General

The DaliControl SC64IP brings together the cross-functional KNX installation bus and the lighting control specific DALI-Bus. Lights with cost-effective, digital DALI ECGs can therefore be integrated into an overall EIB/KNX architecture and operated via the multitude of existing KNX devices. The DaliControl SC64IP serves both as DALI-Master and power supply for up to 64 connected ECGs.

The ECGs can be switched, dimmed or set to a defined value in up to 16 groups per Gateway. The current light value or error status of each group (light, ECG error status within the group) can be exported to e.g. a visualisation via KNX.

In addition to the group control, the SC64IP also enables the individual control of up to 64 ECGs. In the latter case, one object is available per ECG. A parameter determines whether the individual ECG is to be switched, dimmed or set to a defined value.

An error status object is available for each ECG. This makes it possible to locate exactly light and ECG errors. Full control of all connected ECGs via Broadcast (no DALI commissioning is necessary in this case) is possible via three objects.

In addition, the individual groups can be used to program and load up to 16 light scenes. The scene control is performed via a 1Byte object.

Using the SC64IP, the DALI can be commissioned (assignment of DALI ECGs to the various groups and changes in configuration) in three different ways (see description below).

1. Commissioning via the device
2. Commissioning via the tool DaliControl Service and Commissioning Wizard
3. Commissioning via integrated web server

Two binary inputs are available on the device. Via simple pushbuttons, which are connected to the device, switch functions can be performed directly. The pushbutton function is available without an existing KNX Bus and is particularly advantageous for the installation phase (construction site).

As an REG device (6TE) the DaliControl SC64IP is suitable for DIN Rail mounting in standard sub-distributions. Connection to the bus is via a standard bus coupler. The DALI, power supply and pushbuttons are connected using screw connectors.

Device Types and Accessories

Currently the following device types are available:

- DaliControl SC64IP Order Nr.: 3927-145-52
- DaliControl SC16 Order Nr.: 3927-145-01

Delivery package

The DaliControl SC64IP delivery package contains the following components:

- The complete device with connected bus coupler
- 1x shrink sleeve 1,2 x 2cm for supplementary insulation of the bus wires
- Operating and assembly manual
DaliControl SC64IP
Order Nr.: 3927-145-52

Application Programs
Currently the following application programs are available:
3927-DaliControlSC64-01-0120
Please refer to the application program description for detailed information on the program functions

Technical data

Power supply
• Power Supply 110 to 240 V, 50 to 60Hz, max. 0,1A
• Additional Power Supply via the KNX Bus

Control elements
• Programming Button to toggle between normal and addressing mode
• 3 buttons (MOVE, Prg/Set, ESC) on the front side to set the device and parameters

Display Elements
• Red LED to indicate Normal-/Addressing Mode
• Green PWR-LED to signal readiness for operation (blinks when in normal operation mode)
• Red ERR-LED to signal fault status
• LC-Display, 2 lines with 12 characters to navigate the menu for commissioning and setting of parameters

Inputs
• Potential-free binary input, passive for connection of pushbuttons or presence detector
  9-32VDC or 8-26VAC, max wire length 15m

DALI-Bus
• Connection of up to 64 ECGs in accordance with IEC 60926
• DALI-Voltage 18-21VDC, short circuit proof
• Other control devices (DALI-Master devices) must not be used

Ethernet
• IP connection via Ethernet, speed 10Mbit / second, used only for DALI commissioning
• IP address assignment via DHCP service or fixed IP address

Connectors
• Bus line: KNX bus coupler
• Power Supply: screw connector 3x 1,5mm² single or threaded core
• DALI-Bus: screw connector 2x 1,5mm² single or threaded core
• Binary input: screw connector 2x 1,5mm² single or threaded core
• Ethernet: RJ-45 socket for standard patch cable

Mechanical Data
• Casing DaliControl SC64IP: Plastic PA66 – V0
• Dimensions of REG casing 6TE:
  Width: 106mm
  Height: 55mm
  Length: 86mm
• Weight: 200 g
• Mounting: on 35mm DIN rail

Electrical Safety
• Pollution Degree: 2
• Protection (in accordance with EN 60529): IP20
• Protection Class: (in accordance with IEC 1140) I
• Over voltage Category: III
• Bus: Safety extra low voltage SELV DC 24 V
EMC Compliance
Complies with EN 50081-1 and EN 50082-2, EN 50090-2-2

Environmental conditions
- Resistance to climate: EN 50090-2-2
- Operates in environmental conditions: 0°C to +45°C
- Storage Temperature: -25°C to +70°C
- Rel. Humidity (non condensing): 5 % to 93 %

Certification
KNX registered

CE-labelling
In accordance with EMC guidelines (domestic and commercial buildings), low voltage guidelines

Location and Function of the Display and Control Elements

The device connectors as well as the programming LED and button, which are elements required for commissioning, are only accessible once the cover of the distribution panel has been removed. However, the programming buttons (MOVE, Prg/Set, ESC), which are required to both commission the DALI and to set parameters, can be operated with closed cover. The two-line menu display and control LEDs (PWR and ERR) can also be read when the cover is closed.

