CHORUSMART

GEWISS

Gateway KNX/DALI 64/16 Advanced - DIN rail mounting

CE

KNX®

GW 90873

Technical Manual

Contents

1 Introduction

This manual describes the functions of the **GW90873 "Gateway KNX/DALI 64/16 Advanced"** device and how these can be set and configured via the ETS configuration software, the integrated web server, and manually.

2 General Product Information

2.1 Properties of the DALI Bus System

The DALI bus (DALI=Digital Addressable Lighting Interface) is a system used to control electronic control gear (ECG) for lighting (ballasts). The specifications of the DALI communication interface are defined in the standard IEC 62386.

The DALI bus allows the sending of switching and dimmer regulation commands. Moreover, the DALI protocol can be used to view other status and fault information for the ballast or other lighting status information. The DALI standard requires support for emergency lighting devices (EN 62386-202). The status and operating mode of emergency lights can be monitored and test procedures can be run.

In a DALI segment, up to 64 ECG ballasts (slaves) can be connected via a control device (master). During the commissioning, the ballasts receive an automatically generated 3-byte address, and from this an address between 0 and 63 is assigned for further configurations. Given that the assignment of the address is performed automatically, the order of assignment is random. The individual ECG ballasts/lamps must be identified during subsequent commissioning operations (see below).

The addressing of the individual ECG ballasts in the system is based on a short address (individual addressing) or via a DALI group address (group address). For this purpose, each ECG within a segment can be assigned up to 16 groups. DALI group addressing guarantees that switching or dimmer regulation processes of different luminaires in a system are made simultaneously without imposing time delays. In addition to short or group addressing, the brightness values of a single DALI ballast can be entered into scenarios and addressed via the scenarios themselves.

For further detailed information on the DALI system, refer to the DALI manual on:
---> https://www.digitalilluminationinterface.org

2.2 GW90873 Product Specifications

The GW90873 gateway is a device used to interface the DALI Bus to the KNX bus.
It supports ballasts in accordance with EN 62386-102 ed1 (DALI1) and also EN 62386-102 ed2 (DALI2)-compliant devices, as well as DALI2 movement and light sensors compliant with EN 62386-303 and EN 62386-304.

The device transforms switching and regulation commands from the KNX system into DALI frames, and the DALI bus status information into KNX frames.

The GW90873 device has a DALI output which can control up to 64 ballasts. In addition, it is possible to connect up to 8 DALI2 movement or light sensors, and the multi-master function is permitted in accordance with EN 62386-103.

The power supply required for the connected ballasts and sensors is supplied directly by the device; additional DALI power supplies are not required. If sensors powered directly by the DALI bus are used, it will be necessary to check that the required current draw does not exceed the rated value.

The device is supplied in a 4-DIN module package, for installation in distribution boards. Connection to the bus is made via a standard bus connector. The power supply and the DALI lines are connected via screw terminals on the device. The Ethernet line is connected via an RJ45 socket.

For each gateway, the ballasts can be controlled in 16 groups. As well as group control, the GW90873 device allows up to 64 ECGs to be controlled individually.

In addition to control of all operational devices, the GW90873 gateway allows management of emergency lights with self-contained battery (EN 62386-202). Emergency lighting systems with centralised batteries are also supported.

It can also control a maximum of 8 movement detectors with light sensors.

For configuration of the DALI segments with ETS, a special interface has been developed via a DCA (Device Control App) which must be installed in addition to the product database *.knxprod*. The DCA program can be downloaded directly from the KNX Association site, using your MyKNX account, or from the Gewiss site.

As well as the gateway functions, the GW90873 device offers numerous additional functions:

- *Addressing of 16 DALI groups and/or individual addressing up to 64 ballasts*
- *Flexible addressing: directly on the device, via the integrated web server, or in ETS (DCA)*
- *Control of coloured lights with Device Type 8 (DT-8) ballasts and via communication objects*
- *Control of coloured lights on basis of ballast subtype:*
  - *Colour Temperature   (DT-8 Sub-Type Tc)*
  - *XY 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 or time control of the brightness, light colour and colour temperature values (also from centralised applications) for groups or individual ballasts*
- *Automatic colour temperature change via communication object for DT6, warm and cold white*
- *Group object broadcasting to control all ballasts simultaneously (including colours)*
- *Different operating modes for groups and ballasts such as permanent mode, night-time mode or "stairway lights" mode*
- *Hours of operation counter for each individual ballast or group with an alarm to indicate end of lifespan*
- *Objects for recognition of specific faults or errors for each light/ballast*
- *Complex troubleshooting at group and device level with number of faults and fault rate calculation*
- *Error threshold monitoring with individually settable threshold values*
- *Scenario module up to 16 scenarios, which can be assigned to KNX scenarios from 1 to 64 where required*
- *Extended scenario programming, including the possibility for dimmer regulation scenarios*
- *Setting of colours in DT-8 devices via scenarios for groups of ballasts or individual ballasts*
- *"Effect" module for the control of light effects and sequences including colour control in DT-8 devices*
- *Test function for emergency systems with central power supply*
- *Support for self-contained emergency ballasts (DT1 single battery)*
- *Support for the emergency lighting test procedure with recording of date and time*
- *Quick exchange function for easy replacement of defective ballasts*
- *Energy saving function which allows the power supply of the ballasts to be disconnected when the light is switched off via an additional actuator*
- *Integrated web server for extended commissioning and maintenance operations*
- *Integrated display via web-browser for control and consultation*
- *Summary report of errors among the devices in the entire system*
- *Manual operation of the broadcast and group frames via operating keys and display on the device*
- *Status errors and diagnostic warnings via the LEDs and the display on the device*
- *Call-up of scenarios and effects from the time control module*
- *New and subsequent installations can be connected directly in the groups*
- *API/MQTT IoT interface*
- *Web access limited to 1 user account and 1 administrator account*

2.3 User and/or installer operational interfaces

The device is equipped with 3 operational interfaces available to the user or installer:

- Buttons and display on device
- ETS + DCA for KNX configuration
- Web interface

It is recommended to choose an operating mode for device configuration and commissioning, also for any subsequent reconfigurations.
N.B.: the operating modes listed above cannot be used in parallel or simultaneously.

Any change made in ETS or in DCA will be visible on the next access to the web page (with a new login); if this is already open, these changes cannot be updated online.

It is also important to ensure that the changes made on the web page will be visible in ETS only after synchronisation in the DCA; see chapter 9.5 "Synchronisation between the web page and DCA".

In the event of configuration via ETS and DCA, with the corresponding group addresses and parameters, it is recommended to follow the procedure below:

1. Set the required group addresses and parameters in ETS
2. Configure the ballasts and assign them to the corresponding groups via DCA
3. Configure the commands for the scenes, effects and timers via DCA or web interface
4. Configure the diagnostic errors and status reports via DCA or web interface.

Number of KNX group objects (datapoint):

- Number of group objects: 2110
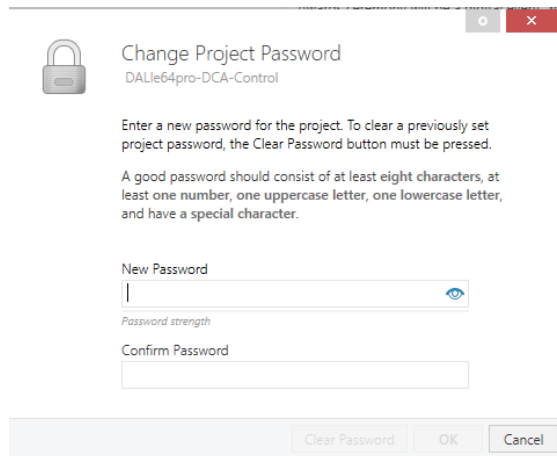
If using KNX Secure:
- Number of group objects: 1000
- Number of communication partners: 100

3 KNX Secure

The KNX standard has been extended with KNX Secure. This protocol enables encrypted transmission of information on the KNX bus. It also allows the configuration (download) phase of ETS on devices to be protected with secure encryption, in addition to real-time communication of communication objects.

NB: There are some measures which must be followed when using KNX Secure devices in ETS. For further information, consult the dedicated page on the KNX Association website (KNX Secure).
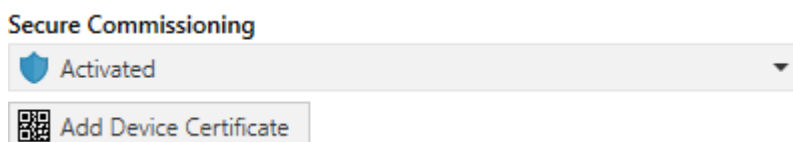
The GW90873 device features a KNX Secure internal communication stack. When added to an ETS project, a password must be entered to protect the project.
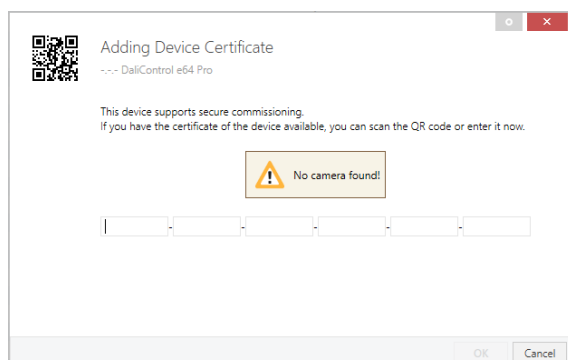
N.B.: KNX Secure devices can be configured only via an interface which supports long frames.

3.1 Secure Commissioning

In ETS, secure commissioning is shown on the "Settings" page contained in the device's "Properties" window:

Below, for each KNX Secure device, the certificate provided by the manufacturer must be entered in the ETS project; this is available via a QR Code, which can be read by the computer's video camera, or else entered manually.

The certificate consists of a serial number and an initial code named FDSK (Factory Default Setup Key). This key is used only for initial commissioning with ETS. During the initial download, this key is replaced with hidden keys by ETS. This prevents any access attempts to the installation in the event that unauthorised persons should come into possession of this default key, being visible.

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

N.B.: an adhesive label is also provided, that the user can insert in their own documentation.

N.B.: the device has been designed to manage up to 1000 group addresses with secure communication. Via secure group communication, the device can communicate with a maximum of 100 partners.

3.2 NON-Secure Commissioning

The GW90873 gateway can also be used as a "traditional" device in ETS, in other words with unencrypted KNX protocol. In this case, group communication with the other devices is performed as usual, and the ETS download is also performed without encryption.

Secure Commissioning

Deactivated

Add Device Certificate
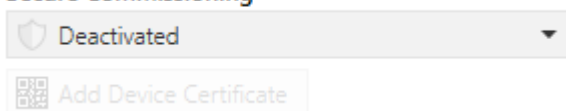
3.3 Master Reset

If the device requires a master reset, it will be returned to factory default settings. In this case it will be necessary to reactivate the FDSK default key.

A Master Reset can be performed on the device using the following procedure:

1.   Remove the KNX connector
2.   Press and hold the KNX programming button
3.   Reinsert the KNX connector
4.   Press and hold the KNX programming button for a longer time (~7 sec) after the connection of the KNX power supply.

4 Colour Control

The GW90873 device supports colour control in Type 8 ballasts per EN 62386-209.

These devices offer multi-channel colour control (RGB) and allow a colour mix to be enabled or a colour temperature set via DALI.

4.1 Functions of DALI Type 8 Devices

ECG ballasts for colour control (DT-8) are offered by a wide variety of manufacturers. Usually, these devices allow direct control of the LED modules with multicolour LEDs. The most common have LEDs with three colours, red, green and blue (RGB), as well as modules with two different shades of white (Tunable White).

Important: ECG DT-8 and sub-Type PrimaryN ballasts are not supported by the DALI gateway.

Occasionally, LED modules with a further integrated white channel (RGBW) are offered on the market. Although it is obviously possible to control the different colour channels individually, each via a separate DALI control device for LEDs (type 6 devices), this solution has the disadvantage that each of these devices is assigned a separate short DALI address. This means that two (tunable white), three (RGB) or even four short addresses are required to control a module. With a maximum of 64 short addresses per DALI segment, the usable number of lights would be significantly reduced. With a DT-8 device, however, only one 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 given device supports only one of these possible methods. As such, take note of the specifications of the corresponding device or lamp manufacturer.

4.2 Colour Display via XY Co-ordinates
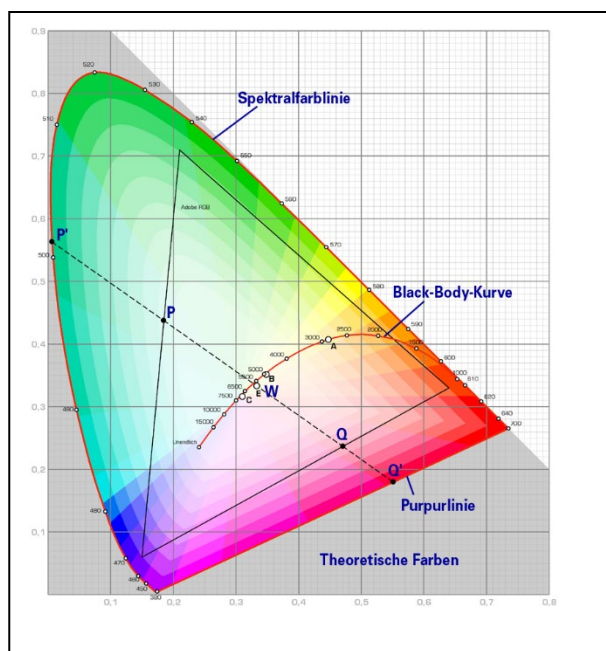
Displaying a colour via two named co-ordinates in a "colour space" is a common method. By means of the x-y co-ordinates, any point in this space is accessible and as a consequence, any colour can be defined. The diagram used in the DALI standard is the chromaticity diagram of the colour space according to the CIE standard of 1931. (Cambridge University Press) which is shown in the graph to the side.

Figure: University of Cambridge, source: Wikipedia.

In devices which support the x-y coordinates method, the colour is set by two values between 0.0 and 1.0.

Nevertheless, due to the physical properties of an LED, even in an RGB LED module, not all colours are practically possible. In practice, it is common to set the closest value to the desired one.

N.B.: pay attention to the instructions of the manufacturer of the ECG or the lamp. Usually, here the xy values supported by the lamp are specified. XY values outside of the specified range can lead to incorrect values and colours which are not reproducible.

4.3 Displaying colours via colour temperature
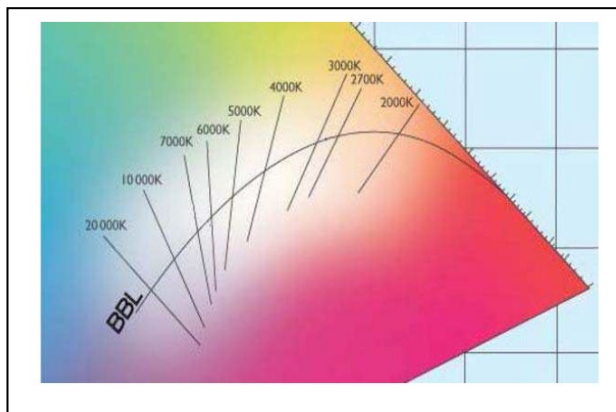
A subset of all the possible colours in the colour space displayed above are the different shades of white. The shades of white are found on a line through the entire colour space. The points on this so-called black-body line (BBL) are generally defined via a colour temperature in Kelvin. This allows the shade of white, between warm and cool, to be precisely determined with a single value. The principle of colour temperature is therefore perfect for the control of white luminaires (tunable white)

Figure: University of Cambridge, source: Wikipedia.

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

4.4 Displaying colours via 3 or 4 colour channels (RGBWAF)

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

Unlike the methods described above, the definition of the colour in this case is not precise but depends a lot on the specific physical attributes of the LEDs used to create the colour (wavelength, intensity). Nevertheless, the indication of the primary colour percentages within a system is useful for the relative description of a colour. In some DT-8 ballasts, the colour is set by defining 3 (RGB) or 4 (RGBW) values between 0 and 100%.

According to the DALI standard EN 62386-209, up to six colours (RGBWAF) can theoretically be used. The GW90873 device, however, supports a maximum of 4 colours only, in line with the ECGs currently available on the market.

4.5 Display of colours via 2 DT-6 LED types

This display consists of setting a colour temperature via two DT-6 groups. For example, warm (3000K) LED strips are assigned to a master group, and cold (6000K) colour LED strips to a slave group.

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

5   Operating modes

Each group and individual ballast offer different operating modes which can be set individually on the parameters page.

5.1   Normal Mode

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

An ECG can only be assigned to a single DALI gateway. The GW90873 gateway does not support multi-group assignment at DALI level. If this assignment is necessary, use KNX communication objects for this purpose. Separate status objects provide information on the switching and brightness value status both at group and individual ECG level.

5.2   Permanent Mode

If you wish to permanently configure an individual ECG or an entire group with a given brightness value (e.g. a corridor or office lit in permanent mode), it is possible to choose the permanent mode option. The ECG or group are set automatically to the requested value after programming or switching on of the gateway. The dimmer regulation and switching objects remain hidden. The light, fault and service status functions, on the other hand, are also available in permanent mode.

N.B.: if a device in this mode does not operate at the preset lighting level due to a special operation (e.g. identification process on the device's display) or a fault (e.g. the ECG was unpowered when the gateway was started up), the lighting level is automatically corrected after 60 seconds.

5.3   Stairway Light Mode

This operating mode is supported only by groups.
In stairway light mode, the value set via sending of values, switching or dimmer regulation frame is automatically modified on receipt of a switch-off command after a programmable time. The lights can be switched off immediately or in 2 steps (within a minute) or via decreasing regulation (within a minute).

In stairway lights mode, each additional frame received restarts the internal timer. The lights shut off when the timer expires after the last frame received. Stairway light mode can be enabled or disabled via an additional object. If stairway light mode is disabled, the group behaves as in normal mode and does not switch off automatically. If the mode is disabled while the switch-off timer is already running, the timer will stop and the group will remain at the currently set value; if the mode is enabled once again, the timer will restart from the beginning.

5.4   Night-time Mode

Night Mode largely corresponds to Stairway Light Mode. The only difference is that automatic shut-off depends on the central "*Activate Night mode*" object of the gateway. If the "*Activate Night mode*" object is not activated (day), the group behaves as in normal mode. If the object is activated (night), the group either switches off after a programmable time, or switches to permanent mode.

5.5 Panic Mode

Panic mode can be activated by a central "*Activate panic mode*" object for the entire gateway. All groups and ECGs for which Panic Mode has been enabled switch permanently to a programmable panic light value on receipt of the object. They can no longer be controlled individually. When panic mode is deactivated, the devices return to the previous light value or to the on/off value and can once again be controlled individually.

NB: When panic mode is active, both the hourly programming module and scene are deactivated.

5.6 Test Mode for Central Battery Emergency Lights

Through its internal function, GW90873 supports installations with central battery emergency luminaires. Any ECG (except for those of the self-contained battery type) can be configured as an emergency light (even if assigned to a group). You can choose a test time between 15 minutes and 4 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 predefined conditions.

So that individual ECGs within a group can no longer be switched via group frames or scenes, the group assignment is cancelled for the duration of the test mode. When the test has finished, groups and scenes are automatically reprogrammed to the ECGs. Should the gateway lose power during the test mode, the unprogrammed devices are marked and automatically programmed on return of the power supply. The test mode will not continue, however, and will need to be restarted.
When the test mode terminates normally, the devices return to the previous light value or the switch on/switch off value and can once again be controlled individually.

5.7 Operating Mode Hierarchy

Some of the individual operating modes described above have higher functions and roles for the operation of the system as a whole. A hierarchy of operating modes must therefore be established. The central battery test mode has the highest priority followed by the panic mode. The permanent, normal and night-time modes have the same priority level in the hierarchy.
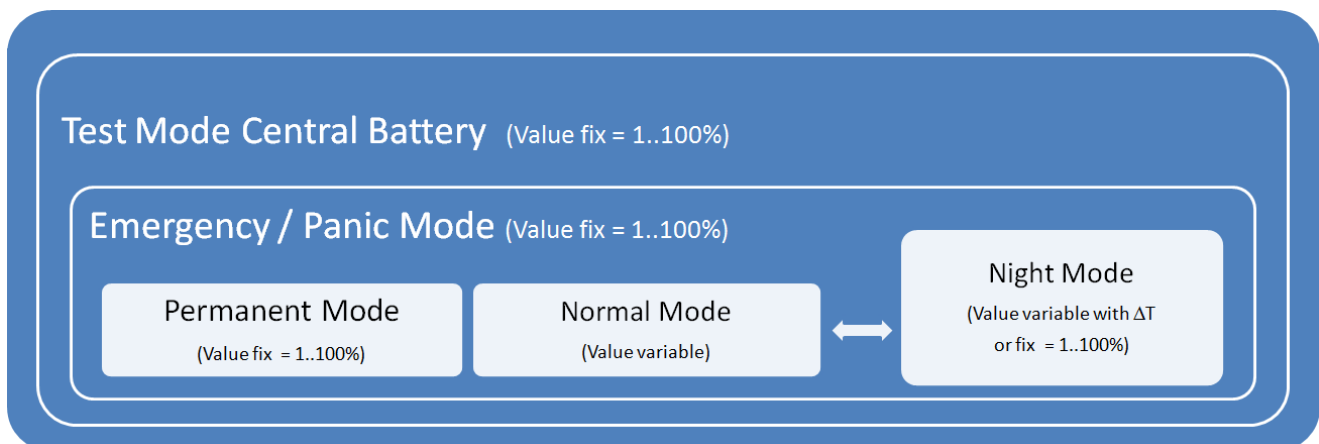
By default, manual mode is enabled and can always be used for the service and maintenance functions. However, it can be disabled by means of ETS parameters, see chapter 19.1.4 Parameters page: Special Functions

6 Analysis and Service Functions

6.1 Recording Operating Hours

GW90873 allows for the operating hours (burning time) of each lamp to be individually recorded for each group and individual ECG. The internal recording is accurate to the second. The value is available externally via KNX communication objects (DPT 13.100).

The operating hours recording is independent of the dimmer regulation value. This means any brightness value > 0% contributes to an increase in the operating hours of a group. The counter can be reset (when a lamp is changed). To reset the counter, the value 1 is written to the ""*reset operating hours"* object.

A maximum number of running hours can be set for an object to be sent on the KNX bus as a threshold alarm for the purposes of preventive lamp maintenance.

Important: in accordance with KNX standards, the operating hours are sent in seconds. However, these can be changed into other units.

6.2 Fault Detection at ECG Level

One of the major advantages of DALI technology is the individual recognition of light failures or faulty ECGs. The GW90873 device supports these functions.

For error analysis, the DALI Gateway cyclically interrogates all connected ECGs to determine any faults with the ECGs or lamps. The polling cycle can be configured. If the time is 1 second (standard setting) and there are 64 connected ECGs, the complete process of scanning all ECGs for lamp and ECG faults takes 128 seconds (1 second per ECG and error type). It can therefore take up to around 2 minutes before a fault that has occurred is recognised. 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 connected devices is clearly displayed on the web page of the gateway.

Important: If the parameter setting is "*Cycle Time for DALI Failure Request"* = *"No request*", all failure queries are disabled. No ECG or converter failures or lamp failures are recognised in this case. This setting is only useful for service purposes when an extreme reduction of the DALI busload is required.

6.3 Fault Detection at Group Level

If ballasts and/or converters are merged into groups, numerous group-specific failure data is 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 KNX communication object. An alarm object is sent when a certain failure rate is exceeded. A complex object with a summary of the data further adds to the analysis options.

For details of group-specific communication objects, please see the KNX communication objects description below in chapter: 20.3 Group Objects

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

6.4 Fault Detection at Device Level

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

For further details regarding the communication objects, please see the communication objects description in chapter: 20.1.2 General Objects Analysis and Service.

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

7   Commissioning via Webserver

7.1   Commissioning and Operation

In addition to the DCA, you can also easily commission the Gateway and place it into service via the integrated web server. For this purpose connect the Gateway directly to the IP network. The RJ-45 socket is located above the KNX bus connector at the bottom left-hand side of the device.

Use a standard patch cable to connect the device to a switch, hub or router of the IP network. You can also use a WLAN access point as network bridge. This means you can commission the DALI via a laptop, tablet or smartphone.

Once the Ethernet network is physically connected, you need to assign an IP address to the GW90873 in order to enable access via the web browser. By default, devices with an IP interface are set to DHCP address assignment. If there is a DHCP server in the network, the device automatically receives an IP address after initialisation. This address is shown on the device display. If no DHCP service is available or if you would rather use a fixed IP address, you must set the address either via ETS. You may also need to configure the subnet mask and standard gateway (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 normal web browser.

Important: ensure that you open an https connection via **https://<ip>**

HTML5 functionality is required for all browsers used. Google Chrome, Mozilla Firefox and Microsoft Edge have been tested for the current device status (version of this document).

7.2   Safety aspects

Communication with the web server in the GW90873 is encrypted via HTTPS.

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

The existing SSL certificate in the device was signed by the certification authority and can be verified with the corresponding public key of the certification authority.
In order for the SSL certificate of the device to be considered trustworthy, the browser or PC must know the certificate of the certification authority in order to confirm the trustworthiness. The operating system manages a list of all "trusted certification authorities", so-called "SSL root certificates".

If a secure connection is then established in the browser, the browser first checks whether this certificate can be confirmed by a root 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 be issued and must be accepted manually.

Gewiss devices have their own CA root certificate and all device certificates are derived and confirmed from this CA root certificate.

If this root certificate is imported to the operating system, the browser recognises all Gewiss devices as "trustworthy", as the individual device certificates are confirmed by this CA root 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 chapter 7.3: "Import of the CA Root Certificate".

7.3   Import of the CA Root Certificate

As already explained in the security aspects, the device enables the CA (Certificate Authority) root certificate to be loaded.

To do this, please log in on the website as "Administrator" and select the menu item "ADMINISTRATOR". Below the actions is the entry "Download Issuer Certificate". This allows the root certificate to be stored on the PC. See also chapter: 7.7.2 Download Issuer Certificate.

To import this certificate, please proceed as follows:

Install security certificate:

- Right-click the exported file in the location where it was saved and select "Install Certificate".
- In the next step, the storage location is queried. Here you can select "Current User" or "Local Computer". Click on "Next".
- Here, select the option "Save all certificates to the following store" then click "Browse".
- Select the Trusted Root Certification Authorities folder as the certificate store and OK.

After completion, the message "The import process was successfully completed" is displayed.

N.B.: In order for the browser to check this new issuer certificate when calling up a website, it must be restarted.

7.4 User Account

The GW90873 manages two user accounts. A user with all administrator rights, and a normal user with restricted rights. A total of 4 sessions (logins) can be managed.

7.4.1 Administrator

This user role has all rights. In particular, commissioning, i.e. new installation or subsequent installation of the ballasts or movement detectors, is only permitted to the administrator.

Important: Only one administrator can be logged on at a time.

7.4.2 Normal User

The rights of the normal user can be set in even more detail with the ETS.
Essentially, commissioning is blocked for the user.

By default, however, they have all operating rights to switch lights, configure scenes, effects, schedules and view status information.

Restriction of rights for the user account
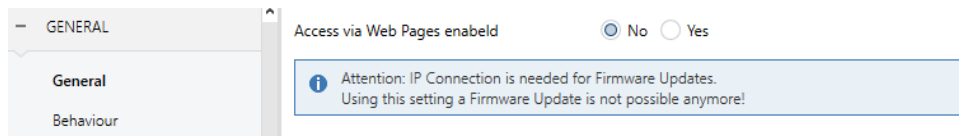
User is allowed to control lights	◯ No	◉ Yes
User is allowed to change scene configuration	◯ No	◉ Yes
User is allowed to change effect configuration	◯ No	◉ Yes
User is allowed to change schedule configuration	◯ No	◉ Yes
User is allowed to view emergeny reports	◯ No	◉ Yes

7.5 Password Management and Login

For security reasons, access to the web server in the device is blocked by default. Therefore an ETS configuration and a download is necessary before using the device's IP interface.

GENERAL	Access via Web Pages enabeld	◉ No ○ Yes
General	ℹ️ Attention: IP Connection is needed for Firmware Updates. Using this setting a Firmware Update is not possible anymore!	
Behaviour		
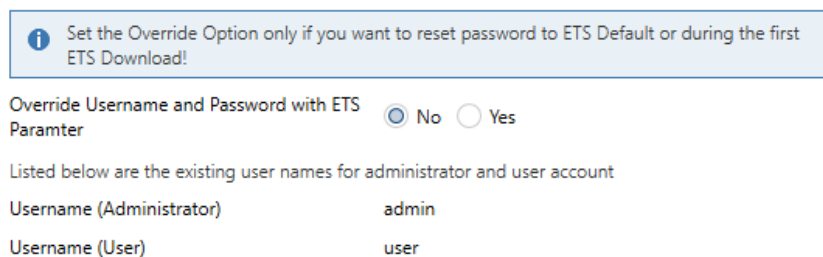
After setting the network configuration, the web server can be activated. By default, the following accesses are provided with the corresponding access data.

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

NB: Please note that after the download, the access passwords must be changed again into secure passwords.

After that the passwords should not be reset with the ETS. It is therefore strongly recommended to set the corresponding parameter to "No" before the next ETS download:

Webpage Access

ℹ️ Set the Override Option only if you want to reset password to ETS Default or during the first ETS Download!

Override Username and Password with ETS Paramter	◉ No ○ Yes

Listed below are the existing user names for administrator and user account

Username (Administrator)	admin
Username (User)	user

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

The following rule must be observed to ensure a secure password:

- At least 8 characters
- Upper and lower case letters
- At least one number
- At least one special character

Afterwards you can log in with the modified password.

N.B.: note: The user name is only defined with the ETS configuration.

Accordingly, it would be possible to assign a customer-specific login name for the administrator or the standard user.

NB: However, it is recommended to use the default names "admin" and "user".

7.5.1 Forgotten Password

If you have forgotten the password, it can be reset via an ETS download with the ETS and the corresponding parameter; see figure below.

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

This is followed by changing the password as described in the previous chapter.

7.6 Accessing the Web Server
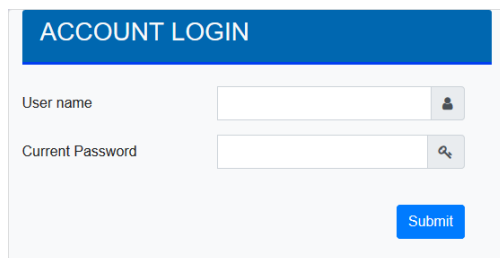
Once the IP connection to the gateway has been established, the website can be accessed by entering the IP address in the address bar of the browser. The website can be accessed with user or administrator rights.

Important: ensure that you open an https connection via **https://<ip>**

When logging in as "user", the function of the website is restricted and configuration commands are blocked. This login should be used if the website is used for display and operation. If the website is also used for DALI commissioning, an administrator login is required.

All following illustrations and descriptions of the web pages refer to the administrator representation.
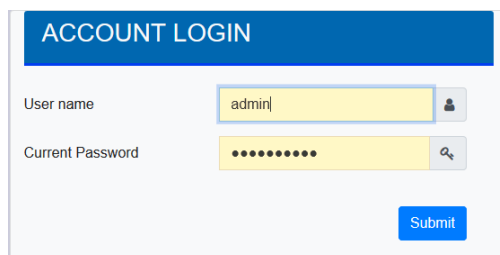
In the login window, the user name is used to decide whether the administrator role or the standard user role should be activated.

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

N.B.: Under certain circumstances it is advisable to save the login data in the browser. You will be prompted to do so. With the next call the data will therefore already be precompiled.

N.B.: If there is no login after 1 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.

N.B.: For security reasons, access to the website will be blocked for 1 minute if 4 incorrect login attempts are made.

Important: Up to four sessions can be managed. If all four sessions are logged in with "User", even a new login as "Admin" will also generate the response "No Session available". In this case users logged in as "User" must first be logged out.

7.7 Website Administrator

For administration, log in on the website as "Administrator" and select the menu item "ADMINISTRATOR".

