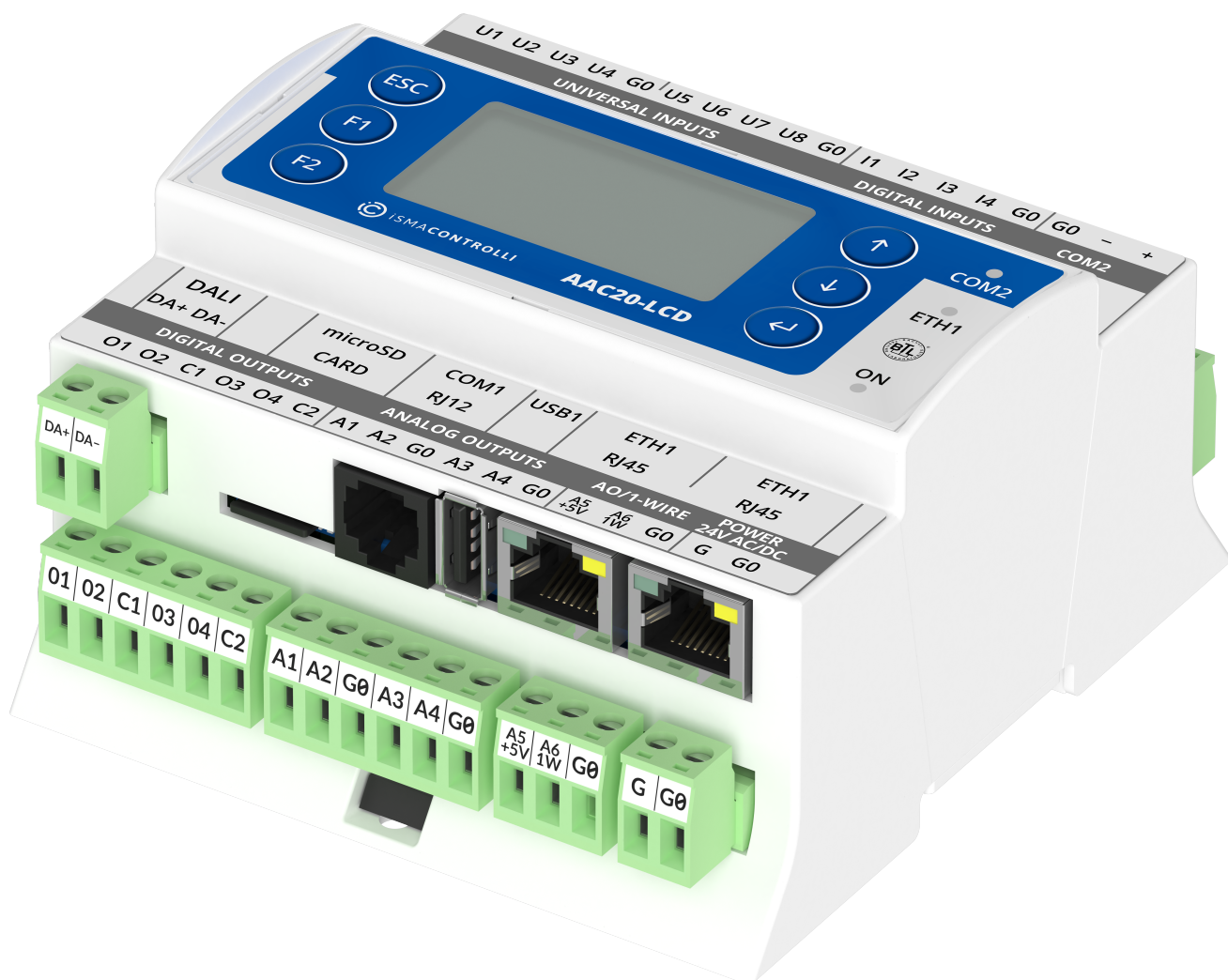


iSMA-B-AAC20

User Manual

DALI



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1 Introduction

This manual contains information about the DALI network in the iSMA-B-AAC20 controller.

DALI is an abbreviation for Digital Addressable Lighting Interface. DALI is a protocol in which DALI devices communicate with each other. In other words, DALI is the language in which DALI- devices talk to each other.

DALI (Digital Addressable Lighting Interface) is a two-way communication system that brings digital technology to lighting. An international standard for communication, DALI defines the commands that ballasts need to recognize in order to be considered DALI ballasts. The system allows individual ballasts to “talk” to the user, and it allows the user to “talk” back via DALI controllers, computers equipped with appropriate software, or building management systems (BMS).

WARNING! Before programming iSMA DALI kit please check if you are using the latest kit version. The latest kits are available on iSMA CONTROLLI support web site ismacontrolli.com

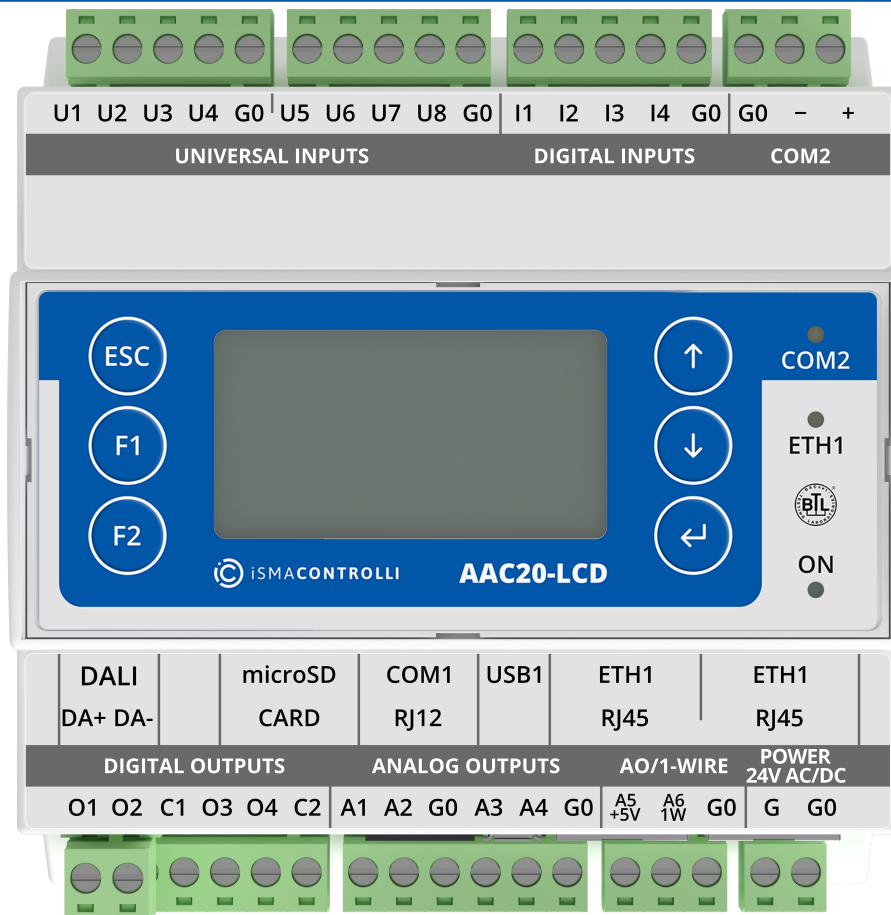


Figure 1. AAC20-ICD controller

1.1 Revision History

Rev.	Date	Description
1.0	28 Aug 2015	First edition
1.1	3 Jun 2016	Enable/Disable DALI bus power supply
1.2	5 Feb 2018	Added lights control components
1.3	10 Apr 2019	Added DALI Scene Setter
1.4	2 Dec 2019	Replaced environment of programming from Workplace to iSMA Tool
1.5	28 Feb 2022	Rebranded

