Node Link User Guide

Description

Node Link makes chosen ActiveAhead groups and network to be visible on the DALI-2 system as DALI-2 loads and input devices. This document describes how to configure a Node Link device on the ActiveAhead system side using the ActiveAhead mobile app and on the Imagine DALI-2 system side using the Designer PC software.
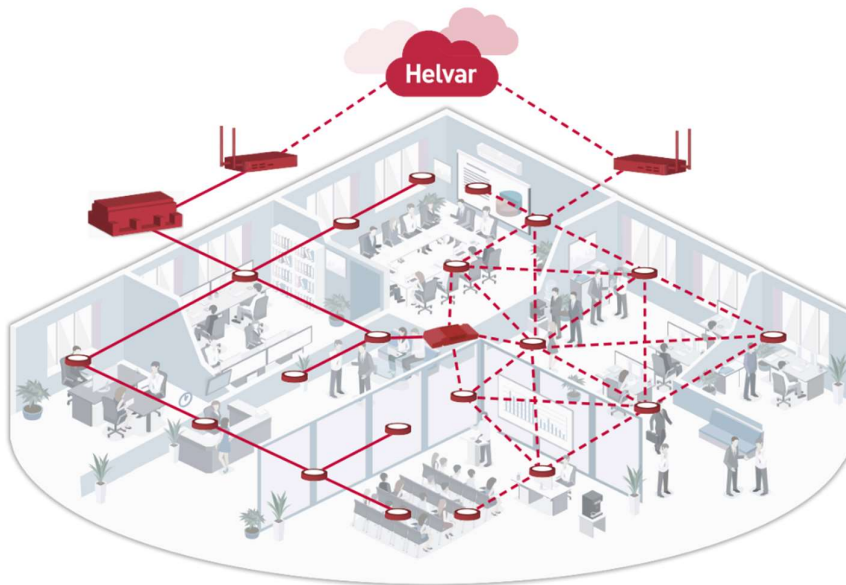

Figure 1: Node Link connects ActiveAhead and Imagine solutions

Contents

System Design Phase Considerations

ActiveAhead considerations

Node Link communicates with the ActiveAhead Nodes using the wireless mesh network. Consequently, it must be installed within direct radio reach from the nearest ActiveAhead Nodes as well as within the indirect radio reach from the furthest linked ActiveAhead device.

The direct reach means that the Node Link can communicate reliably with the mesh network via the nearest Nodes. For a reliable communication, there must be at least three Nodes within 10 meters distance without any elements blocking the radio signals, such as thick walls or metal.

The indirect reach means that the Node Link can communicate with the linked Nodes over the mesh network. For a reliable communication, the furthest linked Node must be within 30 meters distance from the Node Link. Linked Node means any Node within the linked ActiveAhead group or network. Node Link will be able to communicate with Nodes further away but for a reliable communication a shorter distance must be used in device positioning. Control links are impacted more by the distance since the control commands must be real-time and reliable.

Node Link is mains powered and connects to the DALI system over a DALI cable. No other connections are supported, so Node Link does not connect any sensors or other devices to the systems.

In the below example two Node Link devices are positioned to cover as reliably as possible the linked ActiveAhead groups while being as close to the DALI devices as possible to enable an efficient DALI cable installation.
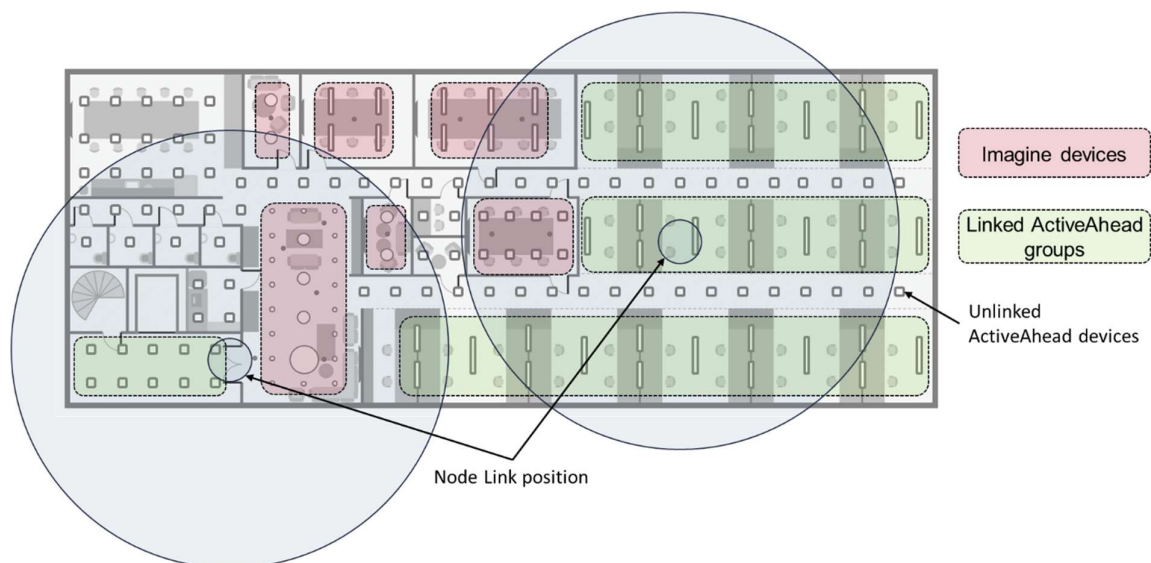

