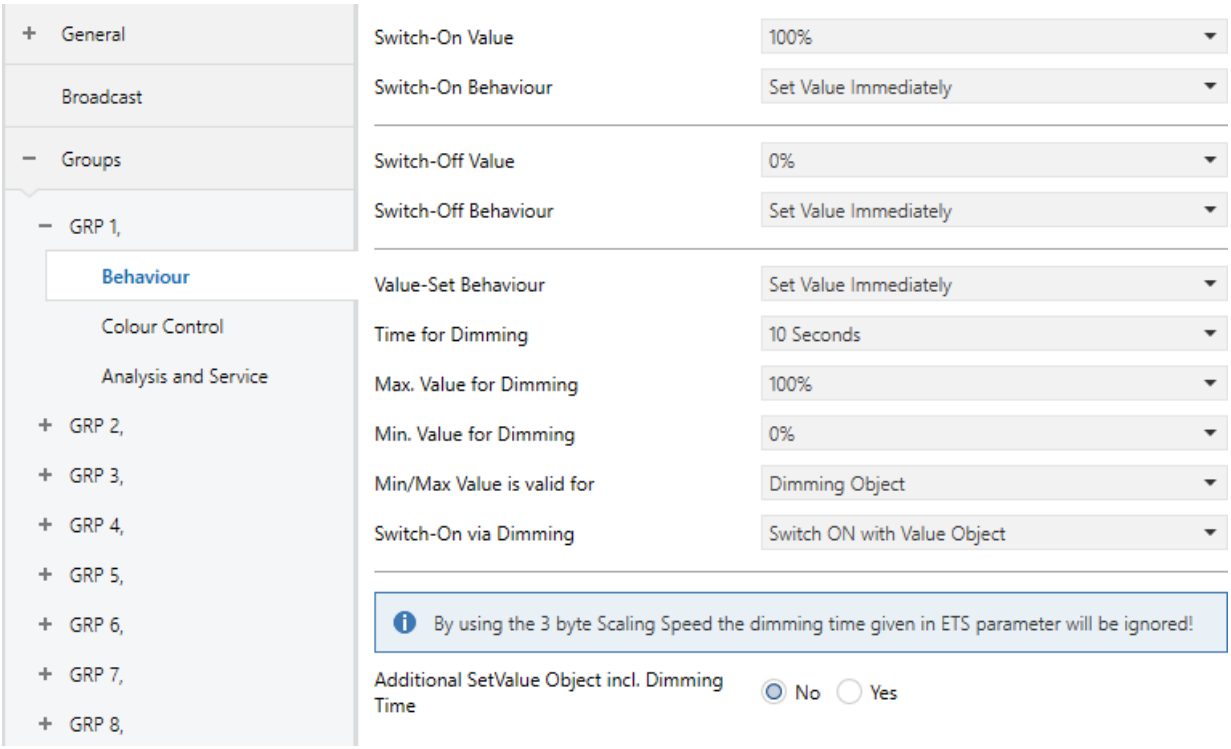
Parameter	Settings
Group x Description	e.g.: Room 1 (window)
Use this parameter to define a group description. **NOTE** The description is shown for all communication objects. For example, Room 1 (window): G1, Switching, Room 1 (window) On/Off G1, Dimming, Room 1 (window) Brighter/Darker G1, Set Value, Room 1 (window) Value G1, Status, Room 1 (window) On/Off G1, Status, Room 1 (window) Value G1, Failure Status, Room 1 (window) Yes/No	
Value on DALI Power Fail (System Failure Level)	• 0 .. 100% (default value: **100%**) • Last Value
Use this parameter to set the value of a lamp after a loss of DALI power. The value is saved on the ECG and the device automatically changes to the specified value when a power loss occurs.	
Value on ECG Power Recovery (Power On Level)	• 0 .. 100% • **Last Value**
Use this parameter to set the lamp's value after the ECG power supply returns. The value is saved on the ECG, and the device automatically changes to it when power is restored.	
Operating mode	• Normal Mode • Permanent Mode • Normal / Night Mode • Staircase Mode
Use this parameter to set the operating mode of a group.	
Value in Permanent Mode (if selected)	0 .. 100% (default value: **50%**)
Use this parameter to set the value of all lamps in a group in **Permanent mode**. Lamps in this mode cannot be switched or changed. They remain at the set value.	
Behaviour in Normal / Night Mode (if selected)	• **Delayed Switch-Off automatically** • Delayed Switch-Off in 2 steps automatically • Delayed Dimm-Off automatically • Activate Permanent Mode and Ignore Telegrams
This parameter can be used to set how the corresponding group behaves if night mode has been activated via the night object (No. 12). The parameter is only shown if the group is set to **Normal / Night Mode**. The special settings for this mode are: • **Delayed Switch-Off in 2 steps automatically**: – The value is set to 50% of the current value one minute before the configured time. – After the configured time, the switch-off value is set. • **Delayed Dimm-Off automatically**: The current value is dimmed to the switch-off value one minute before the configured time. • **Activate Permanent Mode and Ignore Telegrams**	

Parameter	Settings
Automatic Switch OFF after	• 1 Minute • 2 Minutes • 3 Minutes • 4 Minutes • **5 Minutes** • 10 Minutes • 15 Minutes • ... • 90 Minutes
Use this parameter to set the time after which a group in **Normal / Night Mode** automatically switches off. **NOTE** This parameter is only visible if you select **Normal / Night Mode** and one of the **delayed** behaviors.	
Behaviour in Staircase Mode (if selected)	**Delayed Switch-Off automatically** Delayed Switch-Off in 2 steps automatically Delayed Dimm-Off automatically
This parameter can be used to set how the corresponding group behaves in staircase operation. These parameters are only shown if the group is set to **Staircase Mode**: • **Delayed Switch-Off in 2 steps automatically:** – The value is set to 50% of the current value one minute before the configured time. – After the configured time, the switch-off value is set. • **Delayed Dimm-Off automatically**: The current value is dimmed to the switch-off value one minute before the configured time.	
Automatic Switch OFF after	• 1 Minute • 2 Minutes • 3 Minutes • 4 Minutes • **5 Minutes** • 10 Minutes • 15 Minutes • ... • 90 Minutes
Use this parameter to set the time after which a group in **Staircase Mode** automatically switches off. **NOTE** This parameter is only visible if you select **Staircase Mode**.	

Parameter	Settings
Function of Additional Object	• No Object • Staircase function Disable Object
Use this parameter to set the function of an additional object. **NOTE** If you select **Staircase function Disable Object**, value 1 disables only the staircase function. This can be used to temporarily disable the staircase function, for example, during cleaning.	
Behaviour on Disable	• **No Change** • Switch to On-Value • Switch to Off-Value
This parameter appears when an additional object has been selected to define the behavior when disabled.	
Behaviour on Enable	• **No Change** • Switch to On-Value • Switch to Off-Value • Switch to state received during disable (lock)
This parameter appears when an additional object has been selected to define the behavior when enabled.	
Enable for Panic Mode	• **No** • Yes
Determines whether a group should be considered during Panic Mode. **NOTE** Panic Mode is controlled via central object number 10.	
Value in Panic Mode	• 1% • 5% • 10% • 15% • ... • **50%** • ... • 85% • 90% • 95% • 100%
Use this parameter to select the value for this operating mode.	
Calculation of Dimming Values	• linear • **logarithmic**
Sets the dimming curve for the group.	

Parameter	Settings
Control ECG Power Line via Object	• **None** • Energy Saving Object 1 .. 16
Here, you define the object with which the power supply is to be switched off. This parameter is only visible if energy-saving objects have been enabled on the **General → Special Functions** parameter page. See Parameter Page: Special Functions (page 172). **NOTE** As soon as the group is switched on again, this object enables the power of the ECG line again.	

21.3.2. Behaviour



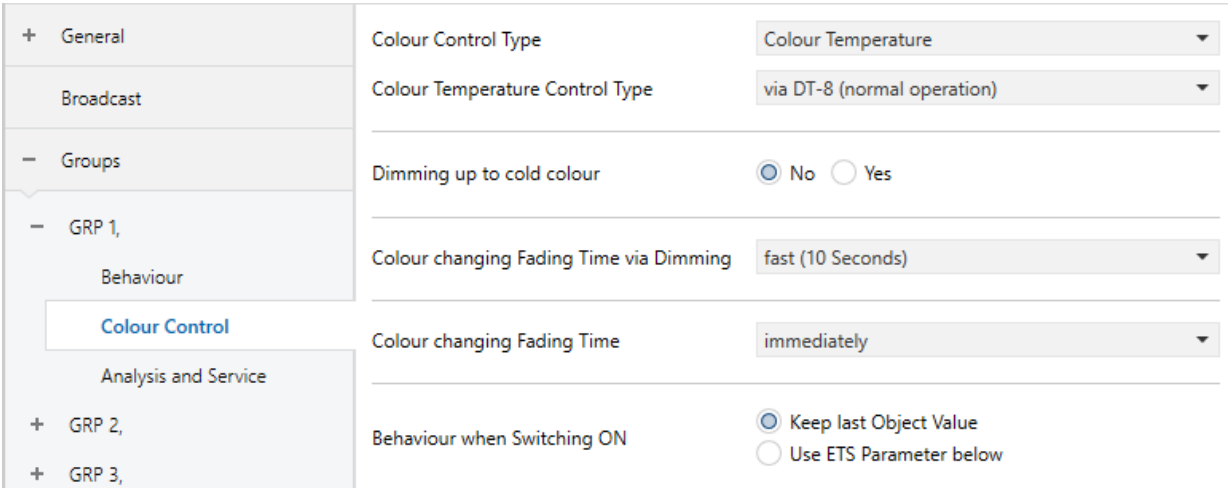
Parameter	Settings
Switch-On Value	• 1% • 5% • 10% • ... • 95% • **100%** • Last Value
Use this parameter to set the switch-on value. If you select **Last Value**, the value is set to the dimming value the lamp had before being switched off.	

Parameter	Settings
Switch-On Behaviour	• **Set Value Immediately** • Dim to Value in 3 Seconds • Dim to Value in 6 Seconds • Dim to Value in 10 Seconds • Dim to Value in 15 Seconds • Dim to Value in 30 Seconds • Dim to Value in 1 Minute • Dim to Value in 2 Minutes • Dim to Value in 5 Minutes • Dim to Value in 10 Minutes
Use this parameter to set the switch-on behavior.	
Switch-Off Value	• **0%** • 5% • 10% • ... • 95% • 99% • Last Value
Use this parameter to set the switch-off value	
Switch-Off Behaviour	• **Set Value Immediately** • Dim to Value in 3 Seconds • Dim to Value in 6 Seconds • Dim to Value in 10 Seconds • Dim to Value in 15 Seconds • Dim to Value in 30 Seconds • Dim to Value in 1 Minute • Dim to Value in 2 Minutes • Dim to Value in 5 Minutes • Dim to Value in 10 Minutes
Use this parameter to set the switch-off behaviour.	

Parameter	Settings
Value-Set Behaviour	• **Set Value Immediately** • Dim to Value in 3 Seconds • Dim to Value in 6 Seconds • Dim to Value in 10 Seconds • Dim to Value in 15 Seconds • Dim to Value in 30 Seconds • Dim to Value in 1 Minute • Dim to Value in 2 Minutes • Dim to Value in 5 Minutes • Dim to Value in 10 Minutes
Use this parameter to configure the behavior on receipt of a new dimming value via value setting. Remember that the dim time always refers to the full value range. Accordingly, a dimming time of 30 seconds means a value change of 100% within 30 seconds. If the value within a scene is only changed by 50%, the change is performed within 15 seconds.	
Time for Dimming	• 3 Seconds • 4 Seconds • 5 Seconds • 6 Seconds • **10 Seconds** • 20 Seconds • 30 Seconds • 60 Seconds
Use this parameter to set the dim time for relative dimming in relation to a value between 0 and 100%.	
Max. Value for Dimming	• 50% • 55% • ... • **100%**
Use this parameter to configure the maximum dimming value that can be set through relative dimming.	
Min. Value for Dimming	• 0% • 0.5% • 1% • ... • 5% • ... • 50%
Use this parameter to configure the minimum dimming value that can be set through relative dimming.	

Parameter	Settings
Min/Max Value is valid for	• **Dimming Object** • Value Object • Dimming & Value Object
Use this parameter to select the object for which minimum and maximum values are valid. For example, 60% can be set via dimming and 100% via value setting.	
Switch-On via Dimming	• 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.	
Additional SetValue Object Incl. Dimming Time	• **No** • Yes
Determines whether the setValue object is to be used with the combined dimming time (DPT 225.001). See Object number 50. **NOTE** If you select the 3-byte object (combination of value and dimming time), the dimming time in the ETS is ignored.	

21.3.3. Colour Control



Parameter	Settings
Colour Control Type	• **none** • Colour Temperature • RGB Colour • RGBW Colour • XY Colour • Colour Temperature + RGB • Colour Temperature + RGBW
This parameter allows you to select what colour control method should be used in this group. **NOTE** Ensure that the group's ECGs also support the selected type of control.	

21.3.3.1. Colour Temperature

Parameter	Settings
Colour Temperature Control Type	• **via DT-8 (normal operation)** • Via DT-6 (LED cold/warm) Master-Group • Via DT-6 (LED cold/warm) Slave-Group
These types of control are supported when **Colour Temperature** is selected:	
via DT-8 (normal operation)	
Dimming up to cold colour	• **No** • Yes
When this option is activated, the colour temperature is changed as the light is dimmed up. The corresponding values are set in the following parameter.	
• Colour Temperature at Value 0% • Colour Temperature at Value 100%	• 1000 .. 20000K (default value: **3000K**) • 1000 .. 20000K (default value: **6000K**)
Use these parameters to set the colour temperature (warm) in dimmed light and (cold) in high dimmed light.	
Colour changing Fading Time via Dimming	• **Fast (10 seconds)** • Standard (20 seconds) • Slow (40 seconds)
This parameter is used to decide how quickly the colour temperature should be changed when dimming.	

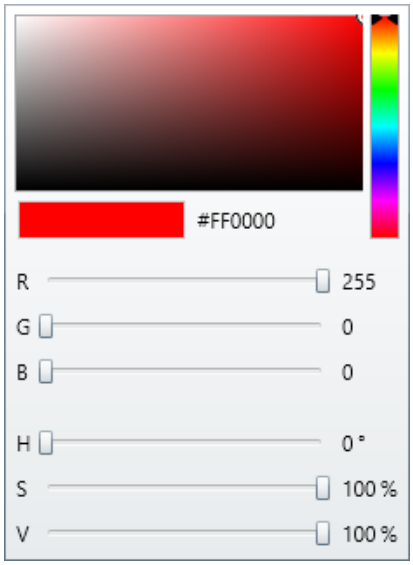
Parameter	Settings
Colour changing Fading Time	• **immediately** • 1 Second • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 60 Seconds • 90 Seconds
This parameter is used to decide how quickly the colour temperature should be changed.	
Behaviour when Switching ON	• **Keep last Object Value** • Use ETS Parameter below
This parameter decides whether the last valid colour value or the colour temperature set with the ETS should always be used. **NOTE** When using **the Keep last Object Value** option, if an object value is invalid, the preset colour of the ETS will be used instead.	
Colour Temperature when Switching ON	1000 .. 20000K (default value: **3000K**)
The set colour temperature when switched on in Kelvins. **NOTICE** This parameter is only visible when the **Use ETS parameter below** option is selected.	
Via DT-6 (LED cold/warm) Master-Group	
With this method, the colour temperature is set via two DT-6 groups. For example, LED strips with a warm colour (3000K) are assigned to a master group, and LED strips with a cold colour (6000K) to a slave group.	
• Colour Temperature for Master LED (warm) • Colour Temperature for Slave LED (cold)	• **1000** .. 4000K • 4000 .. 20000K (default value: **6000K**)
Here, the real values for the two LEDs are defined.	
Via DT-6 (LED cold/warm) Slave-Group	
This group is controlled by another master group. Settings and objects from the master are applied.	
Assign according Master Group	• **Group 1** • Group 2 • Group 3 • ... • Group 16
Assignment of the relevant master group.	