Table 1. Revision history

2 DALI License and Limitation

In a standard license, there are available 64 DALI devices, and this number cannot be expanded. The iSMA-B-AAC20-D has an internal power supply (default switch off in network configuration) of 130 mA, which can be used to power up, up to 64 standard DALI ballasts ($64 * 2 \text{ mA} = 128 \text{ mA}$ only ballasts). However, in order to connect devices, where the rate of total power consumption exceeds 130 mA (some DALI sensors use more than 2 mA), then the internal power supply must be switched off, and the external power adapter needs to be connected.

3 Installation of iSMA DALI Kit

The iSMA-B-AAC20-D controller has one independent DALI kit. To install the iSMA DALI kit, import the kit to the iSMA Tool software (possibly as part of the package of various kits in a zip file). To do this, use an application from the Sedona -> Import Sedona Files. After a successful import of the files, upload the files to your device using the Kit Manager application from the Sedona Tools package.

WARNING! Before programming iSMA DALI Network please check if you are using the latest kit version. The latest kit is available on iSMA CONTROLLI support web site ismacontrolli.com.

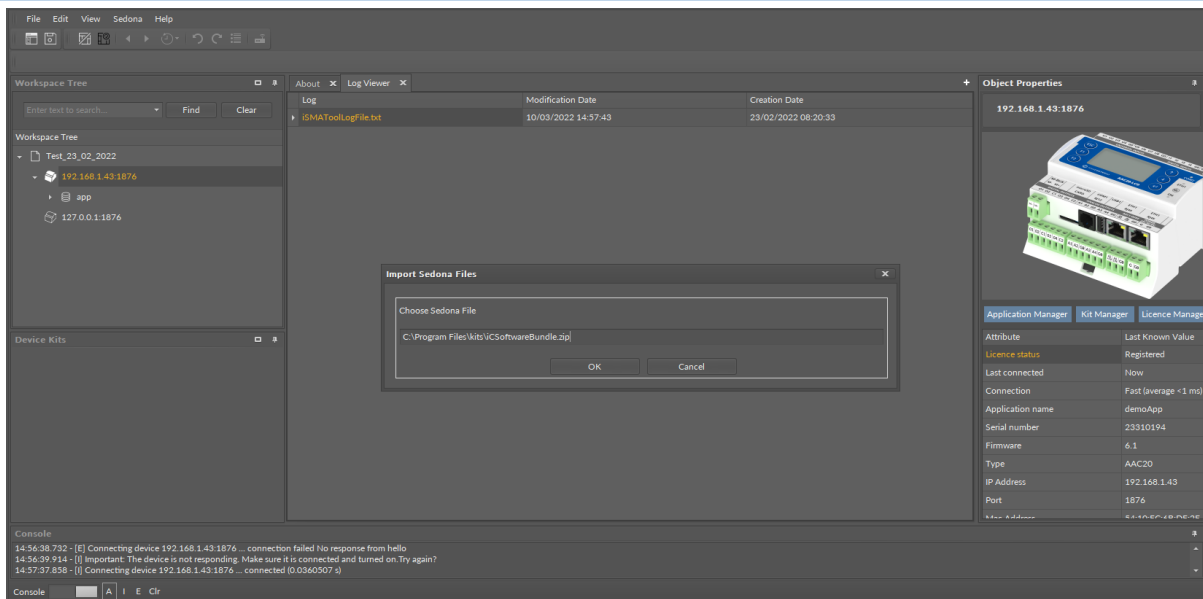


Figure 2. Importing Sedona files

3.1 iSMA_DALI Kit

After a successful import of all packages, upload the files to your device using the Kit Manager application from the Device Managers tab.

To install a selected kit:

- Step 1: Open the iSMA Tool, right-click the device, and choose the Kit Manager;
- Step 2: In the Kit Manager, all kits on the device can be managed;
- Step 3: Select the iSMA DALI kit, then click Update;
- Step 4: Components are installed successfully.