On the lower side of the REG casing the following can be found (left to right):
- A0: RJ-45 socket for Ethernet connection
- A1: KNX bus coupler
- A2: Programming LED
- A3: Programming Button
- A4: Power Supply

On the upper side of the REG casing the following can be found (left to right):
- A5: DALI-connector
- A6: Connector passive binary input 1
- A7: Connector passive binary input 2

On the front of the REG casing the following can be found:
- A8: Display 2x12 characters for DALI configuration
- A9: MOVE-button
- A10: Prg/Set-button
- A11: ESC-button
- A12: Operating LED
- A13: Error LED

The labelling of the connectors on the casing is to be followed at all times!
**Installation Advice and Warning**

- **Risk of Electrocution!**
- The device must only be installed and commissioned by a qualified electrician!
- The current country-specific health and safety regulations as well as the KNX guidelines must be respected at all times!
- The device is made for fixed mounting in dry interior locations!
- When connecting the power supply wires, the power supply must be switched off.
- The device must not be opened. Defective devices must be returned to the manufacturer.

**Mounting and Wiring**

As an REG device the DaliControl SC64 is designed to be mounted directly on 35mm DIN rails within distribution panels. After snapping the device onto the rail, the DALI bus should be connected to the upper left-hand side connector. In accordance with IEC90929 the DALI control wires can be part of a 5-stranded cable also carrying the ECG power (the base insulation is sufficient). However, each wire must be clearly marked and reliably identified. The maximum cable length for the entire DALI installation of one segment must not exceed 300m. (Recommended cross-sectional area: 1.5mm²).

After connecting the DALI control wires, the optional external pushbuttons can be connected, as shown in the image to the right. The binary inputs are passive meaning that an auxiliary 6-20VAC or 9-32V DC voltage is required to operate the switches.

The power supply is connected to the lower right-hand side connector according to the schema printed on the device.

The KNX cable is connected using a standard bus connector that is already inserted in the block when the device is shipped. Proper double base insulation between the KNX installation and the power supply needs to be guaranteed. It is therefore necessary to wrap the KNX control wires from the cable end right to the bus connector with the shrink sleeve that is part of the package.

After the device has been connected and the power supply activated, the device will display its product name and the firmware version. The blinking green PWR LED signals that the device is ready to be used. If the device is started without KNX, the red ERR-LED is lit. If the ERR-LED is still on after connecting the KNX, a short circuit within the DALI segment is the probable error source (refer to sub-menu SYSTEM TEST). In this case, please check the wiring of the DALI segment.

The DaliControl SC64IP also enables easy commissioning of the Dali segment via the integrated web server. For this purpose, the device has an RJ-45 socket above the bus coupler on the lower right-hand side of the device. The device can be connected to a Switch or Router of the IP network (Ethernet) via a standard patch cable. The connection is usually only required for commissioning purposes and can therefore be temporary. After completing the commissioning process, the Ethernet connection is no longer necessary for the normal operation. When the power supply is connected, sufficient distance between the IP cable and the power cable must be ensured.
Operation and Menu Structure

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.

Main menu – Level 1

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

- DALI CONTROL
  SC64IP,V.2.0
  The product description and the firmware version are displayed. This screen features a submenu that allows to select the display language.

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

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

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

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

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

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

- GROUP TEST
  This submenu allows to switch the entire installation (Broadcast) and the individual channels for testing purposes.

- TEST SCENES
  This submenus 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
  --- as above ---
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.

Submenu DALI CONTROL – Level 2

The main menu DALI CONTROL leads to the submenu LANGUAGE by briefly pressing the Prg/Set key.

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.

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.

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.

### 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:

- **GROUP: 12**
  - **ON-VALUE: 100**
  - **MIN VAL: 0**
  - **MAX VAL: 100**
  - **DURATION: 10s**

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.

### 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 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 CHANNELS: 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.

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.
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, briefly press the Move button. The number of the currently selected function is shown in the first display line. The following functions can be set:

- **TOG/DIM**
  - **GROUP: ALL**
  - 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, briefly press the Move button. By pressing the ESC key (or automatically after 30 seconds) the device returns to the menu level above.

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, briefly press the Move button. The number of the currently selected function is shown in the first display line. The following functions can be set:

- **SCENE**
  - INPUT B2
  - 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, briefly press the Move button. By pressing the ESC key (or automatically after 30 seconds) the device returns to the menu level above.

**DALI Commissioning via the Device Buttons and Display**

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.
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.

**DALI Commissioning via Software Tool**

The DALI segment can also be commissioned via the free-of-charge software tool 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.

**DALI Commissioning via Web Server**

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 SC64IP 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 access 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.

A 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.

- **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**
  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.

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 green field with the group number in the top right-hand corner of the 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.

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 button. The page has the following layout:

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 modified value in the selected scene.

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