12/2011

Technical Manual
MDT DaliControl IP Gateway mit Webinterface

SCN-DALI64.01

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1 Content

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2 Overview

2.1 Operation Instructions

Danger High Voltage

- Installation and commissioning of the device only be carried out by authorised electricans. The relevant standards, directives, regulations and instructions must be observed. Use in USA and Canada is prohibited.

- After Installation and connecting mains power supply the outputs can be alive. The outputs can be switched OFF using the push buttons on top of the device.

- After installation a KNX bus telegram can switch the outputs alive.

- Disconnect the mains power supply prior to installation or disassembly.

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2.2 Usage & Handling

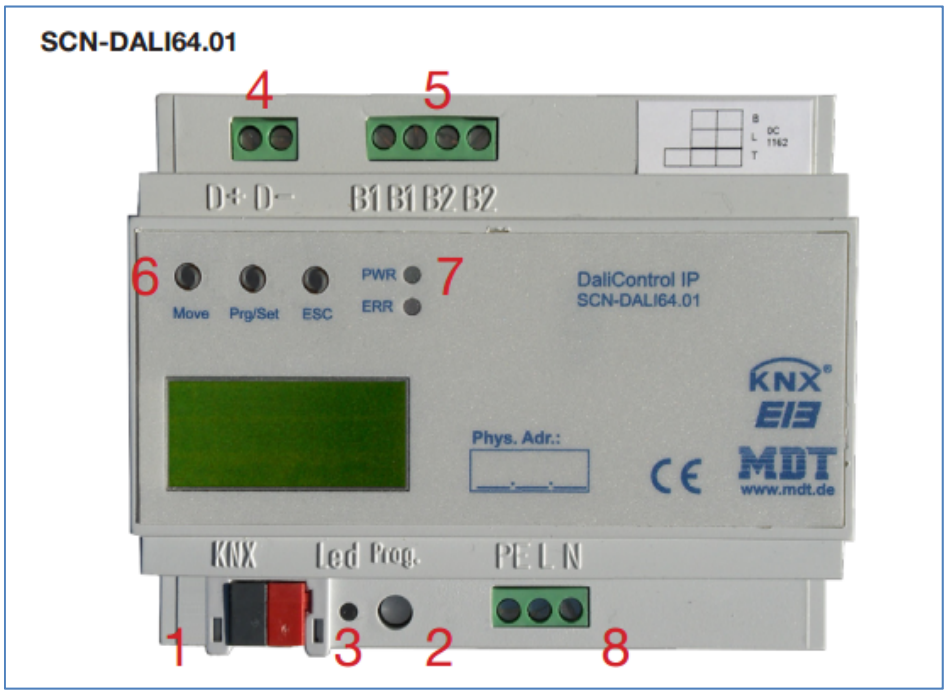

Illustration 1: Overview Hardware module

1 - KNX bus connection terminal
2 – Programming key
3 - Red programming LED
4 - Connection terminal DALI bus
5 - Connection terminal buttons
6 - Dali programming key
7 - LED indicators
8 - mains power supply terminal

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2.3 Installation DaliControl IP Gateway

1. Place the DaliControl IP Gateway on DIN 35mm rail.
2. Connect the DaliControl IP Gateway to the KNX bus.
3. Wire up the Dali Gateway as descripted in the circuit diagram.
4. Switch on KNX power supply.
5. Switch up mains power supply.

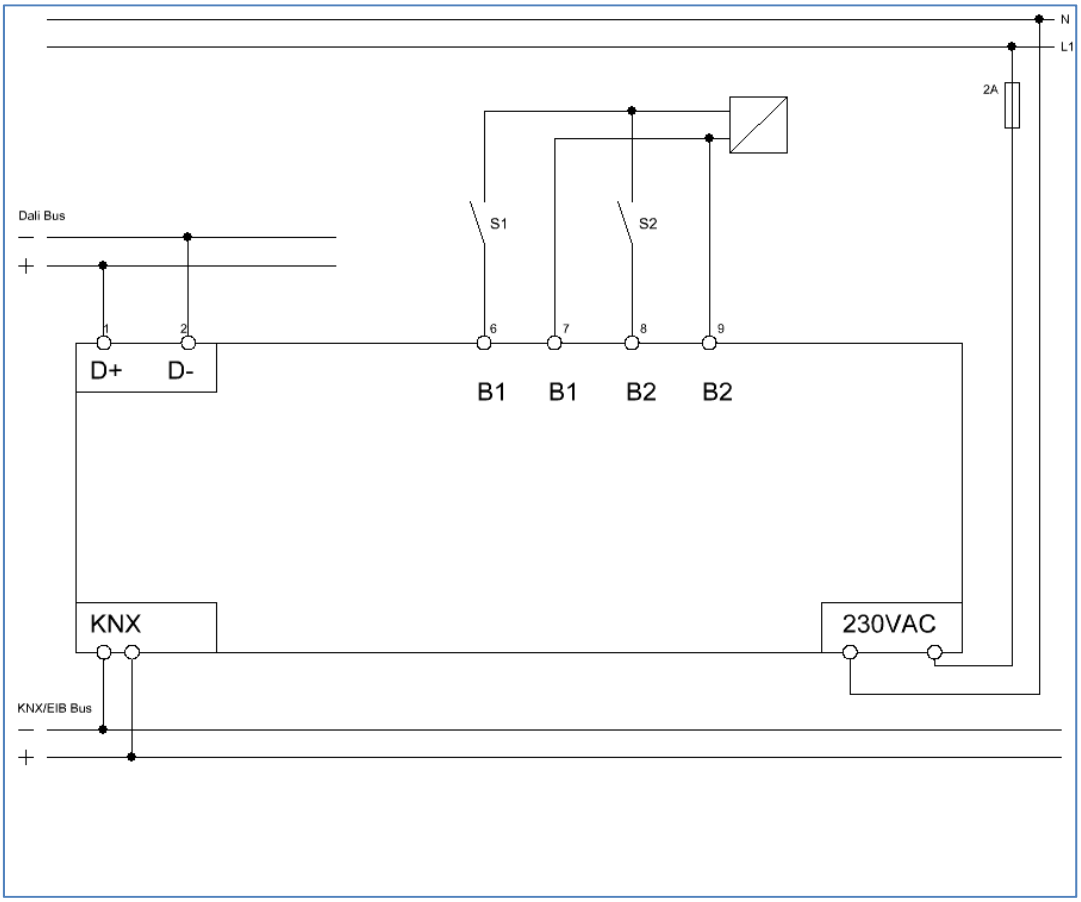

Illustration 2: Exemplary circuit diagram

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2.4 Description DaliControl IP Gateway

The MDT DaliControl IP Gateway receive KNX/EIB telegrams and enables the classic control of 16 DALI groups plus individual control of the ECG. An example is switching or dimming of 2x16 light in groups (advantage of synchronous switching inside the group) plus 32 individual lights. The MDT DaliControl IP Gateway detects light and ECG errors and releases telegrams in dependence of its parameterization. The commissioning after installation and group attribution of the DaliControl IP Gateway is done with the buttons on the device or with the integrated web interface. Quick identification and group attribution of the connected DALI segments can be done without connection to the KNX bus. The network connection is realized with an RJ45 interface. Additionally the DaliControl IP Gateway offers two binary inputs to connect push buttons or presence detectors. The DaliControl IP Gateway is a modular installation device for fixed installation in dry rooms. It fits on 35mm rails in power distribution boards or closed compact boxes.

2.5 Commissioning DaliControl IP Gateway

Note: Before commissioning please download application software at
www.mdtautomation.de\downloads.html

1. Assign the physical address and set parameters with the ETS3.

2. Upload the physical address and parameters into the Dali Gateway.
   After request press programming button.

3. After successful programming the red LED goes out.

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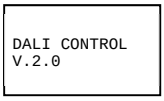
3 Operation manual

The connected DALI segment can entirely be commissioned with the three programming buttons (MOVE, Prg/Set, ESC) and the 2x12 character display on the front of the device. DALI parameters can also be set or changed with these buttons and the display. The operating concept is menu driven. Depending on the current menu position, up to two submenu levels can be accessed. The currently selected menu item is shown on the display. The user navigates within the menu by briefly pressing the buttons. The Move button selects the next menu item within each level. A short keypress of the Prg/Set button selects the submenu. The ESC button quits the current menu level and returns to the above menu item.

3.1 Menu structure

3.1.1 Main menu - Level 1

The main menu (level 1) is structured as follows:

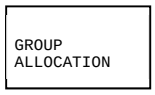


The product description and the firmware version are displayed. This screen features a submenu that allows to select the display language.

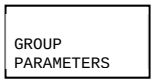
This submenu displays the IP address, which has been assigned by the DHCP server or set in the ETS.