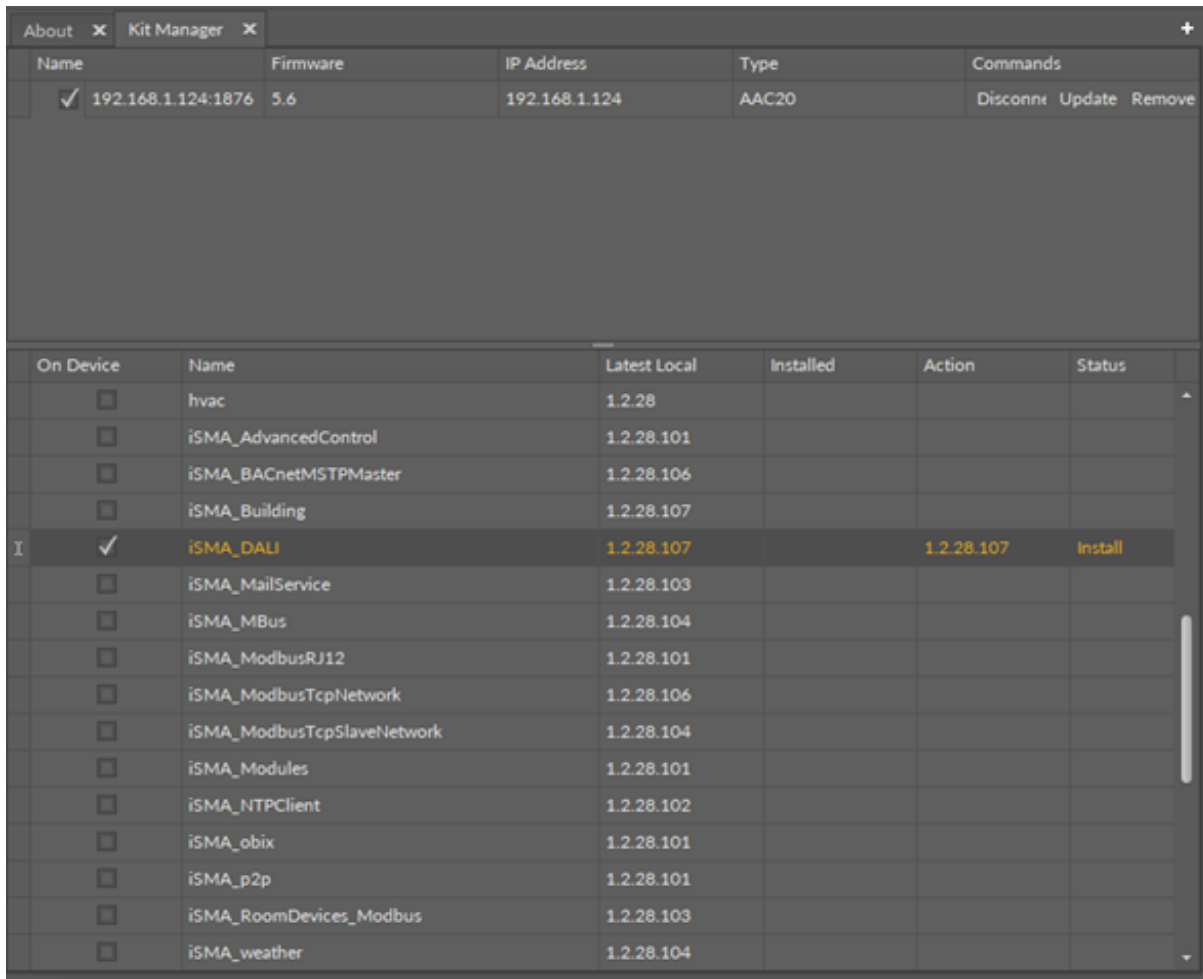


Figure 3. Installing the iSMA_DALI kit in the Kit Manager

To remove a selected kit:

- Step 1: Open the iSMA Tool, right-click on the device and choose the Kit Manager;
- Step 2: Uncheck the DALI kit, then click Upgrade;
- Step 3: Components are uninstalled successfully.

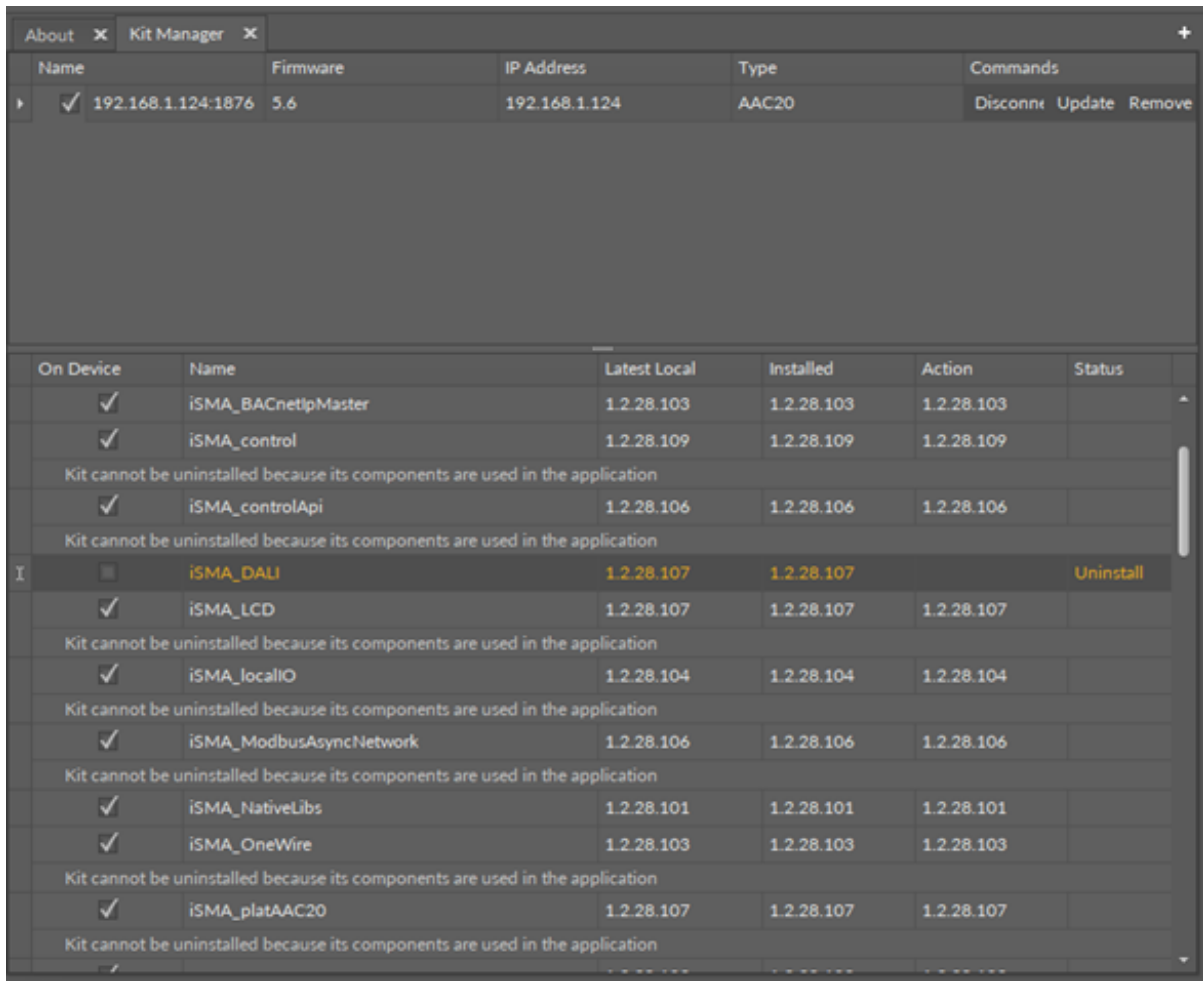


Figure 4. Removing the iSMA_DALI kit

4 DALINetwork

This section provides a collection of procedures to use within the iSMA-B-AAC20-D DALI Network kit to build a network of devices with DALI points. The iSMA-B-AAC20-D device has one DALI interface which can be used to communicate with up to 64 DALI devices.

The DALI Network kit consists of 11 types of components:

And:

- DALIDevice;
- DALIDeviceFolder;
- DALILogicFolder;
- DALINetwork.

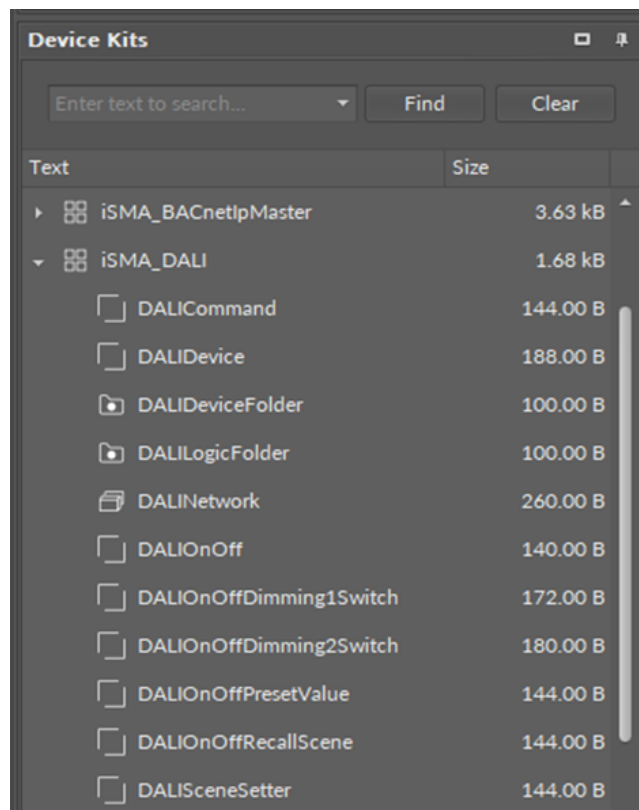


Figure 5. iSMA_DALI components

4.1 DALI Network Component

The DALINetwork component is the main component, which services the DALI physical interface. The component must be placed under the Drivers folder.