21.3.3.2. RGB

Parameter	Settings
Selection of Object Type (when selecting **Colour Temperature + RGBW**)	• **RGB (3-byte combined object)** • RGB (Separated objects) • HSV (Separated objects)
These types of control are supported when selecting **RGB Colour**:	
Colour changing Fading Time via Dimming	• **fast (10 Seconds)** • standard (20 Seconds) • slow (40 Seconds)
This parameter is used to decide how quickly the colour temperature should be changed when dimming.	
Colour changing Fading Time	• **immediately** • 1 Second • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 60 Seconds • 90 Seconds
This parameter is used to decide how quickly the colour temperature should be changed.	
Correction Value for special LED:	
• Intensity of Colour Red	• 0 .. **100%** (on increments of 10)
• Intensity of Colour Green	• 0 .. **100%** (on increments of 10)
• Intensity of Colour Blue	• 0 .. **100%** (on increments of 10)
Under certain circumstances, the intensity of the red, green, and blue colours may not be precisely matched to the illuminates of the ballast. The weighting of the individual colours can be charged here to carry out a subsequent correction. An intensity of 100% means this colour is controlled to 100%.	
Behaviour when Switching ON	• **Keep last Object Value** • Use ETS Parameter below
This parameter decides whether the last valid colour value or the colour set with the ETS should always be used. **NOTE** When using **the Keep last Object Value** option, if an object value is invalid, the preset colour of the ETS will be used instead.	

Parameter	Settings
Colour value When Switching On	#FF0000

This parameter defines the RGB colour when switching on. To do this, press the button and select the colour in the colour dialog box.



NOTICE
This option is only visible when **Use ETS Parameter below** is selected.

21.3.3.3. RGBW

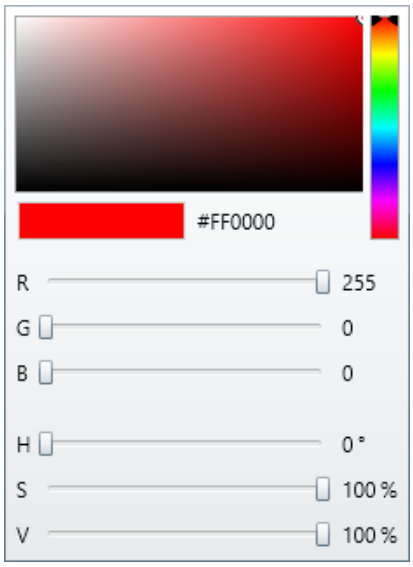
The RGBW colour control type uses the same parameters as the RGB colour control type (see previous section); the only differences can be found in the **Selection of Object type** parameter and an additional control (**Additional White**) available when the **Use ETS Parameter below** option is selected in the **Behaviour when Switching ON** parameter.

Parameter	Settings
Selection of Object Type (when selecting **RGBW Colour**)	• **RGB (6-byte combined object 251.600)** • RGBW (Separated objects) • HSVW (Separated objects)
The following types of control are supported when selecting **RGBW Colour**. For the ETS parameters, see Colour Control (page 10).	
Behaviour when Switching ON	• **Keep last Object Value** • Use ETS Parameter below
This parameter decides whether the last valid colour value or the colour set with the ETS should always be used.	

NOTE
When using **the Keep last Object Value** option, if an object value is invalid, the preset color of the ETS will be used instead.

Parameter	Settings
Colour value When Switching On	#FF0000

This parameter defines the RGB colour when switching on. To do this, press the button and select the colour in the colour dialog box.



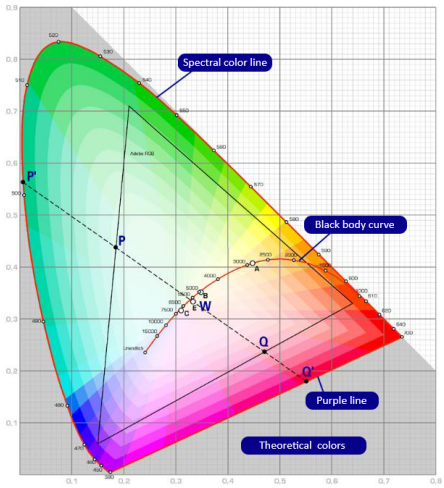
NOTICE
This option is only visible when **Use ETS Parameter below** is selected.

Additional White	0 .. **255**

NOTICE
This option is only visible when **Use ETS Parameter below for Colour** is selected.

Use the **Additional White** control to select the white level.

21.3.3.4. XY Colour

Parameter	Settings
These types of control are supported when selecting **XY Colour**:	
Colour changing Fading Time	• **immediately** • 1 Second • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 60 Seconds • 90 Seconds
This parameter is used to decide how quickly the colour temperature should be changed.	
Selection of Object Type	• **XY (separated objects)** • XY (Combined object 242.600)
This parameter sets which objects are used for control.	
Behaviour when Switching ON	• **Keep last Object Value** • Use ETS Parameter below
This parameter decides whether the last valid colour value or the colour set with the ETS should always be used. **NOTE** When using **the Keep last Object Value** option, if an object value is invalid, the preset colour of the ETS will be used instead.	
• Colour X-Value when Switching On (0..1) • Colour Y-Value when Switching On (0..1)	• 0 .. 1 (default value: **0.33**) • 0 .. 1 (default value: **0.33**)
This parameter defines the colour when switching on via xy coordinates.  **NOTE** The value range is between 0 and 1. X = 0.33 and Y = 0.33 corresponds to the white point.	

21.3.3.5. Colour Temperature + RGB

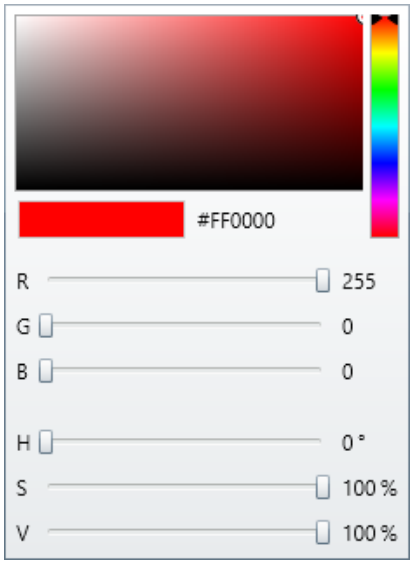
Parameter	Settings
Selection of Object Type (when selecting **Colour Temperature + RGB**)	• **RGB (3-byte combined object)** • RGB (Separated objects) • HSV (Separated objects)
These types of control are supported when **Colour Temperature + RGB** is selected:	
Dimming up to cold colour	• **No** • Yes
When this option is activated, the colour temperature is changed as the light is dimmed up. The corresponding values are set in the following parameter.	
• Colour Temperature at Value 0% • Colour Temperature at Value 100%	• 1000 .. 20000K (default value: **3000K**) • 1000 .. 20000K (default value: **6000K**)
Use these parameters to set the colour temperature (warm) in dimmed light and (cold) in high dimmed light.	
Colour changing Fading Time via Dimming	• **Fast (10 seconds)** • Standard (20 seconds) • Slow (40 seconds)
This parameter is used to decide how quickly the colour temperature should be changed when dimming.	
Colour changing Fading Time	• **immediately** • 1 Second • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 60 Seconds • 90 Seconds
This parameter is used to decide how quickly the colour temperature should be changed.	
Correction Value for special LED • Intensity of Colour Red • Intensity of Colour Green • Intensity of Colour Blue	• 0 .. **100%** (on increments of 10) • 0 .. **100%** (on increments of 10) • 0 .. **100%** (on increments of 10)
Under certain circumstances, the intensity of the red, green, and blue colours may not be precisely matched to the illuminates of the ballast. The weighting of the individual colours can be charged here to carry out a subsequent correction. An intensity of 100% means this colour is controlled to 100%.	
Behaviour when Switching ON	• **Keep last Object Value** • Use ETS Parameter below for Colour • USE ETS Parameter below for Colour Temperature
This parameter decides whether the last valid colour value, the colour set with ETS, or the colour temperature set with the ETS should always be used.	

Parameter	Settings

NOTE
When using **the Keep last Object Value** option, if an object value is invalid, the preset colour of the ETS will be used instead.

Colour Value when Switching ON	#FF0000

This parameter defines the RGB colour when switching on. To do this, press the button and select the colour in the colour dialog box.



NOTICE
This option is only visible when **Use ETS Parameter below** is selected.

Colour Temperature when Switching ON	1000 .. 20000K (default value: **3000K**)

NOTICE
This parameter is only visible when the **Use ETS parameter below for Colour Temperature** option is selected.

21.3.3.6. Colour Temperature + RGBW

Parameter	Settings
Selection of Object Type (when selecting **Colour Temperature + RGBW**)	• **RGBW (6-byte combined object 251.600)** • RGBW (separated objects) • HSVW (separated objects)
These types of control are supported when **Colour Temperature + RGBW** is selected:	
Dimming up to cold colour	• **No** • Yes
When this option is activated, the colour temperature is changed as the light is dimmed up. The corresponding values are set in the following parameter.	
• Colour Temperature at Value 0% • Colour Temperature at Value 100%	• 1000 .. 20000K (default value: **3000K**) • 1000 .. 20000K (default value: **6000K**)
Use these parameters to set the colour temperature (warm) in dimmed light and (cold) in high dimmed light.	
Colour changing Fading Time via Dimming	• **Fast (10 seconds)** • Standard (20 seconds) • Slow (40 seconds)
This parameter is used to decide how quickly the colour temperature should be changed when dimming.	
Colour changing Fading Time	• **immediately** • 1 Second • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 60 Seconds • 90 Seconds
This parameter is used to decide how quickly the colour temperature should be changed.	
Correction Value for special LED • Intensity of Colour Red • Intensity of Colour Green • Intensity of Colour Blue	• 0 .. **100%** (on increments of 10) • 0 .. **100%** (on increments of 10) • 0 .. **100%** (on increments of 10)
Under certain circumstances, the intensity of the red, green, and blue colours may not be precisely matched to the illuminates of the ballast. The weighting of the individual colours can be charged here to carry out a subsequent correction. An intensity of 100% means this colour is controlled to 100%.	

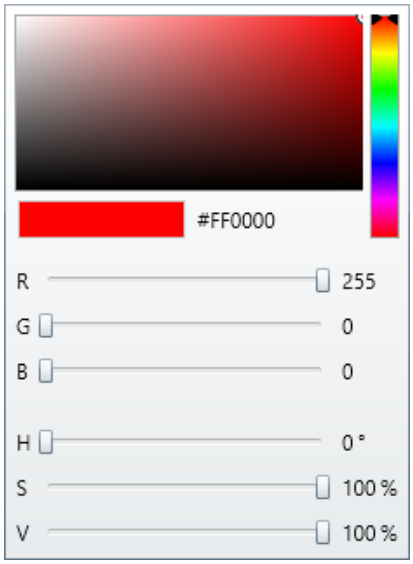
Parameter	Settings
Behaviour when Switching ON	• **Keep last Object Value** • Use ETS Parameter below for Colour • USE ETS Parameter below for Colour Temperature

This parameter decides whether the last valid colour value, the colour set with ETS, or the colour temperature set with the ETS should always be used.

NOTE
When using **the Keep last Object Value** option, if an object value is invalid, the preset colour of the ETS will be used instead.

Colour Value when Switching ON	#FF0000

This parameter defines the RGB colour when switching on. To do this, press the button and select the colour in the colour dialog box.



NOTICE
This option is only visible when **Use ETS Parameter below** is selected.

Additional White	0 .. **255**

NOTICE
This option appears when **Use ETS Parameter below for Colour** is selected.

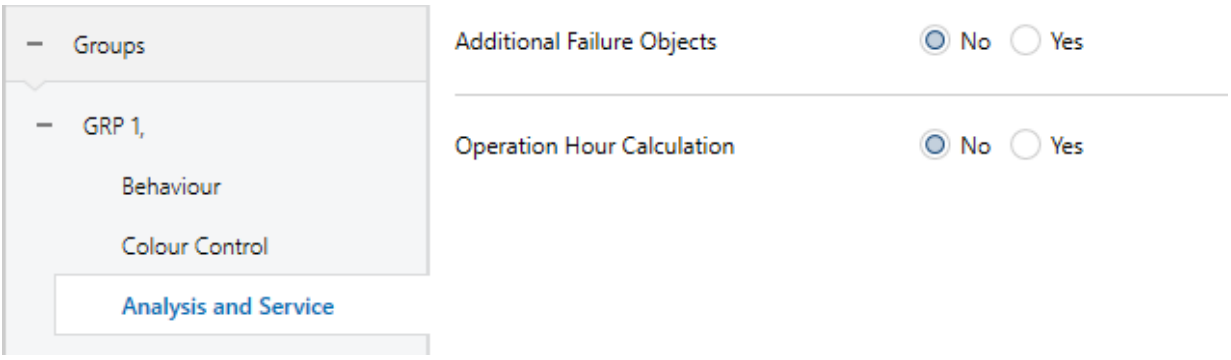
Use the **Additional White** control to select the white level.

Colour Temperature when Switching ON	1000 .. 20000K (default value: **3000K**)

Alternatively, you can specify the initial value when powering on in Kelvins.

NOTE
This parameter is only visible when the **Use ETS parameter below for Colour Temperature** option is selected.

21.3.4. Analysis and Service

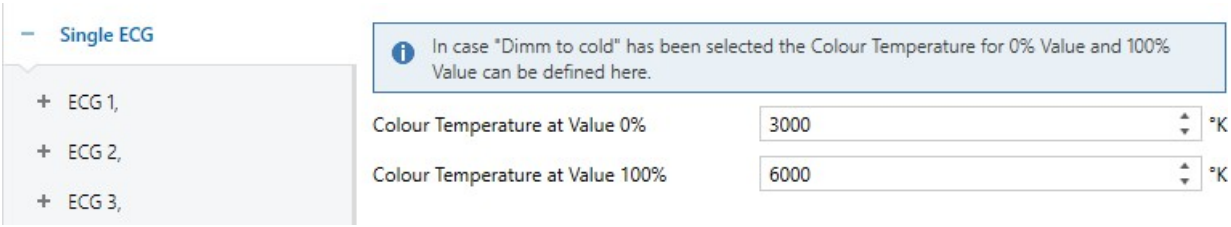


Parameter	Settings
Additional Failure Objects	• **No** • Yes
Select **Yes** to define additional failure objects. The following parameters appear when this parameter is enabled:	
Additional Failure Object For	• **Failure Threshold Exceeded** • Failure Number /Rate
Determines whether the additional failure object should be used as a 1-byte object for the number of failures/ failure rate or as a 1-bit object for exceeding the failure threshold.	
Threshold for Total Failures	1 .. 100% (default value: **1%**)
Use this parameter to enter the threshold in percentage. When the threshold is exceeded, the failure alarm object is sent. **NOTICE** This parameter is only visible when the **Failure Threshold Exceeded** option is selected.	
Function of Additional Failure Object	• **Total number of Failures** • Failure Rate 0.100%
Use this parameter to select either the number of all failures in a group or a failure rate in percentage. **NOTICE** This parameter is only visible when the **Failure Number/Rate** option is selected.	
Operation Hour Calculation	• **No** • Yes
Use this parameter to count the operating hours of a group. The following parameter appears when this parameter is enabled:	
Operating Hour Limit (hours)	1 .. 200.000 hours (Default value: **4.000 hours**)
Use this parameter to set the life span of a lamp, with an individual warning being sent.	