This submenu will reset all connected DALI devices and will start an automatic detection of ECGs when a Dali segment is newly installed.

This submenu makes it possible to automatically detect and synchronize the configuration of post-installed DALI ECGs.



Within the submenus of this screen, the detected ECGs can be allocated to the desired DALI groups.



Within these submenus, the parameters of each group can be set and modified.

Within these submenus, groups can be assigned to DALI scenes.

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GROUP TEST	This submenu allows to switch the entire installation (Broadcast) and the individual channels for testing purposes.
TEST SCENES	This submenu is used to invoke individual, programmed scenes for testing purposes.
SYSTEM TEST	This submenu will display all existing system errors individually.
FUNCTION INPUT B1	Within the submenus of this screen the function of the binary input B1 can be set.
FUNCTION INPUT B2	Within the submenus of this screen the function of the binary input B2 can be set.

If a function is to be activated or a parameter to be changed within a given submenu, it is necessary to switch to the programming mode at the selected point. This is done by pressing the Prg/Set button for more than 2 seconds. Once the selected function is in programming mode, a →-symbol appears in the display. If the programming mode is active, use the Move button to change the setting or the parameter. Another brief keypress of the Prg/Set button terminates the process. The updated parameter is saved or the selected function is activated.

3.1.2 Submenu DALI CONTROL – Level 2

DALI CONTROL V.2.0	The main menu DALI CONTROL leads to the submenu LANGUAGE by briefly pressing the Prg/Set key.
LANGUAGE GERMAN	The currently active language is displayed within the submenu. Activate the programming mode by pressing the Prg/Set button for more than 2 seconds. Use the Move button to navigate through the available languages: GERMAN, ENGLISH, FRENCH, SPANISH, SWEDISH. A short Prg/Set key press activates the new language and the display changes accordingly.

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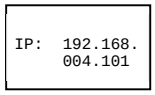
Submenu IP_ADDRESS – Level 2

A short Prg/Set key press leads from the main menu IP ADDRESS to the submenu.

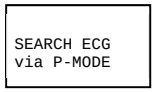


This submenu displays the IP address, which has been assigned by the DHCP server or is currently set in the ETS.

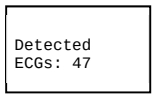
The setting cannot be changed on the device. The setting is done via the ETS or DHCP.

Submenu NEW INSTALLATION – Level 2

A short Prg/Set key press leads from the main menu NEW INSTALLATION to the submenu SEARCH ECG via PROG-MODE.



A long Prg/Set key press switches the device to programming mode. Another short key press starts the initialisation and search process. First, all ECGs connected to the DALI segment are automatically re-set and any previous parameters and group assignments are deleted.



The connected ECGs are searched for by their randomly created long addresses and are automatically identified in ascending order. Depending on the number of connected ECGs the search process can take a few minutes.

Once the search process is complete, the number of detected ECGs is shown on the display. By pressing the ESC key (or automatically after 30 seconds) the device returns to the menu level above.

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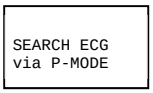
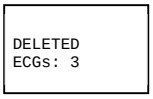
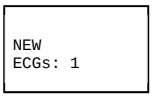
Submenu POST INSTALLATION – Level 2

A short Prg/Set key press leads from the main menu POST INSTALLATION to the submenu SEARCH ECG via PROG-MODE.





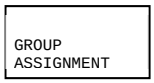
A long Prg/Set key press switches the device to programming mode. Another short key press starts the verification and search process. The connected ECGs are searched for by their long addresses. The result is compared with the previous configuration. If ECGs have been removed from the DALI-Segment, their corresponding entries and settings are automatically deleted from the DALI Gateway. During the verification process, the number of deleted ECGs is shown on the display.



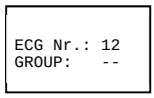
The Gateway then searches for new ECGs within the DALI segment. New ECGs are automatically re-set and any previous parameters and group assignments are deleted. Depending on the number of connected ECGs the search process can take a few minutes. During the search process, the number of new ECGs that are detected is shown on the display.

After the entire process is complete (verification and search), the number of deleted and new ECGs is shown on the display (deleted ECGs/new ECGs from left to right, see image on the left). By pressing the ESC key (or automatically after 30 seconds) the device returns to the menu level above.

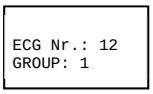
Submenu GROUP ASSIGNMENT – Level 2 and 3



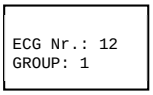
A short Prg/Set key press leads from the main menu GROUP ASSIGNMENT to the submenu. Within the submenu the individual ECGs that have been detected in the search process can be assigned to the 16 DALI groups and existing assignments can be modified.



To navigate from one ECG to the next within the submenu, briefly press the Move button. The first display line shows the number of the selected ECG. The corresponding light will blink for as long as its ECG is selected. This allows to easily identify which number is assigned to which light.



A long Prg/Set key press switches the device to programming mode. Set the group to which the ECG is to be assigned by briefly pressing the Move button. Once the group has been selected, confirm and save the setting with a short Prg/Set key press. For a new installation, this task needs to be completed once for each ECG that was detected during the search process.



By pressing the ESC key (or automatically after 30 seconds) the device returns to the menu level above.

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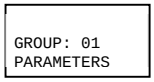
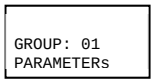
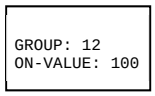
Submenu GROUP PARAMETERS – Level 2 and 3

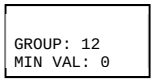


A short Prg/Set key press leads from the main menu GROUP PARAMETERS to the submenu. Within this menu, the individual parameters for each group can be set. Generally speaking, the group parameters should be set within the ETS when the KNX is commissioned. Setting parameters directly on the device is a function that should only be used for the quick modification of individual parameters. Please note that each ETS download overwrites manual settings performed on the device!

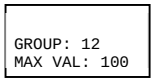


To run through the individual groups, briefly press the Move button. The first display line shows the currently selected group. A long Prg/Set key press switches the device to programming mode and the parameter type and its value are shown in the second display line. The following parameters can be modified directly on the device:

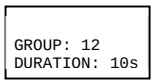




- Initial (ON) value: 0 to 100% in 5% steps
- Minimum Dimming Value: 0 to 40% in 5% steps
- Maximum Dimming Value: 50 to 100% in 5% steps
- Dimming Duration for Dimming of 0…100%: 5 sec. to 60 sec.



In programming mode, the selected parameter can be modified by briefly pressing the Move button. A short Prg/Set key press saves the set value and at the same time automatically activates the programming mode for the next parameter in this group



This means that if, for example, only the parameter for the maximum dimming value is to be modified, the user first needs to go through the initial value and the minimum dimming value (menu level 2). By pressing the ESC key (or automatically after 30 seconds) the device returns to the menu level above.

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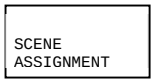
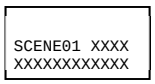
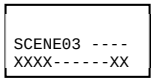
Submenu SCENE ASSIGNMENT – Level 2 and 3

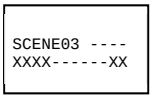


A short Prg/Set key press leads from the main menu SCENE ASSIGNMENT to the submenu. Within this menu, DALI groups can be assigned to the up to 16 individual scenes.



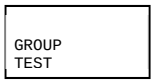


To navigate from one scene to the next, briefly press the Move button. The first display line shows the number of the currently selected scene. Symbols show which one of the 1 to 16 groups is assigned to this scene. An 'X' at the corresponding location means that the group is assigned to the scene. The – symbol means that the group has not been assigned. The four characters following the scene number in the first display line represent from left to right groups 1 to 4. The 12 characters in line two of the display correspond, in ascending order from left to right, to groups 5 to 16.

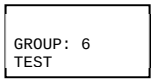


A long Prg/Set key press switches the device to programming mode. A blinking cursor on the first X shows that Group 1 is currently selected. By briefly pressing the Move button, the user can choose whether this group is to be assigned to the selected scene (toggling between X and – symbols). To move the cursor to the next Group briefly press the Prg/Set key. After going through all 16 Groups, the configuration is saved and will be considered as soon as the scene is programmed next time. After the Prg/Set key has been pressed for the last time, the device automatically returns to the next higher menu level. By pressing the ESC key (or automatically after 30 seconds) the device returns to the level above without saving any changes that were made.

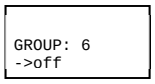
Submenu GROUP TEST – Level 2 and 3



A short Prg/Set key press leads from the main menu GROUP TEST to the submenu, which allows for all groups to be switched individually or together (ALL CHANELS: Broadcast) in order to test the installation.



To navigate from one channel to the next, briefly press the Move button. The number of the currently active channel is shown in the first display line.