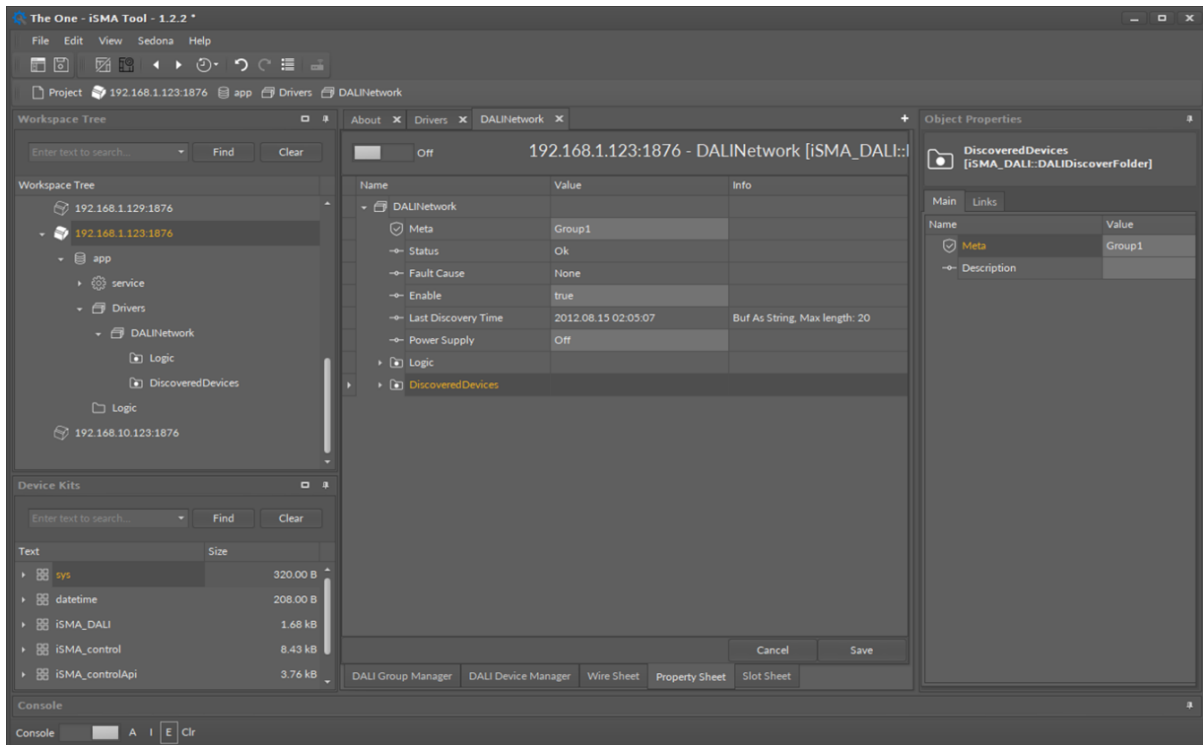


Figure 6. DALINetwork component

The DALINetwork component has the following slots:

- **Status:** Network's status;
 - Available states: OK (network is working properly), Disabled (network is disabled, the Enable slot is in false), OK some device/point down (error in the device or points);
- **Fault Cause:** fault cause description;
- **Enable:** this option switches on or switches off the DALI network;
 - true (network enabled), false (network disabled);
- **Last Discovery Time:** indicates the last time the devices on the DALI network have been discovered;
- **Power Supply:** switches on/off the DALI Network power supply.

Note: As part of the DALINetwork component, configuration actions performed by the integrator (Discover or ReadDevice and WriteDevice of the DALI Device component) have a common context. By doing this action during the implementation of another action, the previous action will be interrupted, and the new action will be started. The communication acquisition status is not shown in any way (status slot or console); therefore, depending on the DALI communication speed set, the integrator must allow a certain time to execute the command and start the next command after that time.

The DALINetwork component has two actions:

- **Discover:** This action will automatically search and detect all devices connected to a DALI port. It will also create a Discover folder and place there all found devices. All devices have a unique address assigned by the manufacturer (slot Address). All devices can be moved and grouped into Device Folders (folders must be also placed under the DALINetwork component).
- **DiscoverNewInitialization:** This action has the same functionality as 'discover', but is also responsible for Short Address. After using this action the Short Address will be

grouped from 0–63, and it will erase your previous addresses (this action is recommended at first commissioning process).

Special Views

Two special views are available for the DALINetwork component in the iSMA Tool: DALI Group Manager and DALI Device Manager.

The DALI Group Manager

The DALI Device Manager list all discovered DALI devices in the network, their addresses and statuses.

4.2 DALIDevice

The DALIDevice is responsible for servicing physical device connected to DALI network. Each device is represented by a DALI device component and has a unique DALI address (0 to 63).

Name	Value
<input checked="" type="checkbox"/> Meta	Group1
<input type="checkbox"/> Status	Ok
<input type="checkbox"/> Fault Cause	None
<input type="checkbox"/> Description	
<input type="checkbox"/> Device Type	Unknown
<input type="checkbox"/> Short Address	-1
<input type="checkbox"/> Random Address	
<input type="checkbox"/> Read Actual Level	false
<input type="checkbox"/> Read Device Status	false
<input type="checkbox"/> Group0	false
<input type="checkbox"/> Group1	false
<input type="checkbox"/> Group2	false
<input type="checkbox"/> Group3	false
<input type="checkbox"/> Group4	false
<input type="checkbox"/> Group5	false
<input type="checkbox"/> Group6	false
<input type="checkbox"/> Group7	false
<input type="checkbox"/> Group8	false
<input type="checkbox"/> Group9	false
<input type="checkbox"/> Group10	false
<input type="checkbox"/> Group11	false
<input type="checkbox"/> Group12	false
<input type="checkbox"/> Group13	false
<input type="checkbox"/> Group14	false
<input type="checkbox"/> Group15	false
<input type="checkbox"/> Scene0 Level	0
<input type="checkbox"/> Scene1 Level	0
<input type="checkbox"/> Scene2 Level	0
<input type="checkbox"/> Scene3 Level	0
<input type="checkbox"/> Scene4 Level	0
<input type="checkbox"/> Scene5 Level	0
<input type="checkbox"/> Scene6 Level	0
<input type="checkbox"/> Scene7 Level	0
<input type="checkbox"/> Scene8 Level	0
<input type="checkbox"/> Scene9 Level	0
<input type="checkbox"/> Scene10 Level	0
<input type="checkbox"/> Scene11 Level	0
<input type="checkbox"/> Scene12 Level	0
<input type="checkbox"/> Scene13 Level	0
<input type="checkbox"/> Scene14 Level	0
<input type="checkbox"/> Scene15 Level	0
<input type="checkbox"/> Max Level	0
<input type="checkbox"/> Min Level	0
<input type="checkbox"/> Power On Level	0
<input type="checkbox"/> System Failure Level	0
<input type="checkbox"/> Fade Time	0
<input type="checkbox"/> Fade Rate	0