Figure 2: Node Link positions indicating their reliable reach

Imagine considerations

Node Link communicates with the DALI system over a wired DALI line. Thus, a DALI cable connects the Node Link with a DALI subnet on an Imagine Application Controller. Multiple Node Link devices can be connected to one DALI subnet if both electrical and system requirements are followed. Most importantly there must enough of DALI addresses for the links. Consequently, it is important to consider which links will be added so that DALI subnets can be designed accordingly. This document

does not go into the details of the Imagine system level requirements. One link takes one DALI address. If the same ActiveAhead is linked as both a control and an input link it takes one control gear address and one input address from the DALI subnet.

The distance from the other devices on the same DALI subnet should be considered when positioning the Node Link devices. This allows to minimise the DALI cabling needs on the project.

ActiveAhead Mobile App Usage

In this chapter, we go through how to create and modify links on the ActiveAhead side using the ActiveAhead mobile app.

Finding the Node Link device

Mobile app discovers the Node Link in the same way as the ActiveAhead Nodes. Thus, it is visible on the Devices list after connecting to the ActiveAhead network. Device type filter can be used to show only the Node Link devices found nearby.

A Node Link cannot be grouped with the ActiveAhead Nodes even though there is the multiselect option on the Node Link row.

Identifying a Node Link will blink the small LED light on the Node Link device visible through the small holes on the side of the device.
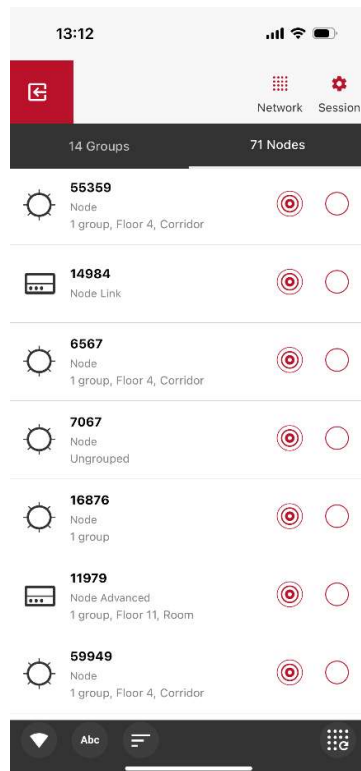

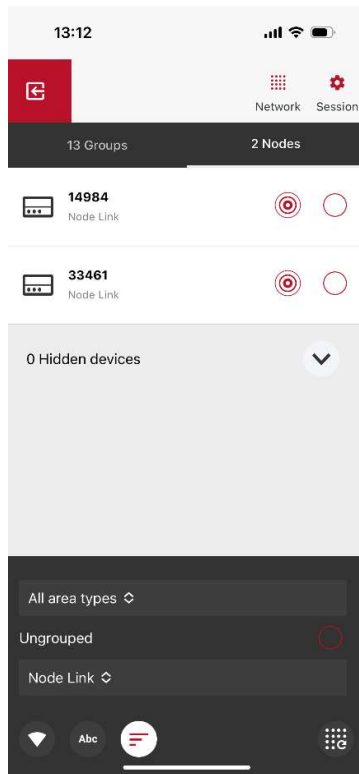**Figure 3: Node Link on the Devices list**

Figure 4: Node Link on the Devices list using the device filter

Node link device page

Opening a Node Link device page shows the links this Node Link has. Different types of links are listed separately. For each link, app shows internal link address, target on the ActiveAhead mesh side and the DALI address given by the DALI system. The internal link address if formed by the Node Link address followed by a number. The target on the ActiveAhead mesh is either an ActiveAhead group or the entire ActiveAhead mesh network. The DALI system assigns a DALI address to each link and this address is shown once the DALI system has assigned the address. Links can be readily created on the ActiveAhead side even before the Node Link device is connected to the DALI system. Once links are created and the DALI system is connected, Node Link will inform the DALI system Application Controller of the different device types needing a DALI address.