A long Prg/Set key press switches the device to programming mode. To choose whether the selected channel is to be switched on or off, briefly press the Move button. In order to perform the selected operation, briefly press the Prg/Set key. By pressing the ESC key (or automatically after 30 seconds) the device returns to the menu level above.

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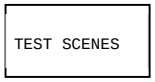
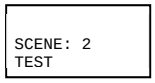
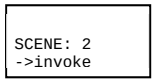
Submenu TEST SCENES – Level 2 and 3



A short Prg/Set key press leads from the main menu TEST SCENES to the submenu. Within the submenu all scenes can be invoked for testing purposes or newly set lighting scenarios can be assigned to the corresponding scene.

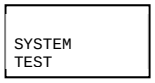


To navigate from one scene to the next, briefly press the Move button. The number of the currently selected scene is shown in the first display line.

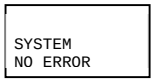


A long Prg/Set key press switches the device to programming mode. To toggle between the functions Invoke Scene and Save Scene, briefly press the Move button. In order to perform the selected operation and either invoke or save the scene, press the Prg/Set key briefly. By pressing the ESC key (or automatically after 30 seconds) the device returns to the menu level above.

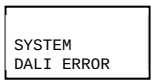
Submenu SYSTEM TEST – Level 2 and 3



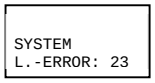
A short Prg/Set key press leads from the main menu SYSTEM TEST to the submenu. Within this menu, potential error messages can be viewed.

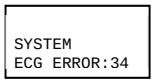


If there are no errors, this is also shown on the display. The following errors, which cause the red error LED to be lit, can be detected by the system and shown on the display:

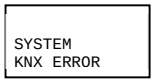


- DALI short circuit
- Lamp failure with display of the lamp or ECG number
- ECG error with display of the ECG number
- No KNX Bus





In case of a DALI short circuit no further errors can be detected. In case of all other types of error, it is possible to detect several errors simultaneously. To toggle between the different errors, briefly press the Move button. In case of lamp or ECG errors, the number of the corresponding ECG is displayed, so that the error can be located immediately within the group. By pressing the ESC key (or automatically after 30 seconds) the device returns to the menu level above.



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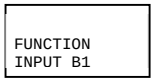
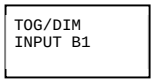
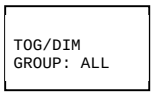
Submenu FUNCTION INPUT B1 – Level 2 and 3



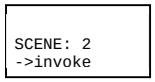
A short Prg/Set key press leads from the main menu FUNCTION INPUT B1 to the submenu. Within the submenu, the function of the potential-free pushbutton that is connected to the binary input B1, can be set.



To navigate from one possible individual function to the next, biefly press the Move button. The number of the currently selected function is shown in the first display line. The following functions can be set:



- ON switches on when pushbutton is pressed
- OFF switches off when pushbutton is pressed
- TOGGLE toggles between on and off when pushbutton is pressed
- ON/DIM short keypress of the pushbutton: switches on; long keypress of the pushbutton: dims up with stop telegram.



- OFF/DIM short keypress of the pushbutton: switches off; long keypress of the pushbutton: dims down with stop telegram
- TOG/DIM short keypress of the pushbutton: toggles between on and off; long keypress of the pushbutton: single button dimming
- SCENE invokes a scene when pushbutton is pressed

A long Prg/Set key press switches the device to programming mode. To choose with which channel or scene the selected function is to be connected, biefly press the Move button. By pressing the ESC key (or automatically after 30 seconds) the device returns to the menu level above.

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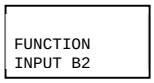
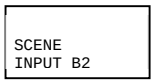
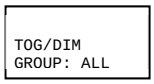
Submenu FUNCTION INPUT B2 – Level 2 and 3

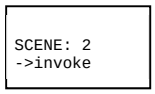


A short Prg/Set key press leads from the main menu FUNCTION INPUT B2 to the submenu. Within the submenu, the function of the potential-free pushbutton that is connected to the binary input B2, can be set.

To navigate from one possible individual function to the next, biefly press the Move button. The number of the currently selected function is shown in the first display line. The following functions can be set:







- ON switches on when pushbutton is pressed
- OFF switches off when pushbutton is pressed
- TOGGLE toggles between on and off when pushbutton is pressed
- ON/DIM short keypress of the pushbutton: switches on; long keypress of the pushbutton: dims up with stop telegram.
- OFF/DIM short keypress of the pushbutton: switches off; long keypress of the pushbutton: dims down with stop telegram
- TOG/DIM short keypress of the pushbutton: toggles between on and off; long keypress of the pushbutton: single button dimming
- SCENE invokes a scene when pushbutton is pressed

A long Prg/Set key press switches the device to programming mode. To choose with which channel or scene the selected function is to be connected, biefly press the Move button. By pressing the ESC key (or automatically after 30 seconds) the device returns to the menu level above.

3.2 Dali-Commissioning

3.2.1 Dali-Commissioning via device

Once the wiring of the device has been completed according to the above instructions, the DALI line can be commissioned. This can be done independently from commissioning the KNX. As long as the KNX is not connected, the red ERR-LED will be lit to signal an error. However, the DALI can nevertheless be commissioned. For the first installation, start by searching the DALI line for all connected ECGs using the menu NEW INSTALLATION (see Operation and Menu Structure above). Once all connected devices have been detected (indicated by (ESC) behind the number of detected devices shown on the display), exit this menu item. Assign the detected devices to the individual DALI groups using the menu GROUP ASSIGNMENT (see Operation and Menu Structure above). The basic installation is completed once all ECGs have been assigned to the desired groups. Using the menu GROUP TEST (see Operation and Menu Structure above) individual groups can be switched on and off for testing purposes.

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If pushbuttons are connected to the inputs of the device, use the menu FUNCTION INPUT B1 and B2 to set the pushbutton function and to assign the inputs to individual DALI groups. This allows for DALI functions to be performed (construction site operation) even if the KNX is not yet operational. Subsequently, the binary inputs can also be used in normal operation mode in order to integrate cost-effective standard pushbuttons or presence detectors into the system.
Finally, the groups can be assigned to individual scenes using the menu SCENE ASSIGNMENT (see Operation and Menu Structure above).
This completes the commissioning of the DALI Segment. The KNX commissioning can be started immediately or later using ETS and the corresponding application program.

3.2.2 Dali-Commissioning via software-tool

The DALI segment can also be commissioned via the free-of-charge softwaretool Dali Service and Commissioning Wizard. In order to be able to do this, the device needs to be connected to the KNX Bus and a physical address needs to have been assigned. The communication with the device is then performed via an interface that is connected to the KNX. An exact description of the commissioning process using the Tool, can be found in the DaliControl Service and Commissioning Wizard user manual.

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3.2.3 Dali-Commissioning via Webserver

In addition to the pushbuttons and the software tool, the DALI can also be easily commissioned via the web server, which is integrated in the device. The DaliControl SCN-DALI64.01 can be directly connected to the IP network for this purpose. An RJ-45 socket is located above the KNX bus coupler on the lower left-hand side of the device. The device can be connected to a Switch, Hub or Router of the IP network via a standard patch cable. As the network connection is only required for the commissioning process, a temporary connection is usually sufficient. After the process has been completed, the network connection can be removed. A WLAN accessp point can, of course, also be used as network coupler. In this case, the commissioning can be performed via a portable notebook, a PDA or other control device.

Once the network is connected, load the commissioning website via a web browser (e.g. Microsoft Internet Explorer or Mozilla Firefox).

Enter the IP address (URL) which has been assigned by the DHCP server or set in the ETS for this purpose, in the browser.

Please remember that the complete URL consists of the IP address and the prefix http://. For example, http://192.168.1.07 should be entered in the browser to start the page.

The website shown here on the right will appear in the browser.

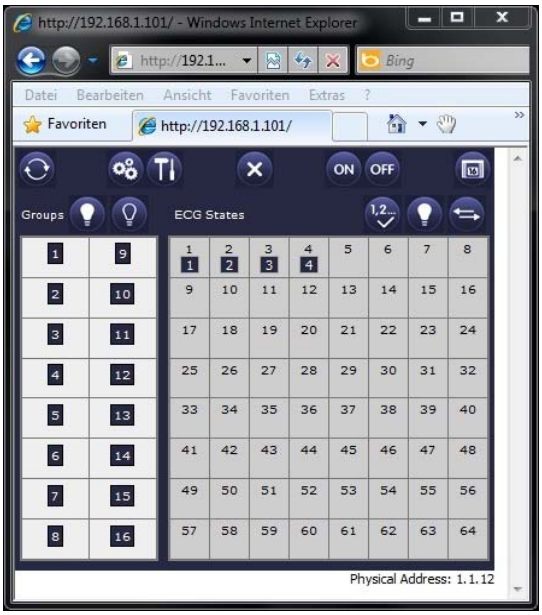

Illustration 3: Webserver

IA toolbar on top of the website is used to perform the main commissioning functions. The individual ICONs displayed in the toolbar have the following meaning and function:

Update

This function is used to update the displayed ECG assignments. It should be used in particular when the assignments have been modified either manually on the device or through the software tool.