Figure 7. DALIDevice component

The DALIDevice component has the following slots:

- **Status:** shows the device current status;
- **Fault Cause:** fault cause description;

- **Description:** additional description label;
- **Device Type:** indicates the type of device;
- **Short Address:** defines the address at the planning stage;
- **Random Address:** hexadecimal address of a device connected to the DALI input controller;
- **Read Actual Level:** current brightness value of the ballast;
- **Read Device Status:** shows actual status of the device;
- **Group (0-15):** a transition from false to true will cause associated scene selected command to be sent to the control gear;
- **Scene (0-15):** stores the brightness values for the individual scenes;
- **Max Level:** sets the maximum brightness value–this value cannot be exceeded when fading up;
- **Min Level:** sets the minimum brightness value–this value cannot be undershot when fading down;
- **Power On Level:** brightness value to which extent the DALI ballast switches when the power supply is switched on;
- **System Failure Level:** brightness value to which extent the DALI ballast switches when a fault is detected in the DALI circuit;
- **Fade Time:** time in seconds of fading from the current brightness value to the new brightness value;

The DALIDevice component has the following actions:

- **Read:** reads the configuration data and the current status of the device;
- **Write:** writes the configuration data and the current status of the device;
- **Blink:** allows the light source(s) of the device to flash.

4.2.1 DALI Groups and Scenes

DALI Groups

With the DALIDevice it is possible to define 16 groups in a DALI circuit. A group is a number of devices classed together. The Group assignment can be edited in the DALIDevice component. It is possible for one DALI device to belong to several groups. This reduces the amount of wiring needed, and greatly increases flexibility compared with non-addressable systems because in these systems the groupings are hard-wired.

DALI Scenes

With the DALIDevice component it is possible to store 16 different lighting scenarios in each DALI device so that predefined lighting moods can be called up for a room (for example, the "presentation" scene in a conference room or a "morning" scene in a wellness center). The values of the 16 scenes are stored in the control gear.

4.2.2 DALICommand

While defining a function, numerous parameters can be set to select the destination address for which the function is intended (group or individual address) and the type of the DALI command to be performed.

The DALI protocol allows addressing an individual control gear (ballasts, relays, dimming circuits, etc.) without a need to refer to a parent device.

The DALICommand is used for triggering the DALI commands. Individual In slots are provided for various DALI commands. A transition from false to true will cause the associated DALI command to be sent to the control gear.

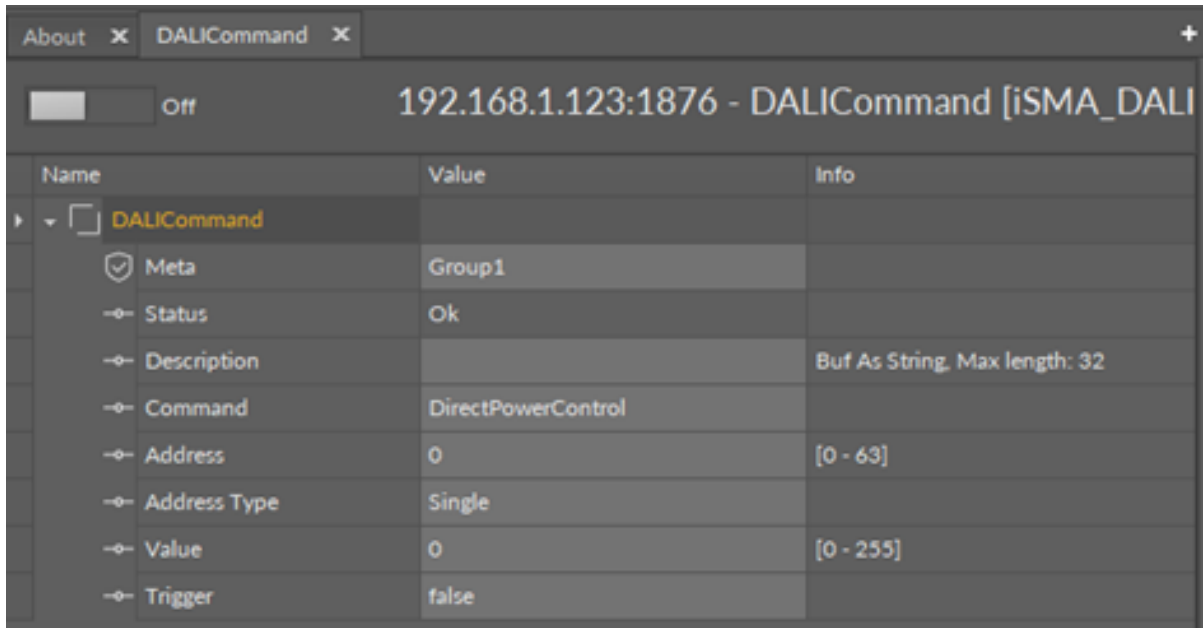


Figure 8. DALICommand component

Slots

The DALICommand has the following slots:

- **Status:** shows the component's current status;
- **Description:** user description up to 32 characters;
- **Command:** parameter to a control gear;
- **Address:** short DALI device address or DALI group address;
- **Address Type:** option to define a single device, group, or all DALI devices;
- **Value:** intensity values for scenes;
- **Trigger:** the rising edge sends the DALI command to DALI devices.

Action

The DALICommand component has the following action:

- **Send:** sends the DALI command to DALI devices.

4.2.3 DALIOnOff

This component has a built-in DALI command, which will be sent to DALI device/devices on the rising edge of slots on and off.