21.4. Single ECG

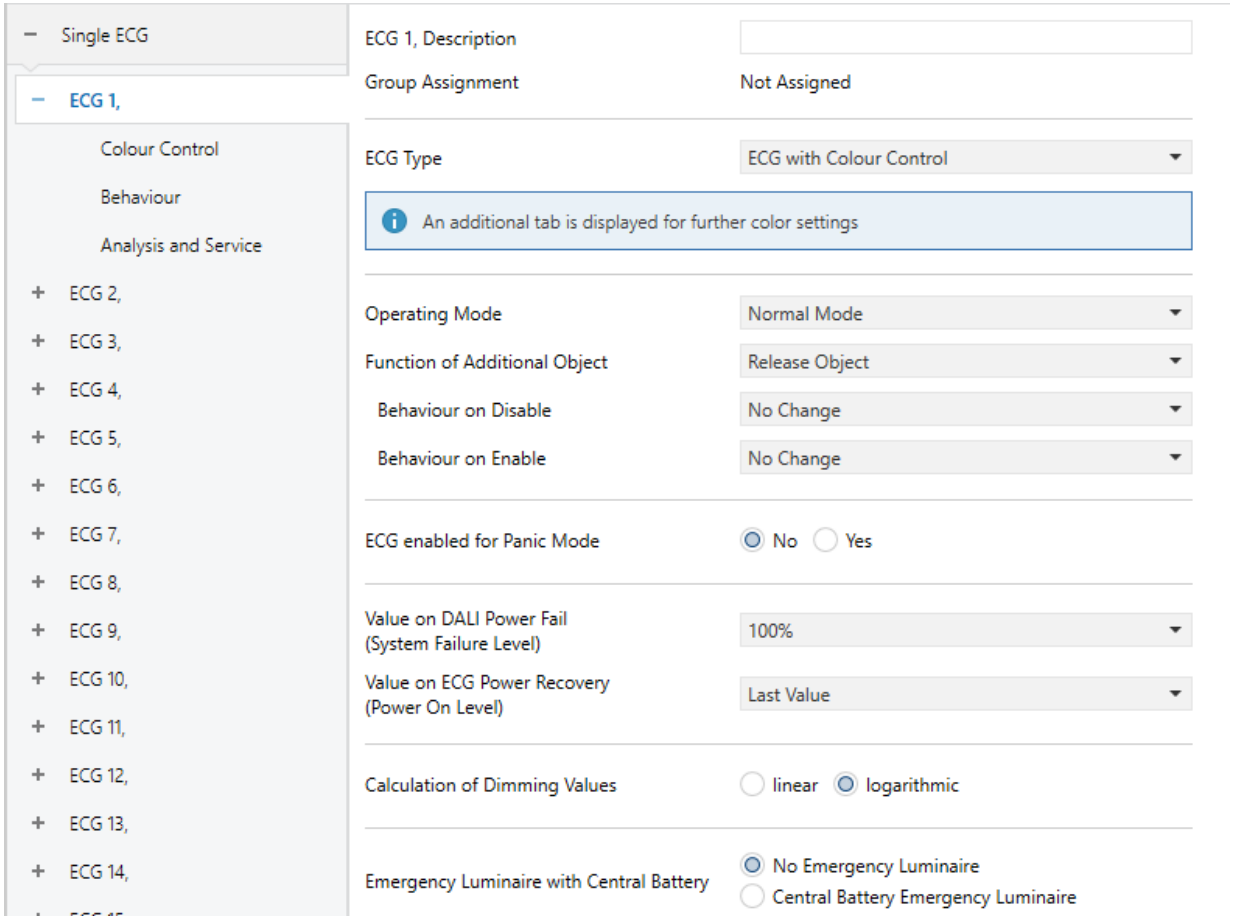
The settings for the ECGs are set on two parameter pages, provided that this ECG is defined as a single ECG and has not been assigned to a group. The parameters on these pages are described below.

21.4.1. Single ECG - General



Parameter	Settings
• Colour Temperature at Value 0% • Colour Temperature at Value 100%	• 1000 .. 20000K (default value: **3000K**) • 1000 .. 20000K (default value: **3000K**)
Parameters for setting the colour temperature (warm) with dimmed light and (cold) with high dimmed light.	

21.4.2. ECG 1 (2 .. 64)



Parameter	Settings
ECG x, Description	e.g.: Floor, 1 level

With this parameter, an ECG description can be defined. This description is displayed as an overview for all communication objects.

NOTE
Shown as an example, Floor, 1 level:

ECG 1, Switching, Floor, 1 level	On/Off
ECG 1, Dimming, Floor, 1 level	Brighter/Darker
ECG 1, Set Value, Floor, 1 level	Value
ECG 1, Enable, Floor, 1 level	Yes/No
ECG 1, Status, Floor, 1 level	On/Off
ECG 1, Status, Floor, 1 level	Value
ECG 1, Failure Status, Floor, 1 level	Status

Parameter	Settings
Group Assignment	• Not Assigned • Group 1 • ... • Group 16
The group assignment is configured via the DCA or website and is only displayed here.	
ECG Type	• Fluorescent Lamp • Self contained Battery Lamp (non switchable) • Self contained Battery Lamp (switchable) • Colour Control • Discharge Lamp • Low Voltage Halogen Lamp • Incandescent Lamp • 0..10V Converter • **LED Module** • Relay Module • ECG with Colour Control
Use this parameter to set the type of the ECG used.	
Parameters for the ECG Type LED module	
Operating Mode	• **Normal Mode** • Permanent Mode • Normal/Night Mode
This parameter allows to set the operating mode in which the ECG will operate. Night operation is controlled via a central object no. 12.	
Function of Additional Object	• **No Object** • Disable Object • Release Object
This parameter can be used to define the function of an additional object. If the **Disable Object** option is selected, an object is displayed which blocks operation of the ECG if the value is **1**. If the **Enable Object** is selected, an object is displayed which enables operation of the ECG if the value is **1**. **NOTE** The disable function only refers to the On/Off and value setting commands via KNX objects.	
Behaviour on Disable	• **No Change** • Switch to On-Value • Switch to Off-Value
This parameter appears when an additional object has been selected to define the behaviour when disabled.	

Parameter	Settings
Behaviour on Enable	• **No Change** • Switch to On-Value • Switch to Off-Value • Switch to state received during disable (lock)
Behavior during activation. This parameter is displayed when an additional object is selected.	
Value in Permanent Mode	1 .. 100% (default value: **50%**)

NOTICE
The parameter is only displayed if the ECG is set to **Permanent Mode**.

This parameter allows you to set the value to which the corresponding lamp is permanently set in **Permanent Mode**. In this mode, the lamp cannot be switched or changed; it always lights up at the set value.

Behavior in Normal / Night Mode	• **Delayed Switch-Off automatically** • Delayed Switch-Off in 2 steps automatically • Delayed Dimm-off automatically • Activate Permanent Mode and Ignore Telegrams

NOTICE
The parameter is only displayed if the ECG is set to **Normal /Night Mode**.

This parameter can be used to set how the corresponding group behaves if night mode has been activated via the night object. The exact behavior of these options is:

- **Delayed Switch-Off automatically**:
  - After the set time, the switch-off value is set.
- **Delayed Switch-Off in 2 steps automatically**:
  - After the set time, the ECG is set to 50% of the previous value.
  - After an additional minute, the switch-off value is set.
- **Delayed Dimm-Off automatically**:
  - After the set time, the switch-off value is dimmed within one minute.
- **Activate Permanent Mode and Ignore Telegrams**

Automatic Switch-Off after (minutes)	• 1 Minute • 2 Minutes • 3 Minutes • 4 Minutes • **5 Minutes** • 10 Minutes • 15 Minutes • ... • 90 Minutes
This parameter is used to decide after how many minutes the ECG will be switched off.	

Parameter	Settings
Function of Additional Object	• **No Object** • Disable Object • Release Object • Staircase function Disable Object
Use this parameter to set the function of an additional object. • If you select **Disable Object**, value 1 disables the operation of the group. • If you select **Release Object**, value 1 enables the operation of the group. • If you select **Staircase function Disable Object**, value 1 disables only the staircase function. This can be used to temporarily disable the staircase function, for example during cleaning.	
Behaviour on Enable	• **No Change** • Switch to On-Value • Switch to Off-Value
This parameter appears when an additional object has been selected to define the behavior when enabled.	
Enabled for Panic Mode	• **No** • Yes
This determines whether an ECG should be considered during panic mode, which is controlled via central object number 10.	
Value in Panic Mode	1 .. 100% (default value: **50%**)
Use this parameter to select the value for this operating mode.	
Value on DALI Power Fail (System Failure Level)	• 0 .. **100%** • Last Value
Use this parameter to set the value of a lamp after a loss of DALI power. The value is saved on the ECG and the device automatically changes to that value when a power loss occurs.	
Value on ECG Power Recovery (Power On Level)	• 0 .. **100%** • Last Value
Use this parameter to set the value of a lamp after a return of the ECG power supply. The value is saved on the ECG and the device automatically changes to that value when power is restored.	
Calculation of Dimming Values	• **logarithmic** • linear
Sets the dimming curve for the ECG.	
Control ECG Power Line via Object	• **None** • Energy Saving Object 1 .. 16
Here, you define the object with which the power supply is to be switched off. This parameter is only visible if energy-saving objects have been enabled on the **General → Special Functions** parameter page. See Parameter Page: Special Functions (page 172).	

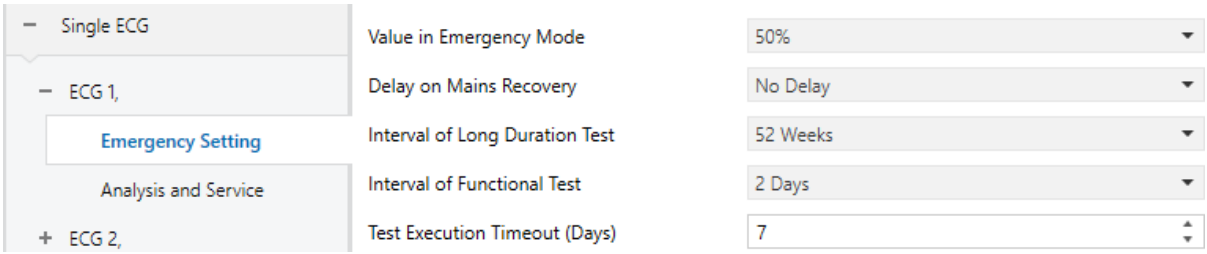
Parameter	Settings
Emergency Lights with Central Battery	• **No Emergency Luminaire** • Central Battery Emergency Luminaire
Use this parameter if you want the ECG to control an emergency light with central battery. Devices defined as emergency lights are specifically marked during status notifications, and a special test mode can be activated via an object. This parameter is not visible if **self-contained emergency light** has been selected.	
Value in Test Mode	0 .. 100% (default value: **50%**)
NOTE This parameter is only visible if **Emergency Luminaire with Central Battery** has been selected. This parameter can be used to set the value to which the corresponding lamp is permanently set in **Test Mode**. In this mode, the lamp cannot be switched or changed, it always lights up in the set value. Test mode is started with object 11.	
Duration of Test Mode	• 5 Minutes • ... • **1 Hour** • ... • 4 Hours
NOTE This parameter is only visible if **Emergency Luminaire with Central Battery** has been selected. Use this parameter to configure how long the lamp will be on after starting the **Test Mode**. A lamp in this mode cannot be switched or changed, it remains at the set value.	
Parameters for the Fluorescent Lamp ECG Type:	
See Parameters for the ECG Type LED module (page 203)	
Parameters for the Self Contained Battery Lamp (non switchable) ECG Type:	
Converter controls	• ECG 1 .. 64 • **Not assigned**
Parameters for the Self Contained Battery Lamp (switchable) ECG Type:	
See Parameters for the ECG Type LED module (page 203) **NOTE** The parameter setting **Emergency Luminaire with Central Battery** is not available for this ECG type.	
Parameters for the Self Contained Battery Lamp (switchable) + Colour Control ECG Type:	
See Parameters for the ECG Type LED module (page 203) **NOTE** The parameter setting **Emergency Luminaire with Central Battery** is not available for this ECG type.	
Parameters for the Discharge Lamp ECG type:	
See Parameters for the ECG Type LED module (page 203)	

Parameter	Settings
Parameters for the Low Voltage Halogen Lamp ECG Type:	
See Parameters for the ECG Type LED module (page 203)	
Parameters for the Incandescent Lamp ECG Type:	
See Parameters for the ECG Type LED module (page 203)	
Parameters for the 0..10V Converter ECG Type:	
See Parameters for the ECG Type LED module (page 203)	
Parameters for the Relay Module ECG Type:	
See Parameters for the ECG Type LED module (page 203)	
Parameters for the ECG with Colour Control ECG Type:	
See Parameters for the ECG Type LED module (page 203)	

NOTE
When selecting this ECG Type, an additional tab is displayed for additional colour settings.

21.4.2.1. Emergency Settings

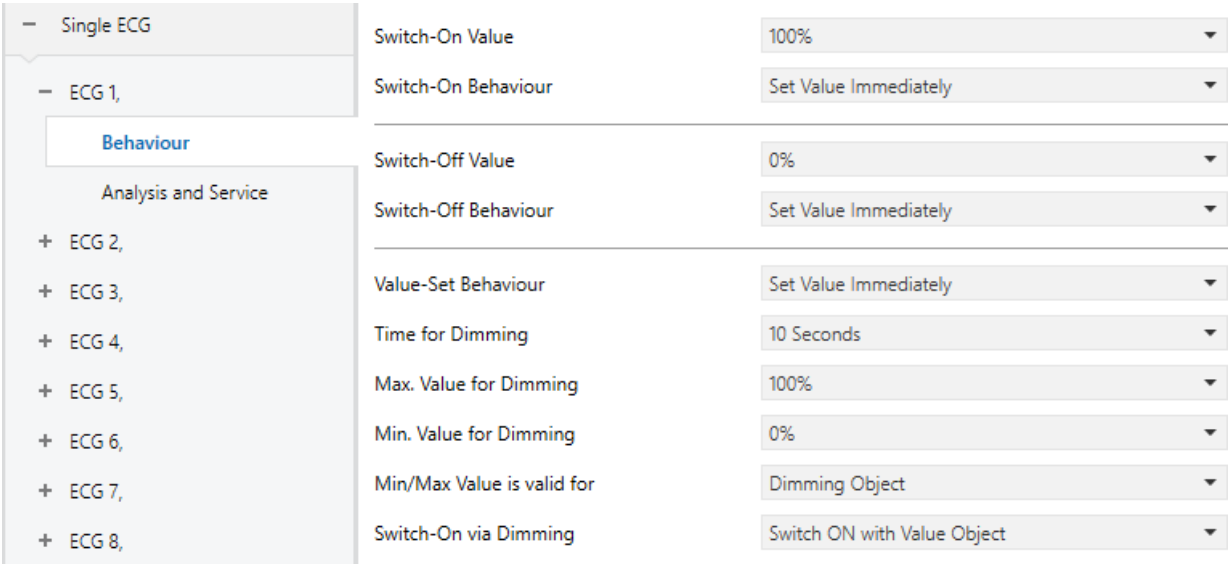
This parameter page is only shown if **Broadcast enabled** (see Parameter Page: Special Functions (page 172)) and the **Self Contained Battery Lamp** ECG type is selected.



Parameter	Settings
Value in Emergency Mode	1 .. 100% (default value: **50%**)
Sets the light level to be used in the event of a power failure or during a long duration test.	
Delay on Mains Recovery	• **No Delay** • 20 Seconds • 1 Minute • ... • 5 Minutes • ... • 20 Minutes
Sets the delay until a self-contained battery lamp reverts to normal mode after power has been restored.	

Parameter	Settings
Interval of Long Duration Test	• No automatic testing • 1 Week • 2 Weeks • ... • **52 Weeks**
Use this parameter to set the intervals at which the converter is to perform automatic long duration tests.	
Interval of Functional Test	• No automatic testing • 1 Day • **2 Days** • ... • 28 Days
Use this parameter to set the intervals at which the converter is to perform automatic functional tests.	
Test Execution Timeout (Days)	0 .. 255 (default value: **7**)
If a function or long-duration test cannot be started immediately (for example, because the battery is not fully charged), the converter tries to execute the test later. Use this parameter to configure how long until another test starts and when to send a failure notification that the time has been exceeded. If the setting is 0, a timeout will occur after 15 minutes.	

21.4.2.2. Behaviour



Parameter	Settings
Switch-On Value	• 1 .. **100%** • Last Value
Use this parameter to set the switch-on value. If you selected **Last Value**, the value is set to the dimming value prior to the lamp being switched off.	