New Installation

This button starts the new installation of the connected DALI segment. Attention: If a new installation is started, any pre-existing configuration of the DALI segment will be deleted.

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Post Installation

This button starts the post-installation of the connected DALI segment. Any no longer existing ECGs will be deleted and new devices will be added.

Cancel

Any processes that may have already been started will be terminated by using this button.

Broadcast On

Broadcast Off

Via a DALI Broadcast telegram all ECGs/lamps of the DALI segment can be switched on or off at the same time.

Change to scene page

By using this button the user can change to the scene setting page.

By using this button the user can change to the scene setting page. The fields below the toolbar are used to identify the ECGs and assign the groups. To identify the ECGs, the Broadcast should be used to first set all lamps to a defined value (e.g. OFF). After selecting the Toggle Key the ECGs can be switched on and off individually by mouse click. The randomly ordered ECGS can thus be identified.

Following the identification, the individual ECGs can be assigned to groups. First, select the Assignment Key. Select the group, to which the ECG is to be assigned, by mouse click. Another click on the ECG, assigns it to the selected group. A small blue field with the group number in ECG list indicates the group assignment. ECGs that have not yet been assigned to any group are given a yellow field with a question mark.

Generally the position of the ECGs (Long Address) within the DALI segment is randomly. During the New Installation the addresses will be detected and assigned automatically to a short address 0..63. The ECGs are added into the list randomly. If there is a need to set an ECG in a special position within the list (special short address) you can swap the positions by usage of the Swap-Button. In order to swap please click Swap-Button first and afterwards click the two devices to be swapped.


Toggle button


Assignment button


Swap button

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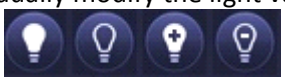
Apart from the identification and group assignment, an additional website allows for the setting of scene values and scene assignments. To go to the scene page from the commissioning page, use the Change button. The page has the following layout:

 Change button

Illustration 4: Scene Page Webserver

To set a scene, select it first on the right-hand side. When selected, the scene (if it already exists) will be loaded in the DALI segment. The currently set light values are displayed in the corresponding group windows. Keys can be used to individually modify the light values.

To do this, select one of the following keys  (On, Off, Dim up, Dim down).

A short (switch) or long (dimming) mouse click on the corresponding group window will modify the light value groupwise.

Pressing the  key saves the the modified value in the selected scene.

To assign the groups to individual scenes, use the  key.

By usage of the Jump-Button you can go back to the last page  .

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4 Application notes

4.1 Communication objects

A maximum of 252 communication objects is available for communication of the device via the KNX. The objects are, in parts, displayed or hidden, depending on how the parameters are set. The communication objects can be connected to 255 group addresses via 255 associations.

5 objects are assigned to each of the 16 DALI groups.
The objects for group 1 are:

Nr.	Function	Object name	Type	Flags				
				C	R	W	T	U
0	On/Off	Switch, group 1	1 bit	X		X	X	
The lamps assigned to DALI group 1 are switched to the set switch ON or switch OFF value using this object. Whether switching is to be carried out immediately or whether dimming is to be performed to the final value when the object is received, can be set in the parameters. The dimming time can be set independently of the time on receipt of a dim telegram.								
1	Brighter/Darker	Dimming, group 1	4 bit	X		X	X	
The lamps assigned to DALI group 1 are dimmed up or down using this object. The dimming time required to dim from 0% to 100% can be set in the parameters.								
2	Value	Value, group 1	1 byte	X		X	X	
The lamps assigned to DALI group 1 are set to a brightness value using this object. Whether the value is accepted immediately or dimmed to the final value when the object is received can be set in the parameters. The dimming time can be set independently of the time on receipt of a dim telegram.								
3	On/Off Value	Status, group 1 Status, group 1	1 bit 1 byte	X	X		X	
The status of the lamps assigned to DALI group 1 can be made available using this object. Whether a 1 bit status (On/Off) or a 1 byte value status (0…100%) is transmitted, can be set in the parameters. The object type changes depending on the parameter settings. The requirement for sending the object can be adjusted. **Attention: When parameters are set as value status, the value during the dimming process is sent immediately on modification. This results in an in increased burden on the bus during dimming.**								
4	Failure	Error status, group 1	1 bit	X	X		X	
This object is used to inform about the error status within a DALI group. Whether only a lamp malfunction, only an ECG malfunction or both types result in an error status can be set in the parameters. An object value of 0 means that no error has occurred within the group. A value of 1 means that at least one error has been detected within the group. The requirement for sending the object can be adjusted.								

Chart 1: Communication objects group 1

Like objects 0 to 4 for DALI group 1, objects 7 to 11 are assigned to DALI group 2, objects 14 to 18 to DALI group 3 etc. up to objects 105 to 109 for DALI group 16.

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Using the DaliControl IP Gateway all 64 ECGs / lamps can also be controlled individually. However, in this case only one object is available per ECG. The type of control and thus the object type can be set via a corresponding parameter (see below). Individual control is performed via the objects 112 to 175:

Nr.	Function	Object name	Type	Flags				
				C				
112	On/Off Brighter/Darker Value	Switch, ECG 1 Dim, ECG1 Set Value, ECG 1	1 bit 4 bit 1Byte	X		X	X	
Using this object, the lamp controlled by ECG1 can be switched, dimmed or set to a lighting value (depending on parameters) individually and independent of belonging to a group.								

Chart 2: Communication objects ECG

Attention: Inconsistency between the actual set lighting value of a lamp and the status value of the group can occur when both individual control and group assignment of ECGs are used. We therefore recommend that when using individual control you do not assign the corresponding ECG to a group or use it via group control. This is the only way to avoid erroneous status reports.

Like object 112 for ECG 1, objects 113 to 175 are used for ECGs 2 to 64.

The DaliControl IP Gateway offers the possibility to make the error status of each connected ECG available individually via one communication object on the KNX Bus. Objects 176 to 239 are used for this purpose.

Nr.	Function	Object name	Type	Flags				
				C				
176	Failure	Error status, ECG1	1 bit 1 byte	X	X		X	
This object is used to inform about the error status of ECG 1. Whether the object is set only for a lamp malfunction, only for an ECG malfunction or for both types, can be set in the parameters. If an error has occurred, the 1 bit object has the value 1, if no error has occurred, it has the value 0. An error status can also still be configured as a 1Byte object. In this case the object values are as follows: No error: 0 Lamp error: 1 ECG error: 2								

Chart 3: Communication object Error status

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Like object 176 for ECG 1, objects 177 to 239 are used for ECGs 2 to 64.

In addition to group and individual control, the application can also be used for the complete control of all ECGs. Communication in this case is via DALI Broadcast telegrams and no new installation of the DALI is required. For complete control, use objects 240 to 242.

Nr.	Function	Object name	Type	Flags				
				C				
240	On/Off	Switch, Broadcast	1 bit	X		X	X	
This object is used to switch all lamps that are connected to the Dali segment to the set Switch ON or OFF value via DALI Broadcast telegrams. For Broadcast switching always use the parameters of group 1.								
241	Brighter/Darker	Dimming, Broadcast	4 Bit	X		X	X	
This object is used to dim all lamps that are connected to the Dali either up or down via DALI Broadcast telegrams. For Broadcast dimming always use the parameters of group 1.								
242	Value	Value, group 1	1 Byte	X		X	X	
This object is used to set all lamps that are connected to the Dali to a lighting value via DALI Broadcast telegrams. For Broadcast value setting always use the parameters of group 1.								

Chart 4: Communication objects common control

By using objects 243 and 244, the signal of the potential-free pushbutton can also be made available to the KNX. The pushbutton function is set on the device itself via the operating menu (see Operating and Assembly Manual). It is important to remember that even when the pushbutton is configured as a dim button for Dali groups, only the switch object (short key press) is available for the KNX. If the parameters of the pushbutton are set to call up a Dali scene, the corresponding object has no function.

Nr.	Function	Object name	Type	Flags				
				C				
243	On/Off	Switch, Input 1	1 Bit	X	X	X	X	
A switch signal is provided via this object, which depends on the set pushbutton function of the potential-free input 1.								
244	On/Off	Switch, Input 2	1 Bit	X	X	X	X	
A switch signal is provided via this object, which depends on the set pushbutton function of the potential-free input 2.								