ADMINISTRATOR

Actions ▾

Generate New Device Certificate
Download Issuer Certificate

Update Firmware

New Admin Password
New User Password
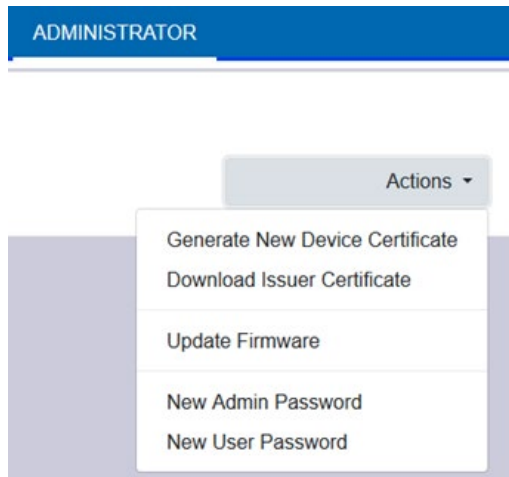
7.7.1 Generating a New Device Certificate

The device is delivered with a certificate. This certificate has a lifetime of 5 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 with the administrator role.
In the "Administrator" tab, you can generate a new certificate.

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

Please Confirm   ✕

Afterwards you have to reboot the device in order to activate the
new certificate

                                                Cancel   Ok
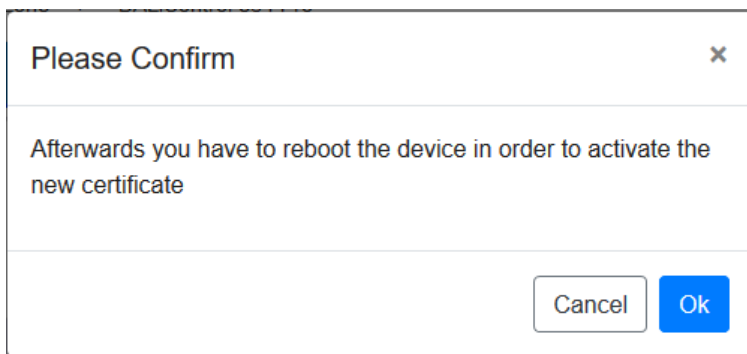
7.7.2 Download Issuer Certificate

With this action the issuer certificate can be downloaded to the PC.

Select a storage location in order to install the issuer certificate on the PC afterwards, see 7.3 Import of the CA Root Certificate. The certificate will be saved in ".der" format.

7.7.3 Firmware Update

The firmware of the device can be updated. For security reasons, the PIN is requested which has already been configured in the ETS.

Administrator

Please enter the pin to unlock the device

PIN   [   ] ⊞

Submit

If the PIN has been entered correctly, the following window will be displayed to select the firmware update package.

Administrator

Please select a file for upload and afterwards press submit.
Please note, the upload may take up to 2 minutes.

| Choose file... | Browse |

Submit

N.B.: The firmware update can take up to 2 minutes.

Under unpredictable conditions, the transmission could be interrupted with an error. The following errors could be reported. Please contact the manufacturer.

• 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: Request ID is invalid
• 799: General error

7.7.4 New Admin password

In this menu item, the password for the administrator can be changed.

Administrator

Change login credentials for: admin

Current Password   [   ] 🔑

New Password   [   ] 🔑

Confirm New Password   [   ] ♻

Submit

7.7.5 New User password

In this menu item, the password for the user can be changed.

Administrator

Change login credentials for: user

New Password   [••••••] 🔑

Confirm New Password   [   ] ♻

Submit

7.7.6 *API/MQTT Access Configuration*

Settings and instructions for using MQTT are explained in chapter 21 "API/MQTT". When using the API/MQTT, please observe the security instructions in chapter 23 "Cybersecurity Disclaimer".

7.8 *Website Language Setting*

English is set by default on delivery. The language can be changed directly on the device using the buttons, see submenu chapter: 18.2.1 Submenu Language.

7.9 *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 defined in the ETS configuration, and the login name.

GEWISS   Project > Building > Zone > DALI Gateway   *(i)*   😑 admin ▾

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

i

Device Information

GEWISS S.p.A.

Gateway KNX/DALI 64/16 advanced

Version: 1.2.4

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[OK]

Readme Opensource Software | Technical Documentation

The menu line consists of the entries:

- INFORMATION
- COMMISSIONING (with admin login only)
- SETTINGS
- CONFIGURATION
- DIAGNOSIS
- ADMINISTRATOR (with Admin login only)

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

INFORMATION	COMMISSIONING	SETTINGS	CONFIGURATION	DIAGNOSIS	ADMINISTRATOR

Serial Number: 00ef:26a021b5	MAC Address: 00-05-26-A0-21-B5	Individual Address: 0.0.100	Firmware: 1.2.4

Failure Status

Lamp	ECG	Converter	KNX	DALI
🟢	🟢	🟢	🟢	🟢

	Lamps	ECGs	Converter
Count	1	1	0
Failures	0	0	0
Failrate	0%	0%	0%

The following properties of the DALI Gateway are displayed in the upper line:

- Serial number: *serial number*
- MAC Address: *MAC Address*
- Individual address: *configured KNX address*
- Firmware: *loaded version*

The current error situation (fault statuses) is also displayed. The following types of error are reported:

- **Lamp** fault
- **ECG** fault
- **Converter** fault
- **KNX** fault
- **DALI** fault

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

7.10 Actions on the Website

Different actions can be performed on the website. A distinction is made between configuration commands such as new installation and switching commands.

Acknowledgement after processing is absolutely necessary for configuration commands. If this cannot be received because of errors, the process is aborted after a timeout of 5 minutes.

7.11 Automatic Log-off

An inactive session, i.e. a login as user or administrator without active operation, is automatically logged off after 5 minutes. After this time, the login window will be displayed again. This is particularly useful for the administrator session, so that it is not blocked indefinitely.

N.B.: Mouse movements, keyboard entries and clicks are considered active operations.

8 System Diagnostics

A system with multiple 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 the 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.

8.1 Requirements and Functions

To activate the system diagnostics, the corresponding parameters must be set in the ETS "Special Functions" menu.

All gateways that are to communicate with each other must be configured with the same multicast address. 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 ETS.

N.B.: After restarting a gateway, the device status is initially sent to this multicast address. Subsequently, it is sent on 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 log in to the corresponding device web interface directly.

The parameters are also described in chapter 19.1.4 Parameters Page: Special Functions.

8.2 Viewing Diagnostic Information

The diagnostic view is displayed on the website.

To access it, select "Diagnosis" in the main menu and "System Overview" in the following submenu.

The list shows all DALI Gateways that are working in the same system and are enabled according to the requirements.

The following information is displayed:

- Name of the DALI Gateway
- IP address of the DALI gateway
- Lamp fault
- ECG fault
- Converter fault
- KNX fault
- DALI fault
- Failure rate

Clicking the Info button displays further information about the status of the device in a detail window.

Report	System Overview									

Name	IP	Lamp	ECG	Converter	KNX	DALI	Tot. Failrate	
DALI Gateway	192.168.1.250	●	●	●	●	●	0 %	i

Serial Number: 00ef:26a021b5	Individual Address: 0.0.100	Firmware: 1.2_04	Project Id:	Building Id:	Zone Id:

	Lamps	ECGs	Converter
Count	1	1	0
Failures	0	0	0
Failrate	0 %	0 %	0 %

8.3 Web Access to Other Gateways

Every Dali Gateway in the list can be opened in a second browser tab by clicking on the IP address.

N.B.: The corresponding login data of the DALI Gateway must be available.

9 Installation and Commissioning

The following graphic shows the steps required for the new installation and commissioning of a DALI gateway.
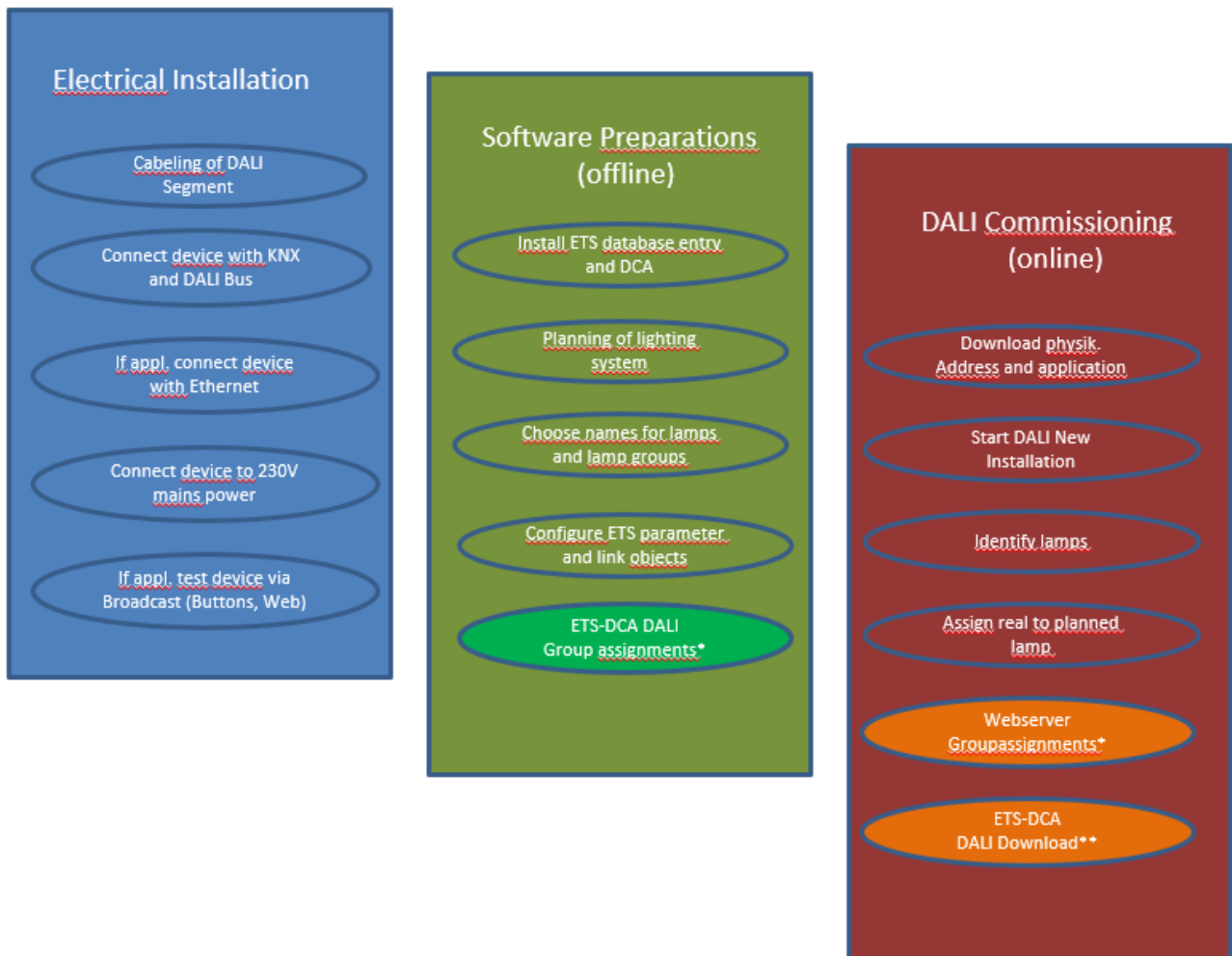
* When commissioning via DCA, group assignment can already be done in the planning phase (offline). When commissioning via web server, the system has to be online.

9.1 New DALI Installation

After wiring the DALI segment (see assembly and operating instructions) and configuring the software for installation, planning and configuration (see below), which can be performed without connection to the DALI gateway (offline), you can now start a new DALI installation.
A new installation is only possible with a connection to the DALI gateway and when the ECGs that are to be installed are connected and powered.

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 integrated web server (Ethernet network connection required)
- Configuration and execution via buttons and display on the device

NB: Depending on the type of use, configuration data should be synchronised in the DCA, see
9.5 Synchronisation between Web Pages and DCA.

If you start a new installation, the ECGs connected to the DALI gateway are reset and automatically recognised and programmed by the DALI 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 lamps need to be assigned

afterwards. The new installation makes the connected ECGs known to the gateway and enables the gateway to contact them via the short address.

N.B.: Bear in mind that every time a new installation is started, the ECGs are reset and thereby randomly allocated again. Any previous configuration is overwritten and deleted.

9.2   Identification and assignment of DALI ECGs

As the ECGs are assigned randomly following the new installation, the individual ECGs need to be identified and assigned as required. During the commissioning process, the ECGs are usually identified by setting an ECG/lamp to flashing mode. This means that in the installation, the lamp can be identified visually so that it can 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 on in case of power loss, standard EN 62386-202 allows 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, buttons and display on the device). The different options are described in the following chapters.

9.3   ETS-App (DCA)

The application for the GW90873 is based on the standard interface for the configuration of KNX communication parameters and communication objects, as well as a special application for commissioning of the DALI bus system.

This special application is designed as a DCA (Device Control App) for the ETS.

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

Click on the "Apps" button in the ETS5 footer and then select the "more (+)" button in order to add a new application to your ETS5 system:
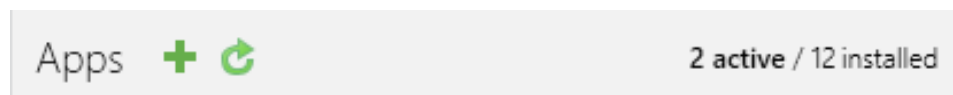
A file browser window will appear to select the downloaded app to be installed in ETS5:

NB: If using ETS6, proceed from the ETS Applications / Settings menu and add the DCA file by clicking on "Install App". Select the DCA file and install it.
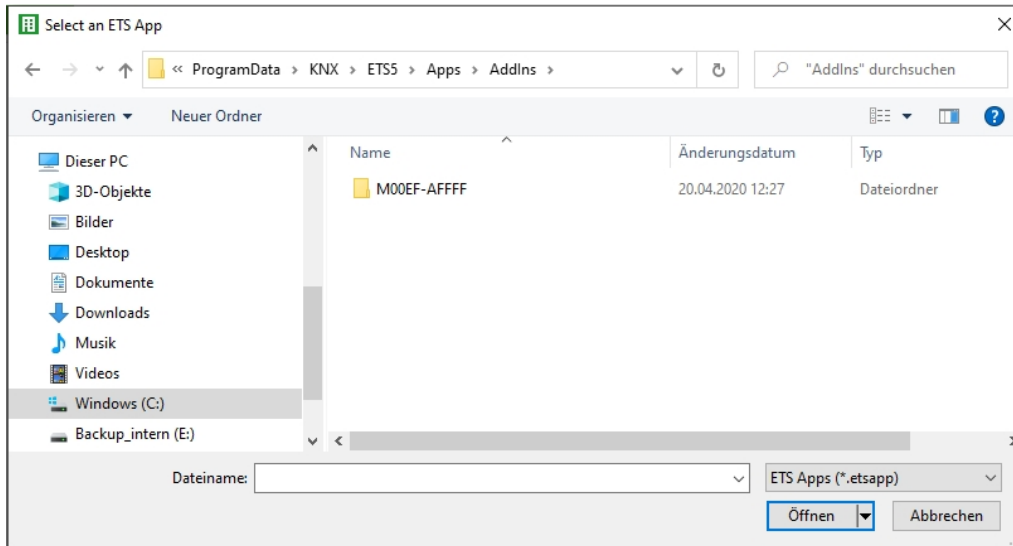
The application will appear in the list of installed apps in ETS.

The ETS must be restarted following the installation.

When the device is selected, an additional "DCA" tab is shown in ETS.
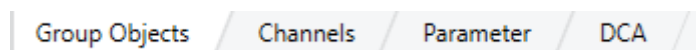
9.4   Configuration

The parameters and the corresponding group addresses can now be configured as with any other KNX product. Through the parameters, various operating modes can also be configured. These are described in more detail in chapter 5 "Operating Modes".

If subsequent use of the website is to be enabled, this must first be enabled in the ETS parameterisation.
As the GW90873 also supports colour control, future ECGs or groups with the desired colour control will need to be configured in ETS. Only in this way can the corresponding communication objects be made available.

In order to better identify the types of ECGs or groups both in the DCA and on the website, meaningful descriptive texts should also be defined for the ECGs and groups. These texts are also displayed in the list of communication objects.
The specific DALI configuration is made in the DCA tab or by using the web page. You should start by planning and naming the ECGs you want to use and by assigning them to the required groups.
This work can be carried out offline without connection to the KNX bus and without connection to the GW90873 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 recognised 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 device by using the "Download" button in the DCA tab, or via the web server, as outlined in chapter 11: Dali ECG Commissioning.

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

9.5   Synchronisation 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.

If a configuration has been carried out with the web page or with the buttons directly on the device and you want to continue working with the DCA later, synchronisation will be necessary.
The menu items "Extras" and "Read device configuration" in the DCA are used for this purpose. More detailed information can be found in chapter: 17 DCA Extras

10 DALI System Maintenance and Expansion

10.1 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 GW90873 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 device (buttons, display) itself. The gateway first checks if any of the configured ECGs that are 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.

However, the ECG quick exchange only works if just one ECG within a segment is faulty and replaced by a new one. If multiple devices are faulty, the ECGs will need to be identified and you will then need to use the post installation function. Please also 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 will terminate the process with a failure code. The different failure codes have the following meaning:

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

10.2 DALI Post Installation

If you would like to expand an already commissioned DALI segment with new ECGs or would like to replace multiple faulty segments, please use the "post installation" function.

It is possible to activate "Post Installation" on DCA in ETS, on the device itself (via the onboard controls and the display), or in the web browser when logged in as "administrator" (admin).

When you start the post installation, the gateway first checks, on the basis of DALI long address, whether 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 powered temporarily), deletion can be avoided by using an additional option.

Usually ECGs have no short address and a long address of 0xFFFFFF on delivery by default. It may be possible for ECGs to obtain a short address even if the long address is still 0xFFFFFF (i.e. if an external tool was used for programming).

In order to delete short address in this case, activate the control element "Delete externally programmed 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.

Attention: Please remember that the maximum number of ECGs within 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 required assign them to groups.

11 DALI ECG Commissioning

This chapter describes commissioning via DCA and the website.

11.1 Commissioning via DCA

Following the physical installation and wiring of the DALI ECGs and lights and electronic commissioning, configuration of the ECGs needs to be prepared and planned in the DCA. For this purpose, open the commissioning page in the DCA:
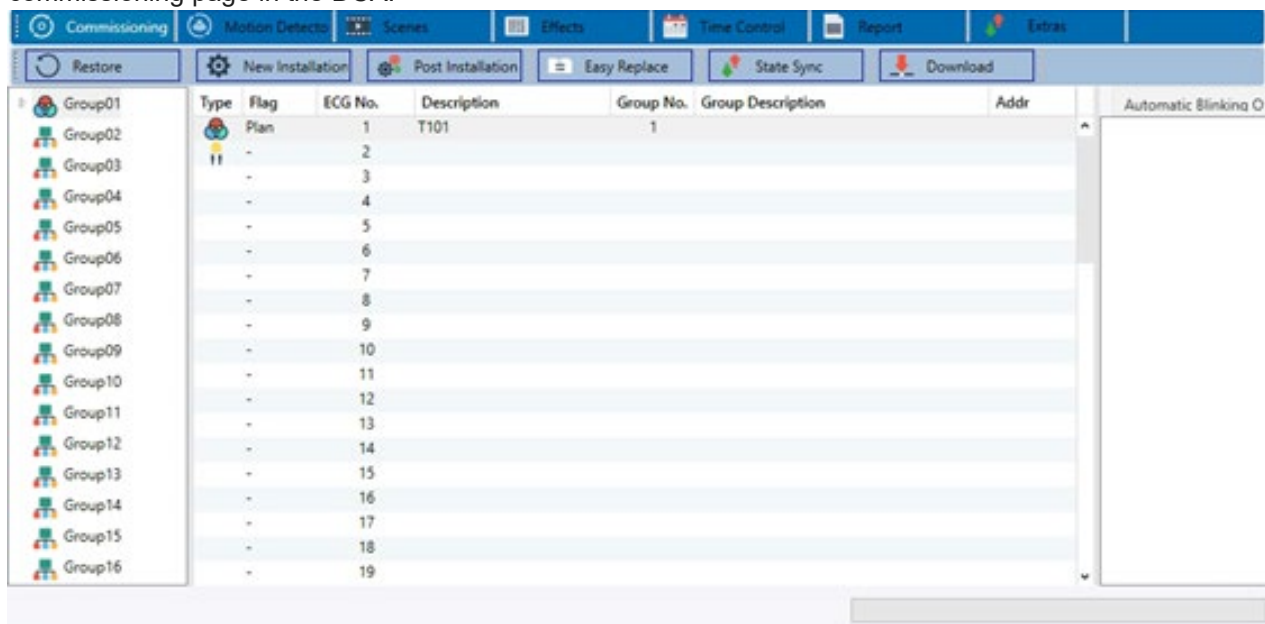
The group configuration is displayed in a tree structure on the left-hand side.
The middle part shows a table for the ECG configuration and names.
A list on the right-hand side shows the actual devices found in the system that have not yet been identified.
During the planning phase the list is empty as the ETS is not yet connected to the system.

11.1.1 Preparation

Firstly, the ECGs need to be planned and named. Use the description field to enter a name (light number, room number etc.).

Double-click to display an editing window which will allow you to enter a maximum of 20 characters.

You should also set the correct ECG Type in the ETS parameters (in this example "LED Module" is selected):

ECG 1, Description	T101
Group Assignment	Not Assigned
ECG Type	LED Module

This also leads to the corresponding display (icon) in the "Type" field in the DCA:

N.B.: The icon in the first column always reflects the ETS setting.

As a next step, you should define the group control Type in the parameters (in this example colour control via RGB):

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 dragging and dropping, 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.

N.B.: The icon in the first column of ECGs assigned to a group always reflects the type of the group, i.e. the icon of the ECG is replaced by the icon of the group.

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

You can enter a user-friendly name in the adjacent "Group description" field. 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 ETS parameters page:

Easily recognisable names make it much easier for the systems integrator to link group addresses with KNX communication objects.

▪⇄47	G1, Switching, Room 111	On/Off
▪⇄48	G1, Dimming, Room 111	Brighter/Darker
▪⇄49	G1, Set Value, Room 111	Value
▪⇄52	G1, Status, Room 111	On/Off
▪⇄53	G1, Status, Room 111	Value
▪⇄54	G1, Failure Status, Room 111	Yes/No
▪⇄57	G1, Colour RGB, Room 111	Value
▪⇄69	G1, Colour RGB, Room 111	Status

11.1.2 *New Installation*

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

Use the 'Commissioning' page and the 'New Installation' button to start the learning process of the connected DALI segment.
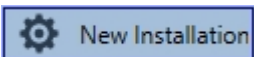
During the learning process, all ECGs are automatically recognised and each ECG is assigned a short address from 0 - 63. Depending on the size of the connected DALI segment the process can take up to 3 minutes.

NB: Note: It is possible to make a group selection directly during the new installation, so that a time-consuming second step for the assignment in groups is not necessary.
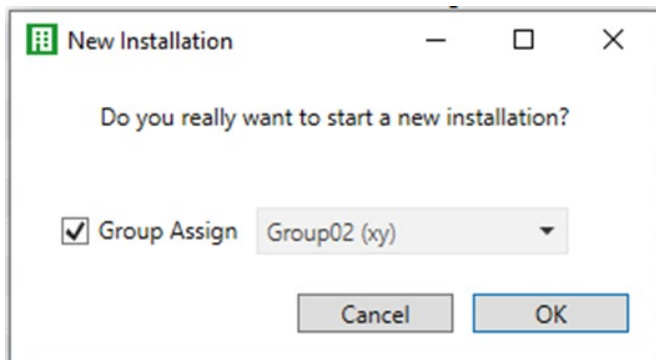
A bar in the bottom right hand corner indicates the progress of this process. At the same time a display also provides information about the current process and the number of ECGs that have so far been found.
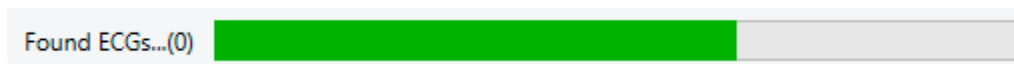
Once the process is complete, all ECGs that have been found are displayed in the list of to-be identified devices on the right-hand side.
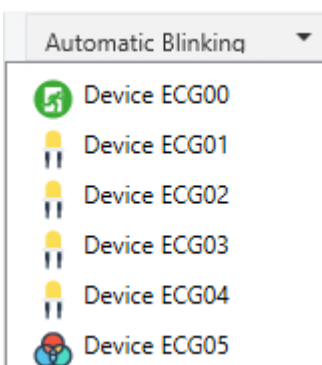
To identify the devices, switch the corresponding lamp on and off. If you select an ECG and press the right mouse button, a context menu appears from which you can select the required function.
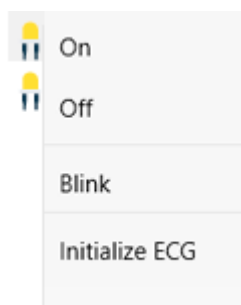
Alternatively, you can also select "Automatic blinking" in the drop-down menu:
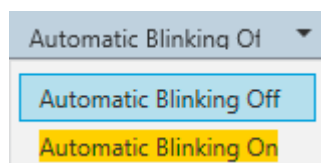
In this case, the flashing mode of an ECG starts by itself when a device is selected.

For self-contained battery emergency lights, selecting "blinking" 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.
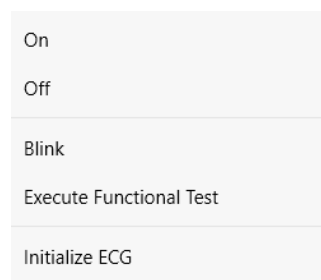
The context menu is also available at group level. During the identification process it might be useful to switch certain groups or all connected lamps on or off. You can also send broadcast commands via the context menu, in order to, for example, switch all lights on or off, see chapter: 11.1.5 Operating DALI devices.

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.

N.B.: 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 & drop mechanism.

Type	Flag	ECG No.	Description	Group No.	Group Description	Addr	Automatic Blinking
	Plan	1	L-10R01-1	1	Building 1, Level 0, Room 01	0	Device ECG05
	Plan	2	L-10R01-2	1	Building 1, Level 0, Room 01	1	
	Plan	3	L-10R01-3	1	Building 1, Level 0, Room 01	2	
	Plan	4	L-10R01-4	1	Building 1, Level 0, Room 01	3	
	Plan	5	L-10R02-1	2	Building 1, Level 0, Room 02	4	
	Plan (E)	6	L-10R02-2	2	Building 1, Level 0, Room 02		
	Plan	7	EL-10F1-1	S		6	
	-	8	EL-10F1-2				
	Plan	9	L-10F1-3	3	Building 1, Level 0, Room 03		
	Plan	10	L-10R03-1	3	Building 1, Level 0, Room 03		
	Plan	11	L-10R03-2	3	Building 1, Level 0, Room 03		
	-	12	R-10R03-3				
	-	13					

Left tree panel:
- Group01 (Building 1, Level 0, Room 01)
- Group02 (Building 1, Level 0, Room 02)
- Group03 (Building 1, Level 0, Room 03)
- Group04
- Group05
- Group06
- Group07
- Group08
- Group09
- Group10
- Group11

The element in the configuration table is now available again (Flag: 'PLAN (E)' is Empty) and the ECG re-appears in the list of non-identified devices from where it can now be moved to a different element if required.

Important: Remember that at this point all operations that have been performed are only displayed in the workspace. They are not immediately loaded onto the DALI gateway. To start the process of downloading the settings onto the gateway and the ECGs, you must press the 'Download' button.
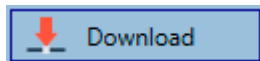
[⬇ Download]

The download can take up to 1 minute. The progress bar displays 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.

Type	Flag	ECG No.	Description	Group No.	Group Description	Addr
	OK	1	L-10R01-1	1	Building 1, Level 0, Room 01	0
	OK	2	L-10R01-2	1	Building 1, Level 0, Room 01	1
	OK	3	L-10R01-3	1	Building 1, Level 0, Room 01	2
	OK	4	L-10R01-4	1	Building 1, Level 0, Room 01	3
	OK	5	L-10R02-1	2	Building 1, Level 0, Room 02	4
	OK	6	L-10R02-2	2	Building 1, Level 0, Room 02	
	OK	7	EL-10F1-1	S		6

Left tree panel:
- Group01 (Building 1, Level 0, Room 01)
- Group02 (Building 1, Level 0, Room 02)
- Group03 (Building 1, Level 0, Room 03)
- Group04
- Group05
- Group06

Attention: Remember that the download on the 'commissioning page' only programmes the DALI configuration data onto the gateway and ECGs. The actual ETS application with parameter settings and group addresses still has to be downloaded onto the device either before or after the DALI identification and commissioning. This is done, as usual, via the normal download process in the ETS

11.1.3 *Detailed ECG and Groups Info*

The following icons are displayed for the different ECG Types in the DCA:

A green background shows that this ECG has been configured as emergency light with central battery.
See below.

	ECG Type 0: Fluorescent lamp
	ECG Type 1: Emergency light switchable or Emergency Light + Colour temperature
	ECG Type 1: Emergency light non switchable
	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 module
	ECG Type 8: Tunable white + RGB module

11.1.4 *Error and Status Display*

During the commissioning, lamps/ECGs are identified visually (ON, OFF, flashing). It is therefore crucial that all lamps and ECGS are working correctly. If the gateway identifies a lamp or ECG fault during the installation process, the ECG concerned is highlighted in red. Failures are displayed for non-identified devices (right-hand tree):
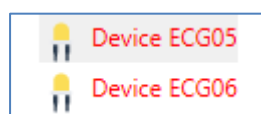
and for ECGs that have already been assigned (middle table).

Errors are marked with a red dot. Detailed information on the error is available by double-clicking (see next chapter).

NB: If the lifetime of a lamp, provided that a limit has been set in the ETS parameters, exceeds the value, the ECG will be marked with a blue dot.

As the view is not automatically updated and as it may take a few minutes for the DALI gateway to recognise a fault, we recommend that you press the 'Status Sync' button a short while after the installation.
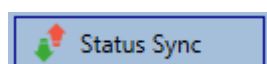
This ensures that the displayed status is updated with the actual status and any failures that may have been detected in the meantime are displayed correctly.

Attention: If an ECG error already exists during the search process of the initial installation, the device is usually not detected. This means that the number of ECGs found does not correspond to the number that was expected. ECG errors are only displayed in the manner described above if the ECG concerned has been previously programmed and is known to the gateway.

In addition to ECG errors, further ECG info 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 colour
  - RGBW: RGB or HSV colour
- Device subType (important for DT-1 emergency ECGs)
  - SW: switchable emergency lights
  - NSW: non switchable emergency lights
- Failure status

For DT-8 ECGs with colour temperature control the following are also displayed:

- Min temperature
- Max temperature

Press the "Status Sync" button to export and update the information.
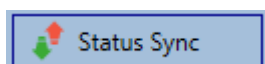
This process may take a few seconds:
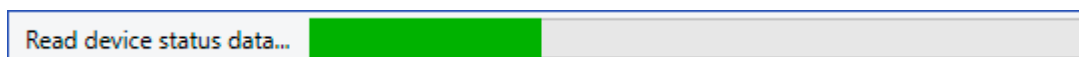
11.1.4.1 ECG Info in the Right-Hand Tree

Additional information is displayed in the right-hand tree via tooltip (pop-up window displayed when the mouse is hovered over the ECG device):

41
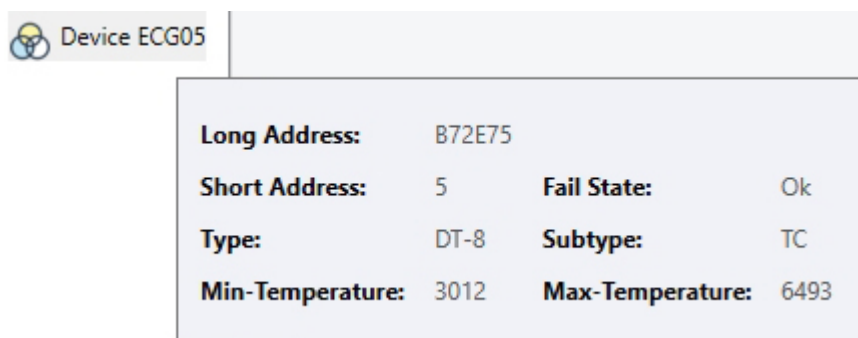
11.1.4.2 ECG Info in the ECG Table

Double-click to open another window with further details:

Long Address:	B72E75	
Short Address:	5	**Fail State:** Ok
Type:	DT-8	**Subtype:** TC
Min-Temperature:	3012	**Max-Temperature:** 6493

Important: The icon in the detail window shows the actual ECG Type. Please make sure that the ETS definition is the same as the actual type.

Further information:

- Long address
- Real short address
- Type
- Sub-Type
- Failure status
- Min. temperature (only for sub-Type TC)
- Max. temperature (only for sub-Type TC)

11.1.4.3 Group Info in the Group Tree

Additional information for the group can be displayed via tooltip (on mouseover) in the group tree.