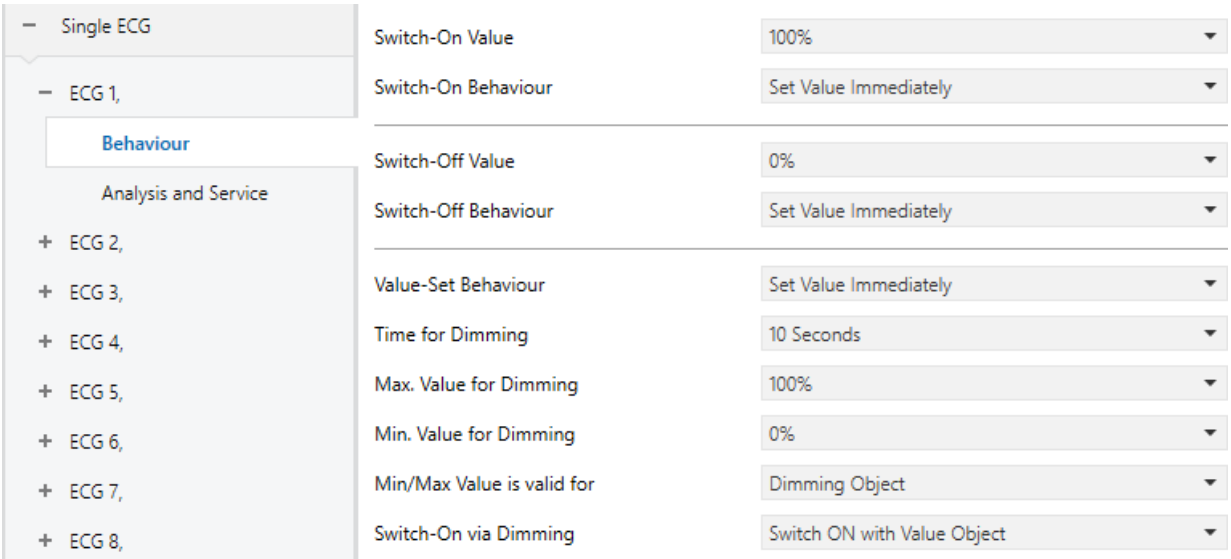
Parameter	Settings
Switch-On Behaviour	• **Set Value Immediately** • Dim to Value in 3 Seconds • Dim to Value in 6 Seconds • Dim to Value in 10 Seconds • Dim to Value in 15 Seconds • Dim to Value in 30 Seconds • Dim to Value in 1 Minute • Dim to Value in 2 Minutes • Dim to Value in 5 Minutes • Dim to Value in 10 Minutes
Use this parameter to set the switch-on behavior.	
Switch-Off Value	• **0%** • 5% • 10% • ... • 45% • 50% • ... • 95% • 99%
Use this parameter to set the switch-off value.	
Switch-Off Behaviour	• **Set Value Immediately** • Dim to Value in 3 Seconds • Dim to Value in 6 Seconds • Dim to Value in 10 Seconds • Dim to Value in 15 Seconds • Dim to Value in 30 Seconds • Dim to Value in 1 Minute • Dim to Value in 2 Minutes • Dim to Value in 5 Minutes • Dim to Value in 10 Minutes
Use this parameter to set the switch-off behaviour	

Parameter	Settings
Value-Set Behaviour	• **Set Value Immediately** • Dim to Value in 3 Seconds • Dim to Value in 6 Seconds • Dim to Value in 10 Seconds • Dim to Value in 15 Seconds • Dim to Value in 30 Seconds • Dim to Value in 1 Minute • Dim to Value in 2 Minutes • Dim to Value in 5 Minutes • Dim to Value in 10 Minutes
Use this parameter to configure the behavior when a new dimming value is received via value setting. Remember that the dim time always refers to the full value range. Accordingly, a dimming time of 30 seconds means a value of 100% within 30 seconds. If the value within a scene is only changed by 50%, the change is performed within 15 seconds.	
Time for Dimming	• 3 Seconds • 4 Seconds • 5 Seconds • 6 Seconds • **10 Seconds** • 20 Seconds • 30 Seconds • 60 Seconds
Use this parameter to set the dim time for relative dimming in relation to a value between 0 and 100%.	
Max. Value for Dimming	• 50% • 55% • ... • **100%**
Use this parameter to configure the maximum dimming value that can be set through relative dimming.	
Min. Value for Dimming	• **0%** • 0.5% • 1% • ... • 5% • ... • 50%
Use this parameter to configure the minimum dim value that can be set through relative dimming.	

Parameter	Settings
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 it possible to set, for example, 60% via dimming and 100% via value setting.	
Switch-On via Dimming	• 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, or both.	
Cyclic request of the status	• **No** • Yes
Use this parameter to read the status of a special ballast cyclically. **IMPORTANT** In the special case that DALI luminaires are switched manually independently of the gateway, the status can be queried cyclically. The cycle time is set in the **General → Analysis and Service** tab.	

21.4.2.3. Colour Control

NOTICE
This parameter page is only visible when selecting the Self-Contained Battery Lamp (switchable) + Colour Control or ECG with Colour Control ECG types.

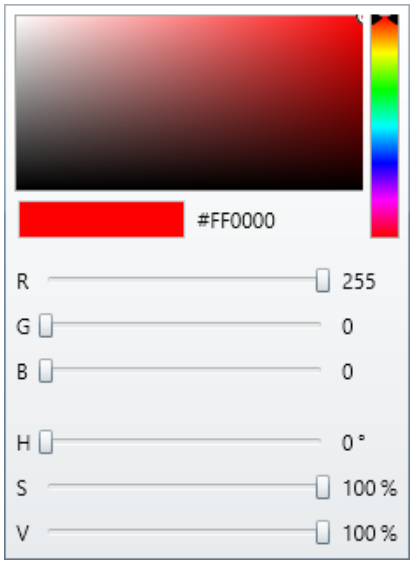


Parameter	Settings
Colour Control Type	• **Colour Temperature** • RGB Colour • RGBW Colour • XY Colour • HSV Colour • HSVW Colour
This parameter is used to select which colour control method is to be used for the ECG.	

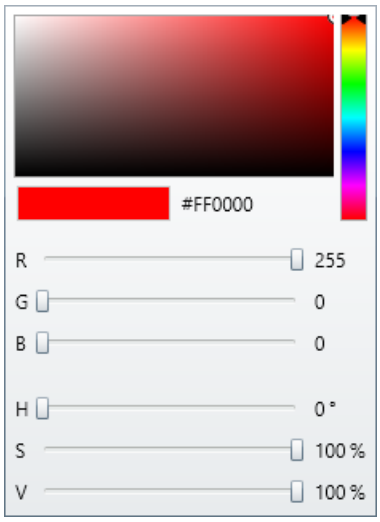
21.4.2.3.1. Colour Temperature

Parameter	Settings
Behaviour when Switching On	• **Keep last Object Value** • Use ETS Parameter below
This parameter is used to decide whether to use the last valid colour value or the parameter set below. **NOTE** When using **the Keep last Object Value** option, if an object value is invalid, the preset colour of the ETS will be used instead.	
Colour Temperature when Switching On	1000 .. 20000K (default value: **3000K**)
The set colour temperature when switched on in Kelvins. **NOTICE** This parameter is only visible when the **Use ETS parameter below** option is selected.	
Dimming up to cold colour	• **No** • Yes
See Single ECG - General (page 201).	
Colour changing Fading Time	• **immediately** • 1 Second • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 60 Seconds • 90 Seconds
Set the time for the colour change.	
Colour changing Fading Time via Dimming	• **fast (10 Seconds)** • Standard (20 Seconds) • slow (40 Seconds)
Set the time for the colour change when dimming here.	

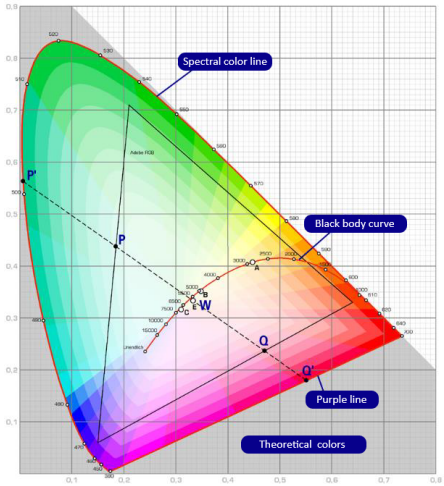
21.4.2.3.2. RGB

Parameter	Settings
Behaviour when Switching On	• **Keep last Object Value**
This parameter is used to decide whether to use the last valid colour value or the parameter set below. **NOTE** When using **the Keep last Object Value** option, if an object value is invalid, the preset colour of the ETS will be used instead.	
Colour Value when Switching On	#FF0000
This parameter defines the RGB colour when switching on. To do this, press the button and select the RGB colour values in the colour dialog box.  **NOTICE** This option is only visible when **Use ETS Parameter below** is selected.	
Colour changing Fading Time	• **immediately** • 1 Second • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 60 Seconds • 90 Seconds
Sets the time for the colour change.	

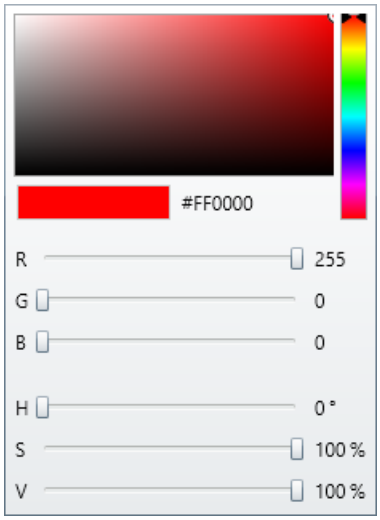
21.4.2.3.3. RGBW

Parameter	Settings
Behaviour when Switching On	• **Keep last Object Value**
This parameter is used to decide whether to use the last valid colour value or the parameter set below. **NOTE** When using **the Keep last Object Value** option, if an object value is invalid, the preset colour of the ETS will be used instead.	
Colour Value when Switching On	#FF0000
This parameter defines the RGB colour when switching on. To do this, press the button and select the RGB colour values in the colour dialog box.  **NOTICE** This option is only visible when **Use ETS Parameter below** is selected.	
Additional White	0 .. **255**
NOTICE This option is only visible when **Use ETS Parameter below for Colour** is selected. Use the **Additional White** control to set the white level.	
Colour changing Fading Time	• **immediately** • 1 Second • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 60 Seconds • 90 Seconds
Sets the time for the colour change.	

21.4.2.3.4. XY Colour

Parameter	Settings
Behaviour when Switching On	• **Keep last Object Value**
This parameter is used to decide whether to use the last valid colour value or the parameter set below. **NOTE** When using **the Keep last Object Value** option, if an object value is invalid, the preset colour of the ETS will be used instead.	
• Colour X-Value when Switching On (0..1) • Colour Y-Value when Switching On (0..1)	• 0 .. 1 (default value: **0.33**) • 0 .. 1 (default value: **0.33**)
This parameter defines the colour when switching on via xy coordinates.  **NOTE** The value range is between 0 and 1. X = 0.33 and Y = 0.33 corresponds to the white point.	
Colour changing Fading Time	• **immediately** • 1 Second • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 60 Seconds • 90 Seconds
Sets the time for the colour change.	

21.4.2.3.5. HSV

Parameter	Settings
Behaviour when Switching On	• **Keep last Object Value**
This parameter is used to decide whether to use the last valid colour value or the parameter set below. **NOTE** When using **the Keep last Object Value** option, if an object value is invalid, the preset colour of the ETS will be used instead.	
Colour Value when Switching On	#FF0000
This parameter defines the HSV colour when switching on. To do this, press the button and select the HSV colour values in the colour dialog box.  **NOTICE** This option is only visible when **Use ETS Parameter below** is selected.	
Colour changing Fading Time	• **immediately** • 1 Second • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 60 Seconds • 90 Seconds
Sets the time for the colour change.	
Colour changing Fading Time via Dimming	• **fast (10 Seconds)** • standard (20 Seconds) • slow (40 Seconds)
Sets the time for the colour change when dimming.	

21.4.2.3.6. HSVW

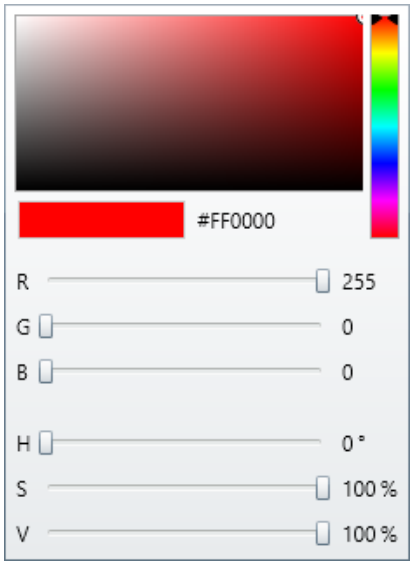
Parameter	Settings
Behaviour when Switching On	• **Keep last Object Value**

This parameter is used to decide whether to use the last valid colour value or the parameter set below.

NOTE
When using **the Keep last Object Value** option, if an object value is invalid, the preset colour of the ETS will be used instead.

Colour Value when Switching On	#FF0000

This parameter defines the HSV colour when switching on. To do this, press the button and select the HSV colour values in the colour dialog box.



NOTICE
This option is only visible when **Use ETS Parameter below** is selected.

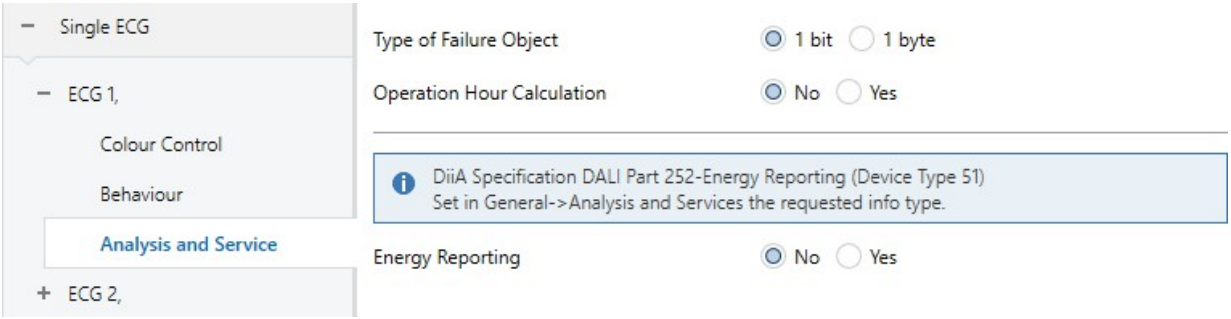
Additional White	0 .. **255**

NOTICE
This option is only visible when **Use ETS Parameter below for Colour** is selected.

Use the **Additional White** control to select the white level.

Parameter	Settings
Colour changing Fading Time	• **immediately** • 1 Second • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 60 Seconds • 90 Seconds
Sets the time for the colour change.	
Colour changing Fading Time via Dimming	• **fast (10 Seconds)** • standard (20 Seconds) • slow (40 Seconds)
Sets the time for the colour change when dimming.	

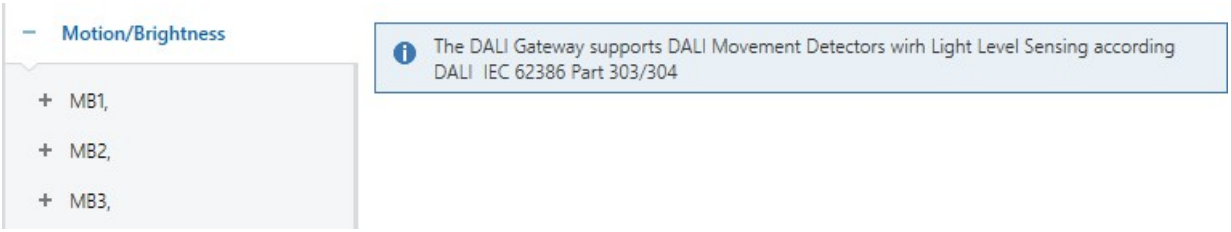
21.4.2.4. Analysis and Service



Parameter	Settings
Type of Failure Object	• **1 bit** • 1 byte
Here, you can define whether the error is to be reported as a bit (Alarm DPT 1.005) or as a byte object with the information about lamp or ballast errors. See Single ECG (page 201). **NOTE** **The 1-byte object is a NON DPT type and will not be implemented in future versions.**	
Operating Hour Calculation	• **No** • Yes
This parameter can be used to set whether an individual operating hours count for the ECG is desired.	
Operating Hour Limit (hours)	1 .. 200000 Hours (default: **4000 Hours**)
This parameter is used to set the lamp life at which an individual warning will be sent. **NOTICE** This parameter is only visible when **Operation Hour Calculation** is set to **Yes**.	
Energy Reporting	• **No** • Yes
This parameter can be used to enable the energy reporting service. **NOTICE** This parameter is only visible when energy reporting is enabled in **General → Analysis and Service**. See Parameter Page: Analysis and Service (page 168).	

21.5. Motion/Brightness Detector

21.5.1. Motion/Brightness General



NOTE
MB1 is used as an example.

Parameter	Settings
MB1, Description	e.g. x, Floor 1, Building 2
Use this parameter to define a description for the motion detector. **NOTE** The description is shown for all communication objects. For example, MB1, Floor1, Building 2. MB1, Movement Switching, Floor1, Buildung 2 — On/Off MB1, Movement Off, Floor1, Buildung 2 — On/Off MB1, Brightness, Floor1, Buildung 2 — Brightness MB1, Failure Status, Floor1, Buildung 2 — Status MB1, Brightness is below the Threshold, Floor1, Buildung 2 — Yes/No	
Type of Sensor	• **Motion+Brightness** • Motion only • Brightness only
This parameter defines the support of Motion/Brightness. **NOTE** An Additional Parameter tab appears depending on the selected type.	
Type of Light Control	• **none** • Light Control via Threshold • Constant Light Control
This parameter defines if light control is required. **NOTICE** An additional parameter page is displayed when a light control method is selected.	