Chart 5: Communication objects switch

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Objects 245 to 248 are used to inform about the status of errors within the entire Dali segment. Objects are sent whenever there is a change. However, they can also be requested. The following error objects for the entire segment are available:

Nr.	Function	Object name	Type	Flags				
				C				
245	Error	Error status, all errors	1 Bit	X	X		X	
This object is used to inform about the error status of the Dali segment, independent of the error type. The value 0 means that no error has occurred. The value 1 means that an error has occurred in the segment.								
246	Error	Error status, DALI Bus	1 Bit	X	X		X	
This object is used to inform about the error status Dali short-circuit. The value 0 means that no error has occurred. The value 1 means that a Dali short-circuit has occurred.								
247	Error	Error status, total Lamp error	1 Bit	X	X		X	
This object is used to inform about any lamp error status in the Dali segment. The value 0 means that no error has occurred. The value 1 means that an error has occurred in at least one lamp in the segment.								
248	Error	Error status, total ECG error	1 Bit	X	X		X	
This object is used to inform about any ECG error status in the Dali segment. The value 0 means that no error has occurred. The value 1 means that an error has occurred in at least one ECG in the segment.								

Chart 6: Communication objects all errors

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Object 252 is required to program and call up set lighting scenes. Please remember that individual Dali groups are assigned to the different scenes on the device itself by using the operating menu (see Operating and Assembly Manual).

Attention: Lighting values of scenes are saved on the ECGs during programming. Please remember therefore to ensure that all ECGs are connected and ready for use during programming. If a scene is programmed and the required ECG is not connected, there can be inconsistencies between the actual set value and the status reported by the Gateway.

Nr.	Function	Object name	Type	Flags				
				C				
252	Invoke / save scenes	Scenes 1-16	1 Byte	X		X		

This object is used to invoke scenes 1 -16 on receipt of a telegram with values 0-15. If the highest significant bit is also set (meaning a value from 128 to 143) the set lighting state is saved in the corresponding scene:

	Invoke	Save
Scene 1	0	128
Scene 2	1	129
Scene 3	2	130
.....		
Scene 14	13	141
Scene 15	14	142
Scene 16	15	143

Chart 7: Communication objects scenes

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4.2 Parameter

For the purpose of clarity, the parameters are spread over several pages. The following parameters are available:

4.2.1 General

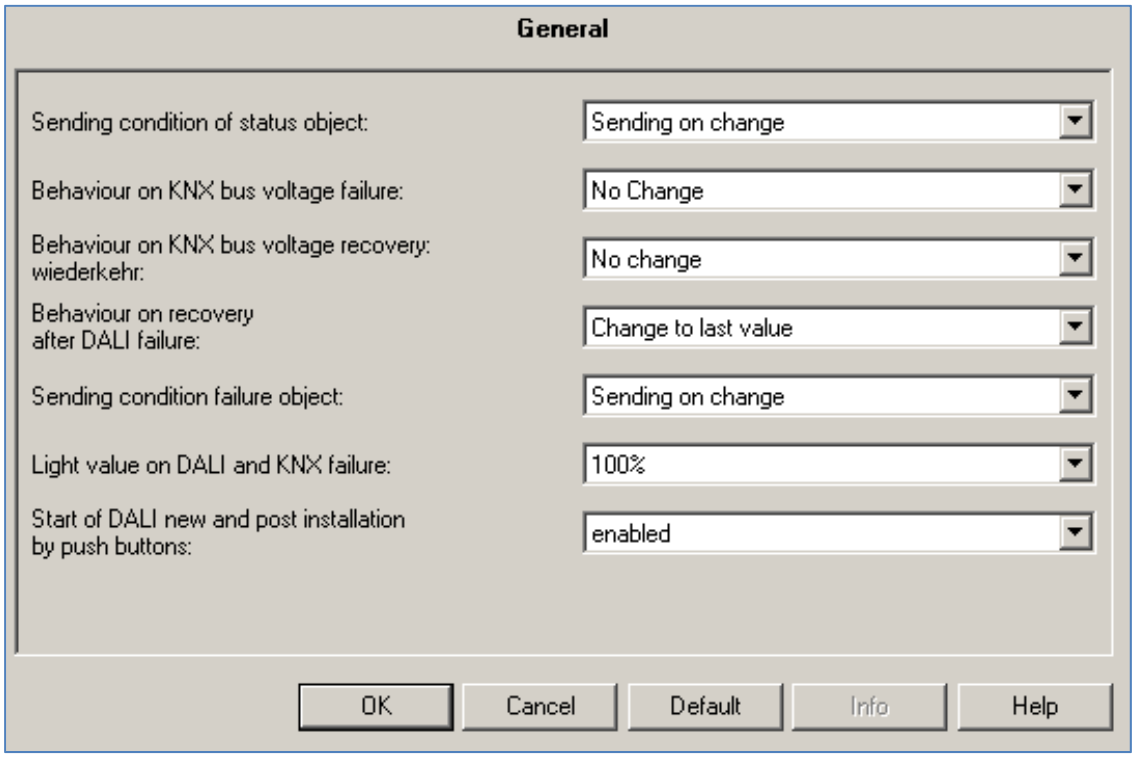

Illustration 5: General Parameter

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The following chart shows the dynamic range for this menu-page and gives a description of the parameters:

ETS-Text	Dynamic range **[Default value]**	Comment
Sending condition of status object	Sending on request only **Sending on change**	This sets the send condition for the light status of the DALI groups (4th communication object of each group)
Behaviour on KNX bus voltage failure	**No change** Change to failure value Switch off	This determines which lighting condition is to be set in the event of KNX bus voltage failure.
Behaviour on KNX bus voltage recovery	**No change** Change to last value Change to failure value Switch off	This determines which lighting condition is to be set on return of KNX bus voltage.
Behaviour on recovery after DALI failure	No change **Change to last value** Switch off	This determines which lighting condition is to be set on return following a DALI error (short-circuit or ECG error)
Sending condition failure object	Sending on request only **Sending on change**	This sets the send condition for the error status of the DALI groups (5th communication object of each group). The entire error statistics (objects no. 245 to 248) are always sent when a change occurs.
Light value on DALI and KNX failure	No change 0 % 5 % 10 % .... (continued in steps of 5%)... 90 % 95 % **100 %** Adjustment per group	This determines which lighting value is to be set in case of a DALI or KNX error. In case of the “Setting per group” parameter, two additional pages appear, on which the error values can be chosen individually per group.
Start of DALI new and post installation by pushbuttons:	**Enabled** Disabled	This sets whether a new or additional DALI installation can be performed via the pushbuttons on the device. The device can thus be protected against unauthorised access.

Chart 8: general Parameter

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4.2.2 Group 1-16

One page is available for each group on which the group-specific parameters can be set.