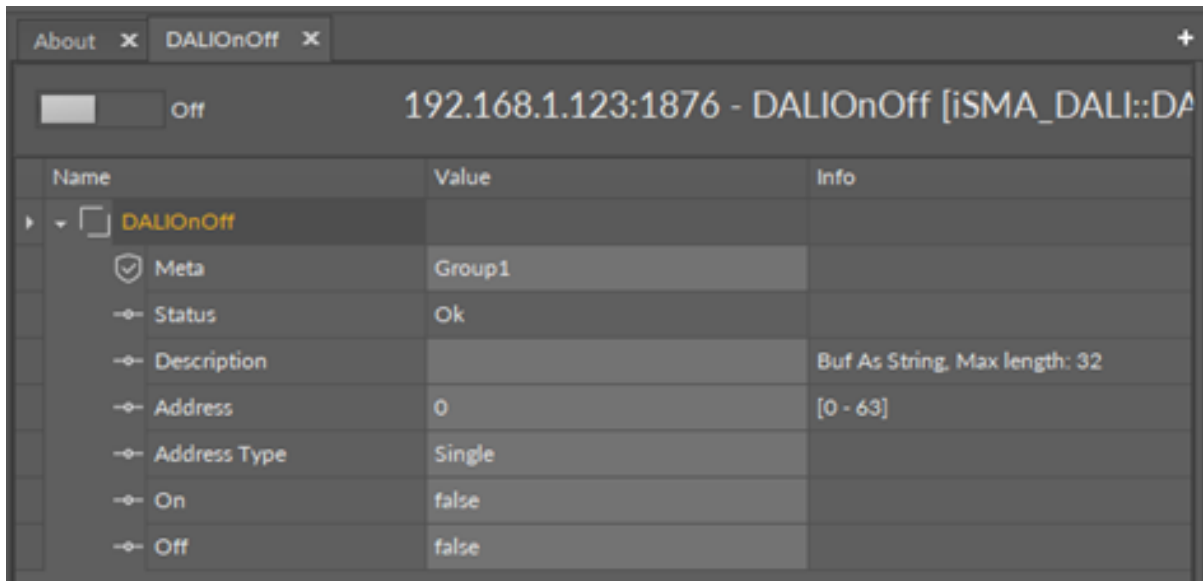


Figure 9. DALIOnOff component

Slots

The component has the following slots:

- **Status:** shows the component's current status;
- **Description:** user description up to 32 characters;
- **Address:** short DALI device address or DALI group address;
- **Address Type:** option to define a single device, group, or all DALI devices;
- **On:** the rising edge sends the Switch On command to device/devices;
- **Off:** the rising edge sends the Switch Off command to device/devices.

Actions

The DALIOnOff component has the following actions:

- **Send On:** sends the Switch On command to DALI device/devices;
- **Send Off:** sends the Switch Off command to DALI device/devices.

4.2.4 DALIOnOffDimming1Switch

This component has a built-in DALI command, which allows to switch on and off or to change DALI device/devices lighting level. This component is designed to work with a single switch (one button connected to one digital input). The switch is working in two modes, short and long press. The short press (if the Switch slot is in the true mode for the time shorter than defined in the Long Press slot) triggers a toggle function, so each short press sends an on/off command to DALI device/devices. The long press is to increase or decrease the lighting level. Each press toggles between the increase or decrease function. Current lighting level is stored in the device in the scene number defined in the Scene No For Last Level slot (by default, scene no. 15). The short press on command invokes the lighting level stored in this scene. The component knows how to perform the next action based on the actions previously performed on it, therefore, it is not suitable to connect it with other components affecting the same ballast (whether by Address Type Single or

Group, or All). Each action performed on a ballast by another component causes the action to desynchronize in the DALIOnOffDimming1Switch.

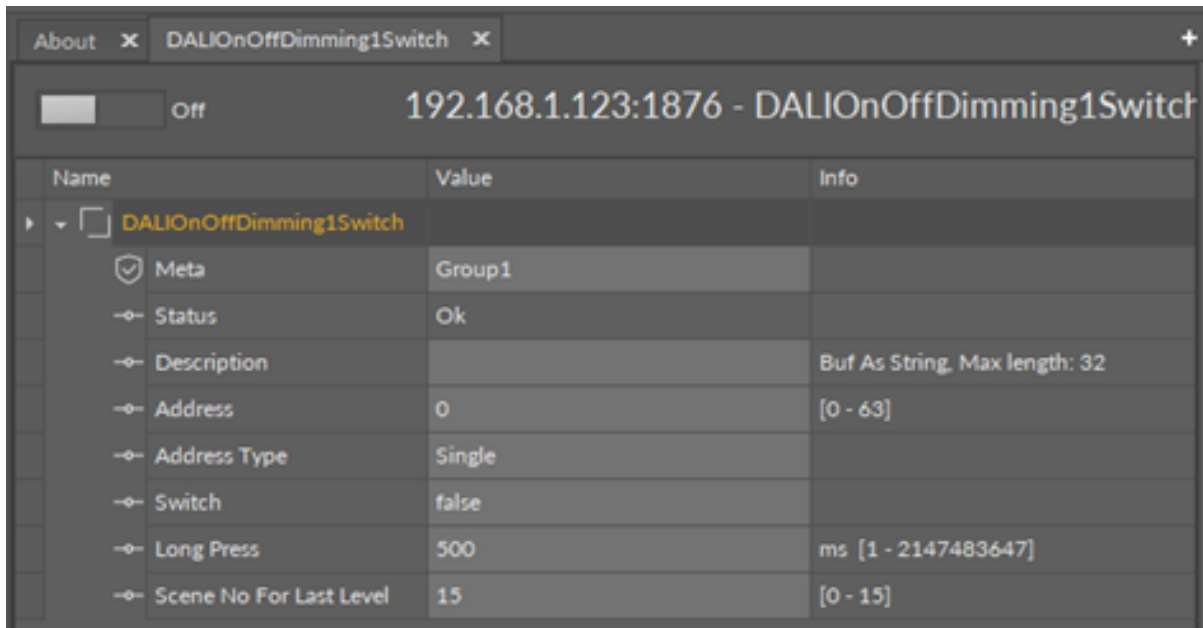


Figure 10. DALIOnOffDimming1Switch

Slots

The DALIOnOffDimming1Switch component has the following slots:

- **Status:** shows the component's current status;
- **Description:** user description up to 32 characters;
- **Address:** short DALI device address or DALI group address;
- **Address Type:** option to define a single device, group, or all DALI devices;
- **Switch:** component input which triggers the DALI command sending;
- **Long Press:** time parameter which defines the time for long press function, (by default, 500 ms);
- **Scene No For Last Level:** sets the scene number, which stores last level value (by default, scene no. 15).