21.5.2. Motion

Parameter	Settings
Number of Instances	**1** .. 7
A well-known use case is the master/slave concept in a long corridor. In such a situation, more than one movement detector has to be installed, and they should work together to light the corridor. The corresponding ETS parameter must be set to support more than one instance.	
Time without movement > Vacant (Off-Delay)	• none • 1 Minute • 2 Minutes • 3 Minutes • 4 Minutes • **5 Minutes** • 7 Minutes • 10 Minutes • 15 Minutes • ... • 40 Minutes
After this time, the presence is deactivated; i.e., if no movement is detected within this preset time, it can be assumed that no person is within the range of the motion sensor. **NOTE** This is based on IEC62386-303 (Hold Timer)	
Time without movement via Object (Off-Delay)	• **Parameter** • Parameter + Set by Object
This parameter defines whether a communication object can adjust the off-delay mentioned above.	
Off-Delay after Startup	• **Use ETS Parameter** • Keep last Object Value
NOTICE This parameter is only visible if the **Parameter + Set by Object** option is selected. In this case, the startup behaviour can be defined by this parameter.	
Object Type for Output	• **Switch Object** • Set Value Object • Scene Object
Selection of the object type that is sent to the bus.	

Parameter	Settings
Value on Presence Mode	0 .. 100% (default value: **75%**)
Value to be called on Presence Mode **NOTICE** This parameter is only visible if the **Set Value Object** option is selected.	
Value on Vacant Mode	**0** .. 100%
Value to be called on Vacant Mode **NOTICE** This parameter is only visible if the **Set Value Object** option is selected.	
Scene Number on Presence	• **none** • Scene 1 to 64
Scene to be called on Presence Mode **NOTICE** This parameter is only visible if the **Set Scene Object** option is selected.	
Scene Number on Vacant	• **none** • Scene 1 to 64
Scene to be called on Vacant Mode **NOTICE** This parameter is only visible if the **Set Scene Object** option is selected.	
Cyclic Sending	• **only on presence detection** • 2 Seconds • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 1 Minute • 2 Minutes • 3 Minutes • 4 Minutes
Selection of behavior in cycle sending mode.	
Activate External Trigger (Master/Slave) via Object	• **No** • Yes
If this parameter is set to **Yes**, an additional object is displayed, and a **1** telegram is equivalent to motion detected.	

Parameter	Settings
Disable / Automatic Mode	
The following options are only displayed if **Type of Light Control** in the parent tab is set to **none**. If a type of light control option is selected, these options will appear in the corresponding light control page.	
Usage of Disable Automatic Object	• Disable vith Value 0 • **Disable with Value 1**
Define how the disable object is to be used.	
Behaviour on Disable by Object	• **Deactivate detection** • Deactivate detection and turn OFF immediately • Deactivate detection and turn ON immediately
This parameter is used to define the behavior in case of switching to disable mode. **NOTE** The detection is activated again by returning to normal mode.	
Activate Fallback to Automatic Mode	• **No** • Yes
The time can also be automatically switched back to normal mode (enable detection). If this option is selected, the following parameter defines the time.	
Fallback Time to Automatic Mode after	• 1 Minute • ... • **10 Minutes** • ... • 4 Hours
Defines the fallback time to automatic mode.	

21.5.3. Brightness

Parameter	Settings
Number of Instances	**1** .. 7
A well-known use case is calculating the brightness depending of more than one brightness sensor as an average value. This parameter defines the number of instances that should be considered for the final brightness value.	
DALI Configuration	
Deadtime between Brightness Events	• none • 1 Second • **2 Seconds** • 2 Seconds • 3 Seconds • 4 Seconds • 5 Seconds • 6 Seconds • 8 Seconds • 10 Seconds
Specification of a fixed period after which the current brightness value is sent.	
Hysteresis in %	0 .. 25% (default value: **10%**)
Value of hysteresis in percentage.	
Send Value by change of	1 .. 250 lux (default value: **10 lux**)
Send value by changing in percentage.	
Cyclic Sending	• **No** • 2 Seconds • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 1 Minute • 2 Minutes • 3 Minutes • 4 Minutes
Specification of a fixed period after which the current brightness value is sent.	

Parameter	Settings
Brightness Correction **NOTE** These settings are only visible when **Constant Light Control** is selected.	
Brightness Correction	• **Use always the ETS values below** • Use DCA Calibration
The measured brightness (lux) can be corrected via fixed ETS parameters or manual calibration in the DCA. See Calibration of Constant Light Control (page 18).	
Brightness Correction Value	-500 .. 500 lux (default value: **0 lux**)
Increase or decrease the measured brightness (lux) by the set value.	
Room Reflection	1% .. 200% (default value: **100%**)
An additional reflection factor can be defined here.	
Threshold Alarm	
Threshold alarm activated at	5 .. 1000 lux (default value: **500 lux**)
Sets the brightness threshold above which the limit alarm is activated.	
Hysteresis for Threshold Alarm	1 .. 250 lux (default value: **20 lux**)
Value of the switch-on delay (hysteresis) in percentage.	
Behaviour when Value < Threshold	• Send OFF when Value < Threshold • **Send ON when Value < Threshold**
Selection of the send behavior when the limit is exceeded.	

21.5.4. Light Control via Threshold

Parameter	Settings
Setpoint Brightness	0 .. 2000 lux (default value: **500 lux**)
Entry of the brightness setpoint value of the switch-on threshold.	
Setpoint Brightness Hysteresis	• 10 lux • **20 lux** • ... • 100 lux
Hysteresis of the brightness setpoint value.	
Setpoint Value based on	• **Parameter** • Parameter + Set by Object
If this parameter is set to **Parameter + Set by Object**, an additional object will be displayed to adjust the level (threshold).	

Parameter	Settings
Setpoint Start Behaviour	• **Use ETS Parameter** • Keep last Object Value
This parameter is used to define the startup behavior. **NOTICE** This parameter is only visible if the **Parameter + Set by Object** option is selected.	
Switch Off Behaviour	• **No presence is detected** • No presence is detected or Brightness is sufficient
If the light is on because the brightness is below the setpoint (threshold), there are two options to switch it off again. • Option 1: The light is switched off only if no presence is detected anymore. • Option 2: The light is switched off if the brightness is above the setpoint again, independently of the presence detection.	
Delay time for correct calculation	• 5 Seconds • **6 Seconds** • 7 Seconds • 8 Seconds • 10 Seconds • 12 Seconds • 15 Seconds
NOTICE This option is only visible if the **No presence is detected or Brightness is sufficient** option is selected. If option 2 is selected, the additional artificial light must be considered to allow the correct switch-off behavior. Therefore, a delay time must be defined.	
Light Groups to be controlled	• **Main Group** • Main Group + 1 Sub-Group • Main Group + 2 Sub-Groups
The light control can directly work with internal DALI groups instead of using KNX objects. By default, it is possible to control one main group. In the case of a large room, additional options allow for up to two additional subgroups to be defined. **IMPORTANT** When using internal groups, the group configuration itself has a higher priority. For example, if the light control is working with Group 1 and Group 1 is set to disable panic mode, the light control module will not work because the setting of the group itself has a higher priority.	
Main Group controls internal Group	• **Not Assigned** • Group 1 .. Group 16
Selects the group number to be controlled.	

Parameter	Settings
Factor for Sub-Group 1	50 .. 200% (default value: **120%**)
NOTICE This parameter is only visible if the **Main Group + x Sub-Group(s)** option is selected. Here, you can define the weighting of sub-group 1 measured against the main group.	
Sub-Group 1 controls internal	• **Not Assigned** • Group 1 .. Group 16
NOTICE This parameter is only visible if the **Main Group + x Sub-Group(s)** option is selected. Selects the group number to be controlled by sub-group 1.	
Factor for Sub-Group 2	50 .. 200% (default value: **80%**)
NOTICE This parameter is only visible if the **Main Group + 2 Sub-Groups** option is selected. Here, you can define the weighting of sub-group 2 measured against the main group.	
Sub-Group 2 controls	• **Not Assigned** • Group 1 .. Group 16
NOTICE This parameter is only visible if the **Main Group + 2 Sub-Groups** option is selected. Selects the group number to be controlled by sub-group 2.	
Activate Semi-Automatic Mode	• **No** • Yes
If this operating mode is selected, the control must be started manually via an additional semi-automatic object. **NOTE** The control only switches on the lighting when motion is detected.	
Object Type for Output	• **Switch Object** • Set Value Object
The object type to be activated if the brightness is below the setpoint (threshold) can be defined as a 1-bit or a 1-byte (value) object. If brightness is below, the switch object is ON. The value of the 1-byte value object can be defined with the following parameter. The behavior and the condition to switch off again can be defined with the **Switch Off Behaviour** parameter, described above.	
Output Value	0 .. **100%**
NOTICE This parameter is only visible if the **Set Value Object** option is selected. The 1-byte value to be sent if brightness is below the setpoint (threshold).	

Parameter	Settings
Cyclic Sending	• **only on presence detection** • 2 Seconds • 5 Seconds • 10 Seconds • 20 Seconds • 30 Seconds • 1 Minute • 2 Minutes • 3 Minutes • 4 Minutes
Specification of a fixed period after which the current output value is sent.	
A manual override of the groups involved deactivates the light control	• No • **Yes**
When overwriting the groups belonging to the control module via object values, scenes, or effects, the control can be deactivated. See Light Control Module (page 15).	
Usage of Disable Automatic Object	• Disable with Value 0 • **Disable with Value 1**
Here, you define how the disable object is to be used.	
Behaviour on Disable Automatic Mode	• **Keep last value** • Turn OFF immediately • Turn ON immediately
Using this parameter, the behavior of switching to **disable mode (inactive)** by the **Disable Automatic** object can be defined.	
Activate Fallback to Automatic Mode	• **No** • Yes
You can also switch back to automatic mode (enable detection) automatically. If this option is selected, the following parameter defines the time.	
Fallback Time to Automatic Mode after	• 1 Minute • ... • **10 Minutes** • ... • 4 Hours
Defines the fallback time to automatic mode.	

21.5.5. Constant Light Control

Parameter	Settings
Setpoint Brightness	0 .. 2000 lux (default value: **500 lux**)
Entry of the brightness setpoint value of the switch-on threshold.	
Setpoint Brightness Hysteresis	• 10 lux • **20 lux** • ... • 100 lux
Hysteresis of the brightness setpoint value.	
Setpoint Value based on	• **Parameter** • Parameter + Set by Object
If this parameter is set to **Parameter + Set by Object**, an additional object will be displayed to adjust the level (threshold).	
Setpoint Start Behaviour	• **Use ETS Parameter** • Keep last Object Value
This parameter is used to define the startup behavior. **NOTICE** This parameter is only visible if the **Parameter + Set by Object** option is selected.	
Light Groups to be controlled	• **Main Group** • Main Group + 1 Sub-Group • Main Group + 2 Sub-Groups
The light control can directly work with internal DALI groups instead of using KNX objects. By default, it is possible to control one main group. In case of a large room, additional options allow for up to two additional subgroups to be defined. **IMPORTANT** When using internal groups, the group configuration itself has a higher priority. For example, if the light control is working with Group 1 and Group 1 is set to disable panic mode, the light control module will not work because the setting of the group itself has a higher priority.	
Main Group controls internal Group	• **Not Assigned** • Group 1 .. Group 16
Selects the group number to be controlled.	
Factor for Sub-Group 1	50 .. 200% (default value: **120%**)
NOTICE This parameter is only visible if the **Main Group + x Sub-Group(s)** option is selected. Here, you can define the weighting of sub-group 1 measured against the main group.	

Parameter	Settings
Sub-Group 1 controls internal	• **Not Assigned** • Group 1 .. Group 16
NOTICE This parameter is only visible if the **Main Group + x Sub-Group(s)** option is selected. Selects the group number to be controlled by sub-group 1.	
Factor for Sub-Group 2	50 .. 200% (default value: **80%**)
NOTICE This parameter is only visible if the **Main Group + 2 Sub-Groups** option is selected. Here, you can define the weighting of sub-group 2 measured against the main group.	
Sub-Group 2 controls	• **Not Assigned** • Group 1 .. Group 16
NOTICE This parameter is only visible if the **Main Group + 2 Sub-Groups** option is selected. Selects the group number to be controlled by sub-group 2.	
Activate Semi-Automatic Mode	• **No** • Yes
If this operating mode is selected, the control must be started manually via an additional semi-automatic object. **NOTE** The control only switches on the lighting when motion is detected.	
Setpoint when Light Control is starting	• Automatic Start Value • **Use ETS Parameter**
After activation of the control, the output is set to a start value **NOTE** The automatic start value is based on a calculation according to a performed DCA calibration. Without a successful calibration, the manual ETS start value is used.	
Start Value	0 .. 100% (default value: **80%**)
Definition of the setpoint after start of control.	

Parameter	Settings
Min. Step Size for Controlling	• 0.5% • 1% • **1.5%** • 2% • 2.5% • 3% • 4% • 5%
This parameter defines the minimum change in the output variable during control.	
Delay before new value is sent	• 1 Second • 2 Seconds • **3 Seconds** • 4 Seconds • 5 Seconds • 6 Seconds • 7 Seconds • 8 Seconds • 9 Seconds • 10 Seconds
This parameter defines the time between two output variables during control.	
A manual override of the groups involved deactivates the light control	• No • **Yes**
When overwriting the groups belonging to the control module via object values, scenes, or effects, the control can be deactivated. See Light Control Module (page 15).	
Usage of Disable Automatic Object	• Disable with Value 0 • **Disable with Value 1**
Here, you define how the disable object is to be used.	
Behaviour on Disable Automatic Mode	• **Keep last value** • Turn OFF immediately • Turn ON immediately
Using this parameter, the behavior of switching to **disable mode (inactive)** by the **Disable Automatic** object can be defined.	
Activate Fallback to Automatic Mode	• **No** • Yes
You can also switch back to automatic mode (enable detection) automatically. If this option is selected, the following parameter defines the time.	

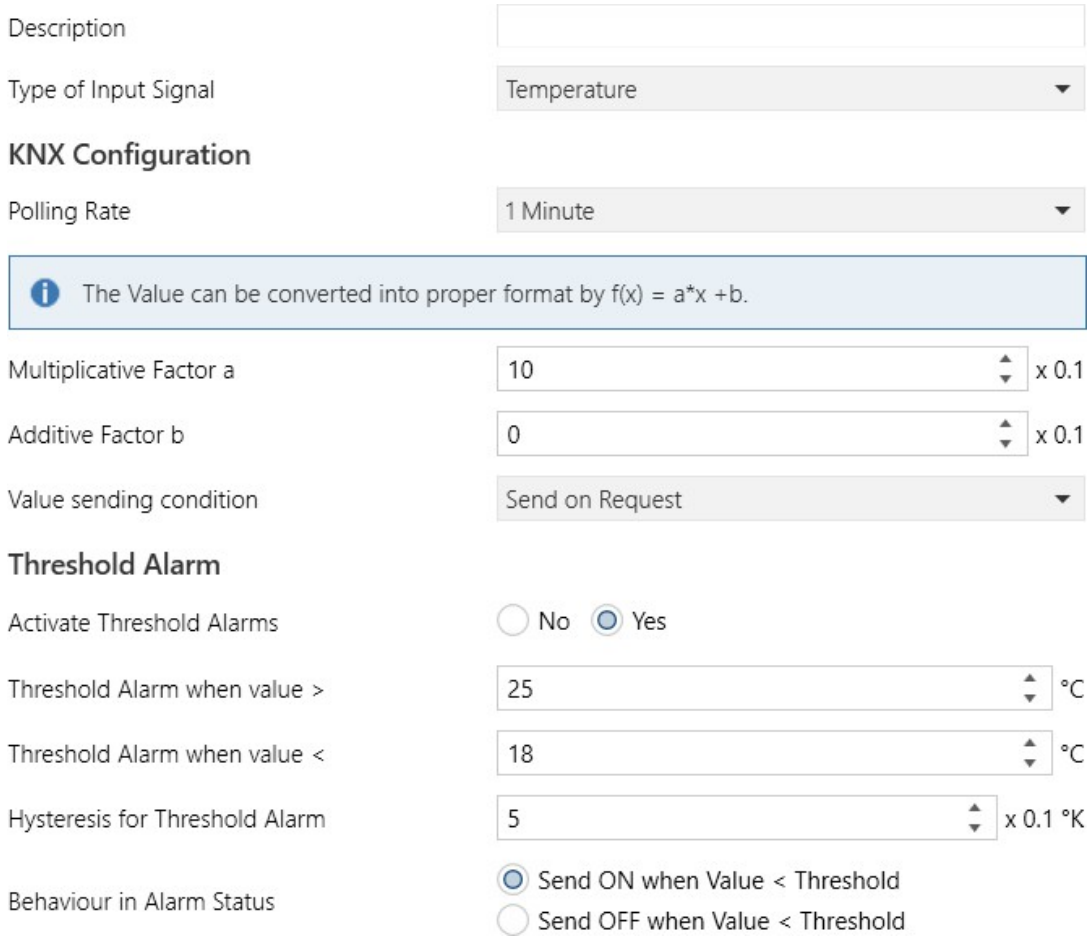
Parameter	Settings
Fallback Time to Automatic Mode after	• 1 Minute • ... • **10 Minutes** • ... • 4 Hours
Defines the fallback time to automatic mode.	