Value:	0%	**ECG Count (Failed):**	3 (0)
Operation Hours:	0	**Converter Count (Failed):**	0 (0)
Lifetime:	●	**Fail Rate:**	0%

11.1.5 Controlling DALI devices

DALI devices can be directly controlled in five different ways.

Broadcast:
In this case frames that all participating devices react to are sent to the DALI bus.
The commands are executed by all ECGs even if they have not yet been commissioned. Therefore these commands work independently of the status of the DALI system.

Group Control:
In this case, group frames are sent to control a particular group. For this process to work correctly, the ECGs need to have been assigned to groups and the configuration has to be downloaded onto the gateway.

ECG Control:
In this case, ECGs can be individually controlled.

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.

Emergency (Converter) Start Functional Test
Use the context menu in the right-hand side tree or the list to start a function test with the converters.

Initialize ECG
This function is only available in the tree on the right. This can be used to completely delete an ECG. After this action, it will no longer be present and can only be found after a new installation. Therefore, this action must be confirmed by the operator:
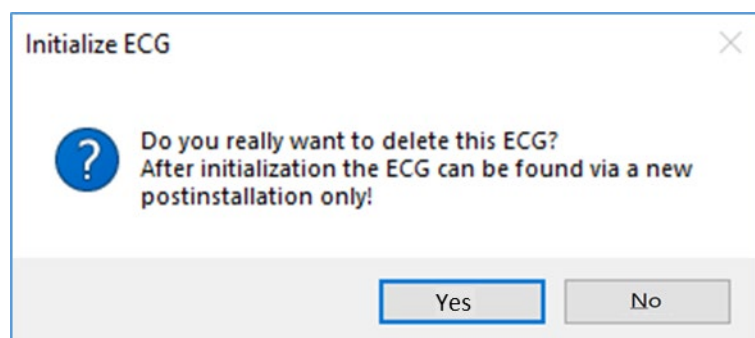
The DCA offers different options to activate these commands. DALI must be commissioned and a connection to the gateway must be available for all of the options.

Group menu in the left-hand tree:
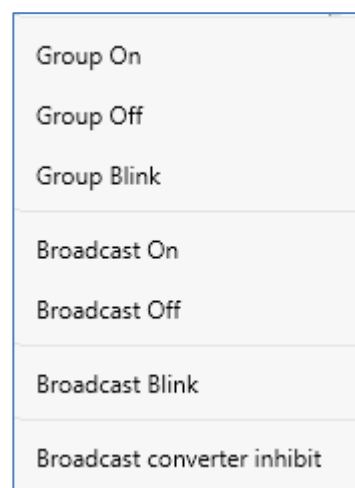
Context menu in the ECG table:
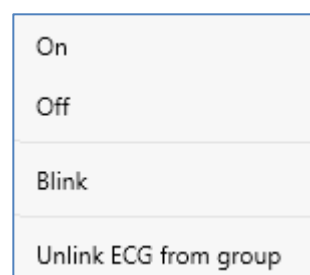
ECG menu in the right-hand tree:
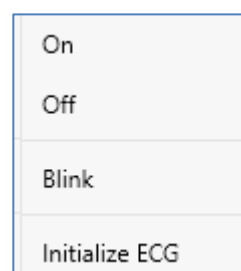
11.1.6 *Post Installation*

If you would like to expand an already commissioned DALI segment with new ECGs or would like to replace multiple faulty segments in the segment, use the "Post Installation" function.
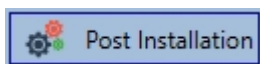
When you start the post installation in the ETS, the gateway first checks whether all previously configured ECGs are still available in the segment. ECGs that no longer exist or cannot be found are usually deleted from the gateway's internal memory. Should unavailable ECGs be kept (i.e. if parts of the system are not powered temporarily), deletion can be avoided by using an additional option: "Keep already assigned ECGs".

Usually ECGs have no short address and a long address of 0xFFFFFF on delivery by default. It may be possible for ECGs to obtain a short address even if the long address is still 0xFFFFFF (i.e. if an external tool was used for programming). In order to delete short address in this case, activate the control element "Delete externally programmed 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.

Attention: Remember that the maximum number of ECGs within a segment is 64.

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

N.B.: If you choose to control ECG power supply via a communication object, the corresponding objects are sent before the post installation. Afterwards the ECG can be assigned again to a group.

N.B.: It is possible to make a group selection directly during the new installation in order to avoid having to spend time assigning the groups at a later date.

Important: Remember that at this point all operations that have been performed are only displayed in the workspace. They are not immediately loaded onto the DALI gateway. To start the process of downloading the settings onto the gateway and the ECGs, you must press the 'Download' button.
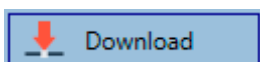
11.1.7 *ECG Easy Replace*

If you need to exchange an individual ECG because of a fault, you can also use the easy replace function. Press the "Easy Replace" button in the DCA.
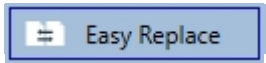
The execution of this function must be confirmed in a notification box.
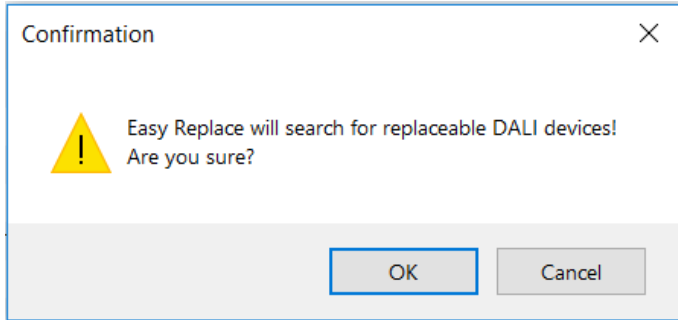
If a quick exchange is not possible because of external circumstances, the gateway will terminate the process with an error code. The different failure codes have the following meaning:

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

11.1.8 *State Sync*

Use this function to read and display the status of all ECGs, see chapter: <u>11.1.3 "Detailed ECG and Groups Info</u>". The DALI Gateway polls the ECG status cyclically.
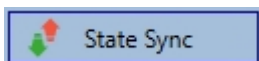
11.1.9 *Restoring the DALI Configuration*

This command is used to completely reset the GW90873 gateway, for example, replacing it with a completely unprogrammed device.
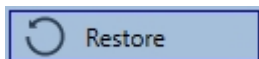
Following execution, a window appears in which the overwriting of the device configuration must be confirmed.
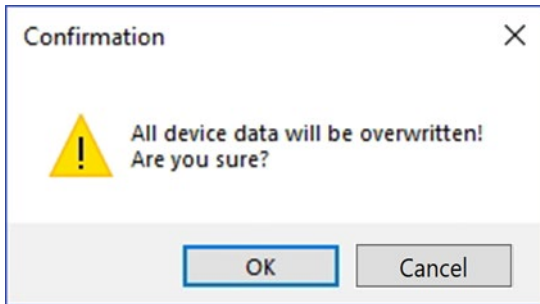
In this case all Dali relevant data from the ETS is written onto the device.

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 perform an ETS back-up after you have completed the configuration.

11.2 Commissioning via web

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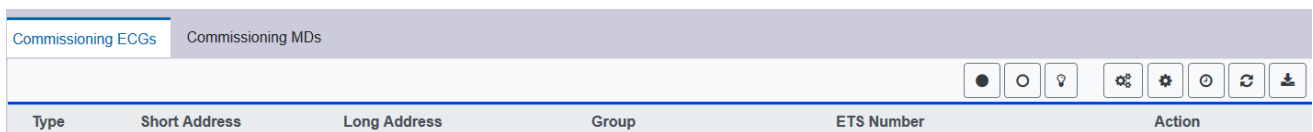
An aspect important for commissioning via web is the correct ETS configuration of the groups and ECG settings. Here the group type (normal or colour control) and also the individual ECG types should already be correctly defined.

11.2.1 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 "Settings" menu on the "ECG Settings" page.
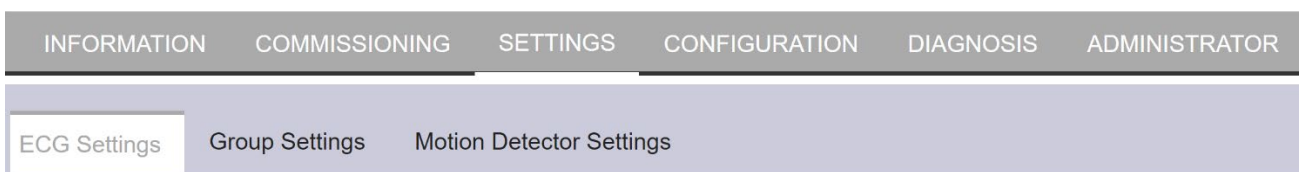
Attention: It is useful to assign plausible descriptive texts for the groups and for the ECGs which are to be used later as individual ECGs.

N.B.: The view in "ECG settings" is sorted by the ETS ECG number. These ECG numbers must therefore also receive the corresponding planned settings and object assignments in ETS.

Important: Note that all performed operations are initially only displayed within the user interface but are not directly loaded onto the DALI Gateway. To start the save operation, the save button in the upper right corner must be pressed:

11.2.2 *New Installation*

After planning, setting the parameters and linking the group addresses, the actual commissioning of the DALI segment takes place. The learning process of the connected DALI segment can then be started via the "Commissioning" page and the "New Installation" button.
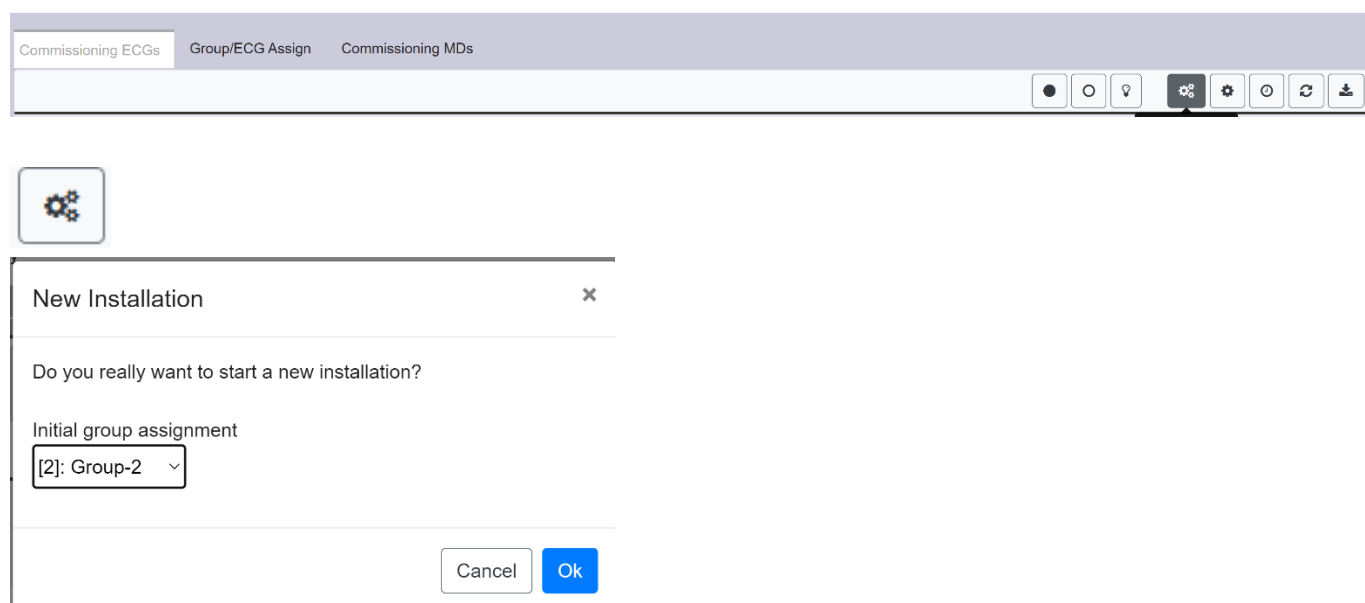
N.B.: It is possible to make a group selection directly during the new installation in order to avoid having to spend time assigning the groups at a later date.

During the learning process, all ECGs are automatically detected and each ECG is assigned a short address from 0..63. The learning process can take up to 3 minutes, depending on the size of the connected DALI segment. The progress is shown in the pop-up window.
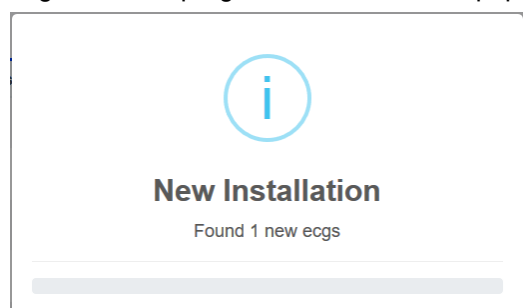
After completion of the learning process, all ECGs found are included in the table.

Identification is now carried out by switching the respective light on and off.

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

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

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

With this procedure all ECGs found can be assigned.

N.B.: Please note that the real short address is between 0 and 63.

Important: Remember that at this point all operations that have been performed are only displayed in the workspace. They are not immediately loaded onto the DALI gateway. To start the process of downloading the settings onto the gateway and the ECGs, you must press the 'Download' button (Saving the commissioning settings).

The programming process can take up to 1 minute.

Important: It is important to note that the programming process on the "commissioning side" only programs the DALI configuration data in 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.

11.2.3 *Post Installation*

If an already commissioned DALI segment is to be extended by additional ECGs, or if several defective ECGs in the segment are to be replaced, the "Post Installation" function must be used.

⚙

When you start the post installation, the gateway first checks whether 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 powered temporarily), deletion can be avoided by using an additional option: "**Keep already configured ecgs**":

Post Installation ✕

Do you really want to start a post installation?

☐ Keep already configured ecgs
☐ Reassign short addresses

Initial group assignment

[2]: Group-2 ⌄

Cancel | Ok

Usually ECGs have no short address and a long address of 0xFFFFFF on delivery by default. It may be possible for ECGs to obtain a short address even if the long address is still 0xFFFFFF (i.e. if an external tool was used for programming). In order to delete short address in this case please activate the control element "Reassign short addresses".

After verification the segment is searched for new ECGs. Newly found devices are inserted into any existing gaps or those added on at the end.
**Attention**: Remember that the maximum number of ECGs within a segment is 64.

Since the position (short address) of the newly found devices was assigned randomly, an identification of the luminaires and, if necessary, a group assignment must be carried out after the subsequent installation, as with the new installation.

N.B.: It is possible to make a group selection directly during post installation in order to avoid having to spend time assigning the groups at a later date.

N.B.: If you choose to control ECG power supply via a communication object, the corresponding objects are sent before the post installation. Afterwards the ECG can be assigned again to a group.

11.2.4 *Failure and Status Display*

The identification of the lighting devices/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.

Type	Number	Short Address	Group	Description	Value		Colour					Action	
	1	4	Single	ECG No. 1	0	%	0	X	0	Y		▶	i
	2	6	[1]: Group 1	ECG No. 2	N/A	%	N/A					▶	i
	3	0	Single	ECG No. 3	0	%	N/A					▶	i

N.B.: If the lifetime of a lamp, provided that a limit has been set in the ETS parameters, exceeds the value, the ECG will be highlighted in blue.

	1	4	Single
	2	6	Single

Pressing the Info button will show detailed information:

Show Details

Long Address	0x6E1853
Short Address	4
Type	8
Sub-Type	RGB SW
Operating hours	275
Lifetime	●
Fault-State	0

11.2.5 *Controlling DALI devices*

DALI devices can be directly controlled in various ways.

The following are available in the menu bar:

· **Broadcast:**

 :

In this case frames that all participating devices react to are sent to the DALI bus.
The commands are executed by all ECGs even if they have not yet been commissioned. 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**

If you need to exchange an individual ECG because of a fault, you can also use the easy replace function. This action must be confirmed by the operator.

If a quick exchange is not possible because of external circumstances, the gateway will terminate the process with an error code. The different failure codes have the following meaning:

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

· **Action**:
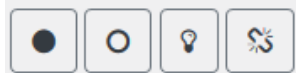
Individual ECGs can be controlled directly, turning them on or off, or making the lamp flash.

The "Remove ECG" button can be used to completely delete an ECG. After this action, it will no longer be present and can only be found by a new post installation. Therefore, this action must be confirmed by the operator.

11.2.6 *Group/ECG Assignment*

With the help of this table, ECGs can be easily assigned to groups or reassigned. Alternatively, ECGs can also be defined as individual ECGs.

This page shows the groups on the left side and the ECGs on the right side.

Each group is numerically and colour coded and contains the corresponding group name. Each ECG shows the ECG number and also the corresponding name. In addition, the ECGs show the group memberships with a coloured numerical 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, then the ECGs that are to be assigned to it. The assignment happens immediately and is confirmed by a popup. Assigned ECGs get a coloured numeric tag.

- **Single Assign Command:**

This command removes the assignment of an ECG to a group. In this case, the single ECG is marked by an asterisk.

- **Broadcast ON/OFF**

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

- **Switch ON/OFF**
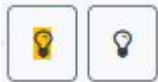
With these two commands, individual groups or ECGs can be switched ON or OFF. Click on ON (yellow bulb icon) or OFF (white bulb icon) and then on the ECG to which you wish to send the command.

12 DALI Motion Detector Commissioning

The GW90873 gateway allows the configuration of input devices such as movement sensors.

N.B.: Note: Only motion detectors that comply with the IEC 62386 part 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 GW80973 gateway supports up to 8 motion sensors.
Each input device can contain one or more instances. With motion sensors it is common that one instance represents the "motion" and another instance represents the "brightness".

This type of motion detector is preset in the GW90873.

12.1 MD (Motion Detectors) Commissioning via DCA

The assignment settings and programming of motion sensors can be done in the DCA. For this purpose, switch from the "Commissioning" page to the "Motion Detector" page.
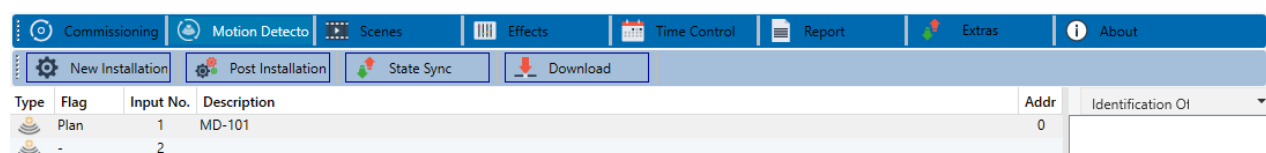
12.1.1 Preparation

The first step should be to plan and name the motion sensors. For this purpose a name (room number or similar) can be entered in the description field.

By double-clicking, an editing window will appear to allow text entry. A maximum of 20 characters can be entered. In addition, the correct motion detector type should also be set in the parameters.

The ETS parameters provide for a built-in brightness sensor for each motion detector, see parameter "*Additional Brightness Sensor available*".

If motion detectors without brightness measurement are used, this can be set via this ETS parameter.

MD 1, Description	MD-101

DALI Configuration

Time without movement > Vacant	5 Minutes ▾
Deadtime between Movement Detection Events	0.1 Seconds ▾

KNX Configuration

Object Type for Output	Switch Object ▾
Cyclic Sending	only on movement detection ▾
Usage of Disable Object	No ▾

> ℹ️ If an additional Brightness Sensor is available a new parameter page will be activated

Additional Brightness Sensor available	○ No ⦿ Yes
Brightness depending Switching	○ No ⦿ Yes
Activate when Brightness Level is below	500 ⇕ lux

🛈 Icon for Motion Detector with Brightness

🛈 Icon for Motion Detector without Brightness

12.1.2 *New Installation*

The learning process of the connected DALI segment can then be started via the "Commissioning" page and the "New Installation" button.

⚙️ New Installation
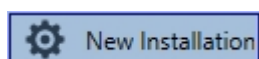
During the learning process, all movement detectors are automatically detected and each movement detector is assigned a short address from 0..63. The learning process can take up to 3 minutes, depending on the size of the connected DALI segment. Progress is displayed in the progress bar at the bottom right of the screen. At the same time, the number of motion detectors found so far, or the current process, is displayed.

Found Inputs...(1) ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
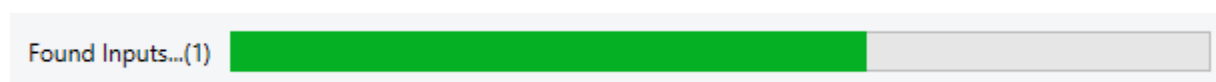
When the learning process is complete, all motion detectors found are entered in the list of devices still to be identified on the right-hand side.

🛈 DevInput01
🛈 DevInput02

The identification is now carried out by an identity process of the motion detectors. When activated, an LED usually flashes in the identified motion detector.

N.B.: The way in which the connected motion sensor displays its identification may be different for different manufacturers. Please read the manufacturer's instructions.

Once a motion sensor has been identified, it can be dragged and dropped to the corresponding ETS entry in the table.
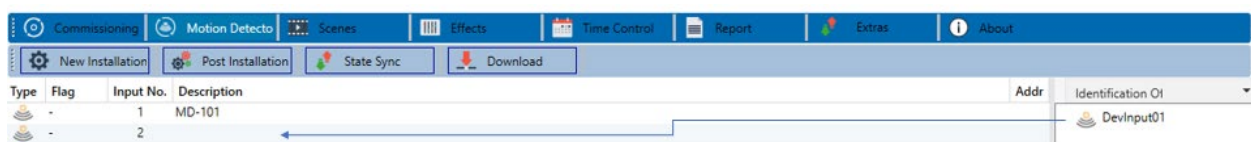
To delete an assignment, this entry can also be dragged back into the right-hand tree.
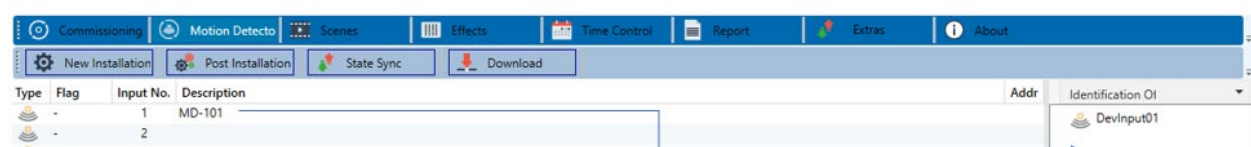
Important: Note that all performed operations are initially only displayed within the user interface but are not directly loaded onto the DALI Gateway. To start the loading process of the settings into the Gateway and into the motion detectors, it is essential to press the "Download" button.
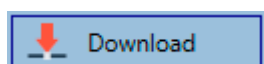
The programming process can take up to 1 minute. The progress bar provides information on the current status. When the loading process is complete, all previously planned motion sensors in the real system have been programmed with the DALI configuration. In the motion detector configuration table, the corresponding devices are marked with the "OK" flag.

Type	Flag	Input No.	Description
🌀	OK	1	MD-101

Important: It is important to note that the programming process on the "commissioning side" only programs the DALI configuration data in gateway and ECGs/movement sensors. 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.

12.1.3 *Post Installation*

If an already commissioned DALI segment is to be extended by additional motion detectors, or if one or more defective motion detectors in the segment are to be replaced, the "Post Installation" function must be used.
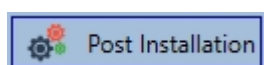
If a subsequent installation is started, the gateway first checks on the basis of the DALI long address whether all previously configured motion sensors are still present in the segment. Normally, motion sensors that are no longer present or cannot be found are deleted from the internal memory of the gateway during the subsequent installation.
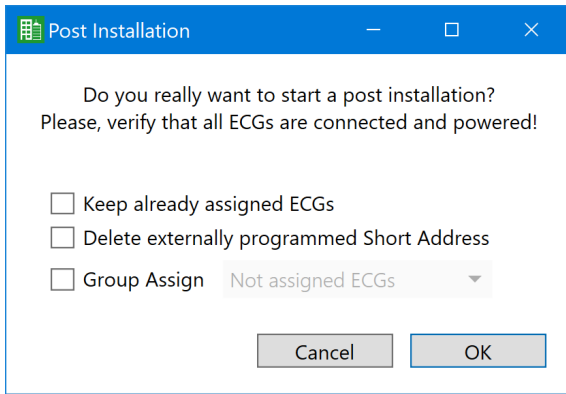
Attention: Please note the maximum number of 8 motion detectors in one segment.

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

Important: Note that all performed operations are initially only displayed within the user interface but are not directly loaded onto the DALI Gateway. To start the loading process of the settings into the Gateway and into the motion detectors, it is essential to press the "Download" button.
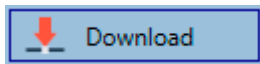
12.1.4 *Error and State Display*

Here, additional information is displayed via tooltip (by hovering the cursor over the object) of the respective motion detector:
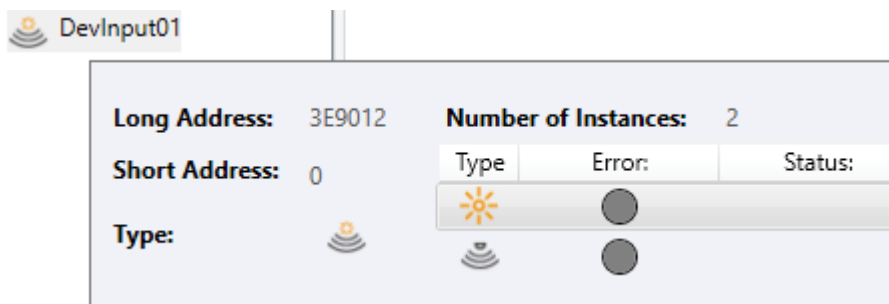
Double clicking opens an additional window with further details:

Important: The icon in the details window indicates the actual motion detector type that was read via DALI. Please make sure that the ETS definition matches the actual type.

Further information:
- Long address
- Real short address
- Type
- Number of instances
- Sub-type
- Error status

12.2 MD (Motion Detectors) Commissioning via Web

The assignment settings and programming of motion sensors can be performed on the web page.

INFORMATION	COMMISSIONING	SETTINGS	CONFIGURATION	DIAGNOSIS	ADMINISTRATOR	

ECG Settings   Group Settings   Motion Detector Settings

Type	Number	Short Address	Description	Info
≋	1		MD-101	i

12.2.1 Preparation

The first step should be to plan and name the motion sensors. For this purpose, text can be entered in the "Motion Detector Settings" field on the "Settings" page.

Type	Number	Description	Info
≋	1	Input 1	i

Important: Note that all performed operations are initially only displayed within the user interface but are not directly loaded onto 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 learning process of the connected DALI segment can then be started via the "Commissioning" page and the "New installation" button.

Commissioning ECGs	Commissioning MDs				

Type	Short Address	Long Address	ETS Number	Action

After installation, all motion detectors found are displayed in the list and can be identified with the action button.

After identification, they can be assigned to the motion detectors preconfigured in the ETS.

Type	Short Address	Long Address	ETS Number	Action
≋	0	0x3E9012	Unassigned ⌄	💡

[1]: Input 1
[2]: Input 2
[3]: Input 3
[4]: Input 4
[5]: Input 5
[6]: Input 6
[7]: Input 7
[8]: Input 8
Unassigned

Important: Note that all performed operations are initially only displayed within the user interface but are not directly loaded onto the DALI Gateway. To start the loading process of the settings into the Gateway and into the motion detectors it is essential to press the "Program" button.

12.2.3 *Post Installation*

If an already commissioned DALI segment is to be extended by additional motion detectors, or if one or more defective motion detectors in the segment are to be replaced, the "Post Installation" function must be used.

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

Post Installation   ✕

Do you really want to start a post installation?

Cancel   Ok

Attention: Please note the maximum number of 8 motion detectors in one segment.

Newly found motion detectors can be assigned according to the previous chapter of the ETS configuration.

Important: Note that all performed operations are initially only displayed within the user interface but are not directly loaded onto the DALI Gateway. To start the loading process of the settings into the Gateway and into the motion detectors it is essential to press the "Program" button.

13 Scene Module

The GW90873 enables the programming and invoking of up to 16 internal light scenes. A scene is invoked via a 1 Byte scene object. It can be set on the basis of which KNX scene 1 - 64 (value 0 - 63) of the 1 - 16 DALI scenes is invoked. This object can also be used to save scenes (Bit 7 set). The currently set value is saved as scene value. For DALI DT-8 devices, the currently set light colour or colour temperature also becomes part of the scene and is automatically adjusted when a scene is invoked.
In general, a scene can consist of groups and individual ECGs (as long as these have not been assigned to a group).

To assign a group to a scene or to delete a group from a scene and to assign the KNX scene number to the DALI scene, use the DCA or the website. 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 stopped, but only the group addressed is affected. All other groups continue the dimming process started by the scene call.

For each scene a 4 Bit dimmer object is available. This makes it possible to dim all the lights in a scene together.

13.1 Scene Configuration via DCA

Scenes can be programmed and assigned in the DCA. For this purpose, change from the Commissioning to the Scene page.

13.1.1 Configuration

You can enter a user-friendly name for each scene in the description field. The name can contain up to 20 characters.

If you do not want a scene to start immediately but would prefer dimming it up to its final value, you can set the dimming time individually for each scene.

Remember that the dimming time always refers to the full value range. Accordingly, a dimming time of 30 s means a value change of 100% within 30 s. If the value within a scene is only changed by 50%, the change is performed within 15 s.

Select the required scene from the drop-down menu on the left-hand side.

A "tick" means that the scene has already been defined.

A scene is activated by a 1 Byte scene object according to DPT 18.001. In the KNX standard you are able to address up to 64 scenes via this datapoint. In the DALI gateway there are only 16 scenes available. By default, DALI scenes are assigned one to one to the KNX scenes, which means that scene 1 of the DALI gateway is usually invoked by object value 0 (KNX scene 1). In the DCA it is now possible to change this assignment. This regulation can be made in the title of the scene editor.
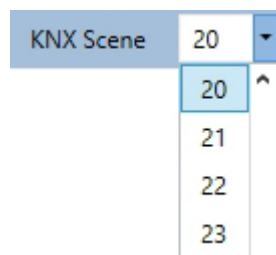
In the example above, the selected DALI scene can be invoked with object value 19 (KNX scene 20), respectively programmed by value 147. Please note that the assignment has to be unique. If different DALI scenes are assigned to the same KNX scene, only the first DALI scene will be activated/scheduled.

The groups which you would like to use for this scene can be dragged and dropped from the tree on the right-hand side into the field in the middle.
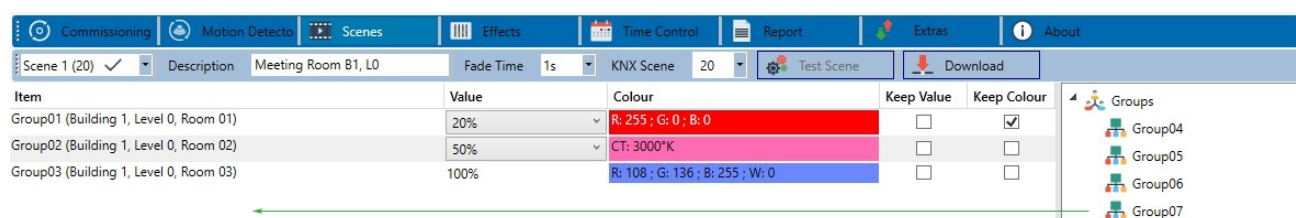
Use the entry fields to enter the required values for this scene.

· **Value**

A brightness level between 0 and 100% can be selected via a drop-down field.

· **Colour**

Defines the colour according to Type of colour control for this group. Use the context menu or simply double-click to open a window to select the colour from a colour picker.

· **Keep value**

In this case the current value remains unchanged when the scene is invoked. The entry field for the value is disabled. Any entry in the value field is ignored.