Action

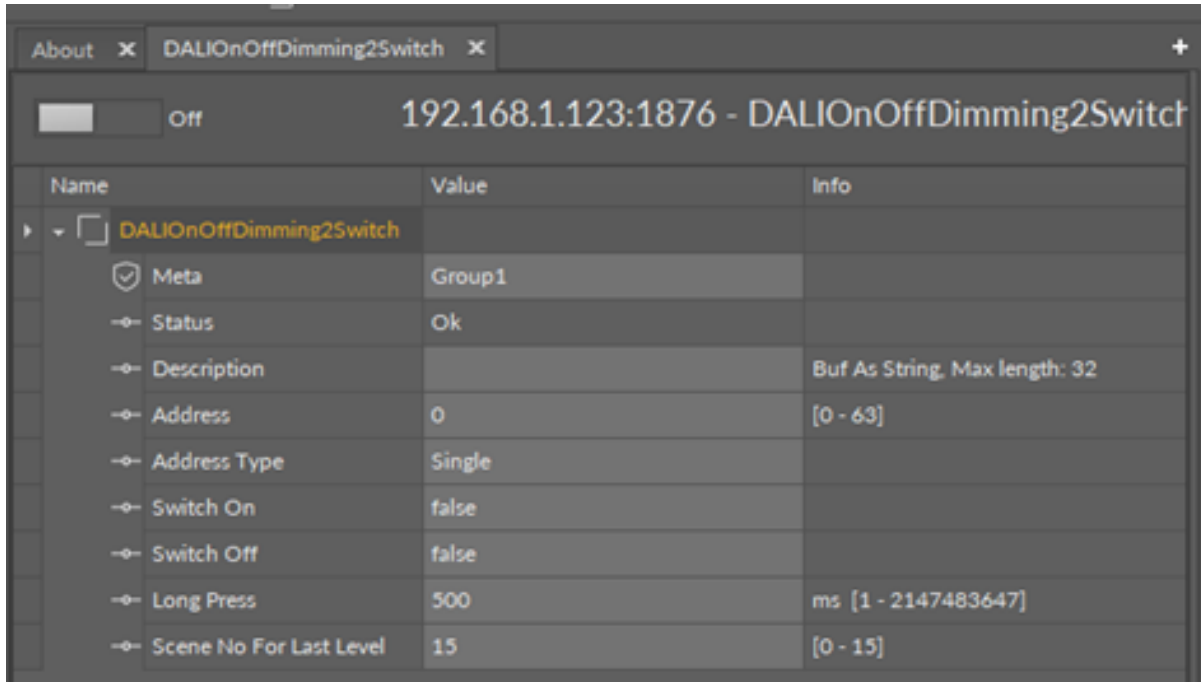
The DALIOnOffDimming1Switch component has the following action:

- **Send Short Press:** toggles between on and off commands and sends it to DALI device/devices.

4.2.5 DALIOnOffDimming2Switch

This component has the built-in DALI command, which allows to switch on and off or to change DALI device/devices lighting level. This component was designed to work with a double switch (one button for switch on and dim up, second for switch off and dim down). The switch is working in two modes, short and long press. The short press (if the Switch slot is in the true mode for the time shorter than defined in the Long Press slot), triggers an on/off command to DALI device/devices. The long press is for increasing or decreasing the lighting level. Current lighting level is stored in the device in the scene number

defined in the Scene No For Last Level slot (by default, scene no. 15). The short press On command will recall the lighting level stored in this scene. The component does not check the actions it has performed recently, it only performs actions determined on the basis of triggering the corresponding inputs, therefore it is suitable to connect it with other components affecting the same ballast (whether by Address Type Single or Group, or All).



Name	Value	Info
<input checked="" type="checkbox"/> DALIOnOffDimming2Switch		
<input checked="" type="checkbox"/> Meta	Group1	
<input type="checkbox"/> Status	Ok	
<input type="checkbox"/> Description		Buf As String. Max length: 32
<input type="checkbox"/> Address	0	[0 - 63]
<input type="checkbox"/> Address Type	Single	
<input type="checkbox"/> Switch On	false	
<input type="checkbox"/> Switch Off	false	
<input type="checkbox"/> Long Press	500	ms [1 - 2147483647]
<input type="checkbox"/> Scene No For Last Level	15	[0 - 15]

Figure 11. DALIOnOffDimming2Switch

Slots

The DALIOnOffDimming2Switch component has the following slots:

- **Status:** shows the component's current status;
- **Description:** user description up to 32 characters;
- **Address:** short DALI device address or DALI group address;
- **Address Type:** option to define a single device, group, or all DALI devices;
- **Switch:** component input which triggers the DALI command sending;
- **Long Press:** time parameter which defines the time for long press function, (by default, 500 ms);
- **Scene No For Last Level:** sets the scene number, which stores last level value (by default scene, no. 15).

Actions

The DALIOnOffDimming2Switch component has the following actions:

- **Send Short Press On:** sends the on command to DALI device/devices.
- **Send Short Press Off:** sends the off command to DALI device/devices.

4.2.6 DALIOnOffPresetValue

This component has the built-in DALI command, which sends a lighting level to directly to DALI device/devices. The component has defined two sending slots, so different values for on and off trigger can be defined.

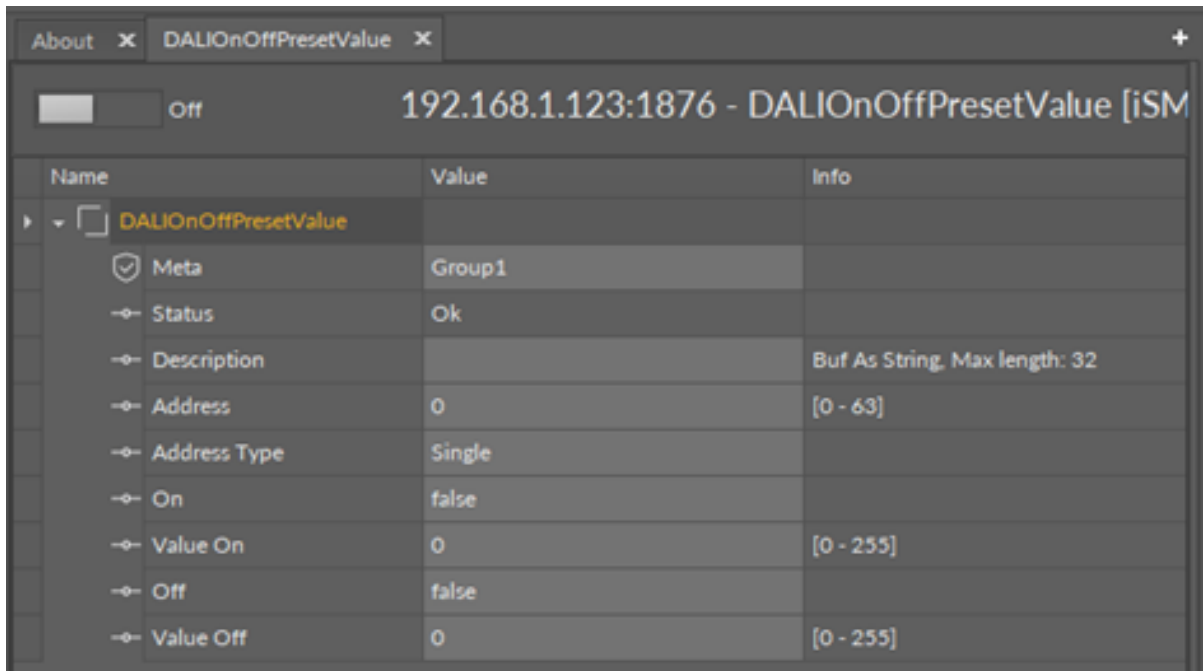


Figure 12. DALIOnOffPresetValue component

Slots

The DALIOnOffPresetValue component has the following slots:

- **Status:** shows the component's current status;
- **Description:** user description up to 32 characters;
- **Address:** short DALI device address or DALI group address;
- **Address Type:** option to define a single device, group, or all DALI devices;
- **On:** component input trigger, which sends the direct lighting level from the Value On slot;
- **Value On:** on direct lighting level;
- **Off:** component input trigger which sends the direct lighting level from the Value Off slot;
- **Value Off:** off direct lighting level.