21.6. Generic DALI Inputs

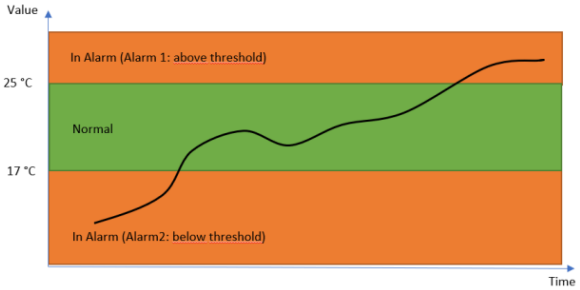
More and more manufacturers of DALI-2 movement detectors also provide different kinds of measurement:

- Brightness
- Temperature
- Humidity
- Air quality
- and more

This information can also be assigned to ETS communication objects. The following parameters describe the conversion factor and the setting of the required threshold alarm:

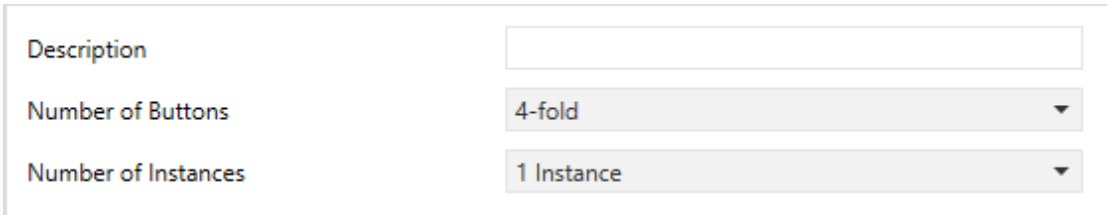


Parameter	Settings
Description	E.g. CO2 Sensor
Use this parameter to define a description **NOTE** Maximum length: 20 characters	
Type of Input Signal	• **Temperature** • Humidity • CO2 • VOC • Sound [db] • Scaling [%] • Generic 1 Byte unsigned • Generic 2 Byte float
Selects the correct data type of communication object according to this definition.	
Polling Rate on DALI	• not used • 10 Seconds • 20 Seconds • 30 Seconds • 40 Seconds • 50 Seconds • **1 Minute** • 2 Minutes • 3 Minutes • 4 Minutes • 5 Minutes
Generic inputs of DALI input device type are being polled. Often, there is no DALI standard for such inputs. To reduce DALI traffic, the poll rate should be defined as small as possible. **NOTE** For example, for a temperature signal, a poll rate higher than one minute is enough.	

Parameter	Settings
Multiplicative Factor a	-128 .. 127 x 0.1 (default value:**10** x 0.1)
Because there is no defined standard, the value received from the DALI input device might need to be converted. The conversion can be done via f(x) = ax + b **NOTE** Examples: • A value a = 10 is converted into 1 • A value a = 100 is converted into 10	
Additive Factor b	-128 .. 127 x 0.1 (default value:**0** x 0.1)
An additional factor can be defined for the reasons mentioned in the parameter above.	
Value sending condition	• **Send on Request** • Send on Change • Send on Change and after Busreset
Use this parameter to define the conditions for sending the value.	
Send Value by change of	0 .. 255 x 0.1 (default value: **5** x 0.1)
This parameter specifies at which change the value is sent on the KNX. **NOTE** Example: For a change of 0.5, the parameter must be set to “5” as it is multiplied by 0.1.	
Activate Threshold Alarms	• **No** • Yes
By setting this parameter to **Yes**, an additional threshold alarm is activated. **IMPORTANT** The alarm type is different depending on the input signal type.	
• Threshold Alarm when value > • Threshold Alarm when value <	• 0 .. 255 °C (default value: **25°C**) • 0 .. 255 °C (default value: **18°C**)
Type: Temperature and Humidity In this type of input signal, a value range is defined for good status, and values outside this range trigger the threshold alarm.  	

Parameter	Settings
• Threshold Alarm when value >	• 0 .. 65535 ppm (default value: **800 ppm**)
• Threshold Alarm when value <	• 0 .. 65535 ppm (default value: **1200 ppm**)
Type: CO2 and VOC In this type of input signal, two threshold limits can be defined to allow a pre-alarm.  	
Hysteresis for Threshold Alarm	• **0.5°C** (temperature) • 2% (humidity) • 16 ppm (CO2 and VOC)
According to the selected input signal, the requested hysteresis can be defined.	
Behaviour in Alarm Status	• **Send ON when Value in Alarm** • Send OFF when Value in Alarm
This parameter defines what value is sent in alarm or normal status.	

21.7. Push Buttons

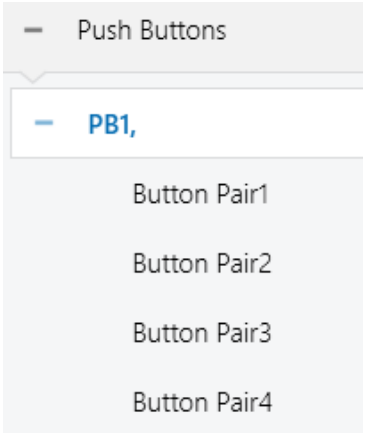


The DALI gateway supports DALI push buttons according to DALI IEC 62386 Parts 301/302. Up to eight push buttons with up to eight buttons each can be configured.

Parameter	Settings
Description	
Use this parameter to define a description. **NOTE** The maximum length is 20 characters.	

Parameter	Settings
Number of Buttons	• 2-fold • 4-fold • 6-fold • **8-fold**

This parameter defines the number of buttons. Only certain number of pairs are supported. Additional tabs are displayed depending on the selected option:



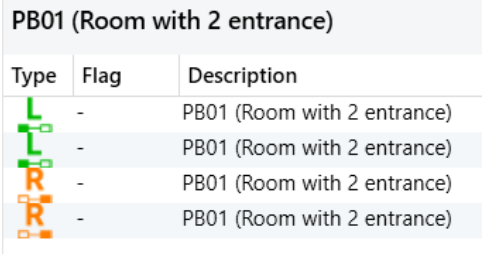
Number of Instances	• **1 Instance** • 2 Instances • 3 Instances • 4 Instances

A push button can be supplied by up to four instances. The normal use case is the 1:1 assignment with one instance. However, in special use cases, allowing more than one instance makes sense.

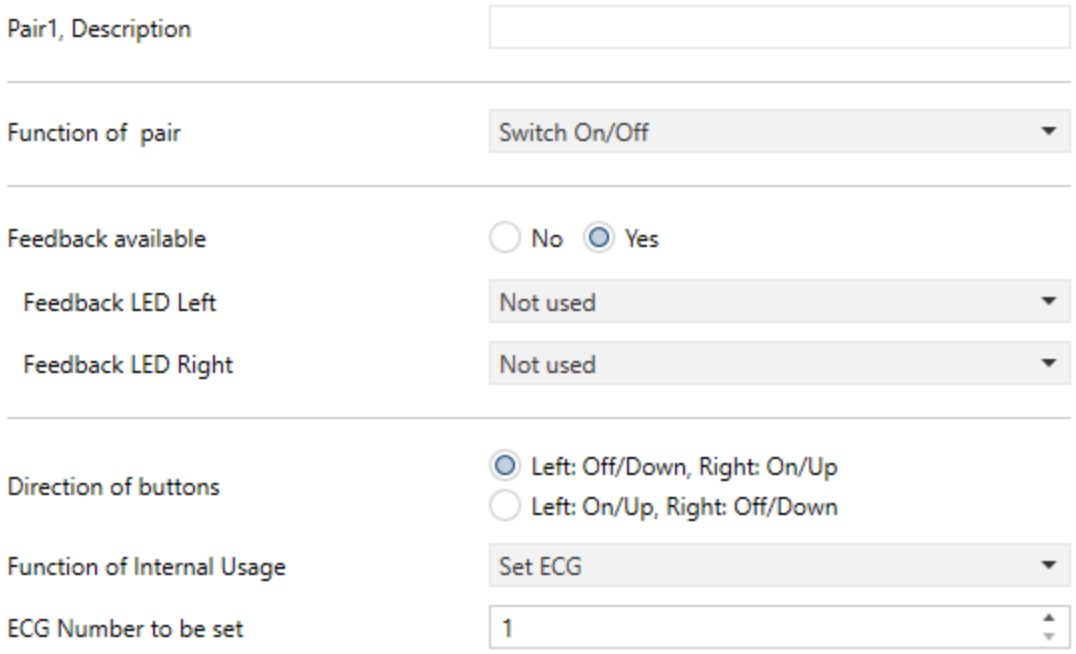
NOTE
An example use case could be a room with two door entrances: each door has one push button, but the functionality should be the same for both push buttons.

In the ETS we define **one** push button, but we link two different instances of two different real push buttons to the ETS element in the DCA. Internally, the parameterized function is executed when either of the real buttons is pressed.

Figure 15. DCA view



21.7.1. Push Buttons Pair



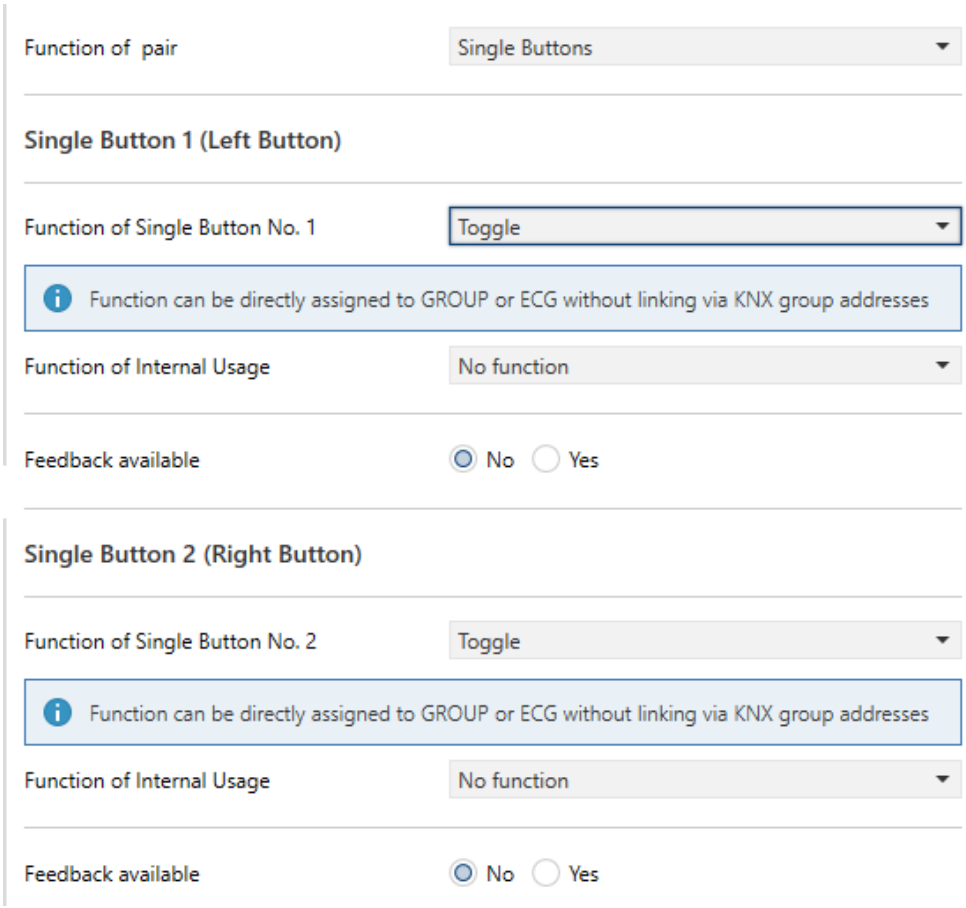
Parameter	Settings
Description	
Use this parameter to define a description. **NOTE** The maximum length allowed is 20 characters.	
Function of pair	• No function • **Switch On/Off** • Switching / Dimming with stop telegram • Shutter • Set value fix • Set value in steps • Presence • Single Buttons
Here, the general function of the push button can be selected. **NOTE** A special mode is the **Single Buttons** selection. In this case, the button pair is split into single buttons with single functionality.	

Parameter	Settings
Feedback available	• **No** • Yes
According to IEC 62386-332, push-button feedback elements are supported. If a DALI input device with LED feedback is available, the next parameter defines the control type.	
Feedback LED Left	• **Not used** • Always Off • Always On • Status • Status inverse
This parameter defines the control type. **NOTICE** This parameter is only visible when the **Feedback available** option is set to **yes**.	
Feedback LED Right	• **Not used** • Always Off • Always On • Status • Status inverse
This parameter defines the control type. **NOTICE** This parameter is only visible when the **Feedback available** option is set to **yes**.	
Direction of buttons	• **Left: Off/Down, Right: On/Up** • Left: On/Up, Right: Off/Down
This parameter defines the direction and usage of the button pair.	
Function of Internal Usage	• **No function** • Set GROUP • Set ECG
The function of the push button can also be directly used to interact with internal DALI groups or ECGs. The advantage is that no group address has to be used, resulting in an easy and quick configuration. **NOTE** This possibility is available for: • Switch On/Off • Switching / Dimming • Set value fix • Set value in steps	

Parameter	Settings
GROUP Number to be set	**1** .. 16
If internal usage is required, we can define the group number to be set by the button. **NOTICE** This option is only visible if the **Function of Internal Usage** option is set to **Set GROUP**.	
ECG Number to be set	**1** .. 64
If internal usage is required, we can define the ECG number to be set by the button. **NOTICE** This option is only visible if the **Function of Internal Usage** option is set to **Set ECG**.	
Value left button	0 .. **100%**
Value to be sent when pressing the left button. **NOTICE** This option is only visible if the **Function of pair** option is set to **Set value fix**.	
Value right button	**0** .. 100%
Value to be sent when pressing the right button. **NOTICE** This option is only visible if the **Function of pair** option is set to **Set value fix**.	
Value Step size	• 2% • **5%** • 10% • 20% • 33% • 50%
Increment or decrement of the given value to be sent in percentage. **NOTICE** This option is only visible if the **Function of pair** option is set to **Set value in steps**.	

21.7.2. Push Buttons Single Buttons

This section deals specifically with the Single Buttons option due to its special features. Each button can be used as a single button (left and right).



NOTE
Only one single button is described to avoid redundancy.

Parameter	Settings
Function of Single Button No. 1	• On • Off • **Toggle** • Set value • Toggle value • Scene invoke • Scene invoke/program • Effect Start/stop (intern only) • Toggle/Dimming
The list of possible functions to be used in single button mode. The available options may vary depending on the selected mode.	
Available functions for: • On • Off • Toggle	
Function of Internal Usage	• **No function** • Set GROUP • Set ECG
The function of the push button can also be directly used to interact with internal DALI groups or ECGS. The advantage is that no group address has to be used, resulting in an easy and quick configuration.	
GROUP Number to be set	**1** .. 16
If internal usage is required, we can define the group number to be set by the button. **NOTICE** This option is only visible if the **Function of Internal Usage** option is set to **Set GROUP**.	
ECG Number to be set	**1** .. 64
If internal usage is required, we can define the ECG number to be set by the button. **NOTICE** This option is only visible if the **Function of Internal Usage** option is set to **Set ECG**.	
Available functions for: • Set value • Toggle value	
Value 1 Value 2 (only in **Toggle value** function)	0 .. **100%** (in steps of 5%) **0** .. 100% (in steps of 5%)
Define the value to be sent by pressing the button.	

Parameter	Settings
Function of Internal Usage	• **No function** • Set GROUP • Set ECG
The function of the push button can also be directly used to interact with internal DALI groups or ECGS. The advantage is that no group address has to be used, resulting in an easy and quick configuration.	
GROUP Number to be set	**1** .. 16
If internal usage is required, we can define the group number to be set by the button. **NOTICE** This option is only visible if the **Function of Internal Usage** option is set to **Set GROUP**.	
ECG Number to be set	**1** .. 64
If internal usage is required, we can define the ECG number to be set by the button. **NOTICE** This option is only visible if the **Function of Internal Usage** option is set to **Set ECG**.	
Available functions for: • On • Off • Toggle • Set value • Toggle value	
Feedback available	• **No** • Yes
According to IEC 62386-332, push-button feedback elements are supported. If a DALI input device with LED feedback is available, the next parameter defines the control type.	
Feedback LED Left or LED Right	• **Not used** • Always Off • Always On • Status • Status inverse
This parameter defines the control type. **NOTICE** This parameter is only visible when the **Feedback available** option is set to **yes**.	