· **Keep colour**

In this case the current colour remains unchanged when the scene is invoked. The entry field for the colour is disabled. 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):
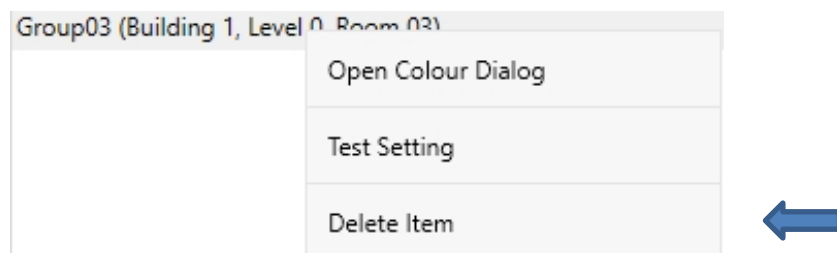
13.1.2 *Colour Setting*

Each group or ECG can only support one Type of colour control. Click on "Open Colour Dialog" in the drop-down menu to bring up a colour picker for the corresponding colours on the basis of the type of group or ECG set with the parameters.
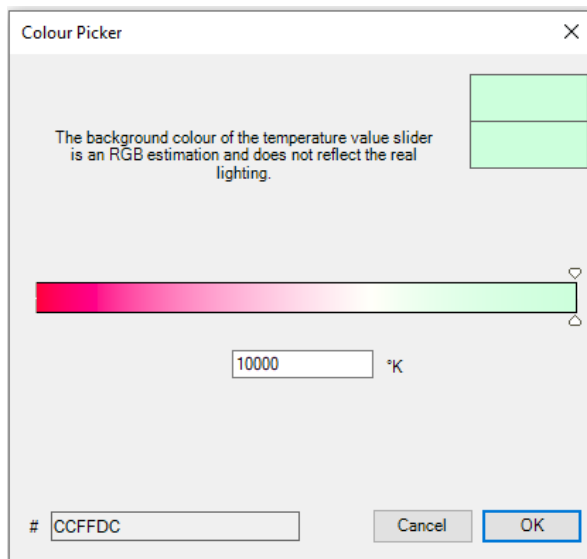
The following colour input window is displayed for the "Colour Temperature" type.
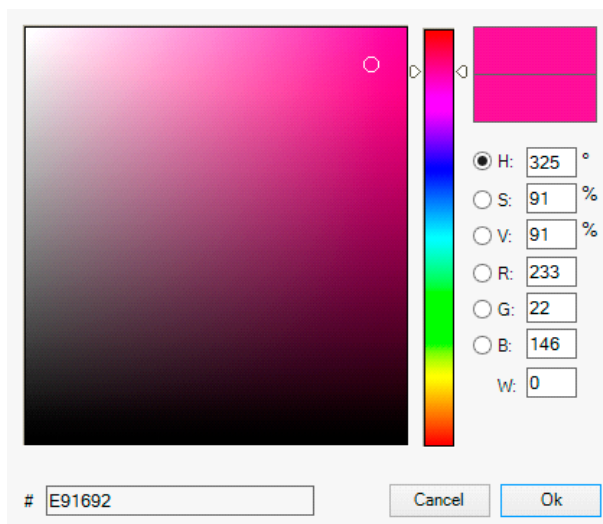
For the "RGB (RGBW)" or "HSV" type, this colour input window is displayed.
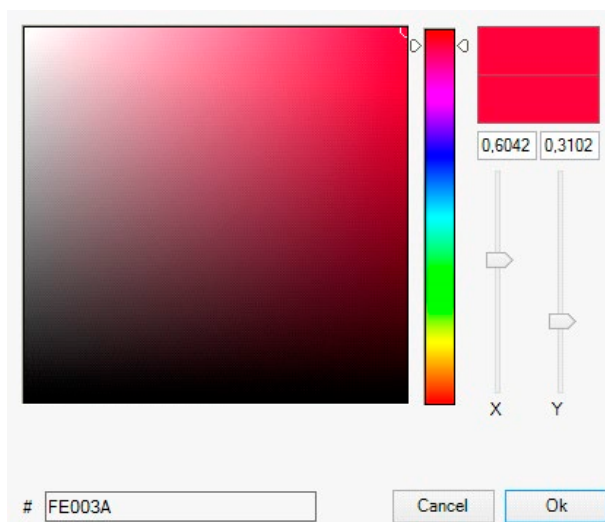
For the type "XY" this colour input window is displayed.

If a group in ETS is selected as colour type "RGB + colour temperature", this group can be used in the scene with both colour controls. This type is indicated by the following dialogue box:
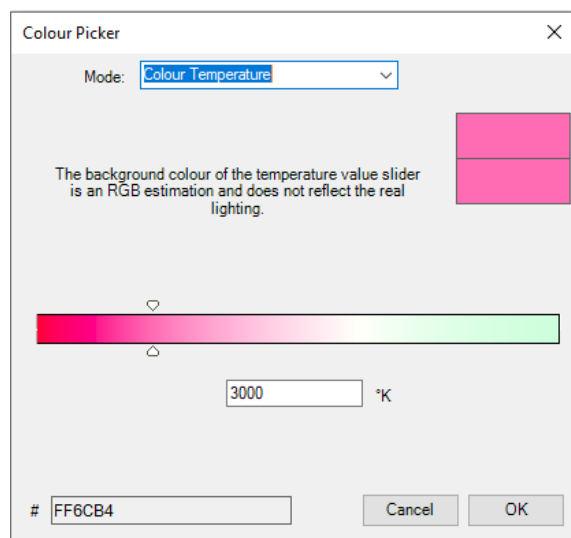
In the upper setting the type of control can be selected.

13.1.3 *Programming Scenes*

Once all scene values have been set and assigned, you need to download the scene onto the DALI ECGs. To do so, press the "Download" button in the top right-hand corner.
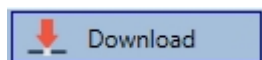
A connection to the GW90873 is required. In principle, you can also plan individual scenes in the ETS 'offline', independently of the DALI system. The DCA only has to be connected to the gateway for the duration of the programming.

13.1.4 *Testing a Scene Event*

One way to test the settings for an event is via the context menu (right-click). "Test Setting").
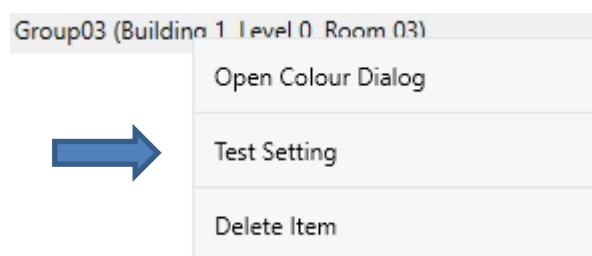
A connection to the GW90873 device is required. The command setting the value and colour of the group is executed. This means you can check the correct properties before programming the whole scene. If "Keep Value" or "Keep colour" have been selected, the current values are kept and the new values are not activated.

13.1.5 *Testing a Scene as a Whole*

After a scene has been programmed, the button becomes active. Press the button to activate and execute the selected scene. A connection to the GW90873 is required for this purpose.
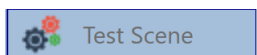
13.1.6 *Export/Import/Delete Scene*

In order to be able to reuse a scene that has already been created, it is possible to export it. The created XML file can be saved separately to be used again in another project or in another template. The commands for export or import can be found in the context menu.
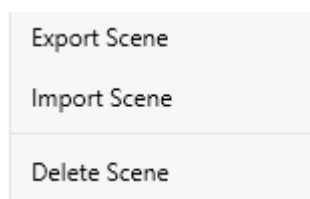
The template is saved as an XML file in the desired target directory.

13.2 *Scene Configuration via Web Server*

The assignment settings and programming of scenes can be done from the web page via the web server. After starting the web page, switch to the configuration page for this purpose and select "Scenes".
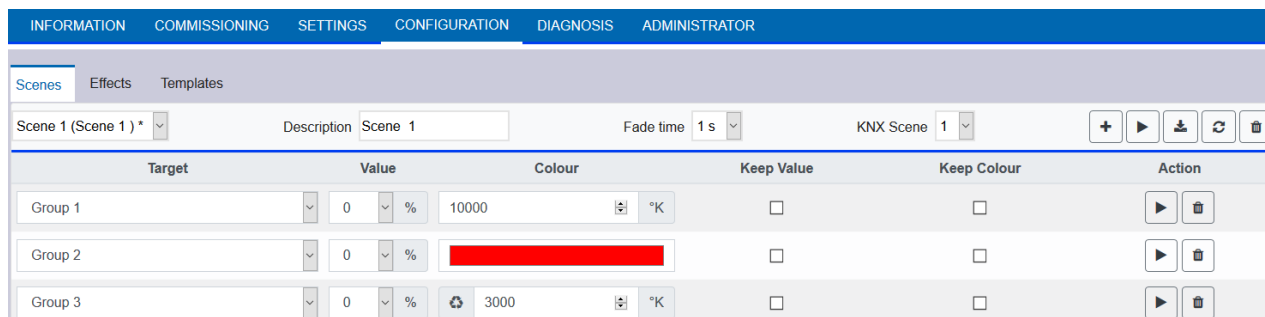
Up to 16 scenes can be configured here. Each scene can be provided with a description text.

13.2.1 *Configuration*

On the left side, the desired scene can be selected in the drop-down menu. An asterisk indicates that this scene has already been defined.

In the description field of the scenes, a user-friendly name can be assigned. This name can be up to 10 characters long.

If the scene is not to be jumped to immediately when called up, but is to be dimmed to the end value, a dimming time can also be set individually for each scene.

Please note that the dimming time always refers to the full range value. Accordingly, a dimming time of 30 s means a change in value of 100% within 30 s. If the value is only changed by 50% within the scene, this change will be made within 15 s.

The scene is activated via a 1 Byte scene object according to DPT 18.001. In the KNX standard you are able to address up to 64 scene. Nevertheless, in the DALI gateway there are only 16 scenes available.

By default, the assignment of the DALI scene to the KNX value which calls up the scenes is set to 1 to 1 assignment. This means that scene 1 of the DALI gateway is activated via the KNX object value 0 (KNX scene 1), or programmed via the object value 128. It is possible to change this assignment. The setting can be made in the header of the scene editor:

In the example above, the selected DALI scene is then called up via the object value 19 (KNX scene 20) or programmed via the value 147. You must ensure that the assignment is unique. If the same KNX scene is assigned to different DALI scenes, only the first DALI scene is retrieved / programmed by the KNX scene call.

The following actions are available for a selected scene:

- Adding a new element to the scene

- Testing the scene (the scene must first be loaded into the gateway)

- Saving the scene

- Reloading the scene

- Deleting elements from a scene

13.2.2 *Colour Settings*

If individual ECGs or groups are parameterised 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:

Attention: 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 further window opens in which the colour data can be set.

By clicking on a point of the colour palette or setting the RGB values, for example, the set colour for the group/individual ECG is adopted in the scene.

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

- • **KV (Keep Value),** Value remains as set, only colour is taken into account

- • **KC (Keep Colour),** Colour remains as set, only value is taken into account

If a group in ETS is selected as colour type "RGB + colour temperature", this group can be used in the scene with both colour controls. This type is indicated by the following dialogue element:
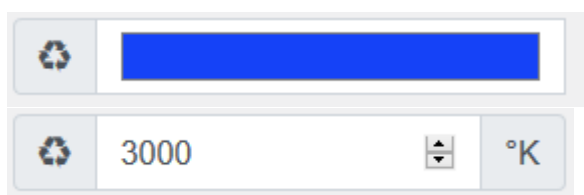
By clicking on the front icon, the colour temperature input in Kelvin changes to the normal colour dialogue.

13.2.3 *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 device. This is done by pressing the "Save" button.

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

During programming, a descriptive text (max. 10 characters) can also be assigned to the respective scene. 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.

13.2.4 *Testing an Event in the Scene*

A way to test the setting of an event is in the "Action" column. When the "Play" (apply settings) button is activated, this event is sent to the DALI bus.
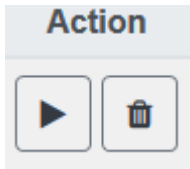
The command with the setting of the value and colour is executed for this group or ECG. In this way the desired property can be checked before programming the whole scene. If the properties "Keep value" or "Keep colour" are set, the corresponding values are not activated but are kept at the current value.

14 Effects Module

In addition to light scenes the GW90873 also enables the use of effects. An effect is essentially the process control of 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 dimming time between 0 and 100% (see scene module).
The GW90873 allows for 16 independent effects. An effect is started or stopped via a 1 Byte object. Set Bit 7 in the object to start the effect. Receipt of the object with Bit 7 set to zero will stop the effect.

Altogether, 500 effect steps can be programmed, which can be spread across 16 effects.

14.1 Effects Configuration via DCA

Effect programming and assigning can be done via the DCA. For this purpose, please change from the commissioning to the Effects page.

14.1.1 Configuration

On the effects page, select the required effect from the drop down field.

In the description field of the effect, a user-friendly name can be assigned. This name can be up to 20 characters long.

If the "Loop Mode" setting is checked, this effect is played endlessly and can only be stopped by a stop command.

Drag the groups and individual ECGs that are required for this effect from the tree on the right hand side into the central field listing the effect steps. The order of the list entries corresponds to the individual effect steps. To change the order within the list, use the mouse to move the entries around.

Enter the values required for the scene in the different fields.

Value
Defines the light value between 0 and 100%. The value can be selected via a drop-down field.

Colour
Defines the colour according to Type of colour control for this group. Double-click on the mouse or use the context menu to open a window and simply select the colour from a colour picker.

Keep Value

With this setting, the current value remains unchanged when the scene is invoked. The entry field for the value is disabled with this setting as it is not needed. Any entry in the value field will be ignored.

Keep colour

With this setting, the current colour remains unchanged when the scene is invoked. The entry field for the value is disabled with this setting as it is not needed. Any entry in the colour field is ignored.

Fade Time

Defines 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.

Another option to delete an entry is via the context menu entry "Delete Item":
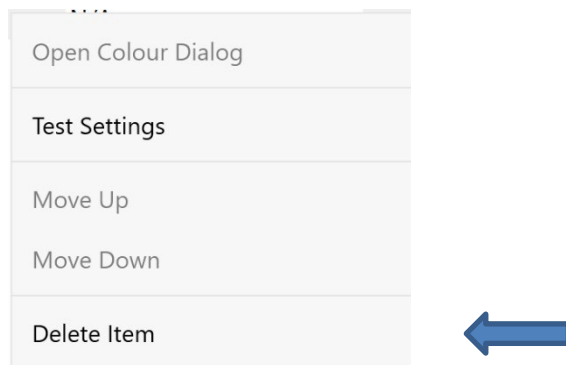
14.1.2 *Colour Settings*

Each group or ECG can only support one Type of colour control.
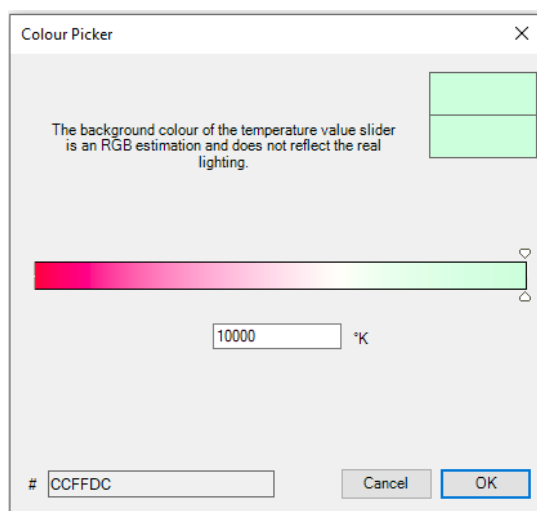
The following colour input window is displayed for the "Colour Temperature" type.
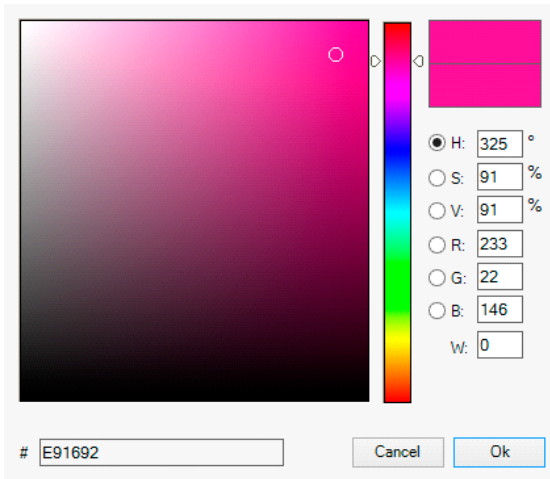
For the "RGB (RGBW)" or "HSV" type, this colour input window is displayed.
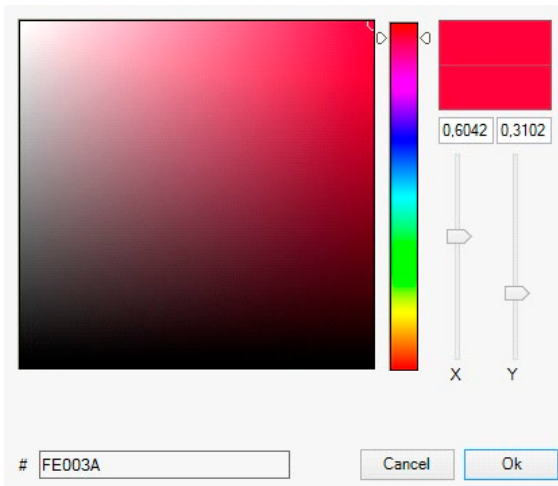
For the type "XY" this colour input window is displayed.
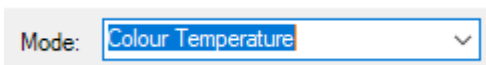
For the RGB + colour temperature type a selection option is offered in the upper line

14.1.3 *Programming Effects*

Once all effect values have been set and assigned, save the effect on the device. Press the "Download" button in the top right hand corner.
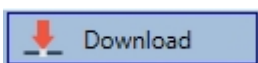
A connection to the GW90873 is required for the download. Individual effects can also be planned "offline" in the ETS, independently of the DALI system. The DCA only needs to be connected to the gateway for the download.

14.1.4 *Testing an Effect Event*

To test the settings of an event, use the context menu (right-click on a field):
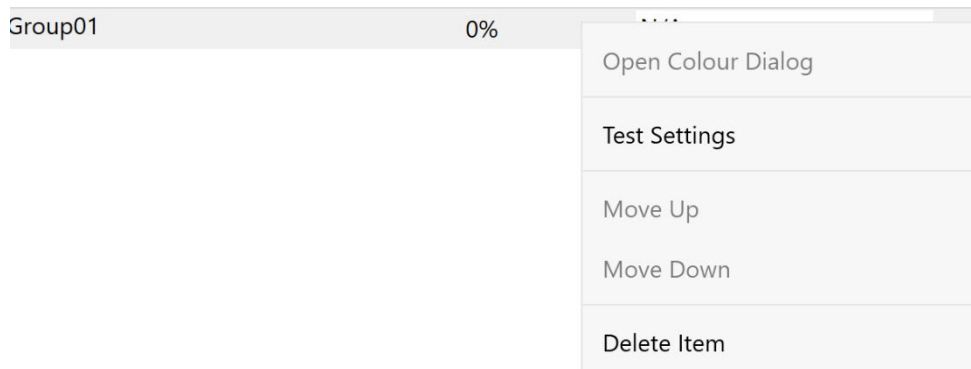
A connection to the GW90873 is required. The command is performed with the value and colour settings that have been defined for this group or ECG. This makes it possible to check properties before the whole effect is programmed. If "Keep value" or "Keep colour" have been set, the respective values will not be activated and the current value will be retained.

14.1.5 *Testing the Whole Effect*

After an effect has been programmed, the button is activated. Press the "Start Effect" button to start the selected effect. A connection to the GW90873 is required.
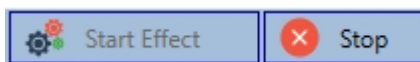
To stop an endless (loop mode) effect, press the stop button.

14.1.6 *Export/Import/Delete*

In order to be able to reuse an effect that has already been created, it is possible to export it. The created XML file can be saved separately to be used again in another project or in another template. The commands for export or import can be found in the context menu.
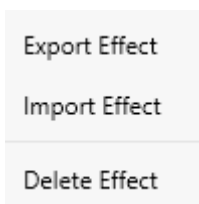
The template is saved as an XML file in the desired target directory.

14.2 Effects Configuration via Web Server

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

14.2.1 Configuration

On the left side, the desired effect can be selected in the drop-down menu.
An asterisk indicates that this effect has already been defined.

If the "Effect loop mode" setting is checked, this effect is played endlessly and can only be stopped by a stop command.

The following actions are available for a selected effect:

- Adding a new entry
- Testing the effect (the effect must first be loaded into the gateway)
- Stop
- Saving the effects
- Reloading configuration data
- Deleting the effect

Use the "+" button to add new entries to the selected effect.

In the drop-down element you can now select the desired group or single ECG.

The order of the entries in the list corresponds to the order of the individual effect steps. If the order within a list is to be changed, this can be changed using the buttons in the actions column.

The desired values for this effect can be entered in the individual entries.

Value
Specifies the brightness value in 0 - 100% and can be selected via a drop-down field.

Colour
Specifies the colour according to the type of colour control for this group. To do this, a window is opened by clicking on it to simply select the colour in a colour picker.

Keep Value
With this setting, the current value remains unchanged when the effect is invoked. The colour input field is deactivated, as it is not taken into consideration in this function. An entry in the value field is ignored.

Keep colour
With this setting, the current colour remains unchanged when the effect is invoked. The colour input field is deactivated, as it is not taken into consideration n this function. An entry in the colour field is ignored.

Fade Time
With this setting, the time to reach the desired setting can be defined.
This allows you to define crossfade effects.

Delay
The delay defines the time until the next event is set.

Delete
To delete an entry, use the corresponding button in the action column.
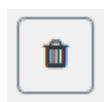
14.2.2 *Colour Settings*
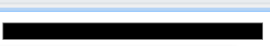
If individual ECGs or groups are parameterised for colour control (DT-8), a colour can be set in addition to the light value. To do this, click in the "Colour" field of the desired ECG or group:

Target	Value	Colour	Keep Value	Keep Colour	Fade time	Delay	Action
Group 1	75 %	4000 °K	☐	☐	1 s	0	⬆ ⬇ ▶ 🗑
Group 2	60 %	(blue)	☐	☐	1 s	0	⬆ ⬇ ▶ 🗑
Group 3	25 %	♻ 4000 °K	☐	☐	1 s	0	⬆ ⬇ ▶ 🗑
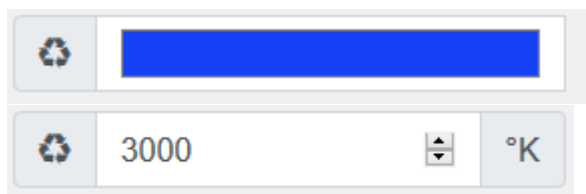
Attention: Setting a colour is only possible if the respective group or ECG has been enabled for colour control. Otherwise the note N/A (not applicable) appears in the "Colour" field. Click on it to open a further window in which the colour data can be set.

By clicking on a point of the colour palette or setting the RGB values, for example, the set colour for the group/individual ECG is adopted in the scene.

If a group in ETS is selected as colour type "RGB + colour temperature", this group can be used in the effect

with both colour controls. This type is indicated by the following dialogue element:

By clicking on the front icon, the colour temperature input in Kelvin changes to the normal colour dialogue.

14.2.3 *Programming the Effects and Effect Test*

Once all entries for all desired effects have been made, the settings must be loaded from the browser into the device. This is done by pressing the "Save Effect" button.

If the selected effect needs to be activated for testing, this can be done by pressing the "Test effect" button.

With loop mode, the effect can be stopped with the "Stop" button

Loading the effect data from the gateway into the web browser is possible by pressing the "Reload Effects" button.

14.2.4 *Testing an Event in an Effect*

A way to test the setting of an event is in the "Action" column. When the "Play" button is activated, this event is sent to the DALI bus.

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

15 Time Control Module for Values and Colours
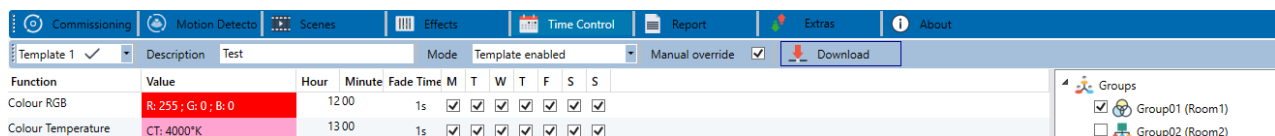
In order to use the colour setting options of DT-8 devices, the GW90873 offers an integrated time control module. With this module, users can automatically set a defined light colour and potentially a light value depending on the current time and date. Up to 16 templates are available. A template combines different actions which will trigger an event at a configurable time.

Time control of DT-8 colour ECGS is particularly interesting for white light control. Changes in colour temperature over the course of 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 timed colour changes in DT-8 devices. For example, a building façade can be illuminated in red light for the first half of the night and in blue light for the second half of the night. Automatic adjustment of the dimming value depending on the time is also possible.

15.1 Time Schedule Configuration with DCA

Time control can be programmed and assigned in the DCA. For this purpose change from the commissioning to the "Time Control" page.

15.1.1 Configuration

Use the drop down on the left hand side to select a template.
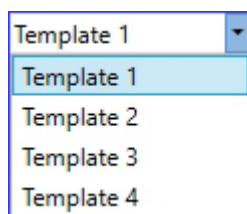
A "tick" means that the template has already been defined.

Use the description field to enter a user friendly name for the template. The name can be up to 20 characters long and is displayed in brackets in the dropdown list for information purposes.

You can also define the behaviour of the template:
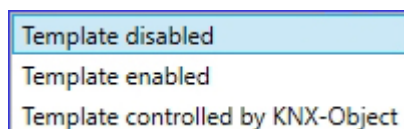
The template can be disabled. By default all templates are enabled. It is also possible to enable or disable the template via a communication object. If you choose the option "Template controlled by KNX-Object", the corresponding objects will be displayed. See chapter: 20.1.4 Time Control Objects.

2095	Schedule 1, Activation	Activate/Stop
2096	Schedule 2, Activation	Activate/Stop

By using the "Manual Override" option, you can allow a certain group in this template to be deactivated on the basis of time. Please refer to chapter 15.1.4 Manual Override.

Use the tree on the right-hand side to select the DALI groups that you want to include in the template.

The middle part of the page is used to create an action list. All groups that have been selected automatically perform an action at the configured time. In total, a maximum of 300 actions can be stored on a DALI gateway if all templates are used. A context menu is available to control and create action lists.

A total of 11 function types are available for time control.
See chapter: 15.1.2 Types of Action.

The creation of action lists and the operation is performed as far as possible via the context menu. The context menu is opened when the mouse pointer is positioned on an action in a line and the right mouse button is pressed.

The following functions are then available for editing and creating action lists:

	Import Template see 15.1.5 Export/Import
Import Template	
Export Template	**Export Template** see 15.1.5 Export/Import
Empty Template	
	Empty Template Completely removes the configuration of this template.
Open Colour Dialog	
	Add action Creates a new action and adds it to the end of the list.
Add action	
Insert action	**Insert action** Creates a new action and inserts it between two existing list entries.
Copy & Add action	
	Copy & Add action Copies a selected action and adds it to the end of the list.
Remove action	
	Remove action Deletes a selected action.
Sort by time	
Sort by function	**Sort by time** Sorts the action list into ascending chronological order.
Test action	**Sort by function** Sorts the action list according to function entries.
Test group action ▸	

Test action
Immediately executes the chosen action (regardless of any configured transition times) for all selected groups within a template. A connection to the GW90873 is required.

Test group action
Immediately executes the chosen action (regardless of any configured transition times) for a selected group within a template. You can also select the group via the context menu. A connection to the GW90873 is required.

15.1.2 *Types of Action*

Once you have created an action, 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 every day, enter the days of the week when you want to schedule the action. Remember that only certain 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 value range, it is automatically limited to the maximum value. (For example, if you enter 200 for the function "Set value", the maximum value 100% will automatically be entered.)

The following functions are possible for an action:

Set value
Sets the brightness level of a group. The permitted value range is between 0 and 100%.

Minimum value
Sets the minimum dimming value of the selected group for relative (4 Bit) and absolute (8 Bit) dimming. When using this action, any minimum dimming value set in the ETS parameters is automatically overwritten. The permitted value range is between 0 and 100%.
This value is reset to the ETS setting after an ETS download.

Maximum Value
Sets the maximum dimming value of the selected group for relative (4 Bit) and absolute (8 Bit) dimming. When using this action, any maximum dimming value set in the ETS parameters is automatically overwritten. The permitted value range is between 0 and 100%.
This value is reset to the ETS setting after an ETS download.

Colour Temperature
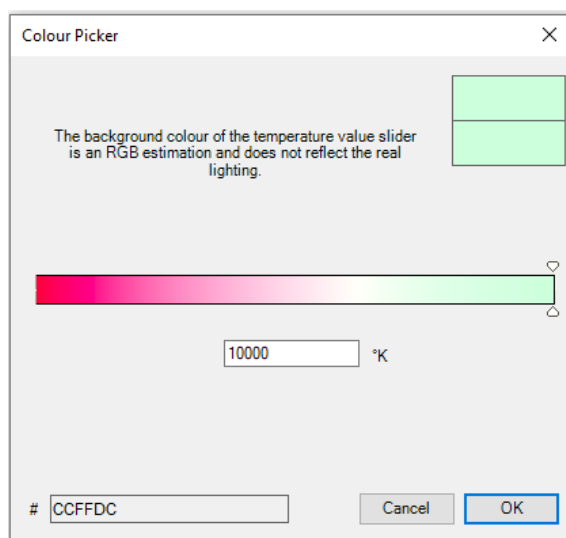
This function sets the colour temperature of DT-8 devices that support the colour temperature setting (TC). On the ECG the colour is also changed if the lamp is turned off at the time of the action. You can enter the colour temperature range. The value range permitted is between 1000 and 10000 K, but please remember the physical limits of the connected ECGs and lights.

RGB colour
Sets the colour values of DT-8 devices that support RGB colours. On the ECG the colour is also changed if the lamp is turned off at the time of the action. The values for each colour can be entered separately. The permitted value range for R,G and B is between 0 and 255. The final colour is a mixture of the different primary colours according to their percentage.

RGBW colour
Sets the colour values of DT-8 devices that support RGB or RGBW colours.
On the ECG the colour is also changed if the lamp is turned off at the time of the action.
The values for each colour can be entered separately. The permitted value range for R,G,B and W is between 0 and 255. The final colour is a mixture of the different primary colours according to their percentage.
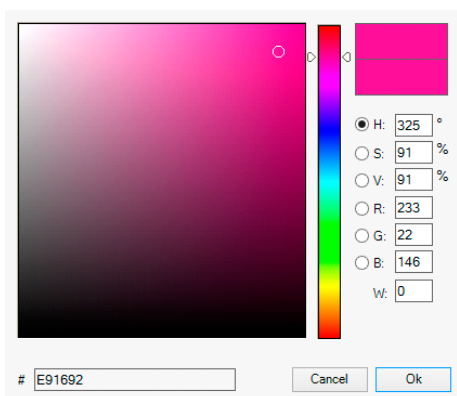
HSV colour
Sets the colour values of DT-8 devices that support RGB colours.
However, the value is entered by means of saturation, hue and brightness levels in this case.
On the ECG the colour is also changed if the lamp is turned off at the time of the action.
The permitted value range for the hue is between 0 and 360°, the value range for saturation and brightness is between 0 and 100%.

HSVW colour
In this function, a separate white value (separate channel) is specified in addition to HSV.

XY colour
Sets the XY colour of DT-8 devices that support the XY colour space.
On the ECG the colour is also changed if the lamp is turned off at the time of the action. The X and Y coordinates of the colour can be entered separately. The permitted value range for X and Y is from 0.0 to 1.0. Please remember the physical limits of the connected ECGs/lights. Not every colour from the colour spectrum can be set.

MaxOnValue
Sets the maximum ON value of the selected group or ECG. When using this action, any maximum On value set in the ETS parameters is automatically overwritten. The permitted value range is between 0 and 100%.
This value is reset to the ETS setting after an ETS download.

Call Scene
This function starts a desired scene. The internal scenes 1 - 16 can be selected.

Start/Stop Effect
This function starts or stops a desired effect. The internal effects 1 - 16 can be selected.

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

Other device types will ignore these actions. This also applies to the selected method. A DT-8 device with XY control, for example, 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 DALI gateway. Press the "Download" button to do so.
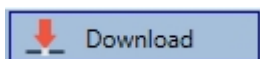
Remember that time-dependent actions can only be performed if they have previously been saved on the gateway. You can, however, test individual actions via the test button without saving them on the gateway. This does not change the data on the device.

15.1.3 *Disable/Enable Template*

A template can be enabled or disabled in the header of the editor.
This makes it possible to fully prepare a template whilst 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 simply enable the required template without having to modify 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 external objects 2095ff.
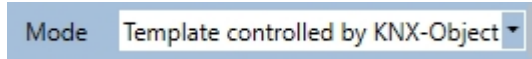
The value on receipt of the object determines whether a template is disabled or enabled.