Actions

The DALIOnOffPresetValue component has the following actions:

- **Send Value On:** sends the direct level value assigned to On trigger to DALI device/devices.
- **Send Value Off:** sends the direct level value assigned to Off trigger to DALI device/devices.

4.2.7 DALIOnOffRecallScene

This component has the built-in DALI command, which sends the Recall Scene command to DALI device/devices. The component has defined two scenes numbers and triggering slots, so it allows for defining different scenes for on and off triggering slots.

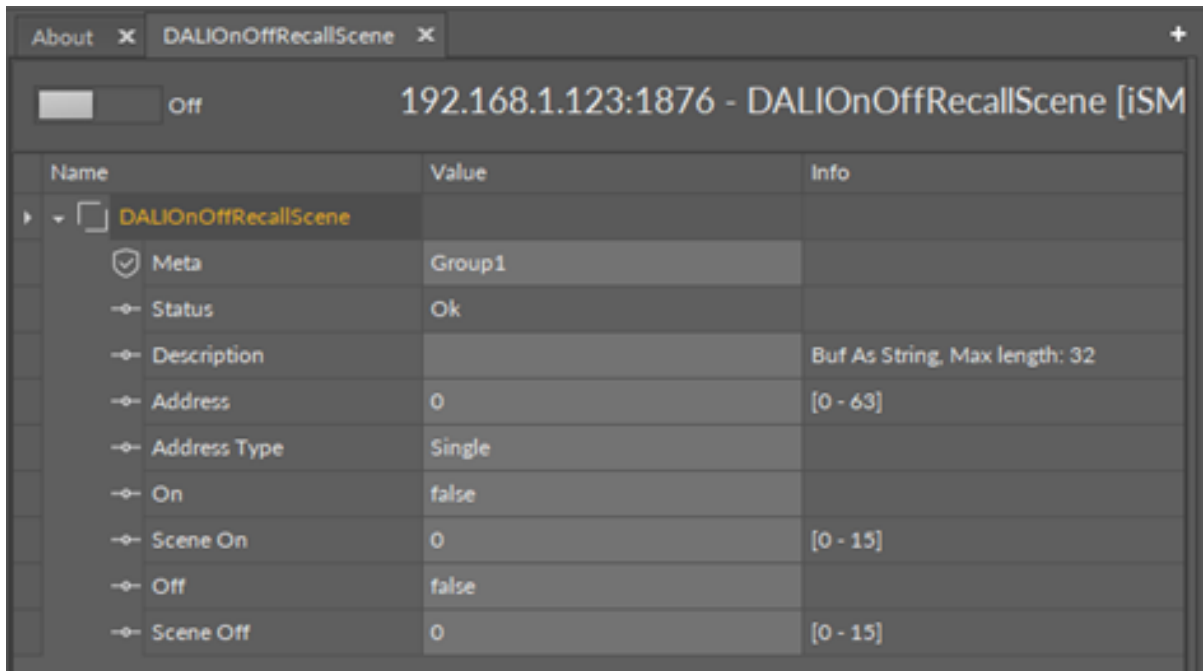


Figure 13. DALIOnOffRecallScene component

Slots

The DALIOnOffRecallScene component has the following slots:

- **Status:** shows the component's current status;
- **Description:** user description up to 32 characters;
- **Address:** short DALI device address or DALI group address;
- **Address Type:** option to define a single device, group, or all DALI devices;
- **On:** component input trigger, which sends the Recall Scene command;
- **Value On:** sets the scene number recalled by the On trigger;
- **Off:** component input trigger, which sends the Recall Scene command;
- **Value Off:** sets the scene number recalled by the Off trigger.

Actions

The DALIOnOffRecallScene component has the following actions:

- **Send Scene On:** sends the Recall Scene number assigned to the On trigger to DALI device/devices.
- **Send Scene Off:** sends the Recall Scene number assigned to the Off trigger to DALI device/devices.

4.2.8 DALISceneSetter

This component allows for building an application, in which the user is able to change the value of the scene in the ballast independently without the need to use the configuration software. In the component, the Scene Number value defines the scene, which value is to be changed to the current level of the luminaire (actual level).

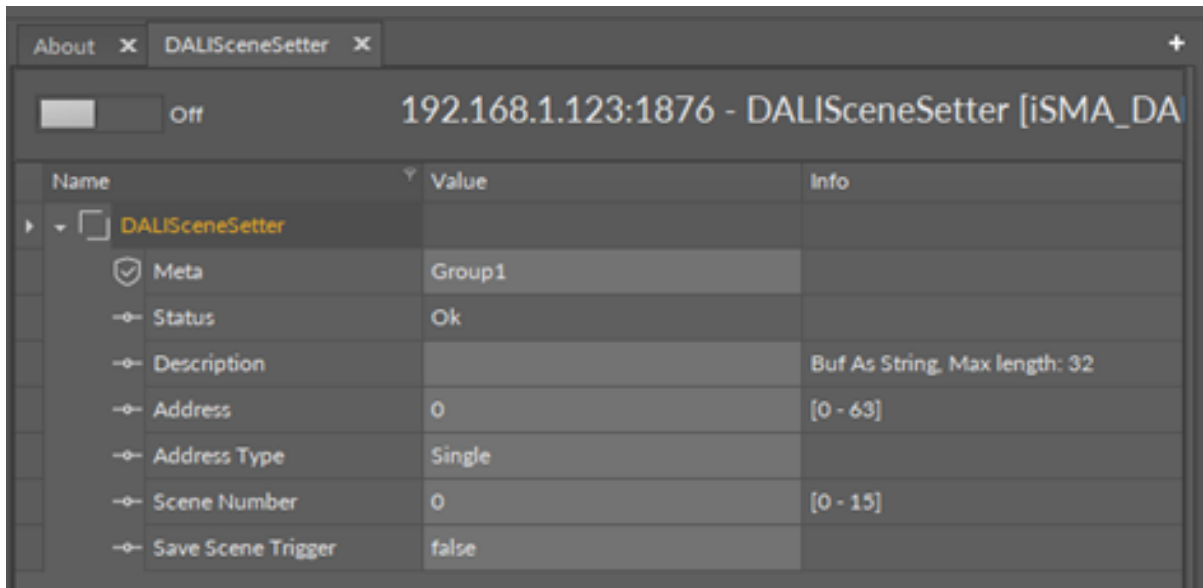


Figure 14. DALISceneSetter component

Slots

The DALISceneSetter component has the following slots:

- **Status:** shows the component's current status;
- **Description:** user description up to 32 characters;
- **Address:** short DALI device address or DALI group address;
- **Address Type:** option to define a single device, group or all DALI devices;
- **Scene Number:** sets the number of the scene to be overwritten on the triggering event;
- **Save Scene Trigger:** changing the value to true triggers the overwrite of the scene value.

Action

The DALISceneSetter component has the following action:

- **Save Scene:** sends a command to DALI device/devices to save the actual level for ballast to the scene number indicated by the Scene Number slot.