Parameter	Settings
Available functions for: • Scene invoke • Scene invoke/program	
KNX Scene Number to be set	**1** .. 64
This parameter defines the KNS scene number to be sent via a communication object.	
Function of Internal Usage	• **No function** • Scene
The function of the push button can also be directly used to interact with internal DALI scenes. The advantage is that no group address has to be used, resulting in an easy and quick configuration.	
Internal Scene Number to be set	**1** .. 16
This parameter defines the internal DALI scene number to be set.	
Group Number to be set	**1 .. 16**
This parameter defines the internal DALI scene number to be set. **NOTICE** This option is only visible if the **Function of Internal Usage** option is set to **Scene**.	
Available functions for: • Effect start/stop (intern only)	
Function of Internal Usage	• **No function** • Effect start • Effect stop
The function of the push button can also be directly used to interact with internal DALI effects. The advantage is that no group address has to be used, resulting in an easy and quick configuration.	
Internal Effect Number to be set	**1** .. 16
This parameter defines the internal effect number to be started or stopped **NOTICE** This option is only visible if the **Function of Internal usage** option is set to **Effect start** or **Effect stop**.	
Available functions for: • Toggle/Dimming	
Function of Internal Usage	• **No function** • Set GROUP • Set ECG
The internal use function allows direct one-button dimming of a group or an ECG. A short button press switches the selected group (or the selected ECG) between the switch-on and switch-off values. Dimming is performed with a long button press. The dimming direction changes each time the button is pressed. No communication objects for controlling external KNX devices are available for this function.	

Parameter	Settings
GROUP Number to be set	**1** .. 16
If internal usage is required, we can define the group number to be set by the button. **NOTICE** This option is only visible if the **Function of Internal Usage** option is set to **Set GROUP**.	
ECG Number to be set	**1** .. 64
If internal usage is required, we can define the ECG number to be set by the button. **NOTICE** This option is only visible if the **Function of Internal Usage** option is set to **Set ECG**.	

21.8. Generic KNX Inputs

Up to 16 KNX inputs can be defined in this section to transmit information from the KNX system to MQTT.

Parameter	Settings
Description	
Use this parameter to define a description for the generic KNX input **NOTE** The maximum length allowed is 20 characters.	
Data Type	• **1 bit** • 1 Byte (0..100%) • 1 Byte unsigned • 1 Byte signed • 2 Byte Unsigned • 2 Byte signed • 2 Byte float • 4 byte unsigned • 4 byte signed • 4 byte float • no object
The data type defines the general type of the value to be transmitted.	

Parameter	Settings
Unit Type	• No unit (counter value) • No unit (Float value) • No unit (counter value signed) • 0 .. 255% (DPT 5.004) • % (DPT 6.001) • lux (DPT 7.013) • °C (DPT 9.001) • Pa (DPT 9.006) • kW (DPT 9.024) • W/m² (DPT 9.022) • m/s (DPT 9.005) • lux (DPT 9.004) • % Humidity (DPT 9.007) • s (DPT 9.010) • mA (DPT 9.021) • mV (DPT 9.020) • ppm (DPT 9.008) • air flow (m³/h - DPT 9.009) • °F (DPT 9.027) • Wh (DPT 13.010) • kWh (DPT 13.013) • m³/h (DPT 13.002) • °C (DPT 14.068) • Pa (DPT 14.058) • W (DPT 14056) • J (DPT 14.031) • Hz (DPT 14.033) • m² (Dpt 14.010)
Different units are available depending on the selected data type, each with the matching DPT for the communication object.	

22. API/MQTT

22.1. General

There is an increasing need for IoT functions to alert or notify users anywhere via the Internet. The MQTT (Message Queuing Telemetry Transport) protocol was chosen as the communication protocol. It is a lean protocol and transmits small amounts of data. MQTT is, therefore, one of the best protocols for opening up KNX data to the IoT world.

22.2. MQTT Basics

22.2.1. MQTT Client

The DALI gateway works as an MQTT client. A client always establishes the network connection to the server. It can:

- **Publish** application messages that other clients might be interested in.
- **Subscribe** to request application messages that they are interested in.
- **Unsubscribe** to remove a request for application messages.
- **Disconnect** from the server.

NOTICE
Refer to this link for more information.

22.2.2. MQTT Broker

Each MQTT client has to connect to a so-called broker. The broker is at the heart of any publish/subscribe protocol. Depending on the implementation, a broker can handle up to millions of concurrently connected MQTT clients. It is, therefore, important to note that the broker is highly scalable.

IMPORTANT
The part of the MQTT broker is not described in this document.

22.2.3. MQTT Security

The MQTT specification does not define anything else on top of TCP. However, we recommend using transport layer security (TLS).

22.3. MQTT Communication

The MQTT connection is always between one client and the broker. Clients never connect to each other directly. Once the connection is established, the broker keeps it open until the clients send a disconnect command or the connection breaks. Due to this method, there is no problem for clients located behind a NAT (router). No additional management of router NAT tables and port forwarding is necessary.

22.3.1. Client ID

The client identifier (Client ID) **identifies each MQTT client** that connects to an MQTT broker. The broker uses the Client ID to identify the client and its current state. Therefore, this ID should be unique for each client and broker.

The Client ID should be unique for all DALI gateways and in the broker management.

NOTICE
By default, the Client ID contains the keyword **dali** in conjunction with the unique serial number.

The user can change the client ID via the web server.

NOTICE
The maximum length allowed is 23 characters.

22.3.2. Topics

In MQTT, the word topic refers to a char string that the broker uses to filter messages for each connected client. The topic consists of one or more topic levels. Each topic level is separated by a forward slash (topic level separator).

This results in various methods for identifying information. The topic structure can be defined at root level for a specific DALI gateway or abstractly to make it independent of any DALI gateway hardware.

In the current implementation, the predefined topic structure contains the client ID as a fixed assignment to the Dali Gateway.

22.3.3. Topic Structure and Payload

The main topic of the gateway can contain several location attributes.

NOTE
Example:

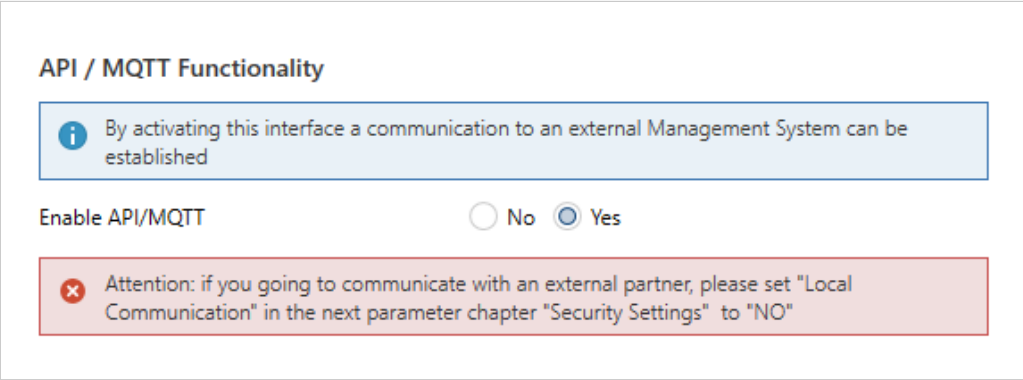
[PROJECTID/][BUILDING/][ZONEID/]client-ID

The client ID identifies the current DALI gateway. The location part ([PROJECTID/][BUILDING/][ZONEID/]) can be defined by the ETS configuration.

NOTICE
Each part can have a maximum character length of 20 characters.

22.4. MQTT Configuration Page

The API/MQTT configuration can be defined in the administrator tab of the web interface. To do this, the API/MQTT functionality must be enabled in the **General→ IP Network** settings.



NOTE
Remember that the **Access via Web Pages enabled** option must be set to Yes for this option to appear. See: Parameter Page: IP Network (page 176).

Configuration is distributed through three different sections:

- Connection
- Subscription
- Publication

22.4.1. Connection

The following entries have to be filled:

- MQTT Server Address: The address to which the gateway connects to the MQTT Server (Broker).
- Client ID: Predefined with **dali** + serial number.
- MQTT Port: Default value: **8883**.
- TLS: Whether Transport layer Security (TLS) is active. Default value: **Yes**.
- Keep Alive: defines the frequency with which a signal should be sent to keep the connection with the broker open. Default value: **60 seconds**.
- Communication Timeout: Defined in milliseconds. Default value: **1000**.
- Auth: Authorization defined by the MQTT Server (broker). Default value: **Yes**. Use the necessary credentials when this option is enabled.

22.4.2. Subscription

The Subscription tab can be used to allow commands from external sources. The predefined commend is **cmd/**, but it can be changed on this page.

22.4.3. Publication

Currently, five different information sources are provided:

- Groups
- ECGs
- Emergency lights
- Sensors
- KNX Datapoint types

The tag name for this part of the topic can be changed on this page.

22.5. Publication and Payload

22.5.1. Root Level ([Location]/client-id)

On this root level, the gateway provides four properties, all of which are always **retained**:

- Status
- Info
- Statistics
- Config

22.5.1.1. Status Sub-Topic

The status sub-topic indicates the online/offline status. The offline status is propagated by the **Last Will** command. This information is published as **retained**.

22.5.1.2. Info Sub-Topic

Device-specific information is provided. This information is published as **retained**.

22.5.1.3. Statistics Sub-Topic

General statistics are presented here:

- Number of Lamps
- Number of ECGs
- Number of Converters
- Number of Lamp Failures
- Number of ECG Failures
- Number of Converter Failures
- Lamps Failure Rate
- ECG Failure Rate
- Converter Failure Rate
- Gateway Failure Rate
- General Failure Mode

```
{
 "CntLamps": 7,
 "CntEcgs": 6,
 "CntConverter": 1,
 "LampFailures": 0,
 "EcgFailures": 0,
 "ConverterFailures": 0,
 "LampFailRate": 0,
 "EcgFailRate": 0,
 "ConverterFailRate": 0,
 "TotalFailRate": 0,
 "FailMode": 0
}
```

The general FailMode defines the status in a bitset as follows:

- Bit 0: Lamp Failure
- Bit 1: ECG Failure
- Bit 2: Converter Failure
- Bit 3: Not used
- Bit 4: KNX Failure
- Bit 5: DALI Failure

22.5.1.4. Config Sub-Topic

The information on the static configuration is divided into groups and ECG parts.

22.5.1.4.1. Config/groups Sub-Topic

```
[
 {
    "Number": 1,
    "Name": "Group 1",
    "ColorType": 0,
    "CntEcgs": 1,
    "CntConverter": 0
 },
..
]
```

This topic can store information on up to 16 groups. Each group contains information about the description, the colour type defined in ETS, the number of ECGs, and the number of assigned converters.

NOTE
Definition of colour types:

- 0: No Colour
- 4: ColorTemp
- 5: xy Colour
- 6: RGBW
- 7: RGB
- 8: HSV
- 9: HSVW
- 10: Colour Temperature + RGBW
- 11: Colour Temperature + RGB
- 12: Colour Temperature + HSV
- 13: Colour Temperature + HSVW
- 14: Colour Temperature Master
- 15: Colour Temperature Slave

22.5.1.4.2. Config/ecgs Sub-Topic

```
[
 {
    "Number": 1,
    "ShortAddress": 6,
    "LongAddress": 3430086,
    "GroupNumber": 3,
    "Name": "ECG No. 1",
    "DeviceType": 6,
    "ColorType": 0
 },
..
]
```

This topic can store information on up to 64 ECGs. Each ECG part contains the number, the short and long address, the group number in case it is assigned to one, the name, the device type, and the colour type.

NOTE
On ECGs that are not assigned to any group, the group number is set to 0.

NOTE
Definition of colour types:

- 0: No Colour
- 4: ColorTemp
- 5: xy Colour
- 6: RGBW
- 7: RGB
- 8: HSV
- 9: HSVW

22.5.1.5. Energy Sub-Topic

```
{
 "Value": 0,
 "Unit": "Wh"
}
```

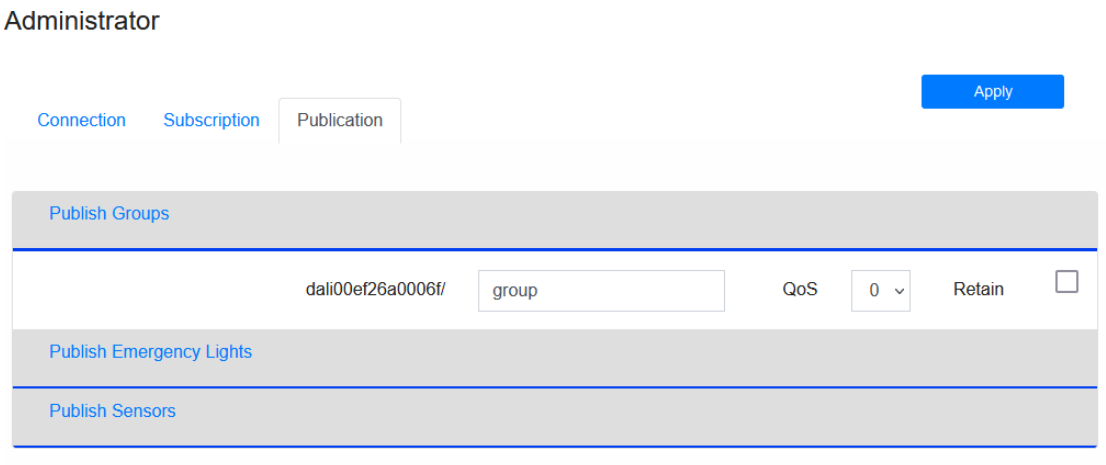
22.5.1.6. Power Sub-Topic

```
{
 "Value": 0,
 "Unit": "W"
}
```

22.5.2. Group Level ([location]/client-id/group/index)

By default, the group level topic is called **group**. However, this can be modified on the web MQTT configuration page.

NOTICE
The maximum length allowed is 15 characters.



22.5.2.1. Status Sub-Topic

Each group index indicates the value and current mode in JSON format.

```
{
 "Mode": 0,
 "Value": "0%"
}
```

The mode is defined as follows:

Bit 0	1 Byte	Permanent Mode
Bit 1	1 Byte	Panic Mode
Bit 2	1 Byte	Emergency Test Mode
Bit 3	1 Byte	Group Disable
Bit 4	1 Byte	Power Switch Off
Bit 5	1 Byte	Auto Switch Off
Bit 6	1 Byte	Staircase Disable Mode
Bit 7	1 Byte	Lifetime Exceeded

22.5.2.2. Colour Sub-Topic

The colour sub-topic information varies depending on the colour type:

- Colour Temperature:

```
"tc": {
    "tc": <color temperature>
}
```

- RGB:

```
"rgb": {
    "r": <0..255>,
    "g": <0..255>,
    "b": <0..255>
}
```

- RGBW:

```
"rgbw": {
    "r": <0..255>,
    "g": <0..255>,
    "b": <0..255>,
    "w": <0..255>
}
```

- HSV:

```
"hsv": {
    "h": <0..255>,
    "s": <0..100>,
    "v": <0..100>,
}
```

- HSVW:

```
"hsvw": {
    "h": <0..255>,
    "s": <0..100>,
    "v": <0..100>,
    "w": <0..255>
}
```

- XY:

```
"xy": {
    "x": <0-65535>,
    "y":<0-65535>
}
```

NOTE
For example, for the Colour Temperature + RGBW colour type:

```
"Colour": {
    "tc": 1345,
    "rgbw": {
        "r": 255,
        "g": 255,
        "b": 128,
        "w": 0
    }
}
```

22.5.2.3. Statistics Sub-Topic

```
{
    "CntLamps": 1,
    "CntEcgs": 1,
    "CntConverter": 0,
    "LampFailures": 0,
    "EcgFailures": 1,
    "ConverterFailures": 0,
    "FailRate": 100,
    "OperatingHours": 0
}
```

22.5.2.4. Energy Sub-Topic

```
{
 "Value": 0,
 "Unit": "Wh"
}
```

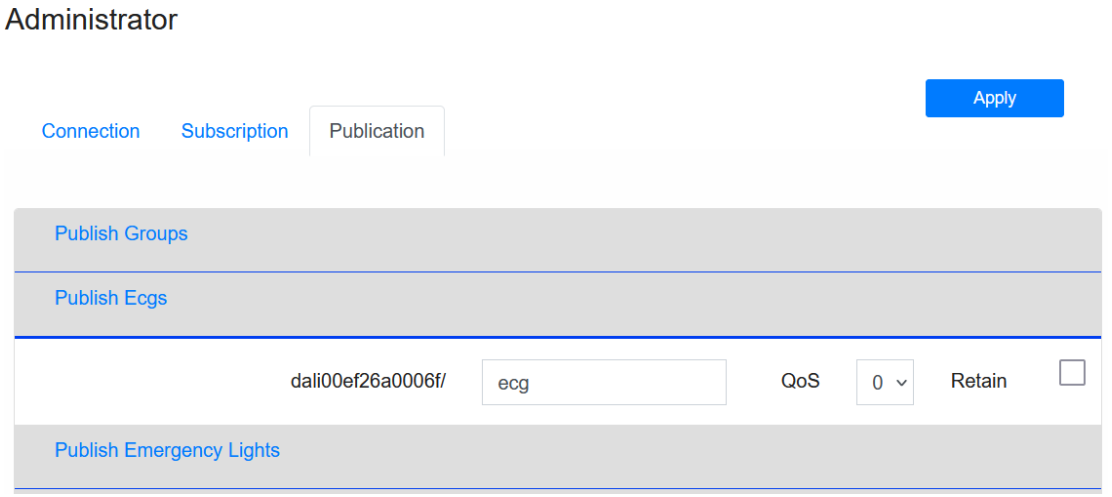
22.5.2.5. Power Sub-Topic

```
{
 "Value": 0,
 "Unit": "W"
}
```

22.5.3. ECG Level ([location]/client-id/ecg/index)

By default, the ECG level topic is called **ecg**. However, this can be modified on the web MQTT configuration page.