Figure 5: Node Link device details listing existing links
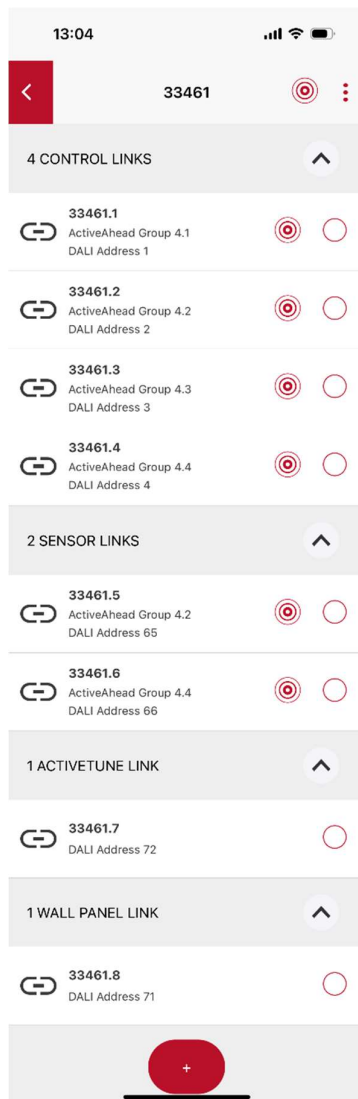
From the menu at the top right corner one can rename, reset, over-the-air (OTA) update and check the information on the Node Link.
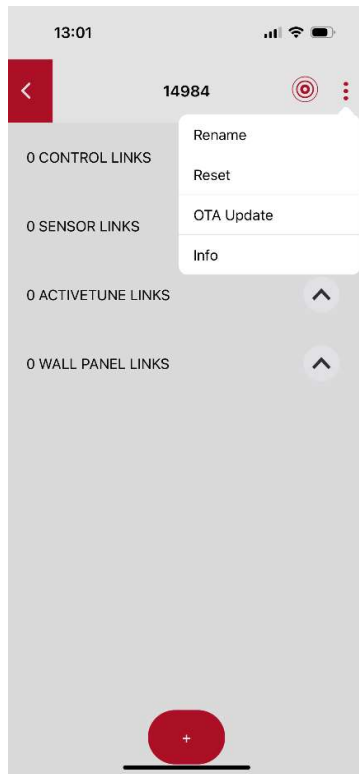
Figure 6: Node Link top right menu

The information on the Node Link lists the address of the Node Link device on the ActiveAhead mesh network and the software version of the Node Link device.
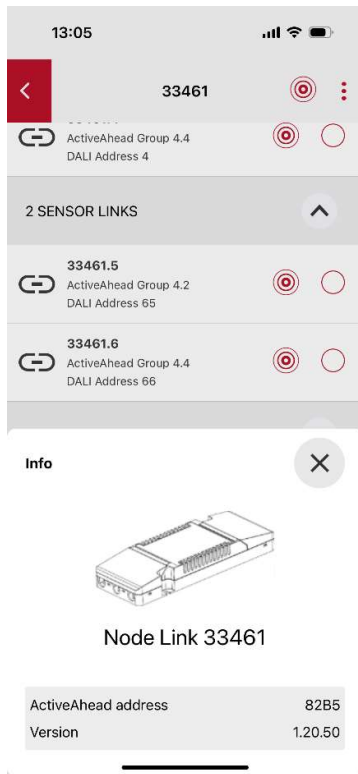
Figure 7: Node Link information

Adding a link

Links can be added one at a time by pressing the *+* sign button at the bottom of the Node Link device page. The different link type options are control, sensor, ActiveTune and wall panel.

Links can be created even before the Node Link is connected to the DALI system. Once connected Node Link will inform the DALI system about the new links needing DALI addresses. The link is visible to the DALI system as a DALI-2 Colour control gear, DALI-2 sensor, DALI-2 Absolute input device or DALI-2 Push-button depending on the link type. Each link consumes one DALI address on the DALI system side even though it targets a group of ActiveAhead Nodes or the entire nearby ActiveAhead mesh network of Nodes.