15.1.4 *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 a manual intervention for individual groups/ECGs of the template. Automatic mode is thus manually overridden.
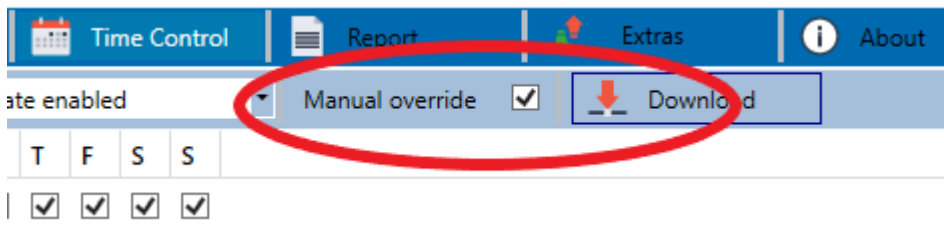
This function is particularly useful for HCL control applications. If the brightness or colour of an element (group / individual ECG) is changed, automatic operation for this element stops. No automatic colour adjustment will then be performed at the next action time. The change made by the user will remain until automatic mode is activated again.
Activation of the automatic mode according to the template takes place at the receipt of the next 1-bit Off or On frame 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 frame is received, the last colour value correctly requested by an action is set. When an off frame is received, the group /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.

15.1.5 *Export/Import Template*

In order to reuse a previously created template, it is possible to export the template. The resulting xml file can be saved separately so that it can be reused in another project or template.
The export and import commands can be found in the context menu.
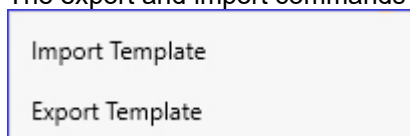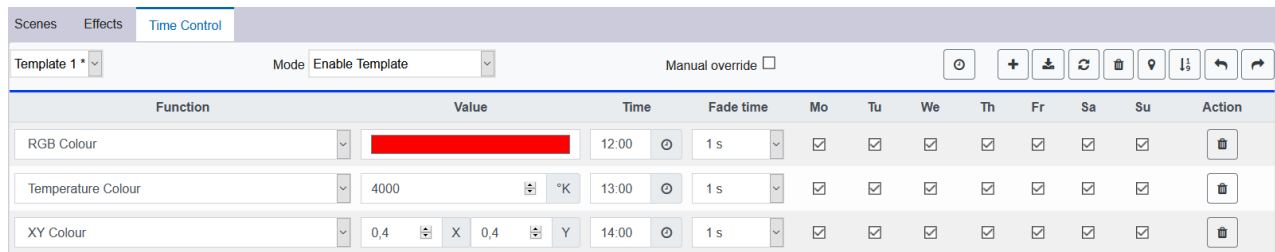
The template is saved as an XML file in the chosen destination directory.

15.2 Time Schedules Configuration via Web Server

The assignment settings and the programming of time schedules can be made from the website via the web server. After starting the web page, switch to the "Time Schedules" configuration page and select "Templates".
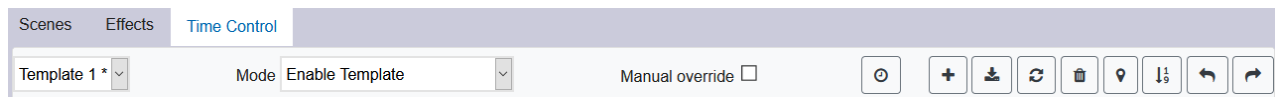
Function	Value			Time	Fade time	Mo	Tu	We	Th	Fr	Sa	Su	Action
RGB Colour				12:00	1 s	☑	☑	☑	☑	☑	☑	☑	🗑
Temperature Colour	4000		°K	13:00	1 s	☑	☑	☑	☑	☑	☑	☑	🗑
XY Colour	0,4	X	0,4 Y	14:00	1 s	☑	☑	☑	☑	☑	☑	☑	🗑

15.2.1 *Configuration*

On the left side you can first select the desired template in the drop-down menu.
An asterisk indicates that this template has already been defined.

"Mode" Option:
The behaviour of the template can be defined, see chapter: 15.1.3 Template Disable/Enable.

"Manual override" Option:
Please refer to chapter 15.1.4 "Manual Override"

The following actions are available for a selected template:

- •   Read current date/time on device
- •   Adding a new entry (control template)
- •   Saving the template
- •   Reload templates
- •   Delete template commands
- •   Assignment of groups and/or ECGs
- •   Sorting the entries
- •   Import of the template from an xml file
- •   Export of the template to an xml file

For the time schedule especially, it is necessary to ensure that the gateway is working with correct date and time information. Clicking on this icon displays the current date/time information:

Device Information: Time

2012-01-01 04:06

OK

With the "Plus" (+) button new entries can be added to the selected template.
In the drop-down element you can now select the desired action type, see next chapter.

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

15.2.2 *Types of Action*

Once you have created an action, 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 every day, enter the days of the week when you want to schedule the action. Remember that only certain 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 value range, a red border is automatically displayed to indicate the input value which does not match.

The following functions are possible for an action:

Setvalue
Sets the brightness level of a group. The permitted value range is between 0 and 100%.

Min-value
Sets the minimum dimming value of the selected group for relative (4 Bit) and absolute (8 Bit) dimming. When using this action, any minimum dimming value set in the ETS parameters is automatically overwritten. The permitted value range is between 0 and 100%.
This value is reset to the ETS setting after an ETS download.

Max-value
Sets the maximum dimming value of the selected group for relative (4 Bit) and absolute (8 Bit) dimming. When using this action, any maximum dimming value set in the ETS parameters is automatically overwritten. The permitted value range is between 0 and 100%.
This value is reset to the ETS setting after an ETS download.

Temperature colour
This function sets the colour temperature (CT). On the ECG the colour is also changed if the lamp is turned off at the time of the action. You can enter the colour temperature range. The value range permitted is between 1000 and 10000 K but please remember the physical limits of the connected ECGs and lights.

XY colour
Sets the colour temperature of DT-8 devices that support the XY colour space display (XY).
On the ECG the colour is also changed if the lamp is turned off at the time of the action. The X and Y coordinates of the colour can be entered separately. The permitted value range for X and Y is from 0.0 to 1.0. Please remember the physical limits of the connected ECGs/lights. Not every colour from the colour spectrum can be set.

RGBW colour
Sets the colour values of DT-8 devices that support RGB or RGBW colours.
On the ECG the colour is also changed if the lamp is turned off at the time of the action.
The values for each colour can be entered separately. The permitted value range for R,G,B and W is between 0 and 255. The final colour is a mixture of the different primary colours according to their percentage.

RGB colour
Sets the colour values of DT-8 devices that support RGB colours.
On the ECG the colour is also changed if the lamp is turned off at the time of the action. The values for each colour can be entered separately. The permitted value range for R,G and B is between 0 and 255. The final colour is a mixture of the different primary colours according to their percentage.

HSV colour
Sets the colour values of DT-8 devices that support the HSV colours.
However, the value is entered by means of saturation, hue and brightness levels in this case.
On the ECG the colour is also changed if the lamp is turned off at the time of the action.
The permitted value range for the hue is between 0 and 360°, the value range for saturation and brightness is between 0 and 100%.

HSVW colour
In this function, a separate white value (separate channel) is specified in addition to HSV.

Max-OnValue
Sets the maximum ON value of the selected group or ECG. When using this action, any maximum On value set in the ETS parameters is automatically overwritten. The permitted value range is between 0 and 100%.
This value is reset to the ETS setting after an ETS download.

Call Scene
This function starts a desired scene. The internal scenes 1 - 16 can be selected.

Start/Stop Effect
This function starts or stops a desired effect. The internal effects 1 - 16 can be selected.

In principle, every group can be added to a template independently of the ECG device types used in the group. While the functions "Set Value", "MinValue" and "MaxValue" work for all device Types, (including, for example, fluorescent lights DT-0 and LED modules DT-6), the colour control functions "Colour Temperature", "Colour XY", "Colour RGBW", "Colour RGB" and "Colour HSV" can only be executed by the connected DT-8 devices. Devices of other device types will ignore the actions. This also applies with regard to the selected procedure.

Other device types will ignore these actions. This also applies to the selected method. A DT-8 device with XY control, for example, 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.

15.2.3 *Disable/Enable*

In the page header, the respective template can be released or locked.

Mode | Disable Template | ⌄

This option allows you to prepare templates completely but block their execution. For example, two templates could be created: one for the normal operation of a building and another one for the holiday period. By simply selecting the desired template, the desired template can be released without having to manipulate any actions. Time dependencies can be implemented even more conveniently using external objects. If this setting is selected for a template, the control can be carried out via the external objects 2095ff.

15.2.4 *Manual Override*

Please refer to chapter <u>15.1.4 Manual Override</u>

15.2.5 *Assignment of Groups and ECGs*

By selecting the "**Assignment**" button, the desired groups and ECGs that are to work with this schedule can be selected.

Select Template Members ✕

Groups ☑ ☐

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐

9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐

Ecgs ☑ ☐

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐

9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐

15.2.6 *Programming the Time Programs*

Once all entries for all desired templates have been made, the settings must be loaded from the browser into the device. This is done by pressing the "Save" button.

15.2.7 *Export/Import Template*

In order to be able to reuse a template that has already been created, it is possible to export it. The created XML file can be saved separately to be used again in another project or in another template. The export or import can be done with the following buttons:

Import of a time program (template)

Export of a time program (template)

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

15.3 *Date and Time*

To ensure the safe operation of the time control module the exact time and date are required on the device. This has to be provided by the KNX in form of 3 Byte communication objects. The precision of the DALI gateway's internal time calculation is limited. It is therefore 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 day of the week (Monday – Sunday). (For some KNX timers this is configurable). If a 3 Byte object is received without this information, the day of the week is not checked. This means that an action which has, in fact, only been enabled for Saturday and Sunday would also be performed on a Monday.

As 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. At the same time, the time object is also automatically queried. A further read request is sent at 3:01. This avoids any potential failures when changing from winter to summer time (DST).

16 Self-Contained Battery Emergency Lights

The GW90873 gateway also supports ECGs for the control of self-contained battery emergency lights. (Device Type 1 according to EN 62386-202). Such devices contain a battery within the lamp that will operate the light for a certain time period in case of loss of power supply.

16.1 Characteristics

Primarily, 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 just like a 'normal' ECG. In normal mode the light (usually an LED) can be switched and dimmed via DALI. The standard switching parameters and objects are available for these devices.

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

During both new and post-installation the GW90873 recognises automatically, whether the connected device is a 'switchable' or 'non-switchable' ECG.

Sometimes special, non-switchable converters are used together with "normal"DALI ECGs in a light. These lights are therefore called emergency lights with 2 DALI devices. The two ECGs make a device pair that shares a common light. The 'non-switchable' device uses the DALI communication to query the device status and to initiate mandatory test phases. The switchable device controls the light in normal mode.

However, because of the DALI structure with its random assignment of short addresses, the pairing of a 'normal' device with a 'non-switchable' device does not occur automatically. It has to be performed manually on the parameter page in ETS. The assignment is crucial for failure analysis purposes as 'non-switchable' devices usually share the connected lamp with a 'normal' device. Without the assignment, a lamp failure may be double-counted. In addition, the 'normal' 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 recognises automatically whether a real ECG failure has occurred or whether the corresponding converter has simply been tested. Only actual ECG failures are taken into account for the analysis.

16.2 Identification of Self-Contained Battery Emergency Lights

For identification after new/reinstalled single-battery emergency lights, the identification process is started when "flashing mode" is selected. Usually the status LED of the emergency light flashes. However, please observe the respective description of the light. Since the status LED is not executed or visible with some lights, a function test can be started as an alternative. During the function test, the ECG usually switches the luminaire on for a few seconds.

16.3 Converter Inhibit Mode

Self-contained battery emergency lights always change into emergency mode if there is a power supply failure. The lamp will now be operated by the internal battery. However, it may become necessary at times to cut off the power supply, for example during maintenance work or the commissioning phase of a building. To prevent the lights from switching into emergency mode, the converters connected to the GW90873 can be disabled via the buttons and display on the device (see above). This converter inhibit mode is only available for all devices connected at the same time. If the power supply is turned off within 15 minutes after activating the mode, the connected lights do not change into emergency mode and the lights remain switched off. When the power resumes, the lights return to normal. If the 15 minutes pass without a power loss, all converters are automatically reset to normal mode.

16.4 Test mode

The GW90873 supports the execution and recording of mandatory tests for self-contained battery emergency lamps.

Attention: Legal regulations and standards vary in different countries. Please make sure that you comply with all country-specific requirements.

The GW90873 supports functional tests, long duration tests and battery status tests. Functional and duration tests can be started externally via KNX frames (1 Byte frames, see below) or via the device website. Alternatively you may choose to set automatic test intervals. This means tests are performed automatically via the connected converters. (Please check the converter description for the precise function).
After a test has been completed, the test results are available on the KNX bus via communication objects and they may be recorded in the display. The corresponding objects are updated with the test result and automatically sent after every new test. See chapter: 20.1.3.2 Objects for Emergency.

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

16.5 Emergency Test Results

16.5.1 DCA report

The "Report" tab displays statistical data on the fault status of the connected ECGs, as well as the test reports of the connected emergency lighting devices. In the upper section, the following information is displayed:

- Number of lamps
- ECG Count
- Number of converters
- Lamp failed
- Number of ECG failures
- Number of converter failures
- Lamp fail rate
- ECG fail rate
- Converter fail rate

Press the "Refresh Report" button to display the test reports (Result of the last emergency lighting test of all emergency lights). This information is directly obtained from the emergency lights via a DALI command.
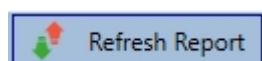
Date

ECG: Number of ECGs (ETS Definition)

ECG name: Name of the ECG assigned by the ETS

Mode: FT= Functional 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 fault; red: Converter was faulty during the test (DALI QUERY 252: bit 0)

Duration: green: no fault; red: Duration of the battery is insufficient (DALI QUERY 252: bit 1)

Battery: green: no fault; red: Battery fault (DALI QUERY 252: bit 2)

Lamp: green: no fault; red: Emergency light is faulty (DALI QUERY 252: bit 3)

Delay: green: no fault; red: Maximum delay time has been exceeded during function or duration test (DALI QUERY 252: bit 4 or bit 5)

Test: green: ok

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: FT in progress

8: DT in progress

Emergency light status: Status according to DALI Query_Emergency_Status 253

Emergency light mode: Status according to DALI Query_Emergency_Mode 250

Emergency light failure: Status according to DALI Query_Failure_Status 252

Press the "Export" button to save the test results in an xml file. The file can be saved in any location.
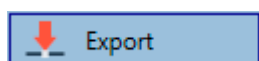
16.5.2 *Web report*

The test results of the emergency lights can be displayed on the website via the web server. After starting the web page, switch to the diagnostics page for this purpose and select "Report".

Short Address	ETS Number	Ecg Description	Date	Converter Failure	Duration Failure	Battery Failure	Lamp Failure	Delay Failed	Test Failed	Result	Test	Action	Info
6	10	Ecg10	2012-01-01 00:01:19	🟢	🟢	🟢	🟢	🟢	🟢	252 min	⧗	Long Duration Test ▶	i

This table lists all configured emergency luminaires:

Short address: actual 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

Converter Failure: green: no error; red: Converter was faulty during the test (DALI QUERY 252: bit 0)

Duration Failure: green: no error; battery rated time insufficient (DALI QUERY 252: bit 1)

Battery Failure: green: no error; red: battery defective (DALI QUERY 252: bit 2)

Lamp Failure: green: no error; red: emergency lighting lamp defective (DALI QUERY 252: Bit 3)

Delay Failed: green: no error; red: maximum delay time in function test or duration test exceeded (DALI QUERY 252: bit 4 or bit 5)

Test Failed: indicates that the test failed for some reason

Result: During a battery test, the charge state of the battery is displayed; during a duration test, the time of the test is displayed

Test:

♥		FT= Functional Test
⧗		DT: Duration Test
🔋		BT: Battery Test

Action:

Here you can choose between function test, endurance test and battery test. The test is started with the following command:

Action

Long Duration Test ▶

Other detailed information on the emergency lamp can be displayed by pressing the Info button:

The test results can be saved in an xml file in a selectable folder.

Press the **Print view** button; the test results will be summarized in an HTML page and prepared for printing. The printout can be started via the browser.

GEWISS	Report of Emergency Lights	Date	Short Address	ECG Number	Test Type	Result	Status
Date of Report	2023-01-30						

General Information

Project ID	Project
Building ID	Building
Zone ID	Zone
Device	DALI Gateway
Total EL installed	0
Total EL in general error	0

Emergency Test Summary

Total EL Summary	
- Duration Test failed	0
- Functional Test failed	0
- Duration Test pending	0
- Functional Test pending	0
Start of Test Period	N/A
End of Test Period	N/A

The current status is displayed in the "Status" column. If a test is pending or has been started, this is indicated by the abbreviations FTW (function test waiting) or DTW (duration test waiting).
The last completed test is displayed with date/time and result.

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 %	

17 DCA Extras

The menu item "Extras" offers further special functions.
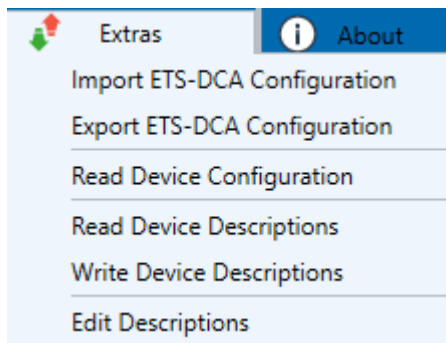
Import ETS-DCA Configuration
A previously saved device configuration can be loaded into the ETS with this function.
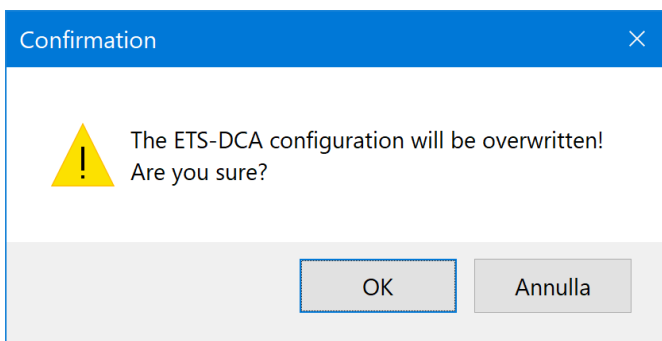
Remember that all DCA data in the ETS will be overwritten with this data. Press the "Restore" button under commissioning in order to load the configuration onto the Dali gateway. See chapter: 11.1. 9 "Restoring the DALI Configuration".

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.
N.B.: This is especially important if you have previously worked with the website. Description texts are not read automatically. To do this, the separate menu item "Read Device Descriptions" must be selected.

Read Device Descriptions
The descriptive texts of the ECGs, groups and scenes can also be saved on the DALI gateway. The descriptions on the device are available on the device website. Please remember that the device allows only 20 characters per name. In case the website was previously used for commissioning, the texts are transferred to the ETS.

Write Device Descriptions
The descriptive texts of the ECGs, groups and scenes can be saved on the DALI gateway. The descriptions on the device are available on the device website.

Edit Descriptions
The descriptive texts of the ECGs, the groups and input devices can be defined separately under this menu item.

17.1 Menu: Edit Descriptions

For each category the description texts can be entered separately.

Item No.	Description
1	Room1
2	Room2
3	Room3

(Group Descriptions | Ecg Descriptions | MD Descriptions)

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

Export Descriptions

Import Descriptions

Clear All Descriptions

There are 2 formats provided for Export and Import:

• 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>
```

Hint (xml): If you do not want to overwrite all texts, you can simply omit the corresponding indices.

Hint (txt): When using the txt format, it should be noted that this file is read in line by line.
An entry that is not to be changed must therefore be defined as an "empty" line. An entry that is to be deleted is marked with single quotation marks.

18 Commissioning/Operating via Display and Buttons

You can commission the connected DALI segment and set and change some functions and tests via the three buttons (MOVE, Set/Prg, ESC) and the 2x12 character display on the front of the device.
The user interface 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 buttons briefly.

The Move button is used to select the next menu item within a level. With a short push on the Prg/Set button you reach the respective lower level. Pressing the ESC key causes leaving the selected level and returning to the upper level.

18.1 Main menu level 1

`GATEWAY DALI` `64/16  V1.2`	The product name and firmware version are displayed. The sub-menu can be used to set the display language.
`NETWORK` `IP ADDRESS`	This sub-menu 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 (ballasts). **Unlike with a new installation that was started through DCA or web server, the ECGs in this case are directly assigned 1:1 to the actual ECGs (ballasts).**
`POST` `INSTALLATION`	Use this sub-menu to start the automatic search process and, where necessary, adjust the configuration following a post installation of DALI ECGs.
`ECG` `EASY REPLACEMENT`	Use this sub-menu to active 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 individually load any existing system errors.
`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 into programming mode. To change into programming mode, press and hold the Prg/Set button for more than 2 seconds.
Once the function is in programming mode, the ➜ symbol appears on the display. If the programming mode is active, use the Move button to change a parameter or setting. Briefly press the Prg/Set button again to complete the process and save the set parameter or activate the function.

18.2 Sub-Menu Level 2

18.2.1 Language Sub-Menu

The LANGUAGE sub-menu has the following structure:

| ```
GATEWAY DALI
64/16 V1.1
``` | The product description and firmware version are displayed. The display language can be set in the sub-menu. |
| ```
LANGUAGE
➔ GERMAN
``` | The currently set display language is shown. Press and 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, DANISH. Briefly press the Prg/Set button again to save the configuration. The display now works in the selected language.<br>**Attention**: The language will be activated after a restart of the device. |

18.2.2 Network IP Address

The Network IP Address menu has the following structure:

| ```
NETWORK
IP ADDRESS
``` | Briefly press the Prg/Set button to change from the main NETWORK IP ADDRESS menu to the sub-menu. |
| ```
DHCP:     192.
168.001.xxx
``` | This sub-menu displays the IP address currently set in the ETS or assigned by the DHCP server. |

18.2.3 New Installation Sub-Menu

The NEW INSTALLATION sub-menu has the following structure:

| ```
NEW
INSTALLATION
``` | Briefly press the Prg/Set button to change from the main NEW INSTALLATION menu to the SEARCH ECGs via PROG-MODE sub-menu. |
| ```
SEARCH ECGs
via PROG-MODE
``` | Use this sub-menu to search for connected ECGs. Press and hold Prg/Set to start the search for ECGs connection to the DALI bus. |
| ```
START SEARCH
ECGs?
``` | Press Prg/Set to start the search. |
| ```
FOUND
ECGs: XX
``` | Report of ECGs found in the system. |

18.2.4 *POST-INSTALLATION Sub-menu*

The POST-INSTALLATION sub-menu has the following structure:

```POST-``` ```INSTALLATION```	Briefly press the Prg/Set button to change from the main POST-INSTALLATION menu to the SEARCH ECGs via PROG-MODE sub-menu.
```SEARCH ECGs``` ```via PROG-MODE```	Press and hold the Prg/Set button to change into programming mode. Briefly press the Prg/Set-button 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.
```START SEARCH``` ```ECGs?```	Confirm search for ECGs in system. Press Prg/Set to start the search.
```DELETED``` ```ECGs: x```	If ECGs have been removed from the DALI segment, the entries are deleted from the device. The number of deleted devices is displayed during the verification process.
```NEW``` ```ECGs: x```	Subsequently, the DALI segment is searched for newly installed devices. Newly added ECGs are automatically reset and any previously programmed parameters and group assignments are deleted. Depending on the number of connected ECGs, the search process may take a few minutes. During the search process, the number of newly found devices is shown on the display.
```DEL./NEW``` ```xx/yy```	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, see picture on the left). Press the ESC button (or wait for about 30 seconds) to return to the previous level).

18.2.5 *ECG EASY REPLACEMENT Sub-Menu*

The ECG EASY REPLACEMENT sub-menu has the following structure:

```ECG EASY``` ```REPLACEMENT```	Briefly press the Prg/Set button to change from the main ECG EASY REPLACEMENT menu to the SEARCH ECGs via PROG-MODE sub-menu.
```SEARCH ECGs``` ```via PROG-MODE```	Press and hold the Prg/Set button to change into programming mode. Briefly press the Prg/Set-button again to start the quick change procedure. The device first checks if one or more ECGs in the system are faulty. It then automatically looks for newly connected ECGs in the segment. The easy replacement procedure is only possible if just one ECG in the segment was faulty and one new ECG is found.
```ECG xx``` ```REPLACED```	If the process is successful, the number of the replaced ECG is shown in the display.

```ERROR```
```TYPE xx```
	If the search process cannot be completed because the required conditions are not met, an error code appears in the display. The displayed error codes have the following meaning:
	  - **Failure Type 7**: No faulty ECG
	  - **Failure Type 8**: More than one ECG faulty
	  - **Failure Type 9**: No new ECG found
	  - **Failure Type 10**: ECG has wrong device Type
	  - **Failure Type 11**: More than one new ECG

Press the ESC button (or wait for about 30 seconds) to return to the previous level.

18.2.6 *GROUP ASSIGNMENT Sub-Menu*

The GROUP ASSIGNMENT sub-menu has the following structure:

```
GROUP ASSIGNMENT
```
Briefly press the Prg/Set button to change from the main GROUP ASSIGNMENT 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 No.:   xx
GROUP:     --
```
Briefly press the MOVE button 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 will flash. The programmer can thereby determine which lamp is assigned to the number.

```
CONV. No.:  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 (see user manual for the converter).

```
CONV. No.:  xx
GROUP:      xx
```
Press and hold the Prg/Set button to change into programming mode. Briefly press the Move button again to select the group that you want to assign the ECG to. If the group is selected, briefly press the Prg/Set button to confirm and save the setting. Press the ESC button (or wait for about 30 seconds) to return to the previous level.

18.2.7 *GROUP TEST Sub-Menu*

The GROUP TEST sub-menu has the following structure:

```
GROUP
TEST
```
Briefly press the Prg/Set push-button to change from the main GROUP TEST menu to the sub-menu. Within the menu, groups can be switched either individually or all together (ALL GROUPS TEST = BROADCAST) to test the installation.

```
GROUP:  X
TEST
```
Briefly press the MOVE button to run through the individual groups. The number of the selected group is shown in the first display line.

```
GROUP:  X
---> OFF
```
Press and hold the Prg/Set button to change into programming mode. Briefly press the Move button to select whether you would like to switch the group on or off. Briefly press the Prg/Set button to execute the selected command. Press the ESC button (or wait for about 30 seconds) to return to the previous level.

18.2.8 *SCENE TEST Sub-Menu*

The SCENE TEST sub-menu has the following structure:

```
SCENE
TEST
```

Briefly press the Prg/Set push-button to change from the main SCENE TEST menu to the sub-menu. Within the menu you can invoke all scenes for test purposes or program newly set lighting scenarios into the scene.

```
SCENE:  X
TEST
```

Briefly press the Move button to run through the individual scenes. The number of the selected scene is shown in the first display line.

```
SCENE:  X
----> INVOKE
```

Press and hold the Prg/Set button to change into programming mode. Briefly press the Move button to choose whether you would like to invoke or save a scene. Briefly press the Prg/Set-Taste button to execute the selected command and either invoke or save the scene. Press the ESC button (or wait for about 30 seconds) to return to the previous level.

18.2.9 *SYSTEM TEST Sub-Menu*

The SYSTEM TEST sub-menu has the following structure:

```
SYSTEM
TEST
```

Briefly press the Prg/Set button to change from the main SYSTEM TEST menu to the sub-menu. Within the menu you can check for any potential failures.

```
DALI
X FAULT
```

If there is no failure, this is shown in the display. The following failures can be recognised by the system. They are shown in the display and also simultaneously set off the red failure LED:

```
DALI
X FAULT
```

- DALI short-circuit
 - Lamp fault with the lamp or ECG number being displayed
 - ECG failure with display of the ECG number
- No KNX Bus

In case of a DALI short-circuit, no further failures can be recognised. For all other failure types, several failures can be recognised at the same time. Within the menu you can toggle between different failures by briefly pressing the Move button.

```
LAMP
X FAULT
```

The number of the ECG is displayed for lamp failures. This means that a failure can be easily located.

```
ECG
X FAULT
```

The number of the ECG is displayed for ECG failures. This means that a failure can be easily located.

```
KNX
X FAULT
```

If there are KNX side failures, this is shown in the display.

```
CONVERTER
X FAULT
```

If there are converter failures, this is shown in the display.

18.2.10 *MAINTENANCE ECG/LAMP Sub-Menu*

The MAINTENANCE ECG/LAMP sub-menu has the following structure:

```
MAINTENANCE
ECG/LAMP
```

Briefly press the Prg/Set button to change from the main MAINTENANCE ECG/LAMP menu to the sub-menu. Within the menu you can start the burn-in of a lamp and reset the operating hours counter.

```
BALL. Nr.:    xx
xxx   h
```

Briefly press the MOVE button to run through the individual ECGs. The number of the selected ECG is shown in the first display line.
Line 2 shows the number of operating hours since the last reset.

```
ECG Nr.:    xx
RESET
```

Press and hold the Prg/Set button to change into programming mode. Briefly press the Prg/Set button to execute the selected command. Press the ESC button (or wait for about 30 seconds) to return to the previous level.

18.2.11 *CONVERTER INHIBIT MODE Sub-Menu*

The CONVERTER INHIBIT MODE sub-menu has the following structure:

```
CONVERTER
INHIBIT MODE
```

Briefly press the Prg/Set push-button to change from the main CONVERTER INHIBIT MODE menu to the sub-menu. Within the menu you can turn on the Inhibit Mode for all connected self-contained battery emergency lights. If the mains power supply is turned off within 15 minutes from activating the Inhibit Mode, the lights do not change into emergency mode but remain switched off. In particular, during the initialisation phase of a building this operating mode may be required to prevent the emergency lights from being turned on constantly.

```
INHIBIT MODE
via PROG-MODE
```

Press and hold the Prg/Set button to change into programming mode.

```
CONVERTER
INHIBIT?
```

Briefly press the Prg/Set button again to enable INHIBIT mode. Press the ESC button (or wait for about 30 seconds) to return to the previous level.

19 ETS Parameters

The ETS parameters of the device are distributed across different parameter pages. To simplify the overview, only the parameter pages of the device selected in the function tree are displayed.

19.1 General

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

19.1.1 Parameters page: General

Parameters	Settings
Device name	DALI Gateway
You can assign your own device name here. DALI GATEWAY is preset.	
Additional information about: Project-ID, Circuid-ID, Distributationboard-ID	ID-progetto ID-edificio" Zona-ID

19.1.2 Parameters page: Behaviour

Parameters	Settings
Behaviour on KNX Failure	**No effect** Switch to ON-Value Switch to OFF-Value Switch to Panic Value
Use this parameter to set the behaviour of the connected ECGs/lamps when a KNX failure occurs.	
Behaviour on KNX Voltage Recovery	**No effect** Switch to Last Value Switch to ON-Value Switch to OFF-Value
Use this parameter to set the behaviour of the connected ECGs/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 sending at the same time (avoiding a bus overload).	
Light Status Send Condition	Send on request **Send on change** Send on Change and after Busreset
Determines the light status send conditions (switch status and value status) of the connected ECGs and groups.	
Send Condition in Dimming Mode	If change > 2% If change > 5% If change > 10% If change > 20% **deactivated**
Use this parameter to set whether and when you would like a value status to be sent via a 4 bit dimming frame during dimming (relative dimming). If you use the setting inactive, the value is only sent after the dimming process is complete.	
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 are to adopt after the panic mode has finished. If you use "Switch to Last Value", the value prior to the panic mode is saved and the lamp returns to this value afterwards.	
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 are to adopt after the emergency test has finished. If you use "Switch to OFF-Value", the value prior to the emergency test is saved and the lamp returns to this value afterwards.	

19.1.3 *Parameters page: Analysis and Service*

Parameters	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 Failure Request	No request 0.5 Seconds 1 Seconds 2 Seconds 3 Seconds 4 Seconds **5 Seconds** 6 Seconds 7 Seconds 8 Seconds 9 Seconds 10 Seconds
To analyse ECG and lamp failures, a periodic request has to be sent to the ECGs via DALI frames. Use this parameter to set the cycles for these periodic requests. **Attention**: If you set "no request", ECG and lamp failures can no longer be recognised. The evaluation of emergency luminaires is no longer possible! You should therefore use this setting only during service or in special cases.	
Type of Central ECG Failure Object	**No Object** Dali Diagnose (1 Byte)
Use this parameter to select whether you want to use the central failure object for ECG and lamp failures (object number 13).	
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 number 16, 18, 20 and 22) to report the total amount of failures or the failure rate in %.	
Threshold for Total Failures	**1%** 2% 3% ….. 100%
Configures a threshold value for the general failure alarm object (object 16). The threshold value takes all failures (ECG, lamp and converter failures) into consideration 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.	