NOTICE
The maximum length allowed is 15 characters.



22.5.3.1. Status Sub-Topic

Each ECG index indicates the value and current mode in JSON format.

```
{
 "Mode": 0,
 "Value": "0%"
}
```

The mode is defined as follows:

Bit 0	1 Byte	Permanent Mode
Bit 1	1 Byte	Panic Mode
Bit 2	1 Byte	Emergency Test Mode
Bit 3	1 Byte	Group Disable
Bit 4	1 Byte	Power Switch Off
Bit 5	1 Byte	Auto Switch Off
Bit 6	1 Byte	Staircase Disable Mode
Bit 7	1 Byte	Lifetime Exceeded

22.5.3.2. Colour Sub-Topic

The colour sub-topic information varies depending on the colour type:

- Colour Temperature:

```
"tc": {
    "tc": <color temperature>
}
```

- RGB:

```
"rgb": {
    "r": <0..255>,
    "g": <0..255>,
    "b": <0..255>
}
```

- RGBW:

```
"rgbw": {
    "r": <0..255>,
    "g": <0..255>,
    "b": <0..255>,
    "w": <0..255>
}
```

- HSV:

```
"hsv": {
    "h": <0..255>,
    "s": <0..100>,
    "v": <0..100>,
}
```

- HSVW:

```
"hsvw": {
    "h": <0..255>,
    "s": <0..100>,
    "v": <0..100>,
    "w": <0..255>
}
```

- XY:

```
"xy": {
    "x": <0-65535>,
    "y":<0-65535>
}
```

NOTE
For example, for the Colour Temperature + RGBW colour type:

```
"Colour": {
    "tc": 1345,
    "rgbw": {
        "r": 255,
        "g": 255,
        "b": 128,
        "w": 0
    }
}
```

22.5.3.3. Alarm Sub-Topic

Each ECG indicates the alarm status in JSON format.

```
{
 "Alarm": 0
}
```

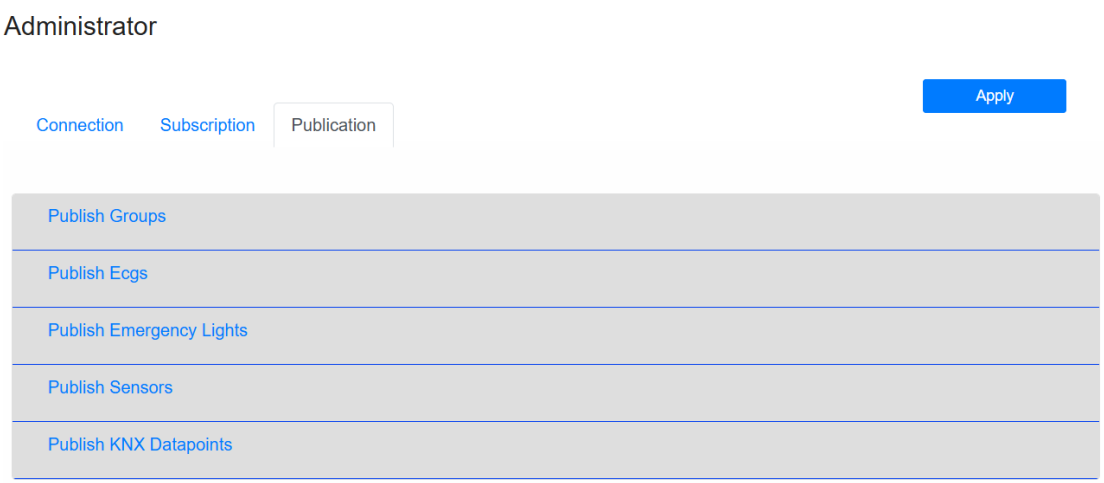
22.5.3.4. Energy Sub-Topic

```
{
 "Value": 0,
 "Unit": "Wh"
}
```

22.5.3.5. Power Sub-Topic

```
{
 "Value": 0,
 "Unit": "W"
}
```

22.5.4. Sensor Level ([location]/client-id/sensor/index)



22.5.4.1. Presence Sub-Topic

Each index of a presence detector specifies the status and the error status in JSON format:

```
{
 "Error": 0,
 "Value": 1
}
```

22.5.4.2. Brightness Sub-Topic

Each index of a presence detector specifies the brightness (lux), if configured, and the error status in JSON format:

```
{
 "Error": 0,
 "Value": 228
}
```

22.5.4.3. Temperature Sub-Topic

Each index of a presence detector specifies the temperature (°C), if configured, and the error status in JSON format:

```
{
 "Error": 0,
 "Value": 20.2
}
```

22.5.4.4. Humidity Sub-Topic

Each index of a presence detector specifies the humidity (%), if configured, and the error status in JSON format:

```
{
 "Error": 0,
 "Value": 52
}
```

22.5.4.5. CO2 Sub-Topic

Each index of a presence detector specifies the air quality (CO_2, in ppm), if configured, and the error status in JSON format:

```
{
 "Error": 0,
 "Value": 528
}
```

22.5.4.6. VOC Sub-Topic

Each index of a presence detector specifies the air quality (VOC, in ppm), if configured, and the error status in JSON format:

```
{
 "Error": 0,
 "Value": 528
}
```

22.5.4.7. Sound Sub-Topic

Each index of a presence detector specifies the sound level (in decibels), if configured, and the error status in JSON format:

```
{
 "Error": 0,
 "Value": 76
}
```

22.5.4.8. GenericUnsigned Sub-Topic

Each index of a presence detector specifies a generic value type, if configured, and the error status in JSON format:

```
{
 "Error": 0,
 "Value": 128
}
```

22.5.4.9. GenericFloat Sub-Topic

Each index of a presence detector specifies a generic value type, if configured, and the error status in JSON format:

```
{
 "Error": 0,
 "Value": 77.89
}
```

22.5.5. KNX Datapoint Level ([location]/client-id/knx/index)

Up to 16 KNX inputs can be defined in the ETS configuration to publish the information via MQTT.

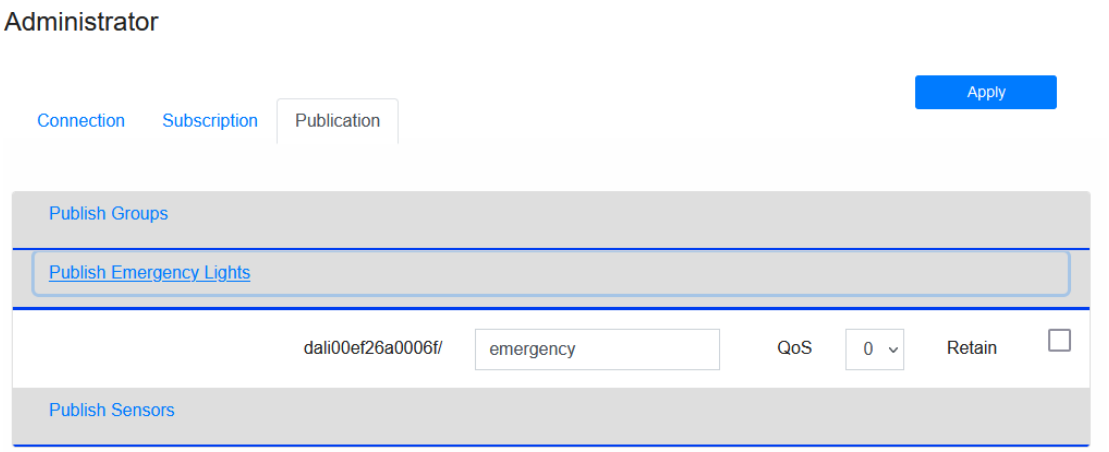
22.5.5.1. KNX Sub-Topic

KNX inputs are defined using a value/key pair in JSON format.

```
{
 "Value": 22,
 "Unit": "°C"
}
```

22.5.6. Emergency Level ([location]/client-id/emergency/index)

IMPORTANT
The index is linked to the device's short address and **NOT** to the ETS ECG Number.



22.5.6.1. EmStatus Sub-Topic

Each self-contained emergency ECG indicates the status in JSON format.

```
{
 "ShortAdr": 6,
 "EtsNumber": 10,
 "State": 1,
 "EmStatus": 8,
 "EmMode": 130,
 "EmFailure": 0
}
```

The ECG short address (**ShortAdr** and the corresponding ETS number (**EtsNumber**) are part of this information. The **State** field indicates the respective status of the device:

First nibble (bits 0 .. 3):

- 0: Unknown
- 1: Normal Mode;
- 2: Inhibit Mode
- 3: Fixed Inhibit Mode
- 4: Rest Mode
- 5: Emergency Mode
- 6: Extended Emergency Mode
- 7: Function Test (FT) Running
- 8: Duration Test (DT) Running

Second nibble (bits 4 .. 7):

- Bit 4: Function Test (FT) Manually Started
- Bit 5: Duration Test (DT) Manually Started
- Bit 6: FT Pending
- Bit 7: DT Pending

The **EmStatus** field indicates the original result of DALI query 253.

The **EmMode** field indicates the original result of DALI query 250.

The **EmFailure** field indicates the original result of DALI query 252.

22.5.6.2. EmTest Sub-Topic

Each self-contained emergency ECG indicates the test report in JSON format.

```
{
 "ShortAdr": 6,
 "EtsNumber": 10,
 "TestResult": 255,
 "TestMode": 1,
 "TestFlags": 0,
 "Hour": 15,
 "Minute": 15,
 "Second": 22,
 "Day": 9,
 "Month": 11,
 "Year": 24
}
```

The ECG short address (**ShortAdr** and the corresponding ETS number (**EtsNumber**) are part of this information. The **TestResult** field indicates the result of the test:

- **Function Test result**: 0 .. 254 for 0 .. 100% (255 means invalid)
- **Duration Test result**: 0 .. 255 in minutes multiplied by 2.

TestMode indicated the test type:

- 1: Function Test
- 2: Duration Test
- 4: Battery Test

The **TestFlags** field contains the following information:

- Bit 0: Inverter Circuit Fault
- Bit 1: Battery Duration Fault
- Bit 2: Battery Fault
- Bit 3: Lamp Fault
- Bit 4: Delay Fault

The **time stamp** indicates the date and time when the result was generated.

22.6. Commands and Payload

The MQTT interface allows sending commands to special topics; This option must be enabled in the configuration page of the web server. A command is indicated with the **cmd/** prefix before the topic.

22.6.1. Group Level (cmd/[location]/client-id/group/index)

22.6.1.1. Status Sub-Topic

Allowed payload content:

- on
- off

NOTE
These values are case-sensitive.

22.6.1.2. Value Sub-Topic

Allowed payload content:

- 0 .. 100 %
- 0 .. 255

22.6.1.3. TC (Colour Temperature) Sub-Topic

Allowed payload content: 0 .. 10000

22.6.1.4. Colour Sub-Topic

Allowed payload content: <colour-hex> or <colour-json>

Colour-hex:

```
#red,green,blue,white (coded 0..255)
```

Colour-json:

```
{
"rgb": { "r": 0..255, "g": 0..255, "b": 0..255}
Or
"rgbw": { "r": 0..255, "g": 0..255, "b": 0..255, "w": 0..255}
}

{
"hsv": { "h": 0..360, "s": 0..100, "v": 0..100}
Or
"hsvw": { "h": 0..360, "s": 0..100, "v": 0..100, "w": 0..255}
}

{
"xy": { "x": 0.0..1.0, "y": 0.0..1.0 }
}
```

22.6.2. ECG Level (cmd/[location]/client-id/ecg/index)

22.6.2.1. Status Sub-Topic

Allowed payload content:

- on
- off

NOTE
These values are case-sensitive.

22.6.2.2. Value Sub-Topic

Allowed payload content:

- 0 .. 100 %
- 0 .. 255

22.6.2.3. TC (Colour Temperature) Sub-Topic

Allowed payload content: 0 .. 10000

22.6.2.4. Colour Sub-Topic

Allowed payload content: <colour-hex> or <colour-json>

Colour-hex:

```
#red,green,blue,white (coded 0..255)
```

Colour-json:

```
{
"rgb": { "r": 0..255, "g": 0..255, "b": 0..255}
Or
"rgbw": { "r": 0..255, "g": 0..255, "b": 0..255, "w": 0..255}
}

{
"hsv": { "h": 0..360, "s": 0..100, "v": 0..100}
Or
"hsvw": { "h": 0..360, "s": 0..100, "v": 0..100, "w": 0..255}
}

{
"xy": { "x": 0.0..1.0, "y": 0.0..1.0 }
}
```

22.6.3. Scene Level (cmd/[location]/client-id/scene/index)

Allowed payload content:

- on

NOTE
This value is case-sensitive.

23. FAQ

23.1. Web Access

- Question: When the IP address is called up in the browser, the message "This page is not available " is displayed.
- Answer:
  - Make sure that the **Access via Web Pages enabled** option located in the **General → IP Network** section is enabled.
  - The IP address must be entered in the following form: **https://<IP address>**.

23.2. Security

- **Q**: No "secure" lock icon is displayed despite using an imported root certificate.
- **A**: The most probable cause is that the IP address was changed, and no new certificate was created. As an administrator, create a new device certificate.
- **Q**: After several failed logins, the device cannot be logged in and is no longer accessible.
- **A**: After three failed login attempts, the connection to this IP address is blocked for one minute for security reasons.
- **Q**: The gateway's IP address is correctly configured, but the device cannot be reached via a router or Internet.
- **A**: In the default setting, access is only allowed in local networks. To change this, set the **Communication on local network, only** option, located in the **General → IP Network** parameters section, to **No**.
- **Q**: I forgot my password.
- **A**: An ETS download with the corresponding settings must be carried out. Afterward, the user will be asked to enter a new and secure password.

23.3. DCA

- **Q**: The DCA does not display the configuration that is visible on the web page.
- **A**: The data was not synchronized. Please read out the device data.

NOTE

See DCA Extras (page 115).

24. Disclaimer for Cyber Security

To protect plants, systems, machines, and networks from online threats, it is necessary to implement a holistic, state-of-the-art security concept and keep it up to date.

You are responsible for preventing unauthorized access to your plants, machines, and networks. These should only be connected to a network or the Internet if and to the extent that the connection is necessary and appropriate security measures (such as firewalls or network segmentation) are in place. This is especially very important when using external IoT devices, e.g. MQTT brokers.

In addition, the security recommendations of HMS Networks must be observed. For further information, please contact your contact person at HMS Networks or visit our website.

HMS Networks strongly recommends using updates as soon as they are available and always using the latest versions. Using versions that are no longer supported or not using the latest updates may increase your risk of online threats. HMS Networks strongly recommends that you follow security recommendations regarding the latest security threats, patches, and related measures.

25. Open Source

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25.1. Open Source used in Firmware

All open-source software components used in the product are shown on the website.

NOTE
For more information, check the Calling the Start Page (page 29) section.

25.2. Open Source used in the DCA

Package Name: ColorMine - Version: 1.1.3

https://www.nuget.org/packages/ColorMine/

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