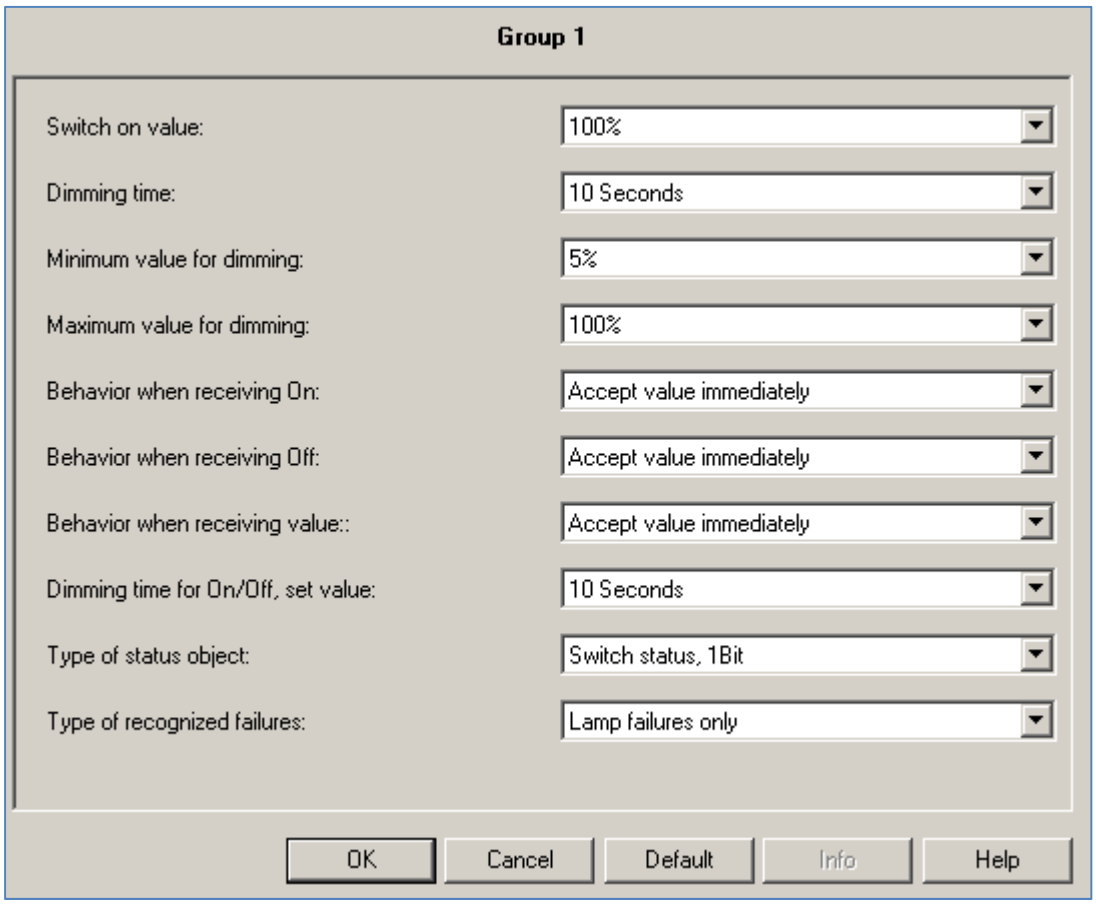

Illustration 6: Groups 1-16

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The following chart shows the dynamic range for this menu-page and gives a description of the parameters:

ETS-Text	Dynamic range **[Default value]**	Comment
Switch on value:	0 % 5 % 10 % .... (continued in steps of 5%)... 90 % 95 % **100 %** Last value	This sets the parameter for the lighting value which is to be set in the corresponding DALI group on receipt of a 1-telegram. If the parameter setting “last value“ is selected, the value switched on receipt of a 1-telegram, is the value that was set via dimming or value setting before the last 0 telegram was received.
Dimming time	2.5 seconds 5 seconds **10 seconds** 15 seconds 20 seconds 30 seconds 1 minute ..... 30 minutes 1 hour	This sets the time it should take to dim from 0% to 100% on receiving a dim telegram (dimming speed).
Minimum value for dimming:	0% **5%** 10% 15% 20% 25% 30%	This sets the minimum dimming value. The setting 0% means that the dimmer can also be used to switch off the light. The light can always be switched on using the dimmer.
Maximum value for dimming	50% 55% 60% .... (continued in steps of 5%)... 90% 95% **100%**	This sets the maximum dimming value.
Behaviour when receiving on	**Accept value immediately** Dim to the value	This determines whether to apply the switch ON value immediately or whether to dim up to it when a 1-telegram is received.
Behaviour when receiving off	**Accept value immediately** Dim to the value	This determines whether to apply the switch OFF value immediately or whether to dim down to it when a 0-telegram is received.

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Behaviour when receiving value	**Accept value immediately** Dim to the value	This determines whether to apply the light value immediately or whether to dim up or down to it when a 1 Byte telegram is received.
Dimming time for On, Off, Set Value	2.5 seconds 5 seconds **10 seconds** 15 seconds 20 seconds 30 seconds 1 minute ….. 30 minutes 1 hour	This sets the time for dimming from 0% to 100% on receiving an 'On', 'Off' or 'Set value' telegram if the parameter was set to "Dim to value".
Type of status object	**Switch status, 1 bit** Value status, 0..100%	This determines whether the status object should only make the ON/OFF switch status for the corresponding DALI group available or also the value status 0…100%.
Type of recognized failures:	No error status **Only lamp error** Only ECG error Lamp and ECG error	This determines the error types for which the error object of each group makes an error status available.

Chart 9: Parameter groups 1-16

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4.2.3 Failure values

If on the General Page the parameter “Lighting value in the event of DALI and KNX errors“ is set to “Setting per group“, two additional pages will appear on which the error values can be selected individually.

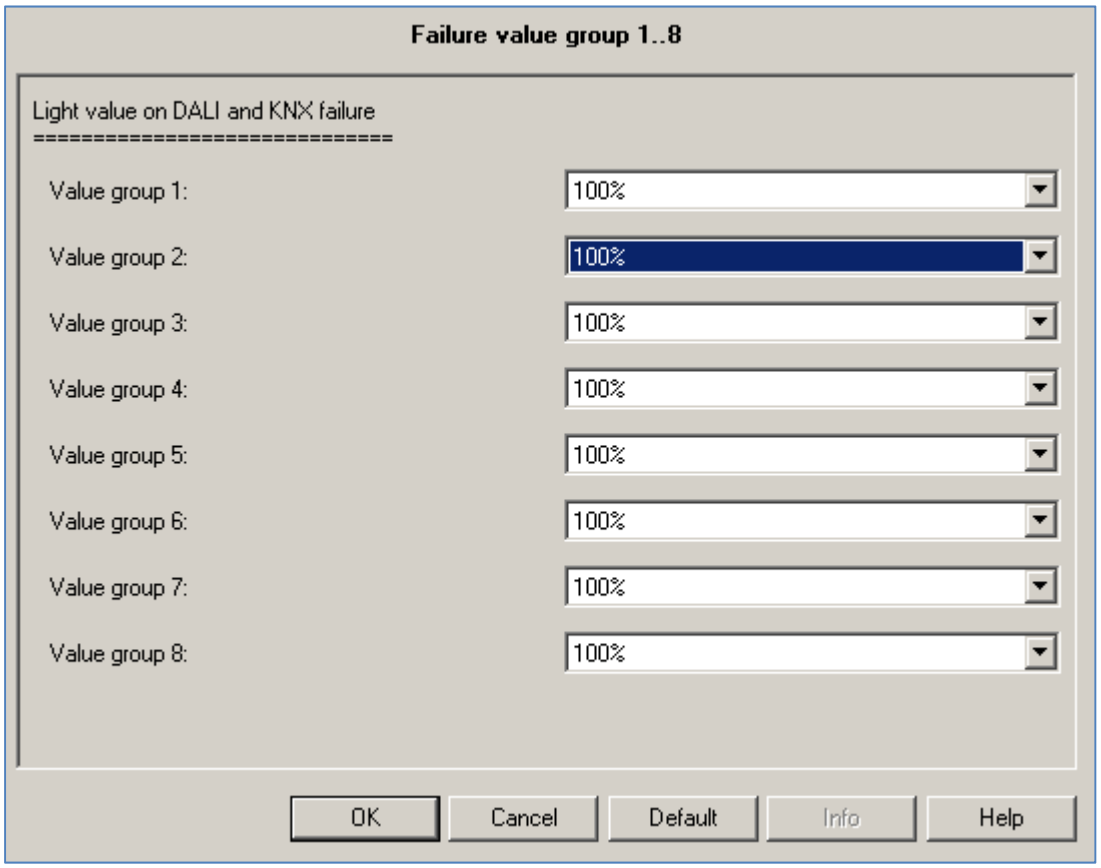

Illustration 7: Failure values

The following chart shows the dynamic range for this menu-page and gives a description of the parameters:

ETS-Text	Dynamic range **[Default value]**	Comment
Value Group 1: ... Value Group 8:	No change 0 % 5 % 10 % .... (continued in steps of 5%)... 90 % 95 % **100 %**	The user can set here which lighting value will be set in the corresponding group in the event of a DALI or KNX error.

Chart 10: Parameter failure values

The function of the page “Error Values Groups 9 – 16“, is analogue to the one described on the previous page.

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4.2.4 ECG Individual control

In addition to group control, the DaliControl IP Gateway also offers individual control of ECGs. Whether individual control is possible as well as the type of individual control can be set on a separate page.