19.1.4 *Parameters page: Special Functions*

GENERAL

- General
- Behaviour
- Analysis and Service
- **Special Functions**
- IP Network

+ G1,

+ G2,

+ G3,

+ G4,

+ G5,

+ G6,

+ G7,

+ G8,

+ G9,

+ G10,

+ G11,

+ G12,

Manual Operation on Device

Disable Manual Operation   No ▼

Broadcast

By enabling the Broadcast Function additional objects can be used to Control the DALI -System

Broadcast enabled   ⦿ No ◯ Yes

Emergency

Type of Objects for Emergency   ⦿ Objects according new KNX Standard
                                     ◯ Objects according legacy "old" style

System Diagnostic via IP Network

Enable System Diagnostic   ⦿ No ◯ Yes

Firmware Update

PIN Code Firmware Update   1234

ⓘ This PIN Code is requested during update procedure

Scenes

Dimming of Scenes enabled   ◯ No ⦿ Yes

Energy Saving

Energy Saving Objects enabled   ◯ No ⦿ Yes

Delay for Switching OFF the ECG Power   10 Seconds ▼

Delay for Switching ON the ECG Power   0.2 Seconds ▼

Parameters	Settings

Disable Manual Operation	**No** Yes, all settings are disabled Yes, without installation
With this parameter, manual control can be enabled directly on the device.	
Broadcast enabled	**Yes** No
This parameter can be used to enable the broadcast function in addition to group control. The activation activates a new tab "Broadcast". See chapter: 20.2 Parameter page: Broadcast **NB:** When activating the broadcast function, additional objects to control the DALI system can be used and further parameters appear.	

Type of Objects for Emergency	**Objects according new KNX Standard** Objects according to legacy "old" style

Enable system diagnostics	**No** Yes

Allows system diagnostics over the network. If the parameter "Security Settings" is enabled ("Yes") in IP Network, the possibility of external diagnostic access is disabled.

System diagnostics Multicast address	**224.0.218201**

All gateways belonging to the system must communicate via the same multicast address.

Device name	

The device name already defined under General Settings is displayed here. It can also be changed here. This name will be displayed later on the web page.

Send status at least all	Never 30 minutes **60 minutes** 90 minutes 120 minutes

A further parameter can be used to define after which time the status is to be sent if no change has occurred 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

Firmware Update

PIN Code Firmware Update   1234

ⓘ This PIN Code is requested during update procedure

This number is requested during a firmware update, see 7.7.3 Firmware Update

Dimming of Scenes enabled	**No** Yes

Scenes

Dimming of Scenes enabled   ○ No ◉ Yes

Energy Saving Objects enabled	**No** Yes

Energy Saving

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 … 1 Second 2 Seconds

Delay until the ECGs are switched on. During this time the actuator controlling the power supply must have switched safely.

19.1.5 *Parameters page: IP Network*

0.0.100 Gateway KNX/DALI 64/16 advanced > General > IP Network

General	
Behaviour	
Analysis and Service	
Special Functions	
IP Network	
Groups	
GRP 1,	
Behaviour	
Colour Control	
Analysis and Service	
+ GRP 2,	
+ GRP 3,	
+ GRP 4,	
+ GRP 5,	
+ GRP 6,	
+ GRP 7,	
+ GRP 8,	

Group Objects | Channels | Para

▲ 1.1 New line

Access via Web Pages enabeld   ◯ No   ⦿ Yes

IP Address Assigment   ◯ Static IP-Address   ⦿ DHCP

HTTPS Port   `443` ▲▼

Hostname Resolution (mDNS)

ⓘ Due to security reason this Service shall only be used in trusted internal networks. Please, take care that router are configured to block this Service. The selected host name must be unique in the entire system.

Enable Hostname Resolution (mDNS)   ⦿ No   ◯ Yes

API / MQTT Functionality (Firmware 1.2.x)

ⓘ By activating this interface a communication to an external Management System can be established

Enable API/MQTT   ⦿ No   ◯ Yes

Security Settings

Communication on local network, only   ◯ No   ⦿ Yes

ⓘ The webserver accepts request from local networks, only

Webpage Access

ⓘ Set the Override Option only if you want to reset password to ETS Default or during the first ETS Download!

Override Username and Password with ETS Paramter   ◯ No   ⦿ Yes

ⓘ Password has to be changed on web page!

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

Restriction of rights for the user account

User is allowed to control lights   ◯ No   ⦿ Yes

User is allowed to change scene configuration   ◯ No   ⦿ Yes

User is allowed to change effect configuration   ◯ No   ⦿ Yes

User is allowed to change schedule configuration   ◯ No   ⦿ Yes

User is allowed to view emergeny reports   ◯ No   ⦿ Yes

Parameters	Settings
Access via Web Pages enabled	**No** Yes
This can be used to deactivate the basic use of web operation for security reasons. **Attention**: An IP connection is required for the firmware update. If deactivated, no firmware update is possible!	
IP address assignment	Fix IP address **DHCP**

Determines whether the device is given a fixed IP address or a dynamic IP address via DHCP.
When selecting the "fix" (static) IP address, the following additional parameters are shown.
 	
IP Address Assigment   ⦿ Fix IP-Address   ◯ DHCP
    IP Address   `0.0.0.0`
    Subnet   `0.0.0.0`
    Gateway   `0.0.0.0`
    DNS Server   `0.0.0.0`
    HTTPS Port `443`	

HTTPS Port	**443**
The device has an HTTPS web server for displaying the status or carrying out commissioning. The port is set to the standard value 443.	
Hostname Resolution (mDNS)	
Enable Host Name Resolution (mDNS)	**No** Yes
If enabled the device can be found by this hostname	
Host name	
This parameter defines the hostname ℹ Due to security reason this Service shall only be used in trusted internal networks. Please, take care that router are configured to block this Service. The selected host name must be unique in the entire system.	
API / MQTT Functionality (Firmware 1.2.x)	
Enable API/MQTT	
Using this parameter the API / MQTT Feature can be enabled. MQTT can be used to communicate with an external broker to provide data to other management systems. ℹ By activating this interface a communication to an external Management System can be established Enable API/MQTT ◯ No ⦿ Yes ❌ Attention: if you going to communicate with an external partner, please set "Local Communication" in the next parameter chapter "Security Settings" to "NO" **Displayed in red is an important hint in the event you wish to communicate with external partner.** Settings and instructions for using MQTT are explained in chapter 21: "API-MQTT.	
Security Settings	
Communication on local network, only	**No** Yes
This parameter can be used to restrict the web server for operating and controlling the device via websites. By default, only requests from the local network are accepted. Communication on local network, only ◯ No ⦿ Yes ℹ The webserver accepts request from local networks, only	
Website Access	
Overwrite Username and Password with ETS parameters	No **Yes**

With this option the passwords can be reset. Refer to [Chapter 3 KNX Secure](#) for detailed information.

Webpage Access

ℹ Set the Override Option only if you want to reset password to ETS Default!

Override Username and Password with ETS Paramter   ○ No   ⦿ Yes

ℹ Password has to be changed on web page!

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

Admin Account	Entry (8 characters)
The standard operator is **"admin"**. The default password **"dali"** must be changed on the website and has a maximum length of 8 characters. **N.B.**: A blank password is not allowed.	
User Account	Entry (8 characters)
The default operator is **"user"**. The default password **"user"** must be changed on the website and has a maximum length of 8 characters. **N.B.**: A blank password is not allowed.	
Restriction of rights for the user account	User are allowed to control lights ○ No ◉ Yes User are allowed to change scene configuration ○ No ◉ Yes User are allowed to change effect configuration ○ No ◉ Yes User are allowed to change schedule configuration ○ No ◉ Yes User are allowed to view emergeny reports ○ No ◉ Yes
Here the user rights can be enabled or restricted.	

19.2 Parameters page: Broadcast – Colour Control

This window is displayed if the "Broadcast enabled" option is enabled on the General settings/Special Functions page.

Objects for Broadcast Colour	**none** RGB colour RGBW colour XY colour
This defines which communication objects are to be displayed for broadcast colour control. When selecting RGB / RGBW or XY colour, an additional selection window is displayed. Selection RGB colour Selection RGBW colour Selection XY colour **NB:** 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 object for broadcast colour temperature.	

19.3 Groups

There are 4 parameter pages for group settings. The parameters are described below.

19.3.1 *Group G1, (2..16) - General*

Parameters	Settings
Group x, Description	e.g.: Room 1

Use this parameter to define a group description. The description is shown for all communication objects.
For example: Room 1.

G1, Switching, Room1 (window)	On/Off
G1, Dimming, Room1 (window)	Brighter/Darker
G1, Set Value, Room1 (window)	Value
G1, Status, Room1 (window)	On/Off
G1, Status, Room1 (window)	Value
G1, Failure Status, Room1 (window)	Yes/No

Value on DALI Power Fail (System Failure Level)	0..100% **[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 value when a power loss occurs.	
Value on ECG Power Recovery (Power On Level)	0 - 100% [100] **Last value**
Use this parameter to set the value of a lamp after a return of ECG power supply. The value is saved on the ECG and the device automatically changes to the value when power is restored.	
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 permanent mode is selected)	0..100% **[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". Special settings:
 	
• **Delayed Switch-Off in 2 steps automatically:**
  - 1 minute before the configured time the value is set to 50% of the actual value.
  - After the configured time the switch-off value is set.
 	
• **Delayed Dimm-Off automatically**
  - 1 minute before the configured time, the current value is dimmed to the switch-off value.
 	
• **Activate Permanent Mode and Ignore Telegrams:**
  - Enables permanent mode through which a value can be set which is not modified via telegrams via the bus (therefore the frames are ignored).	

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. This parameter is only visible if you select "night mode".	
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. The parameters are only shown if the group is set to "Stair raiser light function".
 	
• **Delayed Switch-Off in 2 steps automatically:**
  - 1 minute before the configured time the value is set to 50% of the actual value.
  - After the configured time the switch-off value is set.
 	
• **Delayed Dimm-Off automatically**
  - 1 minute before the configured time, the current value is dimmed to the switch-off value.	

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. This parameter is only visible if you select 'Stair raiser light mode'.

Function of Additional Object	**No Object**
	Disable Object
	Release Object
	Stair raiser light 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.
Attention: The Disable function does only refer to Switch ON/OFF and SetValue via Objects

If you select " Stair raiser light 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 behaviour when disabled.

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 behaviour when enabled.

| Enabled for Panic Mode | **No** |
| | Yes |

Determines whether a group should be considered during panic mode. The panic mode is controlled via central object number 10 "Activate Panic Mode".

Value in Panic Mode	**1%**
	..
	50%
	..
	100%

Use this parameter to select the value for this operating mode.

| Calculation of Dimming Values | **logarithmic** |
| | linear |

Sets the dimming curve for the group.

> This Object can be used to switch Off the Power of the ECGs.
> As soon as the Group has been switch On again, this Object enables the Power of the ECG Line again.

| Control ECG Power Line via Object | **None** |
| | Energy Saving Objects 1.. 16 |

Here you can define the object with which the power supply is to be switched off. This parameter is only visible if this function was previously set on the General → Special Functions parameter page, see Parameter page: Special Functions

19.3.2 *Behaviour*

Parameters	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 prior to the lamp being switched off.	
Switch-ON Behaviour	**Set Value Immediately** Adjust to value in 3 seconds Adjust to value in 6 seconds Adjust to value in 10 seconds Adjust to value in 20 seconds Adjust to value in 30 seconds Adjust to value in 1 minutes Adjust to value in 2 minutes Adjust to value in 5 minutes Adjust to value in 10 minutes
Use this parameter to set the switch-on behaviour.	

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** Adjust to value in 3 seconds Adjust to value in 6 seconds Adjust to value in 10 seconds Adjust to value in 20 seconds Adjust to value in 30 seconds Adjust to value in 1 minutes Adjust to value in 2 minutes Adjust to value in 5 minutes Adjust to value in 10 minutes
Use this parameter to set the switch-off behaviour.	
Value-Set Behaviour	**Set Value Immediately** Adjust to value in 3 seconds Adjust to value in 6 seconds Adjust to value in 10 seconds Adjust to value in 20 seconds Adjust to value in 30 seconds Adjust to value in 1 minutes Adjust to value in 2 minutes Adjust to value in 5 minutes Adjust to value in 10 minutes
Use this parameter to configure the behaviour on receipt of a new dimming value via value setting. Remember that the dimming time always refers to the full value range. Accordingly, a dimming time of 30 s means a value change of 100% within 30 s. If the value within a scene is only changed by 50%, the change is performed within 15 s.	
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 range from 0 to 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.	
Min/Max Value is valid for	**Dimming Object** Value Object Dimming & Value Object
Use this parameter to select the object that minimum and maximum values are valid for. It is possible to set, for example, 60% via dimming and 100% via value setting.	
Switch ON via Dimming	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 Nr. 50. **N.B.**: If you select the 3 Byte object (combination of value and dimming time), the dimming time in the ETS is ignored.	

19.3.3 *Colour Control*

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

19.3.3.1 Temperature colour

Colour Temperature Control Type (when selecting "Colour temperature")	via DT-8 (normal operation) ✔ via DT-6 (LED cold/warm) Master-Group via DT-6 (LED cold/warm) Slave-Group
When "Colour Temperature" is selected, these types of control are supported. On the basis of the selection, the parameters for the relative setting are displayed.	
Via DT-8 (normal operation)	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%	Colour Temperature at Value 0% 3000 °K Colour Temperature at Value 100% 6000 °K
Parameters for setting the colour temperature (warm) in dimmed light and (cold) in high dimmed light.	
Colour changing Fading Time via Dimming	**quick (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.	
Behaviour when Switching ON	**Keep last Object Value** Use ETS Parameter below
This parameter is used to decide whether the last valid colour value should always be used or basically the colour temperature that was set with the ETS. **N.B.:** Note: in case of "Keep last Object Value" - - **Attention**: in case of an invalid object value, the preset colour of the ETS is used.	
Colour Temperature when Switching ON	3000 °K
Colour temperature at power-on with the option "Use ETS Parameter below" enabled.	
Via DT-6 (LED cold/warm) Master-Group	via DT-6 (LED cold/warm) Master-Group ▼
This allows a colour temperature to be set via 2 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 by using 2 Groups (one for cold white, one for warm white) Colour Temperature for Master LED (warm) 1000 °K Colour Temperature for Slave LED (cold) 6000 °K
Here the actual values for the two LEDs are defined	
Via DT-6 (LED cold/warm) Slave-Group	via DT-6 (LED cold/warm) Slave-Group ▼

ℹ This Group is controlled by another Master Group. Settings and Objects from the Master are valid.

Assign according Master Group	**Group 1** Group 2 Group 3 …. Group 16
Assignment of the relevant master group	

19.3.3.2 RGB colour

Selection of Object Type (when selecting "RGB Colour")	RGB (3 Byte combined Object) ✓ RGB (separated objects) HSV (separated objects)
When selecting "RGB colours", these types of control are supported.	
Colour changing Fading Time via Dimming	**quick (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 100 % Intensity of Colour Green 100 % Intensity of Colour Blue 100 %
Under certain circumstances, the intensity of the colours red, green, blue may not be exactly matched to the lamps and the ballast. In order to carry out a subsequent correction, the weighting of the individual colours can be changed here. An intensity of 100% means that this colour is controlled to 100%.	
Behaviour when Switching ON	**Keep last Object Value** Use ETS Parameter below
This parameter is used to decide whether the last valid colour value should always be used or basically the colour temperature that was set with the ETS. **N.B.:** Note: in case of "Keep last Object Value" - - **Attention**: in case of an invalid object value, the preset colour of the ETS is used.	
Colour value at switch-on	Colour Value when Switching On #FF0000

This parameter defines the RGB colour when switching on. To do this, a window for colour selection is displayed by clicking on the ▪▪ button to the side of the coloured bar displaying the selected colour.

19.3.3.3 RGBW

Selection of Object Type (when selecting "RGBW Colour")	
When selecting "RGBW colours", these types of control are supported. For ETS parameters see chapter: [4 Colour Control.](#)	
Behaviour when Switching ON	**Keep last Object Value** Use ETS Parameter below
This parameter is used to decide whether the last valid colour value should always be used or basically the colour temperature that was set with the ETS. **N.B.:** Note: in case of "Keep last Object Value" - - **Attention**: in case of an invalid object value, the preset colour of the ETS is used.	
Use ETS Parameter below	
	This parameter defines the RGBW colour when switching on. To do this, a window for colour selection is displayed by clicking on the ▪▪ button to the side of the coloured bar displaying the selected colour.
Additional white	
The additional white value from 0 to 255 can be set using the slider. The resolution is 1 unit. The preset value is 255 (max.).	

19.3.3.4 XY colour

Selection of Object Type (when selecting "XY Colour")	○ XY (separated objects) ○ XY (combined object 242.600)
This parameter can be used to set which objects are to be used for control.	
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 is used to decide whether the last valid colour value should always be used or basically the colour temperature that was set with the ETS. **N.B.:** Note: in case of "Keep last Object Value" - - <u>**Attention**</u>: in case of an invalid object value, the preset colour of the ETS is used.	
Use ETS Parameter below	X-Value when Switching ON (0..1) Y-Value when Switching ON (0..1)

	This parameter is used to define the X and Y colour at switching-on. The value range is between 0 and 1. X= 0.33 and Y=0.33 corresponds to the white point.

19.3.3.5 Colour temperature + RGB

Selection of Object Type (when selecting "Colour temperature + RGB")	RGB (3 Byte combined Object) ✔ RGB (separated objects) HSV (separated objects)
When "Colour temperature + RGB" is selected, these types of control are supported.	
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%	Colour Temperature at Value 0% 3000 °K Colour Temperature at Value 100% 6000 °K
Parameters for setting the colour temperature (warm) in dimmed light and (cold) in high dimmed light.	
Colour changing Fading Time via Dimming	**quick (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 — 100 % Intensity of Colour Green — 100 % Intensity of Colour Blue — 100 %
Under certain circumstances, the intensity of the colours red, green, blue may not be exactly matched to the lamps and the ballast. In order to carry out a subsequent correction, the weighting of the individual colours can be changed here. An intensity of 100% means that this colour is controlled to 100%.	
Behaviour when Switching ON	Keep last Object Value ✓ Use ETS Parameter below for Colour Use ETS Parameter below for Colour Temperature
This parameter is used to decide whether the last valid colour value should always be used or basically the colour temperature that was set with the ETS. **N.B.:** Note: in case of "Keep last Object Value" - - **Attention**: in case of an invalid object value, the preset colour of the ETS is used.	
Use ETS Parameter below for colour	Colour Value when Switching On #FF0000
	This parameter defines the RGB colour when switching on. To do this, a window for colour selection is displayed by clicking on the ▦ button to the side of the coloured bar displaying the selected colour.
Colour Temperature when Switching ON	3000 °K
Colour temperature on power on with the option "Use ETS parameters for colour temperature as set below" enabled.	

19.3.3.5 Colour temperature + RGBW

Selection of the Object Type (when selecting "Colour Temperature + RGBW")	RGBW (6 Byte combined object 251.600) ✓ RGBW (separated objects) HSVW (separated objects)

When "Colour temperature + RGBW" is selected, these types of control are supported.	
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%	Colour Temperature at Value 0% 3000 °K Colour Temperature at Value 100% 6000 °K
Parameters for setting the colour temperature (warm) in dimmed light and (cold) in high dimmed light.	
Colour changing Fading Time via Dimming	**quick (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 100 % Intensity of Colour Green 100 % Intensity of Colour Blue 100 %
Under certain circumstances, the intensity of the colours red, green, blue may not be exactly matched to the lamps and the ballast. In order to carry out a subsequent correction, the weighting of the individual colours can be changed here. An intensity of 100% means that this colour is controlled to 100%.	
Behaviour when Switching ON	Keep last Object Value ✔ Use ETS Parameter below for Colour Use ETS Parameter below for Colour Temperature
This parameter is used to decide whether the last valid colour value should always be used or basically the colour temperature that was set with the ETS. **N.B.:** Note: in case of "Keep last Object Value" - - **Attention**: in case of an invalid object value, the preset colour of the ETS is used.	
Use ETS Parameter below for colour	Colour Value when Switching On #FF0000 Additional White 255

This parameter defines the RGBW colour when switching on. To do this, a window for colour selection is displayed by clicking on the button to the side of the coloured bar displaying the selected colour.

| Colour Temperature when Switching ON | 3000 ▲▼ °K |

Colour temperature on power on with the option "Use ETS parameters for colour temperature as set below" enabled.

19.3.4 *Analysis and Service*

Parameters	Settings
Type Failure Status Object	**1 Bit** 1 Bytes
Determines whether the failure object should be sent as a 1 Bit object without differentiation after the failure type has been detected or as an 8 Bit object with differentiation.	
Additional Failure Objects	**No** Yes
Use this parameter if you want to define additional failure objects.	
Additional Failure Object for	**Failure threshold Exceeded** Failure Number/Rate
Determines whether the additional failure object should be used as a 1 Byte object for number of failures/failure rate or as a 1 Bit object for exceeding the failure threshold.	
Function of Additional Failure Object	**Total number of Failures** Failure rate 0..100%
Use this parameter to select either number of all failures in a group or failure rate in %. This parameter is only visible if you select "Total Number of Failures/Failure rate" as additional failure object. 	
Threshold for Total Failures	1%...100% **[1%]**

Use this parameter to enter the threshold in %. When the threshold is exceeded, the failure alarm object is sent. This parameter is only visible when you select "Failure Threshold Exceeded" as additional failure object.

Operation Hours Calculation	Yes **No**
Use this parameter if you want to count the operating hours of a group.	
Operating Hour Limit (hours)	1 h..200,000 h **[4000 h]**

Sets the life span of a lamp with an individual warning being sent.

19.4 ECG

The settings for the ECGs are made 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.

19.4.1 General

Colour temperature at Value 0% Colour temperature at Value 100%	
Parameters for setting the colour temperature (warm) in dimmed light and (cold) in high dimmed light.	

19.4.2 *ECG 1 (2..64)*

Parameters	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. Example for the description: Floor, 1 level 	
Group assignment	not assigned Group 1 … Group 16
The group assignment is configured via the DCA or via the website and is only displayed here.	

ECG type	Fluorescent Lamp Self Contained Battery Lamp (non switchable) Self Contained Battery Lamp (switchable) Self Contained Battery Lamp (switchable) + Colour Control Discharge Lamp Low Voltage Lamp Incandescent Lamp 0..10V Converter **LED Module** Relay Module ECG with Colour Control
Use this parameter to set the type of ECG used.	
ECG type	**LED module**
Parameters for the ECG type = LED module	
Operating mode	**Normal mode** Permanent mode Normal/night mode
This parameter allows you to set the operating mode in which the ECG will be operated. Night-time operation is controlled via a central object no. 12 "Activate Night mode".	
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" 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". **N.B.**: Disable function only refers to ON/OFF and value setting commands via KNX objects	
Behaviour on Disable	**No Change** Switch to On-Value Switch to OFF-Value
This parameter is displayed when the function of the additional object is "Disable Object"	
Behaviour on Enable	**No Change** Switch to ON-Value Switch to OFF-Value Switches to state received during disable (block)
This parameter is displayed when an additional object is selected. The behaviour during activation can be defined here.	
Value in Permanent Mode	1..100% **[50%]**
This parameter allows you to set the value to which the corresponding lamp is permanently set in "Permanent" Mode.	
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". Special settings:
 	
• **Delayed Switch-Off in 2 steps automatically:**
  - 1 minute before the configured time the value is set to 50% of the actual value.
  - After the configured time the switch-off value is set.
 	
• **Delayed Dimm-Off automatically**
  - After the configured time, the current value is dimmed to the switch-off value in 1 minute.
 	
• **Activate Permanent Mode and Ignore Telegrams:**
  - Enables permanent mode through which a value can be set which is not modified via telegrams via the bus (therefore the frames are ignored).	

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 shall be switched off.	
ECG enabled for emergency/panic mode	**No** Yes
Determines whether a group should be considered during panic mode. The panic mode is controlled via central object number 10 "Activate Panic Mode".	
Value in Panic Mode	1..100% [**50**]
Use this parameter to select the value for this operating mode.	
Value on DALI Power Fail (System Failure Level)	0..100% [**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 set value when a power loss occurs.	
Value on ECG Power Recovery (Power On Level)	0 - 100% [**100**] **Last value**
Use this parameter to set the value of a lamp after a return of ECG power supply. The value is saved on the ECG and the device automatically changes to the value when power is restored.	
Calculation of regulation Values	**logarithmic** linear
Sets the dimming curve for the ECG.	

> ⓘ This Object can be used to switch Off the Power of the ECGs.
> As soon as the Group has been switch On again, this Object enables the Power of the ECG Line again.

Control ECG Power Line via Object	**None** Energy Saving Objects 1.. 16
Here you can define the object with which the power supply is to be switched off. This parameter is only visible if this function was previously set on the General → Special Functions parameter page, see Parameter page: Special Functions	
Central Battery Emergency Lighting	**No Emergency Lighting** Central Battery Emergency Lighting
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% [**50**]
This parameter can be used to set the value to which the corresponding lamp is permanently set in "Test mode". In the "test mode" operating mode the lamp cannot be switched or changed, but always lights up in the set value. This parameter is only visible if "Emergency lighting with central battery" has been selected. Test mode is started with object 11.	
Duration of Test Mode (minutes)	5 Minutes …. **1 Hour** …. 4 Hours
Use this parameter to configure for 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. This parameter is only visible if you select "emergency lights with central battery".	
ECG type	**Fluorescent lamp**
See parameter settings for LED modules (above)	

ECG type	Self Contained Battery Lamp (non switchable)
Parameters for the ECG type "Self Contained Battery Lamp (non switchable)"	
Converter controls	ECG 1… 64 **Not assigned**
Specify which ECG controls the converter	
Type of Failure Object (in Analysis and Service)	**1 bit** 1 bytes
Here you can define whether the error is to be reported in the form of a bit (Alarm DPT 1.005) or via a 1 byte object with the information about lamp or ballast errors, see chapter: 20.4 ECG objects.	
ECG type	Self Contained Battery Lamp (switchable)
Parameters for the ECG type "Self Contained Battery Lamp (switchable)". See parameter settings for LED modules. The parameter setting "emergency lighting with central battery" is not available for this ECG type.	
ECG type	Self Contained Battery Lamp (switchable) + colour control
Parameters for the ECG type "Self Contained Battery Lamp (switchable) + Colour Control". See parameter settings for LED modules. The parameter setting "emergency lighting with central battery" is not available for this ECG type.	
ECG type	Discharge lamp
Parameters for the ECG type "Discharge Lamp" are the same as for LED modules	
ECG type	Low-Voltage Halogen Lamp
Parameters for the ECG type "Low-Voltage Halogen Lamp" are the same as for LED modules	
ECG type	Incandescent Lamp
Parameters for the ECG type "Incandescent Lamp" are the same as for LED modules	
ECG type	0..10V converter
Parameters for the ECG type "1..10V converter" are the same as for LED modules	
ECG type	Relay Module
Parameters for the ECG type "Relay Module" are the same as for LED modules	
ECG type	ECG with Colour Control
Parameters for the ECG type "ECG with Colour Control" are the same as for LED modules	

19.4.2.1 Emergency Setting

This parameter page is only shown if Broadcast is enabled in Special Functions (see chapter: 19.1.4 Parameter page: Special Functions) and the ECG type is "Self Contained Battery Lamp".

Parameters	Settings
Value in emergency mode	1..100% **[50]**
Sets the light value of a self-contained battery emergency light in case of a power failure or during a long duration test.	
Delay on Main Recovery	**no delay** 30 seconds 1 minute 2 minutes 3 minutes 4 minutes 5 minutes 10 minutes 10 minutes 15 minutes 20 minutes
Sets the delay until a self-contained battery lamp changes back into normal mode after power has been restored.	
Interval of Long Duration Test	no automatic test 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 test 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 **[7]**
If a function or long duration test cannot be started immediately, (for example because the battery is not fully charged), the converter will try to run the test at a later time. Use this parameter to configure how long to attempt another test start and when to send a failure notification that the time has been exceeded. If the setting is 0, timeout will occur after 15 minutes.	

19.4.2.2 Behaviour

Parameters	Settings
Switch-ON Value	1.. 100% [**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 prior to the lamp being switched off.	
Switch-ON Behaviour	**Set Value Immediately** Adjust to value in 3 seconds Adjust to value in 6 seconds Adjust to value in 10 seconds Adjust to value in 20 seconds Adjust to value in 30 seconds Adjust to value in 1 minutes Adjust to value in 2 minutes Adjust to value in 5 minutes Adjust to value in 10 minutes
Use this parameter to set the switch-on behaviour.	
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** Adjust to value in 3 seconds Adjust to value in 6 seconds Adjust to value in 10 seconds Adjust to value in 20 seconds Adjust to value in 30 seconds Adjust to value in 1 minutes Adjust to value in 2 minutes Adjust to value in 5 minutes Adjust to value in 10 minutes
Use this parameter to set the switch-off behaviour.	

Value-Set Behaviour	**Set Value Immediately**
	Adjust to value in 3 seconds
	Adjust to value in 6 seconds
	Adjust to value in 10 seconds
	Adjust to value in 20 seconds
	Adjust to value in 30 seconds
	Adjust to value in 1 minutes
	Adjust to value in 2 minutes
	Adjust to value in 5 minutes
	Adjust to value in 10 minutes
Use this parameter to configure the behaviour on receipt of a new dimming value via value setting. Remember that the dimming time always refers to the full value range. Accordingly, a dimming time of 30 s means a value change of 100% within 30 s. If the value within a scene is only changed by 50%, the change is performed within 15 s.	
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 range from 0 to 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.	
Min/Max Value is valid for	**Dimming Object**
	Value Object
	Dimming & Value Object
Use this parameter to select the object that minimum and maximum values are valid for. It is possible to set, for example, 60% via dimming and 100% via value setting.	
Switch ON via Dimming	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.	

19.4.2.3 Colour Control

This parameter page is only displayed if the ECG type is "Single battery emergency light (switchable) + colour control" or "ECG with colour control".

19.4.2.3.1 Colour Temperature

Parameters	Settings
Colour Control Type = Colour Temperature **N.B.**: The colour control type is important to set the Scenes, Effects or TimeControl events.	none Colour Temperature ✓ RGB Colour RGBW Colour XY Colour HSV Colour HSVW Colour
This parameter can be used to set which colour control should be used in this ECG. The default value is set to "Colour temperature".	
Colour Temperature when Switching ON	3000 °K
Colour temperature at power-on with the option "Use ETS Parameter below" enabled. The set colour temperature when switched on in Kelvin.	
Adjusting up to cold colour	**No** Yes
General parameter for colour Temperature at 0% and at 100% are taken into account, see ECG>General See chapter: 19.4.1 ECG General	
Behaviour when Switching ON	**Keep last Object Value** Use ETS Parameter below
This parameter is used to decide whether the last valid colour value should always be used or basically the colour temperature that was set with the ETS. **N.B.:** Note: in case of "Keep last Object Value" - - **Attention**: in case of an invalid object value, the preset colour of the ETS is used.	

Colour 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.	
Colour changing Fading Time via Dimming	quick (10 seconds) standard (20 seconds) slow (40 seconds)
This parameter is used to decide how quickly the colour temperature should be changed via dimming.	

19.4.2.3.2 RGB colour

Colour Control Type	RGB colour
Colour control assigned to the ECG	
Colour Value when Switching ON	#FF0000
This parameter defines the RGB colour when switching on. To do this, a window for colour selection is displayed by clicking on the button to the side of the coloured bar displaying the selected 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.	

19.4.2.3.3 RGBW colour

Colour Control Type	RGBW colour
Colour control assigned to the ECG	
Colour Value when Switching ON	#FF0000

This parameter defines the RGB colour when switching on. To do this, a window for colour selection is displayed by clicking on the ▪▪ button to the side of the coloured bar displaying the selected colour.

Additional white value	255

The additional white value from 0 to 255 can be set using the slider. The resolution is 1 unit.
The preset value is 255 (max.).

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.

19.4.2.3.4 XY colour

Colour Control Type	XY colour
Colour control assigned to the ECG	
X-Value when Switching ON (0..1)	0.33
Y-Value when Switching ON (0..1)	0.33

This parameter is used to define the X and Y colour at switching-on.
The value range is between 0 and 1.
X= 0.33 and Y=0.33 corresponds to the white point.

19.4.2.3.5 HSV colour

Colour Control Type	HSV colour
Parameters for the colour control type "HSV colour" are the same as for "RGB" → see parameter settings for RGB Colour.	

19.4.2.3.6 HSVW colour

Colour Control Type	HSVW colour
Parameters for the colour control type "HSVW colour" are the same as for "RGBW" → see parameter settings for RGBW Colour.	

19.4.2.4 Analysis and Service

Type of the error object	**1 bit** 1 bytes
Here you can define whether the error is to be reported in the form of a 1 bit (Alarm DPT 1.005) or via a byte object with the information about lamp or ballast errors, see chapter: 20.4 ECG objects. **N.B.: The 1 Byte object is a NON DPT type and will not be implemented in future versions**	
Operation Hours Calculation	Yes **No**
This parameter can be used to set whether an individual operating hours count for the ECG is desired (the 4 byte object "ECGx, Operating Hours") is displayed.	
Operating hours Limit value (hours)	1 h..200,000 h **[4000 h]**

19.5 Motion detector

19.5.1 General

Note: Only DALI motion detectors that comply with the IEC 62386 part 303/304 standard are supported.

19.5.2 Motion Detector MD 1 (2..8)

Parameters	Settings
MD x, Description	e.g. Floor 1, Building 2
This parameter can be used to define a motion detector X description. This description is displayed for an overview for all communication objects. Example: MD1, Floor1, Building 2. MD1, Movement Switching, Floor 1, Building 2 MD1, Brightness, Floor 1, Building 2 MD1, Failure Status, Floor 1, Building 2 MD1, Brightness is below the Threshold, Floor 1, Building 2	
DALI configuration	

Time without movement > Vacant	1 Second 1 Minute 2 Minutes 3 Minutes 4 Minutes 5 Minutes ✓ 7 Minutes 10 Minutes 15 Minutes 20 Minutes 25 Minutes 30 Minutes 35 Minutes 40 Minutes
After this time, the presence is deactivated, i.e. if no movement is detected in this preset time, it can be assumed that no person is within the range of the motion detector. IEC62386-303 (Hold Timer)	
Delay between Movement Detection Events	none 0.1 Seconds ✓ 0.2 Seconds 0.5 Seconds 1 Second 2 Seconds
Deadtime between Movement Detection Events IEC62386-303 (Deadtime Timer)	
KNX configuration	
Object Type for Output	**Switch Object** Set Value Object Scene Object
Selection of the object type which is sent to the KNX bus, whether switching object, value or scene.	
Value in Presence State	**0 - 100%**
Value to be called in Presence State (if "Set Value Object" is set in previous parameter).	
Value in Vacant State	**0 - 100%**
Value to be called in Vacant State	
Scene in Presence State	**None, or Scene 1 to 64**
Scene to be called in Presence State	
Scene in Vacant State	**None, or Scene 1 to 64**
Scene to be called in Vacant State	
Cyclic Sending	only on movement detection ✓ 2 Seconds 5 Seconds 10 Seconds 20 Seconds 30 Seconds 1 Minute 2 Minutes 3 Minutes 4 Minutes
Selection of behaviour in cyclic sending mode	
Usage of Disable Object	**No** Disabled with value 0 Disabled with value 1
Here you define how the disable object is to be used.	

> **ⓘ** If an additional Brightness Sensor is available a new parameter page will be activated

Additional Brightness Sensor available	No **Yes**
If the option is activated, an additional "Brightness" parameter page is displayed	
Brightness depending Switching	**No** Yes
If the parameter is activated, the motion detector switches depending on the entered brightness value.	
Activate when Brightness Level is below	500 ▲▼ lux
Entry of the brightness value of the switch-on threshold. The value can be between 5 - 1000 lux. Default setting is 500 lux.	

19.5.2.1. MD1, Brightness

DALI Configuration

Deadtime between Brightness Events	2 Seconds ▼
Hysteresis in %	10 ▲▼ %
Send Value by change of	10 ▼ lux

KNX Configuration

Brightness Correction Value	0 ▲▼
Threshold alarm activated at	500 ▲▼ lux
Hysteresis for Threshold Alarm	20 ▼ lux
Behaviour when Value < Threshold	◉ Send ON when Value > Threshold ◯ Send OFF when Value > Threshold
Cyclic Sending	No ▼

Parameters	Settings
DALI configuration	
Deadtime between Brightness Events	none 1 Second 2 Seconds ✔ 3 Seconds 4 Seconds 5 Seconds 6 Seconds 8 Seconds 10 Seconds
Specification of a fixed period of time after which the current brightness value is sent.	
Hysteresis in %	10 %
Value of the switch-on delay in % [0 .. 250]. The standard value is set to 10%.	
Send Value by change of	10 lux
Send value by changing in % [1 .. 250]. The standard value is set to 10%.	
KNX configuration	
Brightness Correction Value	0
Increase / decrease of the measured brightness (Lux) by the set value. [-300 .. +300]. The default is 0 (no correction).	
Threshold alarm activated at	500 lux
Setting the brightness threshold above which the limit alarm is activated.	
Hysteresis for Threshold Alarm	20 lux
Value of the switch-on delay (hysteresis) in lux [1 .. 250]. The standard value is set to 20.	
Behaviour when Value < Threshold	Send OFF when Value < Threshold **Send ON when Value < Threshold**
Selection of the send behaviour when the limit is exceeded.	
Cyclic Sending	no ✔ 2 s 5 s 10 s 20 s 30 s 1 min. 2 min. 3 min. 4 min.
Specification of a fixed period of time after which the current brightness value is sent cyclically.	

20 ETS Communication Object

The GW90873 communicates via the KNX bus based on a powerful communication stack of the System B type. Altogether 2110 communication objects are available, which are described below, divided into functional blocks.

NB: Up to 1000 group addresses can be used in encrypted form, see chapter: 3.1 Secure Usage.

20.1 General objects

20.1.1 General Objects Behaviour

Object	Object name	Function	Type	Flags
1	Time	Time	3 Bytes 10001	CWT
This object is used to set the time. The time must be provided by a central timer (or a supervisor) and updated at least twice a day.				
2	Date	Date	3 Bytes 11001	CWT
This object is used to set the date. The date must be provided by a central timer and updated at least twice a day. Leap years and change-over between winter and summer time are not taken into consideration during internal calculations of time and date. Therefore please pay attention that the timer (or the supervisor) sends the correct date on these occasions.				
10	Activate panic mode	Activate/Stop	1 Bit 1010	CW
Use this object to activate or stop the panic mode via the bus.				
11	Test mode active	Activate/Stop	1 Bit 1010	CW
This object is used to activate or stop the test mode via the bus.				
12	Activate Night-time mode	Activate/Stop	1 Bit 1010	CW
This object is used 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 1005	CRT
This object is used to report the presence of a general failure in the connected DALI segment independent of its type.				
14	DALI fault	Yes/No	1 Bit 1005	CRT
This object is used to report the presence of a DALI short-circuit in the connected DALI segment.				
15	General Failure Exceed Threshold	Yes/No	1 Bit 1005	CRT
This object is used to report that the total of all lamp, ECG and converter failures recognised by the gateway, exceeds the set threshold.				

16	General failure in total	Value	1 Bytes 5010	CRT
This object is used to report the total number of all lamp, ECG and converter failures recognised by the gateway. For each connected device, a failure is counted just once. A simultaneous lamp failure in case of an ECG or converter failure cannot be recognised or counted.				
16 a	General failure in %	Value	1 Bytes 5001	CRT
This object is used to report the failure rate as a percentage of all lamp, ECG and converter failures recognised by the gateway. Remember that for each connected device, a failure is counted just once. A simultaneous lamp failure in case of an ECG or converter failure cannot be recognised or counted.				
17	Lamp Failure Exceed Threshold	Yes/No	1 Bit 1005	CRT
This object is used to report that the total of all lamp failures recognised by the gateway exceeds the set threshold.				
18	Lamp failure in total	Value	1 Bytes 5010	CRT
Reports the total amount of lamp failures recognised by the gateway.				
18 a	Lamp failure in %	Value	1 Bytes 5001	CRT
Alternatively, this object is used to report the failure rate as a percentage of the total number of lamps in the DALI segment.				
19	ECG Failure Exceeds Threshold	Yes/No	1 Bit 1005	CRT
This object is used to report that the total of all ECG failures recognised by the gateway exceeds the set threshold.				
20	ECG failure in total	Value	1 Bytes 5010	CRT
Reports the total amount of ECG failures recognised by the gateway.				
20 a	ECG failure in %	Value	1 Bytes 5001	CRT
Alternatively, this object is used to report the failure rate as a percentage of the total number of ECGs in the DALI segment.				
21	Converter Failure Exceeds Threshold	Yes/No	1 Bit 1005	CRT
This object is used to report that the total of all converter failures recognised by the gateway exceeds the set threshold.				
22	Converter failure in total	Value	1 Bytes 5010	CRT
Reports the total amount of converter failures recognised by the gateway.				
22 a	Converter failure in %	Value	1 Bytes 5001	CRT
Alternatively, this object is used to report the failure rate as a percentage of the total number of converters in the DALI segment.				
23	Status On/Off (Group 1 – Group 16)	Status	4 Bytes 27001	CRT
Activates the status display for groups 1 - 16.				
24	Status On/Off (ECG 1 - ECG 16)	Status	4 Bytes 27001	CRT
Sends the switch status for ECGs 1 - 16. Each value >0% is interpreted as ON.				

25	Status On/Off (ECG 17 - ECG 32)	Status	4 Bytes 27001	CRT
Sends the switch status for ECGs 17 - 32. Each value >0% is interpreted as ON.				
26	Status On/Off (ECG 33 - ECG 48)	Status	4 Bytes 27001	CRT
Sends the switch status for ECGs 33 - 48. Each value >0% is interpreted as ON.				
27	Status On/Off (ECG 49 - ECG 64)	Status	4 Bytes 27001	CRT
Sends the switch status for ECGs 49 - 64. Each value >0% is interpreted as ON.				
28	Status Failure Lamp/ECG	Status	1 Bytes 238600	CRT

Sends the switch status of individual lamps in the DALI segment when the system is started or when a change has taken place. Bit 0 - 5 refer to the number of the ECG. Bit 7 represents an ECG failure, Bit 6 a lamp failure. For example:

```
                     Bit 7 6 5 4 3 2 1 0
ECG 5 / ECG error        1 0 0 0 0 1 0 0
ECG 6 / Lamp error       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:

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

The gateway responds with the current status of the queried ECG.
```
                     Bit 7 6 5 4 3 2 1 0
ECG 5 / ECG error        1 0 0 0 0 1 0 0
```

N.B.: binary encoding of ECG number 00000 corresponds to ECG1.

20.1.3 *General Objects Special Functions*

Object	Object name	Function	Type	Flags
29	Start/Program	Scene no.	1 Bytes 18001	CW

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

```
              Start      Program (Store)
Scene 1        0         128
Scene 2        1         129
…………
Scene 16      15         143
```

46	Effects Start/Stop	Effect No.	1 Bytes	CW

Effects can be started or stopped via this object. Up to 16 effects are available in the Dali Gateway. The top bit must be set to start an effect. Stopping (Effect Off) takes place when bit 7 is set to zero. The following therefore applies:

```
              Effect Off        Effect On
Effect 1        0                 128
Effect 2        1                 129
…………
Effect 1615                       143
```

30.. 45	Scene x, Dimming	Brighter/Darker	4 Bit 3007	CW

Scene 1 .. 16 can be dimmed via this object. The direction of dimming is set with bit 4. Bits 1..3 indicate the respective step sizes. Bit 1..3 set to zero is interpreted as a stop dimming command.

N.B.: The min / max values of the respective groups that were defined with the ETS are also taken into account when dimming the scenes.

20.1.3.1 Object for Energy Saving

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

2079.. 2094	Energy Saving Objects 1.. 16	On / Off	1 Bit 1001	CRT
With the appropriate assignment in the parameters, 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 > 0%, this object is first switched on again. In this case, a minimum time delay is programmed so that the ECGs are ready for operation again, see Parameter page: Special Functions				

20.1.3.2 Objects for Emergency

Two types of communication objects are offered on the device. The selection is defined via parameters:

Special Functions

IP Network

Emergency

Type of Objects for Emergency
○ Objects according new KNX Standard
○ Objects according legacy "old" style

The objects are explained between the respective ECG parameters.

20.1.4 *Template Control Objects*

A communication object for enabling and disabling templates is available for each of the up to 16 templates in the colour control module. See chapter: 15.1.3 Disable/enable. These need to be enabled under time control in the DCA.

Object	Object name	Function	Type	Flags
2095ff	Template 1, Activation	Activate/Stop	1 Bit 1010	CW
Template 1 is activated via this object. The template is active when the value is 1 and will be executed according to schedule.				
2110	Template x, Activation	Activate/Stop	1 Bit 1010	CW
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 1001	CW
All connected lights can be switched on or off together using this object. If connected ECGs are in a special state (test mode, panic mode), they are not switched. In this case, switching takes place through sequential addressing on the DALI bus and a delay between the first and last luminaire may be visible. If there is no special state, switching takes place simultaneously using DALI broadcast frames. The broadcast switching function always switches to 0 or 100%. The parameters "switch-on and switch-off value" for groups and electronic ballasts are not taken into account. **N.B.**: This object is only visible if you have selected Parameter page-> Special Function "Enable broadcast" in the parameters.				
4	Broadcast, Set Value	Value	1 Bytes 5001	CW
All connected lights can be set to one value using this object. If connected ECGs are in a special condition (test mode, 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 light may be visible. If there is no special state, the values are set at the same time by DALI broadcast frames. **N.B.**: This object is only visible if "Enable broadcast" was selected in the parameters Parameter page -> Special function. Broadcast can also be released for colour control. In this case, up to 4 further objects no. 3-7 are shown, see Parameter page: -> Special functions. The description of the different colour control objects is explained in detail in chapter: 4 Colour control.				

20.2.1 *Colour Control Broadcast Objects*

Object	Object name	Function	Type	Flags
5	Broadcast, colour control (red RGB)	Value	1 Bytes 5001	CW
The broadcast colour control can be set via this object. The values for (RGB) red are transferred here.				
5 a	Broadcast, RGB colour control	Value	3 Bytes 232600	CW
Send the colour (RGB) via this object.				
5b	Broadcast, colour control (Hue HSV)	Value	1 Bytes 5001	CW
Send the (HSV) Hue value via this object.				
5c	Broadcast, RGBW colour control	Value	6 Bytes 251600	CW
The set colour (RGBW) is sent as a value via this object.				
5d	Broadcast, X colour control	Value	2 Bytes 7600	CW
Send the (X/Y Colour) X value via this object.				
6	Broadcast, colour control (green RGB)	Value	1 Bytes 5001	CW
The broadcast colour control can be set via this object. The values for (RGB) Green are transferred here.				
6 a	Broadcast, colour control (saturation HSV)	Value	1 Bytes 5001	CW
Send the saturation via an HSV value via this object.				
6b	Broadcast, Y colour control	Value	2 Bytes 7600	CW

Send the (X/Y Colour) Y value via this object.

7	Broadcast, colour control (blue RGB)	Value	1 Bytes 5001	CW

The broadcast colour control can be set via this object. The values for (RGB) Blue are transferred here.

8	Broadcast, White colour control	Value	1 Bytes 5001	CW

The broadcast control can be set via this object. The values for white are transferred here.

9	Broadcast, Colour Temperature	Value	2 Bytes 7600	CW

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 (Example group 1):

20.3.1 Group Objects Behaviour

Object	Object name	Function	Type	Flags
47	G1, Switching	On/ Off	1 Bit 1001	CW

Use this object to switch group 1 on or off.

48	G1, Dimming	Brighter/Darker	4 Bit 3007	CW

Used for the relative dimming of group 1. Bit 4 is set to 1 to dim up and to 0 to dim down. Bits 1 to 3 refer to the increment (step) size. Bits 1 to 3 set to zero is interpreted as a stop frame.

49	G1, Value setting	Value	1 Bytes 5001	CW

Use this object to set group 1 to the required value.

50	G1, Value setting	Value/Time	3 Bytes 225001	CW

Attention: Object 50 is shown via the following parameter: G1 --> Behaviour --> Additional value setting object with dim time = YES. Use this object to set group 1 to the required value and dim time.

Format: 3 octets: $U_{16}U_8$

octet nr.   3 MSB   2   1 LSB

field names   [TimePeriod]   [Percent]

encoding UUUUUUUU UUUUUUUU UUUUUUUU

The time is defined in multiples of 100 ms. Because of Dali properties, a value range of 1 to 200 is accepted. Values outside this value range are restricted accordingly. A dim time of 10s is coded as follows:
10 s = 10x10x100 ms

51	G1, Enable	Yes/No	1 Bit 1003	CW

Attention: Object 51 is shown via the following parameter: G1 --> General --> Function of the additional object
This object enables the operation of group 1:
Object = 0 ⇨ Disabled
Object = 1 ⇨ Enabled

51 a	G1, Disable	Yes/No	1 Bit 1003	CW

This object enables the operation of group 1:
Object = 0 ⇨ Enabled
Object = 1 ⇨ Disabled

| 52 | G1, Status | On/Off | 1 Bit 1001 | CRT |

Sends the switch status of the group. Any value >0% is interpreted as ON.

| 53 | G1, Status | Value | 1 Bytes 5001 | CRT |

Sends the value status of the group.

20.3.2 *Group Objects Colour Control*

Different colour control options are supported:

- **Temperature colour**
- **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. Please make sure to only include ECGs with the same colour control in a group. Depending on type of colour control chosen, different objects are displayed:

20.3.2.1 Temperature colour

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

Object	Object name	Function	Type	Flags
58	G1, Colour Temperature	Value	2 Bytes 7600	CW

Sets the colour temperature for the group.

| 59 | G1, Colour Temperature relative | Value | 1 Bytes 5001 | CW |

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

| 64 | G1, Colour control Fading | Warmer/Cooler | 4 Bit 3007 | CW |

The colour in the group can be changed using this object. Increase the angle with bit 3 set, decrease the angle with bit 3 deleted. Bits 0..3 set to zero is interpreted as a stop frame. This means that the entire circumference of the circle can be circulated and every colour can be set.

| 70 | G1, Colour Temperature | Status | 2 Bytes 7600 | CRT |

Sends the set colour temperature as group status.

75	G1, Colour Temperature relative	Status	1 Bytes 5001	CRT
Sends the set 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 (Red, Green, Blue).

Figure 3: RGB cubes (source: Wikipedia)

20.3.2.2.1 RGB (DPT 232.600)

Object	Object name	Function	Type	Flags
57	G1, RGB colour	Value	3 Bytes 232600	CW
Sets the colour in the group as RGB. 				
69	G1, RGB Colour Control	Status	3 Bytes 232600	CRT
Use this object to send the set colour of the group as status.				

20.3.2.2.2 RGB (separate objects)

Object	Object name	Function	Type	Flags
60	G1, Colour Control (RGB) Red	Value	1 Bytes 5001	CW
Sets the colour in the group. The red (R) colour is transmitted.				
61	G1, Colour Control (RGB) Green	Value	1 Bytes 5001	CW
Sets the colour in the group. The green (G) colour is transmitted.				
62	G1, Colour Control (RGB) Blue	Value	1 Bytes 5001	CW
Sets the colour in the group. The blue (B) colour is transmitted.				
65	G1, Colour (RGB) Fading red	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour red (R) in the group. Bit 4 is set to increase the red component and deleted to decrease the red component. Bits 1 to 3 refer to the increment (step) size. Bit 1 to 3 set to zero is interpreted as a stop frame.				
66	G1, Colour (RGB) Fading Green	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour green (G) in the group. Description as for colour change RGB (R).				
67	G1, Colour (RGB) Fading Blue	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour blue (B) in the group. Description as for colour change RGB (R).				
71	G1, Colour Control (RGB) Red	Status	1 Bytes 5001	CRT
Sends the colour red (R) as group status.				
72	G1, Colour Control (RGB) Green	Status	1 Bytes 5001	CRT
Sends the colour green (G) as group status.				
73	G1, Colour Control (RGB) Blue	Status	1 Bytes 5001	CRT
Sends the colour blue (B) as 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. Further objects are displayed for hue (H) and saturation (S). The hue is entered as a value between 0° and 360° and rotates around the colour circle making it easy to reach all colours of the circle.

Figure 4: 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
60	G1, Colour Control (HSV) Hue	Value	1 Bytes 5003	CW
Sets the colour via an HSV value. A value between 0° and 360° can be transmitted. Remember that the data type used (DPT 5.003) only allows for a resolution of about 1.4°.				

Object	Object name	Function	Type	Flags
61	G1, Colour Control (HSV) Saturation	Value	1 Bytes 5001	CW
Use this object to set the saturation. A value between 0° and 100% can be transmitted.				
65	G1, Colour (HSV) Fading Hue	Brighter/Darker	4 Bit 3007	CW
Use this object to change the hue of a group. Bit 3 is set to increase the angle and deleted to decrease the angle. Bits 1 to 3 set to zero is interpreted as a stop frame. As the whole colour circle is accessible, any colour can be set.				
66	G1, Colour (HSV) Fading Saturation	Brighter/Darker	4 Bit 3007	CW
See change of hue above. The value between 0 and 100% is increased incrementally.				
71	G1, Colour Control (HSV) Hue	Status	1 Bytes 5003	CRT
Sends the configured hue as group status.				
72	G1, Colour (HSV) Saturation	Status	1 Bytes 5001	CRT
Sends the configured saturation as group status.				

20.3.2.4 RGBW

20.3.2.4.1 RGBW (6 Byte object DPT 251.600)

Object	Object name	Function	Type	Flags
57	G1, RGBW colour control	Value	6 Bytes 251600	CW
Use this object to set the colour in the group as RGBW. Enter the colour values for white, blue, green and red between 0 and 100% in the upper Bytes. 4 Bits in the 1st 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.

Object	Object name		Function	Type	Flags
69	G1, RGBW colour control		Status	6 Bytes 251600	CRT
Sends the set colour of the group as status.					

20.3.2.4.2 RGBW (separate Objects)

Object	Object name	Function	Type	Flags
60	G1, Colour Control (RGB) Red	Value	1 Bytes 5001	CW
Sets the colour in the group. The values for red (R) are transmitted.				
61	G1, Colour Control (RGB) Green	Value	1 Bytes 5001	CW
Sets the colour in the group. The values for green (G) are transmitted.				
62	G1, Colour Control (RGB) Blue	Value	1 Bytes 5001	CW
Sets the colour in the group. The values for blue (B) are transmitted.				
63	G1, White colour control	Value	1 Bytes 5001	CW
Sets the colour in the group. The values for white are transmitted.				
65	G1, Colour (RGB) Fading red	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour (R) in the group. Bit 4 is set to increase the red component and deleted to decrease the red component. Bits 1 to 3 refer to the increment (step) size. Bits 1 to 3 set to zero is interpreted as a stop frame.				
66	G1, Colour (RGB) Fading Green	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour green (G) in the group. Description as for red colour.				
67	G1, Colour (RGB) Fading Blue	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour blue (B) in the group. Description as for red colour.				
68	G1, Fading White	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour white in the group. Description as for red colour.				
71	G1, Colour Control (RGB) Red	Status	1 Bytes 5001	CRT
Sends the red colour set as group status.				
72	G1, Colour Control (RGB) Green	Status	1 Bytes 5001	CRT
Sends the set colour green as group status.				
73	G1, Colour Control (RGB) Blue	Status	1 Bytes 5001	CRT
Sends the set colour blue as group status.				
74	G1, White colour control	Status	1 Bytes 5001	CRT
Sends the set colour white as group status.				

20.3.2.5 HSVW (separate Objects)

See chapter: 20.3.2.3.1 HSV (separate Objects)

20.3.2.6 XY colour

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

Figure 5: XY colour value (Source: Wikipedia)

In KNX, this range of values is converted into an interval 0..65535 (2 whole bytes). The value 65535 therefore corresponds to the value 1 on the graph.

20.3.2.6.1 XY (combined objects)

Object	Object name	Function	Type	Flags
57	G1, XY colour control	Value	6 Bytes 242600	CW

Use this object to set the colour via XY coordinates in the group. The brightness level is entered in the 2nd 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 determine whether brightness and XY values 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 infor-mation 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.

69	G1, XY colour control	Status	6 Bytes 242600	CRT

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

20.3.2.6.2 XY (separate Objects)

Object	Object name	Function	Type	Flags
57	G1, X colour control	Value	2 Bytes 7001	CW
Use this object to set the X value between 0 and 65535.				
60	G1, Y colour control	Value	2 Bytes 7001	CW
Use this object to set the Y value between 0 and 65535.				
69	G1, X colour control	Status	2 Bytes 7001	CRT
Status object to send the set X value to the bus.				
71	G1, Y colour control	Status	2 Bytes 7001	CRT
Status object to send the set Y value to the bus.				

20.3.2.7 Colour Temperature + RGB

Figure 6: Colour temperature + RGB (Source: Wikipedia)

20.3.2.7.1 Colour temperature + RGB (3 Byte combined Objects)

Object	Object name	Function	Type	Flags
57	G1, RGB colour	Value	3 Bytes 232600	CW
The colour can be set as RGB in the group via this object. The colour values for white, blue, green and red are given in the lower bytes in the value range of 0 ... 100%. In the 5th byte, 4 bits indicate whether the corresponding colour values are valid.				
58	G1, Colour Temperature	Value	2 Bytes 7600	CW
Sets the colour temperature in the group.				
59	G1, Colour Temperature relative	Value	1 Bytes 5001	CW
Sets the colour temperature in the group relatively between 0 and 100%. The value range 0 to 100% is automatically converted to the possible colour temperature range.				
64	G1, Colour control Fading	Warmer/Cooler	4 Bit 3007	CW
Modifies the colour temperature in the group. Bit 4 is set to dim up and deleted to dim down. Bits 1 to 3 refer to the increment (step) size. Bits 1 to 3 set to zero is interpreted as a stop frame.				
69	G1, RGB colour control	Status	3 Bytes 232600	CRT
Sends the set RGB colour as group status.				
70	G1, Colour Temperature	Status	2 Bytes 7600	CRT

Sends the set colour temperature as group status.				
75	G1, Colour temperature relative	Status	1 Bytes 5001	CRT
Sends the set relative colour temperature as group status.				

20.3.2.7.2 Colour temperature + RGB (RGB separate objects)

Object	Object name	Function	Type	Flags
58	G1, Colour Temperature	Value	2 Bytes 7600	CW
Sets the colour temperature in the group.				
59	G1, Colour Temperature relative	Value	1 Bytes 5001	CW
Sets the colour temperature in the group relatively between 0 and 100%. The value range 0 to 100% is automatically converted to the possible colour temperature range.				
60	G1, Colour Control (RGB) Red	Value	1 Bytes 5001	CW
Sets the colour red (R) in the group.				
61	G1, Colour Control (RGB) Green	Value	1 Bytes 5001	CW
Sets the colour green (G) in the group.				
62	G1, Colour Control (RGB) Blue	Value	1 Bytes 5001	CW
Sets the colour blue (B) in the group.				
64	G1, Colour control Fading	Value	1 Bytes 5001	CW
Modifies the colour temperature in the group. Bit 4 is set to dim up and deleted to dim down. Bits 1 to 3 refer to the increment (step) size. Bits 1 to 3 set to zero is interpreted as a stop frame.				
65	G1, Colour (RGB) Fading red	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour red in the group. Bit 4 is set to increase the red component and deleted to decrease the red component. Bits 1 to 3 refer to the increment size. Bits 1 to 3 set to zero is interpreted as a stop frame.				
66	G1, Colour (RGB) Fading Green	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour green in the group. Object coding as for red colour.				
67	G1, Colour (RGB) Fading Blue	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour blue in the group. Object coding as for colour change (red).				
70	G1, Colour Temperature	Status	2 Bytes 7600	CRT
Sends the set colour temperature as group status.				
71	G1, Colour Control (RGB) Red	Status	1 Bytes 5001	CRT
Sends the red colour set as group status.				
72	G1, Colour Control (RGB) Green	Status	1 Bytes 5001	CRT
Sends the green colour set as group status.				
73	G1, Colour Control (RGB) Blue	Status	1 Bytes 5001	CRT

	Sends the blue colour set as group status.			
75	G1, Colour temperature relative	Status	1 Bytes 5001	CRT
	Sends the set relative colour temperature as group status.			

20.3.2.7.3 Colour temperature + RGB (HSV separate objects)

Object	Object name	Function	Type	Flags
58	G1, Colour Temperature	Value	2 Bytes 7600	CW
	Sets the colour temperature in the group.			
59	G1, Colour Temperature relative	Value	1 Bytes 5001	CW
	Sets the colour temperature in the group relatively between 0 and 100%. The value range 0 to 100% is automatically converted to the possible colour temperature range.			
60	G1, Colour Control (HSV) Hue	Value	1 Bytes 5003	CW
	Sets the colour via an HSV value. A value between 0° and 360° can be transmitted. Remember that the data type used (DPT 5.003) only allows for a resolution of about 1.4°. 0 60 120 180 240 300 360			
61	G1, Colour Control (HSV) Saturation	Value	1 Bytes 5001	CW
	Use this object to set the saturation. A value between 0° and 100% can be transmitted.			
64	G1, Colour control Fading	Warmer/Cooler	4 Bit 3007	CW
	The colour in the group can be changed using this object. Increase the angle with bit 3 set, decrease the angle with bit 3 set to zero. Bits 0..3 set to zero are interpreted as a stop frame. This means that the entire circumference of the circle can be circulated and every colour can be set.			
65	G1, Colour (HSV) Fading Hue	Brighter/Darker	4 Bit 3007	CW
	Use this object to change the hue of a group. Bit 3 is set to increase the angle and deleted to decrease the angle. Bits 1 to 3 set to zero is interpreted as a stop frame. As the whole colour circle is accessible, any colour can be set.			
66	G1, Colour (HSV) Fading Saturation	Brighter/Darker	4 Bit 3007	CW
	See change of hue above. The value between 0 and 100% is increased incrementally			
70	G1, Colour Temperature	Status	2 Bytes 7600	CRT
	Sends the set colour temperature as group status.			
71	G1, Colour Control (HSV) Hue	Status	1 Bytes 5003	CRT
	Sends the set hue as group status.			
72	G1, Colour (HSV) Saturation	Status	1 Bytes 5003	CRT
	Sends the set saturation as group status.			
75	G1, Colour temperature relative	Status	1 Bytes 5001	CRT
	Sends the set colour temperature as group status.			

20.3.2.8 Temperature + RGBW colour

20.3.2.8.1 Colour temperature + RGBW (6 Byte combined Objects DPT 251.600)

Object	Object name	Function	Type	Flags
57	G1, RGBW colour control	Value	6 Bytes 251600	CW
The colour can be set as RGB in the group via this object. The colour values for white, blue, green and red are given in the lower bytes in the value range of 0 ... 100%. In the 5th byte, 4 bits indicate whether the corresponding colour values are valid.				
58	G1, Colour Temperature	Value	2 Bytes 7600	CW
Sets the colour temperature in the group.				
59	G1, Colour Temperature relative	Value	1 Bytes 5001	CW
Sets the colour temperature in the group relatively between 0 and 100%. The value range 0 to 100% is automatically converted to the possible colour temperature range.				
64	G1, Colour control Fading	Warmer/Cooler	4 Bit 3007	CW
Modifies the colour temperature in the group. Bit 4 is set to dim up and deleted to dim down. Bits 1 to 3 refer to the increment (step) size. Bits 1 to 3 set to zero is interpreted as a stop frame.				
69	G1, RGBW colour control	Status	6 Bytes 251600	CRT
Sends the set RGB colour as group status.				
70	G1, Colour Temperature	Status	2 Bytes 7600	CRT
Sends the set colour temperature as group status.				
75	G1, Colour temperature relative	Status	1 Bytes 5001	CRT
Sends the set colour temperature as group status.				

20.3.2.8.2 Colour temperature + RGBW (RGBW separate objects)

Object	Object name	Function	Type	Flags
58	G1, Colour Temperature	Value	2 Bytes 7600	CW
Sets the colour temperature in the group.				
59	G1, Colour Temperature relative	Value	1 Bytes 5001	CW
Sets the colour temperature in the group relatively between 0 and 100%. The value range 0 to 100% is automatically converted to the possible colour temperature range.				
60	G1, Colour Control (RGB) Red	Value	1 Bytes 5001	CW
Sets the colour red for the group.				
61	G1, Colour Control (RGB) Green	Value	1 Bytes 5001	CW

Sets the colour green for the group.				
62	G1, Colour Control (RGB) Blue	Value	1 Bytes 5001	CW
Sets the colour blue for the group.				
63	G1, White colour control	Value	1 Bytes 5001	CW
Sets the colour white for the group.				
64	G1, Colour control Fading	Warmer/Cooler	4 Bit 3007	CW
Modifies the colour temperature in the group. Bit 4 is set to dim up and deleted to dim down. Bits 1 to 3 refer to the increment (step) size. Bits 1 to 3 set to zero is interpreted as a stop frame.				
65	G1, Colour (RGB) Fading red	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour red in the group. Bit 4 is set to increase the red component and deleted to decrease the red component. Bits 1 to 3 refer to the increment size. Bits 1 to 3 set to zero is interpreted as a stop frame.				
66	G1, Colour (RGB) Fading Green	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour green in the group. Coding as for red colour.				
67	G1, Colour (RGB) Fading Blue	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour blue in the group. Coding as for red colour.				
68	G1, Fading White	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour white in the group. Coding as for colour change (red).				
70	G1, Colour Temperature	Status	2 Bytes 7600	CRT
Sends the set colour temperature as group status.				
71	G1, Colour Control (RGB) Red	Status	1 Bytes 5001	CRT
Sends the set red colour as group status.				
72	G1, Colour Control (RGB) Green	Status	1 Bytes 5001	CRT
Sends the set green colour as group status.				
73	G1, Colour Control (RGB) Blue	Status	1 Bytes 5001	CRT
Sends the set blue colour as group status.				
74	G1, Colour White	Status	1 Bytes 5001	CRT
Sends the set white colour as group status.				
75	G1, Colour temperature relative	Status	1 Bytes 5001	CRT
Sends the set relative colour temperature as group status.				

20.3.2.8.3 Colour temperature + RGBW (HSVW separate objects)

Object	Object name	Function	Type	Flags
58	G1, Colour Temperature	Value	2 Bytes 7600	CW
Sets the colour temperature in the group.				
59	G1, Colour Temperature relative	Value	1 Bytes 5001	CW
Sets the colour temperature in the group relatively between 0 and 100%. The value range 0 to 100% is automatically converted to the possible colour temperature range.				
60	G1, Colour Control (HSV) Hue	Value	1 Bytes 5003	CW
Sets the colour via an HSV value. A value between 0° and 360° can be transmitted. Remember that the data type used, 5.003, allows for a resolution of about 1.4°. 				
61	G1, Colour Control (HSV) Saturation	Value	1 Bytes 5001	CW
Use this object to set the saturation. A value between 0° and 100% can be transmitted.				
63	G1, White colour control	Value	1 Bytes 5001	CW
Sets the white colour in the group.				
64	G1, Colour control Fading	Warmer/Cooler	4 Bit 3007	CW
Modifies the colour temperature in the group. Bit 4 is set to dim up and deleted to dim down. Bits 1 to 3 refer to the increment (step) size. Bits 1 to 3 set to zero is interpreted as a stop frame.				
65	G1, Colour (HSV) Fading Hue	Brighter/Darker	4 Bit 3007	CW
Use this object to change the hue of a group. Bit 3 is set to increase the angle and deleted to decrease the angle. Bits 1 to 3 set to zero is interpreted as a stop frame. As the whole colour circle is accessible, any colour can be set.				
66	G1, Colour (HSV) Fading Saturation	Brighter/Darker	4 Bit 3007	CW
See change of hue above. The value between 0 and 100% is increased incrementally				
68	G1, Fading White	Brighter/Darker	4 Bit 3007	CW
Use this object to change the white in the group. Description as for colour change (red).				
70	G1, Colour Temperature	Status	2 Bytes 7600	CRT
Sends the set colour temperature as group status.				
71	G1, Colour Control (HSV) Hue	Status	1 Bytes 5003	CRT
Sends the set hue as group status.				
72	G1, Colour Control (HSV) Saturation	Status	1 Bytes 5003	CRT
Sends the set saturation as group status.				
74	G1, White colour control	Status	1 Bytes 5003	CRT
Sends the set white colour as group status.				
75	G1, Colour temperature relative	Status	1 Bytes 5001	CRT

	Sends the set relative colour temperature as group status.

20.3.3 *Objects for Analysis and Service Groups*

Object	Object name	Function	Type	Flags
54	G1, Error status	Yes/No	1 Bit 1001	CRT
Attention: Object 54 is shown via 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.				
54 a	G1, Error status	Status	1 Bytes 5010	CRT
Sends the failure status for lamp, ECG and converter failures within the group as a 1Byte object. Bit 0 --> Lamp failure Bit 1 --> ECG failure				
55	G1, Error status	Status	4 Bytes	CRT
N.B.: This object is a NON DPT type and will not be implemented in future versions This object is used to report the total number of devices within the group and the failure status according to failure type. The different Bits within the object have the following meaning: Bit 31 | Bit 30 | Bit 29..24 Norm.EVG | Notl. EVG | Number ECG+converter failures Bit 23 | Bit 22 | Bit 21..16 Norm.Lamp | Emerg.lamp | Number of lamps failures Bit 15 | Bit 14 | Bit 13..8 Def.Conv. | Idle | Number of converters Bit 7 | Bit 6 | Bit 5..0 Idle | Idle | Number ECGs				
56	G1, Failure Exceeds Threshold	Yes/No	1 Bit	CRT
This object is used to report that the total of all lamp failures recognised in the DALI segment exceeds the set threshold.				
56 a	G1, Failure Threshold in Total	Value	1 Bytes 5010	CRT
This object is used to report the failure rate in total of the total number of lamps in the DALI segment.				
56b	G1, Failure Threshold in %	Value	1 Bytes 5001	CRT
Alternatively, this object is used to report the failure rate as a percentage of the total number of lamps in the DALI segment.				
76	G1, Operating Hours Reset	Yes/No	1 Bit 1015	CW
Resets the operating hours in a group via value "1". **N.B.**: Object 76-78 is shown for the following parameter: G1 --> Analysis and service --> "Operation Hour Calculation" = Yes.				
77	G1, Operating Hours	Value	4 Bytes 13100	CW
Counts the operating hours in the group. The value is transmitted in seconds according to DPT 13.100.				
78	G1, Life Time Exceeded	Yes/No	1 Bit 1005	CW
Shows whether the maximum life span set in the parameters has been exceeded. **NB:** 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.				

20.4 ECG objects

20.4.1 ECG Objects Behaviour

A communication object is available for each of the up to 64 connected ECGs and corresponding lamps to display the failure status. (Example ECG 1):

Object	Object name	Function	Type	Flags
559	ECG1, Switching	On/Off	1 Bit 1001	CW
Use this object to switch an ECG on or off if it is not in special mode (test mode, emergency lights, panic/ emergency mode).				
560	ECG1, Dimming	Brighter/Darker	4 Bit 3007	CW
This object is used for the relative dimming of an ECG that is not in special mode (test mode, emergency lights, panic/ emergency mode). Bit 4 is set to dim up and deleted to dim down. Bits 1 to 3 refer to the increment size. Bits 1 to 3 set to zero is interpreted as a stop frame.				
561	ECG 1, Set value	Value	1 Bytes 5001	CW
Sets the value of ECG1 unless it is in special mode (test mode, emergency lights, panic/ emergency mode).				
562	ECG1, Enable	Yes/No	1 Bit 1003	CW
NB: Object 562 is shown via the following parameter: ECG 1 --> General --> "Function of the additional object". Use this object to enable the operation of ECG 1: Object = 0 → Operation disabled, Object = 1 → Enable operation				
562 a	ECG1, Disable	Yes/No	1 Bit 1003	CW
Use this object to disable the operation of ECG 1: Object = 0 → Enable operation, Object = 1 → Operation disabled				
563	ECG1, Status	On/Off	1 Bit 1001	CRT
Sends the switch status of the ECG. Any value >0% is interpreted as ON.				
564	ECG 1, Status	Value	1 Bytes 5001	CRT
Sends the ECG value status.				

20.4.2 ECG Objects Colour Control

Object	Object name	Function	Type	Flags
566	ECG 1, Colour temperature	Value	2 Bytes 7600	CW
Sets the colour temperature for ECG1				
566 a	EVG 1, Colour RGB	Value	3 Bytes 232600	CW
Sets the ECG1 colour as RGB.				

Format:	3 octets: $U_8 U_8 U_8$		
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	R:	1	G
		G:	0 to 255	G:	1	
		B:	0 to 255	B:	1	

566b	ECG 1, Colour RGBW	Value	6 Bytes 251600	CW

Use this object to set the ECG1 colour as RGBW. Enter the colour values for white, blue, green and red between 0 and 100% in the upper Bytes. 4 bits the 1st Byte determine whether the corresponding colour values are valid.

Datapoint Type

DPT_Name:	DPT_Colour_RGBW				
DPT Format:	$U_8 U_8 U_8 U_8 r_8 r_4 B_4$		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.

566c	ECG 1, Colour XY	Value	6 Bytes 242600	CW

Use this object to set the colour via XY coordinates in the group. The brightness level is entered in the 2nd 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 determine whether brightness and XY values 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.

566d	ECG 1, Colour (HSV) Hue	Value	1 Bytes 5001	CW
Sets the ECG1colour via an HSV value. A value between 0° and 360° can be transmitted. Remember that the data type used (DPT 5.003) only allows for a resolution of about 1.4°. 0 60 120 180 240 300 360				
567	ECG 1, Colour temperature relative	Value	1 Bytes 5001	CW
Sets the colour temperature for ECG1 relatively between 0 and 100%. The value range 0 to 100% is automatically converted to the possible colour temperature range.				
567 a	EVG 1, Colour (HSV) saturation	Value	1 Bytes 5001	CW
Use this object to set the saturation. A value between 0° and 100% can be transmitted.				
568	ECG 1, Colour white	Value	1 Bytes 5001	CW
Sets the colour white for ECG1.				
569	ECG 1, Colour Control Fading	Warmer/Cooler	4 Bit 3007	CW
The ECG1 colour can be changed using this object. Increase the angle with bit 4 set, decrease the angle with bit 4 set to zero. Bits 1 - 3 set to zero are interpreted as a stop frame. This means that the entire circumference of the circle can be circulated and every colour can be set.				
569 a	ECG 1, Colour (HSV) Fading Hue	Brighter/Darker	4 Bit 3007	CW
Use this object to change the hue of ECG1. Bit 4 is set to increase the angle and deleted to decrease the angle. Bits 1 to 3 set to zero is interpreted as a stop frame. As the whole colour circle is accessible, any colour can be set.				
570	ECG 1, Colour (HSV) fading saturation	Brighter/Darker	4 Bit 3007	CW
See change of hue above. The value between 0 and 100% is increased incrementally.				
571	EVG 1, Colour white	Brighter/Darker	4 Bit 3007	CW
Use this object to change the colour white in ECG1.				
572	ECG 1, Colour temperature	Status	2 Bytes 7600	CRT
This object sends the set colour temperature as ECG1 status.				
572 a	EVG 1, Colour RGB	Status	3 Bytes 232600	CRT
This object sends the set RGB colour as ECG1 status.				
572b	EVG 1, Colour RGBW	Status	6 Bytes 251600	CRT
This object sends the set RGBW colour as ECG1 status.				
572c	EVG 1, Colour XY	Status	6 Bytes 242600	CRT
This object sends the set XY colour as ECG1 status.				

572d	EVG 1, Colour (HSV) Hue	Status	1 Bytes 5001	CRT
This object sends the set (HSV) Hue as ECG1 status.				
573	ECG 1, Colour temperature relative	Status	1 Bytes 5001	CRT
This object sends the set relative colour temperature as ECG1 status.				
573 a	EVG 1, Colour (HSV) saturation	Status	1 Bytes 5001	CRT
This object sends the set (HSV) saturation as ECG1 status.				
574	ECG 1, Colour white	Status	1 Bytes 5001	CRT
This object sends the set white colour as ECG1 status.				

20.4.3 *ECG Emergency Setting*

20.4.3.1 *Objects according to the new KNX standard:*

Object	Object name	Function	Type	Flags
575	Converter 1, test start	Start	1 Bytes 20611	CW
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: 20611 DPT_Converter_Test_-Control **Encoding** 0 : Reserved, no effect 1 : Start Function Test (FT) Acc. DALI Cmd. 227 2 : Start Duration Test (DT) Acc. DALI Cmd. 228 3 : Start Partial Duration Test (PDT) not supported 4 : Stop Test Acc. DALI Cmd 229 5 to 255 : Reserved, no effect **N.B.**: Concurrent tests on the same DALI converter will be supported. This DPT controls a test of a DALI converter. It also allows a running test to be stopped. **Attention:** The gateway does not support "Partial Duration Test" and therefore this command is not active!				

576	Converter 1, Test result	Test	6 Bytes 245600	CRT

This object reports the converter status according to KNX DPT type 245.600.

6.9 DPT_Converter_Test_Result

Format: 6 octets: $N_4N_4N_4N_2N_2N_2N_2U_{16}U_8$

octet nr.	6_{MSB}	5	4	3	2
field names	LTRF LTRD	LTRP 0 0 0 0	SF SD SP 0 0		LDTR
encoding	NNNNNNNN	NNNN r r r r	NNNNNN r r	UUUUUUUU	UUUUUUUU

octet nr.	1_{LSB}
field names	LPDTR
encoding	UUUUUUUU

Unit: None.
Resol. (not applicable)
PDT: PDT_GENERIC_06

Data field	Description	Encoding	Range
LTRF	Last Test Result FT: Test result of last function test	The 0's: Unknown The 1's: Passed in time The 2's: Passed max delay exceeded The 3's: Failed, test executed in time The 4's: Failed, max delay exceeded The 5's: Test manually stopped 6 to 15: Reserved, do not use	{0…15}
LTRD	Last Test Result DT: Test result of last duration test	The 0's: Unknown The 1's: Passed in time The 2's: Passed max delay exceeded The 3's: Failed, test executed in time The 4's: Failed, max delay exceeded The 5's: Test manually stopped 6 to 15: Reserved, do not use	{0…15}
LTRP	Last Test Result PDT: Test result of last partial duration test	Attention: The gateway does not support "Partial Duration Test" and therefore this area is not used and stays 0!	
SF	Start Method of Last FT	The 0's: Unknown The 1's: Started automatically The 2's: Started by Gateway The 3's: Reserved Updated after a test has been finished.	{0…3}
SD	Start Method of Last DT	Start Method of Last DT The 0's: Unknown The 1's: Started automatically The 2's: Started by Gateway The 3's: Reserved Updated after a test has been finished.	{0…3}
SP	Start Method of Last PDT	Attention: The gateway does not support "Partial Duration Test" and therefore this area is not used and stays 0!	
LDTR	Contains the battery discharge time as the result of the last successful duration test (DT). According DALI Cmd. 243	DPT 7.006 DPT_TimePeriodMin The max. value of 510 min shall be interpreted as 510 min or longer.	{0…510}
LPDTR	Last PDT Result Provides the remaining Battery Charge Level after the last PDT	Attention: The gateway does not support "Partial Duration Test" and therefore this area is not used and stays 0!	

577	Converter 1, Status		Status	2 Bytes 244600	CRT

This object reports the converter status according to KNX DPT type 244.600.

6.8 DPT_Converter_Status

Format:	2 octets: N4B4N2N2N2N2
octet nr.	2_{MSB} 1_{LSB}
field names	CM HS FP DP PP CF
encoding	NNNN BBBB 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	The 0's: Unknown The 1's: Normal mode active, all OK The 2's: Inhibit mode active The 3's: Hardwired inhibit mode active The 4's: Rest mode active The 5's: Emergency mode active The 6's: Extended emergency mode active The 7's: FT in progress The 8's: DT in progress 9 to 15: Reserved. Shall be 0.	{0…15}
HS	Hardware Status	Bit 0: Hardwired Inhibit is active Bit 1: Hardwired switch is on Bit 2 and 3: Reserved. Shall be 0.	{0,1}
FP	Function Test Pending	The 0's: Unknown The 1's: No test pending The 2's: Test pending The 3's: Reserved NOTE 26 The information about a running test is given in the Converter Mode field. NOTE 27 The status "Unknown" may for instance occur at power-up.	{0…3}
DP	Duration Test Pending	Duration Test Pending The 0's: Unknown The 1's: No test pending The 2's: Test pending The 3's: Reserved NOTE 28 The information about a running test is given in the Converter Mode field. NOTE 29 The status "Unknown" may for instance occur at power-up.	{0…3}
polypropylene	Partial Duration Test Pending	Attention: The gateway does not support "Partial Duration Test" and therefore this area is not used and stays 0!	
CF	Converter Failure	Indicates that one or more failures were detected. Further information about the Type of failure can be found in CTR. The 0's: Unknown The 1's: No failure detected The 2's: Failure detected The 3's: Reserved	{0…3}

578	Converter 1, Battery info	Status	2 Bytes 7001	CRT

This object reports the battery status according to KNX DPT type 246.600.

6.10 DPT_Battery_Info

Format:	2 octets: $r_4B_4U_8$
octet nr.	2_{MSB} 1_{LSB}
field names	0 0 0 0 BS BCL
encoding	r r r r B 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

Field names	Description	Encoding	Range
BS	Battery Status	Bit 0: Battery Failure Acc. DALI Cmd. 252 Bit 1: Battery Duration Failure Acc. 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 DALI Cmd. 241	{0…255}

20.4.3.2 Objects According to Earlier Versions

Object	Object name	Function	Type	Flags
575	Converter 1, test start	Start	1 Bytes	CW

This object is used to start a long duration test, function test and battery status query of the converter. The individual Bits have the following meaning:

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

576	Converter 1, Test result	Test	3 Bytes	CRT

This object is used to analyse the results of function and duration tests and the battery status. The individual bits have the following meaning:

Bit 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 2 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 → Emergency lamp faulty
Bit 10 → Battery faulty
Bit 9 → Battery operating hours too short
Bit 8 → Converter faulty
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

ECG Objects Analysis and Service

Object	Object name	Function	Type	Flags
565 a	ECG 1, Failure status	Status	1 Bit 1005	CRT
Sends the failure status of lamp, ECG and converter failures.				
565b	ECG 1, Failure status	Status	1 Bytes 5.0.10	CRT
N.B.: This object is a NON DPT type and will not be implemented in future versions. Sends the failure status of lamp, ECG and converter failures. Bit 0 --> Lamp failure Bit 1 --> ECG failure Bit 2 --> Converter (DT-1) failure				
579	ECG 1, Operating Hours Reset	Yes/No	1 Bit 1015	CW
Resets the operating hours counter. **N.B.**: Object 579-581 is shown via the following parameter: ECG1 --> Analysis and service --> "Operation Hour Calculation" = Yes.				
580	ECG 1, Operating Hours	Value	4 Bytes 13100	CRT
The operating hours of a lamp are sent via this object. The internal counter can be set to 0 (Reset) or another value via this object. <u>Attention</u>: The "Write" flag is switched off in the presetting.				
581	ECG 1, Life Time Exceeded	Yes/No	1 Bit 1002	CRT
This object is used to send a status message when the configured life time of a lamp is exceeded.				

20.5 Motion Detector Objects

A set of communication objects is available for each of the up to 8 possible motion detectors. The following objects are available (example MD 1):

20.5.1 Motion Detector Objects - General

Object	Object name	Function	Type	Flags
2031	MD1, Movement Switching	ON/Off	1 Bit 1001	CRT
The output is switched when motion is detected				
2031 a	MD1, Movement SetValue	Value	1 Bytes 5001	CRT
A certain value can be sent when motion is detected				
2031b	MD1, Movement SetScene	Activate	1 Bytes 17001	CRT
When motion is detected, an assigned scene is started				
2032	MD1, Disable	Yes/No	1 Bit 1003	CW
This object disables the Motion Detector				
2033	MD1, Movement Off	ON/Off	1 Bit 1001	CW
The presence can be switched off directly via this object and the detector is reset.				
2035	MD1, Error status	Status	1 Bit 1005	CRT
Sends the failure status as an object on the bus.				

20.5.2 Motion Detector Objects - Brightness

Object	Object name	Function	Type	Flags
2034	MD1, Brightness	Brightness	2 Bytes 9004	CRT
Sends the value of the detected brightness as an object to the bus.				
2036	MD1, Brightness is below the Threshold	Yes/No	1 Bit 1005	CRT
Sends an object to the bus when the value falls below the threshold.				

21 API/MQTT

21.1 General information

There is an increasing demand for IoT functionality in order to alert or notify users anywhere over the internet.

The communication protocol selected is MQTT ([Message Queuing Telemetry Transport (MQTT) protocol](#)). It is a lightweight protocol, which has a very low footprint to send and receive data.

Therefore, it uses significantly less data to send and receive information. As such, MQTT is one of the best to open up KNX data to the world of IoT.

21.2 MQTT basics

21.2.1 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 it is interested in receiving.
- "Unsubscribe" to remove a request for Application Messages.
- "Disconnect" from the Server.

Refer to: http://docs.oasis-open.org/mqtt/mqtt/v3.1.1/os/mqtt-v3.1.1-os.html

21.2.2 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.
Therefore, **it is important that the broker is highly scalable. The part of MQTT Broker is not described in this document**.

21.2.3 MQTT Security

The MQTT specification does not define anything else on top of TCP, however transport layer security (TLS) is recommended to be used.

21.3 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 client sends a disconnect command or the connection breaks.
Due to this method, there is no problem at all for clients that are located behind a NAT (Router). No additional management of Router NAT tables and port forwarding is necessary any more.

21.3.1 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 the current state of the client. Therefore, this ID should be unique for client and broker.

Client-ID should be unique for all Dali Gateways and in the broker management.

The Client-ID, by default, contains the key word "dali" in conjunction with the unique serial number.

The client-ID can be changed by user via Web Frontend. The maximum number of characters is 23.

21.3.2 *Topics*

In MQTT, the word topic refers to a character 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 translates into various methods to identify a piece of information.
The topic structure can be defined at root level of a given DALI gateway or can be defined in an abstract way to make the structure independent from any Dali gateway hardware.

In current implementation the predefined topic structure contains the client-ID as a fixed assignment to the Dali Gateway.

21.3.3 *Topic Structure and Payload*

The main topic up to the gateway can contain several location attributes, such as:

[PROJECTID/][BUILDINGID/][ZONEID/]client-Id

The client-ID identifies the current DALI Gateway.

The location part [PROJECTID/][BUILDINGID/][ZONEID/] can be defined by ETS configuration.

Each part can have a character length of 20.

21.4 *MQTT Configuration page*

Provided that API/MQTT has been enabled in ETS, the configuration can be defined in the Administrator tab of the Website.

API / MQTT Functionality

ⓘ By activating this interface a communication to an external Management System can be established

Enable API/MQTT   ◯ No ◉ Yes

❌ Attention: if you going to communicate with an external partner, please set "Local Communication" in the next parameter chapter "Security Settings" to "NO"

Security Settings

Communication on local network, only   ◉ No ◯ Yes

The configuration distinguishes between:

• Connection
• Subscription
• Publication

21.4.1 *Connection*

The following entries have to be filled out:

MQTT Server Address: Client ID: predefined with "dali" + serial number"

MQTT Server Port: predefined with "8883"

TLS: predefined "YES"

Keep Alive (s): predefined with "60"

Communication Timeout (ms): predefined with "10000"

Auth: authorisation defined by MQTT Server (Broker)

21.4.2 *Subscription*

Subscription can be used to allow commands from external sources.

The predefined prefix is "cmd/", but can be changed on this page.

21.4.3 *Publication*

Currently, three different information types are provided:

• Group
• Sensor
•   Emergency lights

The tag name for this part of topic can be changed on this page.

21.5 *Publication and Payload*

21.5.1 *Root Level ([location]/client-id)*

At this root level the gateway provides three properties:

- status
- statistics
- info

21.5.1.1 Property Status

The **status** property indicates the online/offline status. The offline status is propagated by the Last Will command.
This information is published as "retained".

21.5.1.2 Property info

The **info** property provides specific device information. This information is published as "retained".

21.5.1.2 Property statistics

The **statistics** property presents general statistics:

Number of lamps
ECG Count
Number of converters
Number of Lamp Failures
Number of ECG Failures
Number of Converter Failures
Failure Rate Lamps
Failure Rate ECGs
Failure Rate Converters
Failure Rate Gateway
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, with the following coding:

Bit 0 Lamp failure

Bit 1 ECG failure

Bit 2 Converter failure

Bit 3 Not used

Bit 4 KNX failure

Bit 5 DALI failure

21.5.2 *Group Level ([location]/client-id/group/index)*

By default, the Group Level topic is called "group".

However, it can be modified on web MQTT configuration page. The maximum length is 15 characters.

Administrator

Apply

Connection   Subscription   **Publication**

Publish Groups

dali00ef26a0006f/   group   QoS   0 ∨   Retain   ☐

Publish Emergency Lights

Publish Sensors

21.5.2.1 Property: Status

Each group index indicates the value and current mode in json format:

```
{
  "Mode": 0,
  "Value": "0%"
}
```

The mode is defined on the basis of:

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 PowerSwitchOff

Bit 5   1 Byte AutoSwitchOff

Bit 6   1 Byte Staircase Mode Disable

Bit 7   1 byte Lifetime Exceeded

21.5.2.2 Property: Colour

```
"Colour": {
    "tc": 1345,
    "rgbw": {
      "r": 255,
      "g": 255,
      "b": 128,
      "w": 0
    }
  }
```

<tc> ::= "tc": <Colour-Temperatur>
<rgbw> ::= "rgbw": { "r": <0-255>,"g":<0-255>,"b":<0-255>,"w":<0-255>}
<hsvw>::= "hsvw" {"h":<0..255>,"s":<0-100>, "v":<0-100>,"w":<0-255>}
<xy>::="xy": {"x": <0-65535>,"y":<0-65535>}

21.5.2.3 Property: Statistics

```
{
  "CntLamps": 1,
  "CntEcgs": 1,
  "CntConverter": 0,
  "LampFailures": 0,
  "EcgFailures": 1,
  "ConverterFailures": 0,
  "FailRate": 100,
  "OperatingHours": 0
}
```

21.5.3 *Sensor Level ([location]/client-id/sensor/index)*

Administrator

Connection	Subscription	Publication		Apply

Publish Groups

Publish Emergency Lights

Publish Sensors

dali00ef26a0006f/	sensor	QoS	0 ∨	Retain	☐

21.5.3.1 Property: presence

Each presence sensor index indicates the Status and current Error in json format:

```
{
  "Error": 0,
  "Status": 1
}
```

21.5.3.2 Property: brightness

Each brightness sensor index indicates the Status (in lux) and current Error in json format:

```
{
  "Error": 0,
  "Status": 228
}
```

21.5.4 *Emergency Level ([location]/client-id/emergency/index)*

Attention: The index is linked to the device short address and NOT to ETS ECG Number!

Administrator

Connection   Subscription   **Publication**

Apply

Publish Groups

Publish Emergency Lights

dali00ef26a0006f/   emergency   QoS   0 ∨   Retain   ☐

Publish Sensors

21.5.4.1 Property: emstatus

Each self-contained emergency ECG indicates the Status in json format:

```
{
  "ShortAdr": 6,
  "EtsNumber": 10,
  "State": 1,
  "EmStatus": 8,
  "EmMode": 130,
  "EmFailure": 0
}
```

ECG Short address as well as associated ETS number are part of this information block.

The "State" field indicates the State Machine according:

1st nibble (bit 0 – 3):

The 0's: Unknown, 1: Normal Mode, 2: Inhibit Mode, 3: Fixed Inhibit Mode 4: Rest-Mode, 5: Emergency Mode, 6: Extend. Emergency Mode, 7: FT running, 8: DT running

2nd nibble (bit 4 – 7):

Bit 4   1 Bit   FT Manually Started
Bit 5   1 Bit   DT Manually Started
Bit 6   1 Bit   FT Pending
Bit 7   1 Bit   DT Pending

The "EMStatus" field indicates original result of DALI query 253.

The "EMMode" field indicates original result of DALI query 250.

The "EMFailure" field indicates original result of DALI query 252.

21.5.4.2 Property: emtest

Each self-contained emergency ECG indicates the Test-Report in json format:

```json
{
  "ShortAdr": 6,
  "EtsNumber": 10,
  "TestResult": 255,
  "TestMode": 1,
  "TestFlags": 0,
  "Hour": 15,
  "Minute": 15,
  "Second": 22,
  "Day": 9,
  "Month": 11,
  "Year": 21
}
```

ECG Short address as well as associated ETS number are part of this information block.

TestResult indicates the result:

[0..254] for 0..100% in Function Test (value 255 means "invalid")
[0..255] in minutes multiplied by 2 for Duration Test result

TestMode indicates the type of test:

The 1's: Function Test
The 2's: Duration Test
The 4's: Battery Test

Test Flag:

Bit 0: Inverter Circuit Fault
Bit 1: Battery Duration Fault
Bit 2: Battery Fault
Bit 3: Lamp Fault
Bit 4: Delay Fault

Time Stamp: Time in Date/Time when this result was generated

21.6 Commands and Payload

The MQTT Interface allows sending of commands to special topics.

This option has to be "enabled" in the configuration page of the Website.

A command is indicated with "cmd/" prefix in front of the topic.

Administrator

Connection	Subscription	Publication			Apply

Enable Command Subscription	☑	QoS	0 ⌄	Allow Retained	☐
cmd		LB289/BE47167/dali-debug/dali-c-02/			

21.6.1 *Group Level (cmd/[location]/client-id/group/index)*

21.6.1.1 Property status

Allowed payload content: on|off
Ensure you use lower case

21.6.1.2 Property value

Allowed payload content: 0% .. 100% or 0 .. 255

21.6.1.3 Property tc

Allowed payload content: 0..10000

21.6.1.4 Property colour

Allowed payload content: <color-hex> | <color-json>

```
<colour-hex>
#reg,green,blue,white (coded 0..255)
```

```
<colour-json>
{
"rgbw": { "r": 0..255, "g": 0..255, "b": 0..255 [, "w": 0..255] }
}
```

```
{
"hsvw": { "h": 0..360, "s": 0..100, "v": 0..100 [, "w": 0..255] }
}
```

```
{
"xy": { "x": 0.0..1.0, "y": 0.0..1.0 }
}
```

21.6.2 *Group Level collected* (cmd/[location]/client-id/group/index)

If more than one property needs to be written at one time, the following format can be used:

```
{
"value": "55%",
"rgbw": { "r": 0..255, "g": 0..255, "b": 0..255 [, "w": 0..255] },
"tc": 3500
}
```

22 FAQ

Below you will find some technical advice if you should encounter error messages or issues in the device configuration and commissioning phase.

22.1 Accessing the Web Server

- The IP address is called up in the browser, but the message "This page is not available" is displayed.
    - a.) **Web page access must be activated in the ETS.**
    - b.) **The IP address must be entered in the format "https://<ip>.**

22.2 Security

- Although a root certificate has been imported, no "secure" closed lock is displayed.
  Probably the IP address was changed and no new certificate was created. Create a new device certificate as administrator.

- After several failed logins, the device cannot be logged in and is no longer accessible.
  After 3 failed login attempts, the connection to this IP address is blocked for one minute for security reasons.

- The IP address of the DALI GW is correctly configured, but the device cannot be reached via a router or over the internet.
  In the default setting, access is only allowed in local networks. This setting must be changed in the ETS.

- The password has been forgotten.
  An ETS download with the corresponding settings must be carried out. Subsequently, the user will be asked to enter a new, secure password.

22.3 DCA

- The DCA does not display the configuration that is visible on the web page.
  The data are not synchronized. You will need to read the device data, see chapter: 17 "DCA/EXTRAS"

23 Cybersecurity Disclaimer

In order 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 own plants, systems, 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 (e.g. firewalls or network segmentation) are in place.
This is particularly important when using external IoT services, e.g. MQTT brokers.
In addition, the security recommendations of Gewiss must be observed. For further information please get in touch with your contact person at Gewiss, or visit our website.

Gewiss strongly recommends that you use updates as soon as they are available, and always use the latest versions. Using versions that are no longer supported or not using the latest updates may increase your risk of online threats. Gewiss strongly recommends that you follow security recommendations regarding the latest security threats, patches, and related measures.

24 Open Source

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24.1 Open Source used in Firmware

All open source software components used within the product are shown on the website, refer to Chapter 7.9 Start Page.

24.2 Open Source used in DCA

Package Name: ColorMine - Version: 1.1.3
https://www.nuget.org/packages/ColorMine/
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