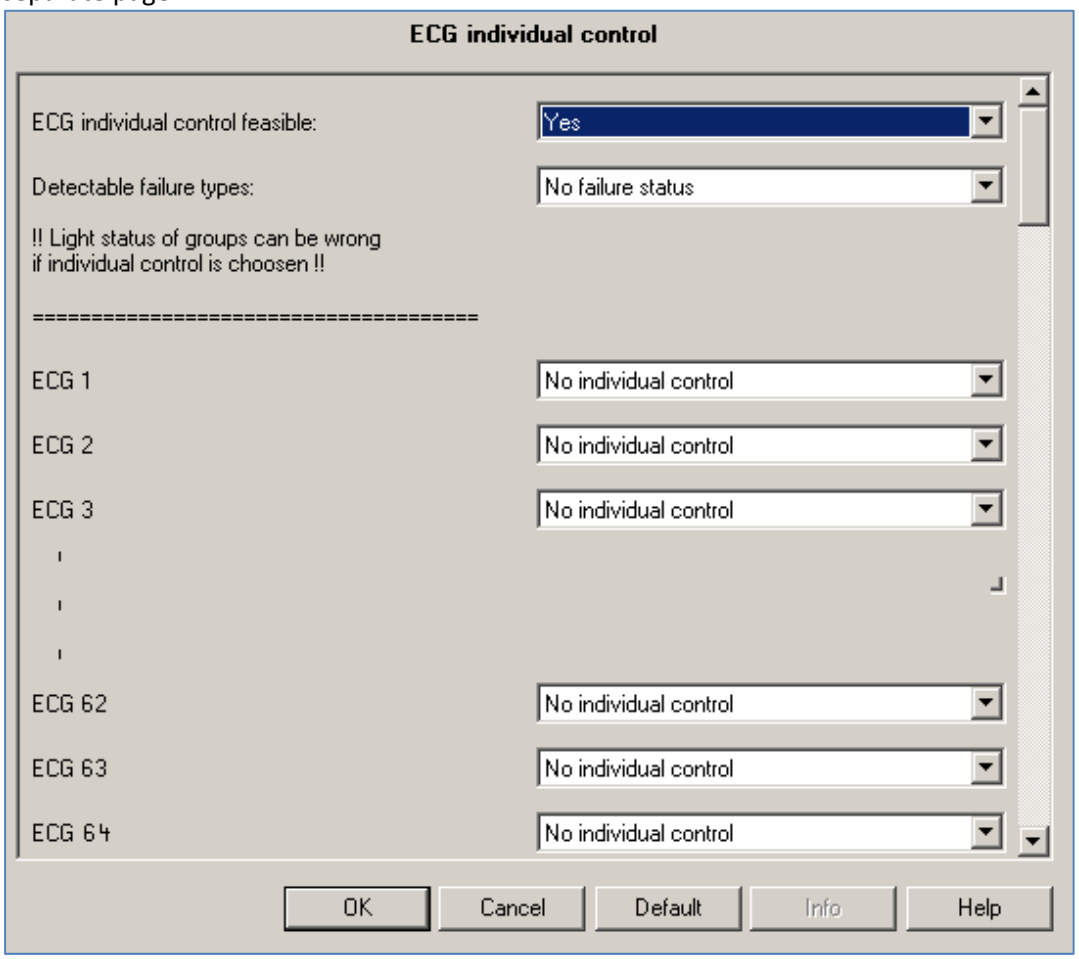

Illustration 8: ECG individual control

The following chart shows the dynamic range for this menu-page and gives a description of the parameters:

ETS-Text	Dynamic range **[Default value]**	Comment
ECG individual control feasible:	**No** Yes	The user can set here whether ECGs should be controlled individually. If the parameter “Yes“ is selected, additional parameters will appear to set the individual control.
Detectable failure types:	**No failure status** Only lamp failures by 1Bit object Only ECG failures by 1Bit object Lamp and ECG failures by 1Bit object Lamp and/or ECG failures by 1Byte object	The user can set here whether errors are to be detected individually for each ECG and which error type is to be detected. The error objects 176 to 239 will appear depending on the parameter.

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ECG 1 ..... ECG 64	**No Individual Control** Switch only via 1 Bit object Dim only via 4 Bit object Set value only via 1 Byte object	The user can set here which object type is to be used for the individual control of the ECG. Only one object is available for each ECG in this case. The object type appears depending on the parameter.

Chart 11: Parameter ECG individual control

4.2.5 Common control

In addition to group and individual control, the application also offers complete control of all connected ECGs at the same time. Communication in this case is via DALI Broadcast Telegrams and no new installation of the DALI is required.

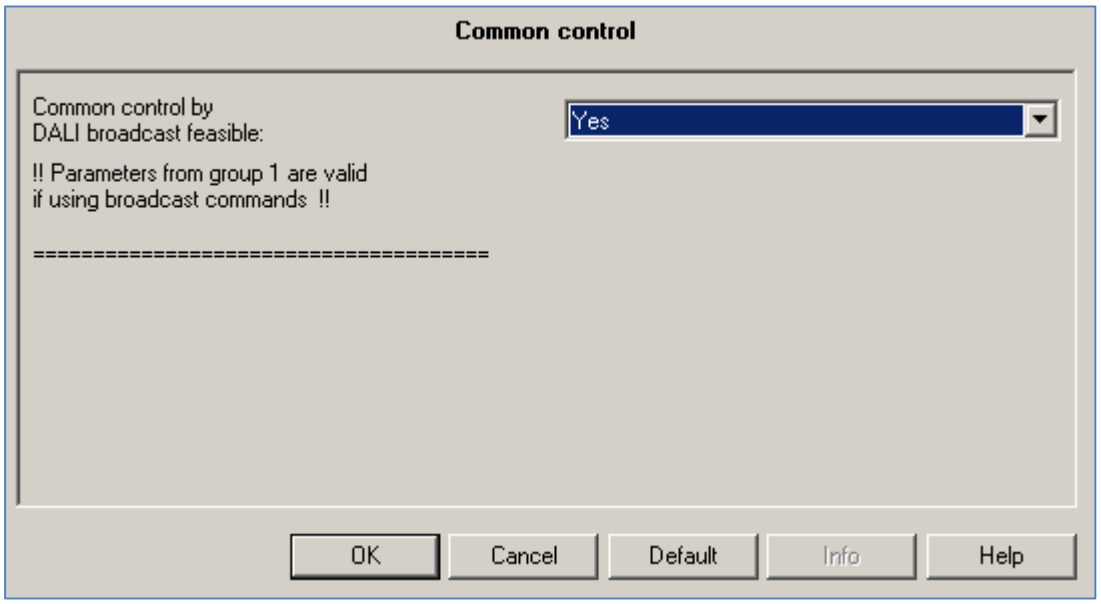

Illustration 9: Common control

The following chart shows the dynamic range for this menu-page and gives a description of the parameters:

ETS-Text	Dynamic range **[Default value]**	Comment
Common control by DALI broadcast feasible	**No** Yes	The user can set here whether complete control of all ECGs should be possible. If the answer is yes, the group 1 parameters (dimming time, max. dim value, etc.) are applied to all ECGs.

Page 12: Parameter common control

Attention: In case of total control via DALI Broadcast, the parameters in group 1 apply (e.g. switch on value, dimming time, etc.). They can be set on the corresponding parameter page.

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4.2.6 IP Configuration

The DaliControl IP Gateway also enables DALI commissioning via a permanent or temporary IP network. The operations necessary for the commissioning process can be performed via the web pages of the integrated web server. The IP address is usually assigned by the DHCP service of a DHCP server on the network. If no DHCP server is available, the settings need to be performed manually.

The required network configurations are set via parameters.

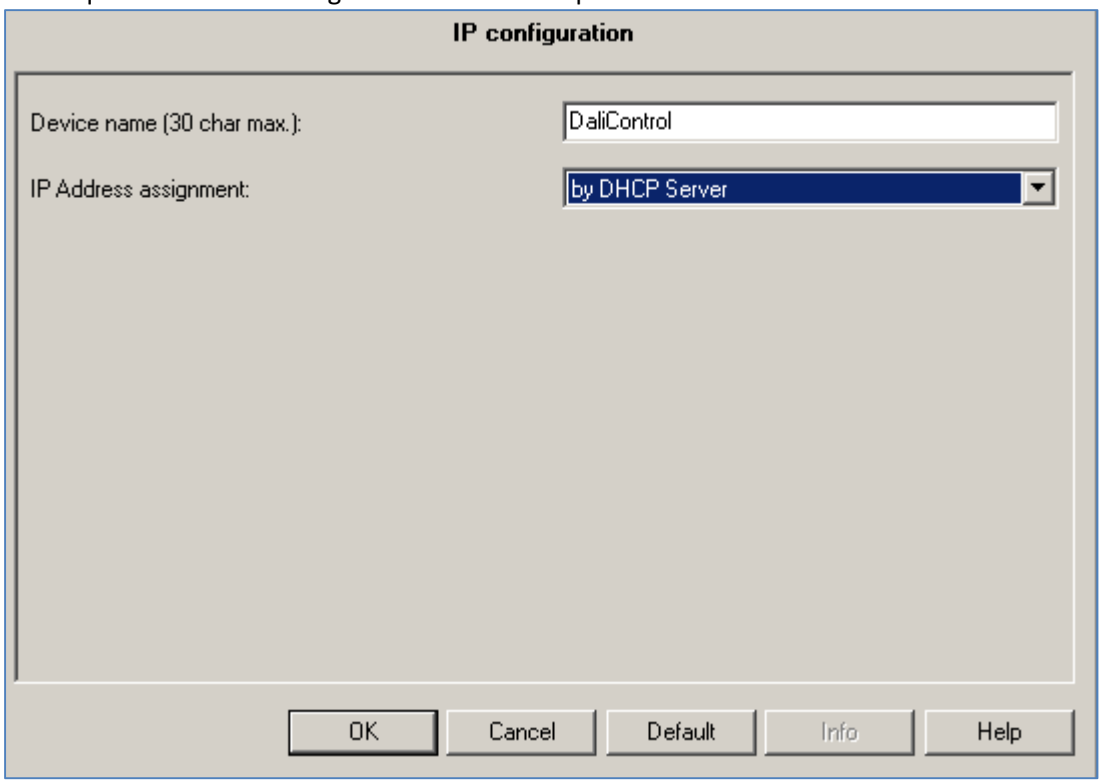

Illustration 10: IP Configuration

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The following chart shows the dynamic range for this menu-page and gives a description of the parameters:

ETS-Text	Dynamic range **[Default value]**	Comment
Device name (max. 30 characters)	**DaliControl**	The device name (User Friendly Name) for IP identification of the device can be entered here.
IP address assignment	**by DHCP Service** manually	The user can set here whether the address will be assigned automatically by a DHCP server on the network or whether a fixed IP address will be entered manually.
IP address: byte 1	**0** [0..255]	If the address is assigned manually, the 1. Byte of the IP address can be set here. The settings of Bytes 2...4 are analogue.
IP subnet mask: Byte 1	**255** [0..255]	If the address is assigned manually, the 1. Byte of the IP subnet mask can be set here. The settings of Bytes 2...4 are analogue. The settings of the subnet mask must correspond to the settings of the commissioning PC.
IP standard gateway: Byte 1	**0** [0..255]	If the address is assigned manually, the 1. Byte of the IP Standard Gateway can be set here The settings of Bytes 2...4 are analogue. A Standard Gateway is only required for connection via a Router (e.g. Internet). Normally, no settings are required.

Chart 13: Parameter IP Configuration

Attention: Please agree the IP settings with the network administrator. If no DHCP service is available on the network, the IP settings need to be performed manually. It is therefore important to ensure that the selected settings are admissible on the network.

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4.2.7 Behavior in the event of voltage failure and voltage return

The different scenarios for voltage failure and voltage return can be set via the parameters on the General Page.

The behavior of the connected lamps can be set via the parameters “Behavior in the event of KNX bus voltage failure and return of KNX bus voltage”. If the setting “No change“ is selected, the lighting value that was set last, is retained. If the setting “Switch to error value“ is selected, the value set on the lamp is the one that was set under „Lighting value in the event of DALI or KNX errors”. The setting “Switch to last value” is only possible for the return of KNX bus voltage. If the error value has been activated in the event of bus voltage failure, this parameter setting will cause the lighting values to be automatically re-set to the values before the failure once the voltage returns. Please remember that the correct last value can only be set, if during the bus voltage failure no other power failure of the Gateway has occurred. In the event of a Gateway power failure, the lights will be switched off on return of the voltage if the parameter was set to “Switch to last value“ (Value 0). If the parameter “Switch Off“ is set, the lamps will be switched off in any case.

A Dali error can occur in the event of a short circuit or when the DALI line is interrupted. If an error occurs, the error lighting value that is saved in the ECGs (Setting via lighting value in the event of DALI and KNX error) will be set. If the parameter for the behavior after the occurrence of a DALI error is set to ”Switch to last value“ or “Switch Off“, a safe and correct lamp setting can only be ensured if the error has occurred for at least 1-2 minutes (depending on the number of connected ECGs). In order for the Gateway to be able to recognize the error, all ECGs are contacted cyclically. Depending on the number, this process can take up to 2 minutes. It is therefore possible that in the event of a very brief error, the Gateway will not yet have detected the error and will not perform the desired function. In this case inconsistencies can occur between the set lighting value and the displayed status. This problem is inherent in the Dali system.

A failure of the Gateway power supply always leads to a complete re-set of the device. The behavior after a device re-set is also determined by the parameter Behavior on return of bus voltage. Please remember that, if “Switch to last value“ is set, the device is switched off, as the internal memory is deleted during the device re-set.

Please also remember another characteristic in the event of simultaneous return of Gateway power supply and ECG voltage. Principally all DALI ECGs are switched on as soon as the power is switched on. If the parameter for behavior on return of bus voltage is set to “Switch Off“, the switch off command needs ca. 1 second to take effect after the system is re-started. On return of the voltage, the ECGs will have initially been switched on automatically and only then switched off. As a result the lamps will be lit briefly when the respective parameters are set. This behavior is also system-inherent and cannot be prevented.

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6 Attachment

6.1 Statutory requirements

The above-described devices must not be used with devices, which serve directly or indirectly the purpose of human, health- or lifesaving. Further the devices must not be used if their usage can occur danger for humans, animals or material assets.
Do not let the packaging lying around careless, plastic foil/ -bags etc. can be a dangerous toy for kids.

6.2 Routine disposal

Do not throw the waste equipment in the household rubbish. The device contains electrical devices, which must be disposed as electronic scrap. The casing contains of recyclable synthetic material.

6.3 Assemblage

Risk for life of electrical power!
All activities on the device should only be done by an electrical specialist. The county specific regulations and the applicable EIB-directives have to be observed.

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MDT Dali Gateway

MDT DaliControl IP Gateway MDRC, up to 64 ECG with webinterface

Version		
SCN-DALI64.01	DaliControl IP	6TE MDRC, up to 64 ECG

The MDT DaliControl IP Gateway receive KNX/EIB telegrams and enables the classic control of 16 DALI groups plus individual control of the ECG. An example is switching or dimming of 2x16 light in groups (advantage of synchronous switching inside the group) plus 32 individual lights. The MDT DaliControl IP Gateway detects light and ECG errors and releases telegrams in dependence of its parameterisation.

The commisioning after installation and group attribution of the DaliControl IP Gateway is done with the buttons on the device or with the integrated webinterface. Quick identification and group attribution of the connected DALI segments can be done without connection to the KNX bus. The network connection is realized with an RJ45 interface.

Additionally the DaliControl IP Gateway offers two binary inputs to connect push buttons or presence detectors.

The DaliControl IP Gateway is a modular installation device for fixed installation in dry rooms. It fits on 35mm rails in power distribution boards or closed compact boxes.

For project design and commissioning of the DaliControl IP Gateway it is recommended to use the ETS3f/ETS4 or later. Please download the application software at www.mdt.de\downloads.

SCN-DALI64.01

- production in Germany certified according to ISO 9001
- modern design
- fully compatible to all KNX/EIB devices
- supports diifferent light types
- dimming curve matches the human perception
- simultanous dimming
- tracking of operating hours and switch cycles
- display and reporting of light and ECG errors
- simple change of the configuration without using ETS
- setting of light scenes without any knx modules
- simple group attribution directly on the device
- Dali Commissioning via Webbrowser or directly on the device display
- individual control up to 64 devices
- operation via integrated binary inputs without knx
- integrated bus coupling unit
- 3 years warranty

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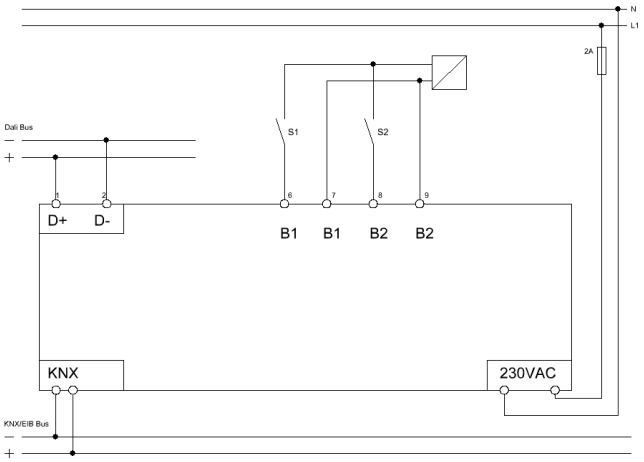
Stand: 1011

DIN EN ISO 9001
TAW Cert
Zert.Nr.1905606

MDT Dali Gateway

Electrical Data	SCN-DALI64.01
Configuration	Dali Gateway with webserver
Power Supply	
Supply voltage	230VAC
Power Consumption	< 3W
Outputs	18-21V
Number of groups	16
Number of ECG	64
Maximum Dali voltage	18-21V
Maximum Dali current	150mA
Inputs	
Number of inputs	2
Maximum cable lenght	15m
Maximum signal voltage	9-36VDC / 9-24VAC
Permitted wire gauge	
Screw terminal	1,5mm²
KNX busconnection terminal	0,8mm²
Operation temperature range	0 bis + 45°C
Enclosure	IP 20
Dimensions MDRC	6TE

Examplary circuit diagram SCN-DALI64.01



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