One Node Link supports up to seven control links, seven sensor links and combined eight ActiveTune and wall panel links.
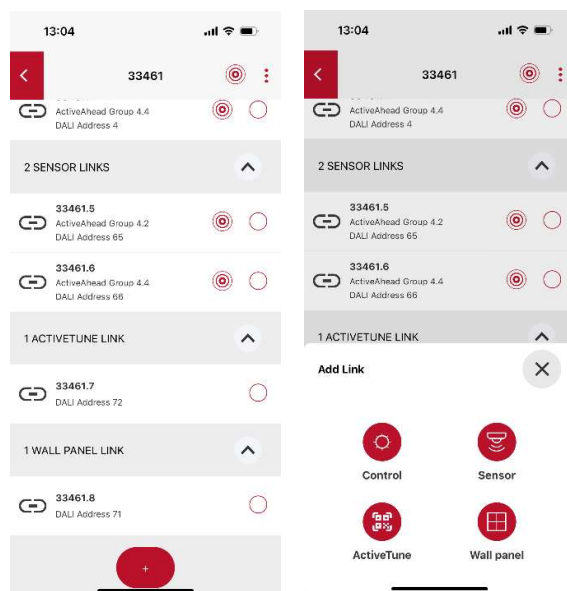

Figure 8: Adding a link

Adding a Control Link

A control link has two options for the control method. These are light level control only and light level with colour temperature control. Despite the selection, the link is shown on the DALI system as a tunable white controllable control gear. The selection will impact the control messages Node Link sends to the ActiveAhead mesh network. The light level control only option should be selected when the controlled luminaires support only intensity control. The light level and colour temperature control option should be selected when the controlled luminaires support tunable white control.

There are also two release methods, which can both be selected at the same time. The release method defines the DALI system message which is used to release the control of the ActiveAhead target and make it to continue with its own logic and control. For example, the DALI system may be in control during selected hours of the day and outside of these hours the ActiveAhead solution works with its own logic and configuration. In case of doubt, both release options should be selected.

A control link can target either the entire ActiveAhead network or a specific ActiveAhead group. The target for the link can be identified to verify that the wanted target is selected. The already existing target groups are shown but cannot be selected. Once the target is selected, the new link is created and added to the link list.

Up to seven control links can be added to one Node Link. Each control link takes one control gear address on the DALI system.
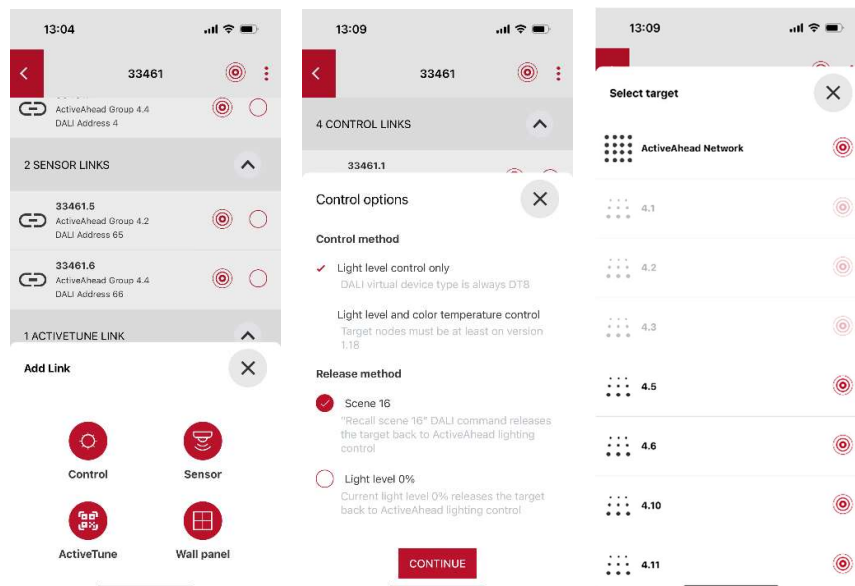
Figure 9: Adding a control link

Adding a Sensor Link

A sensor link source can be either the entire ActiveAhead network or a specific ActiveAhead group. The source of the link can be identified to verify that the wanted source is selected. The already existing source groups are shown but cannot be selected. Once the source is selected, the new link is created and added to the link list.

Up to seven sensor links can be added to one Node Link. Each sensor link takes one DALI-2 input device address on the DALI system.
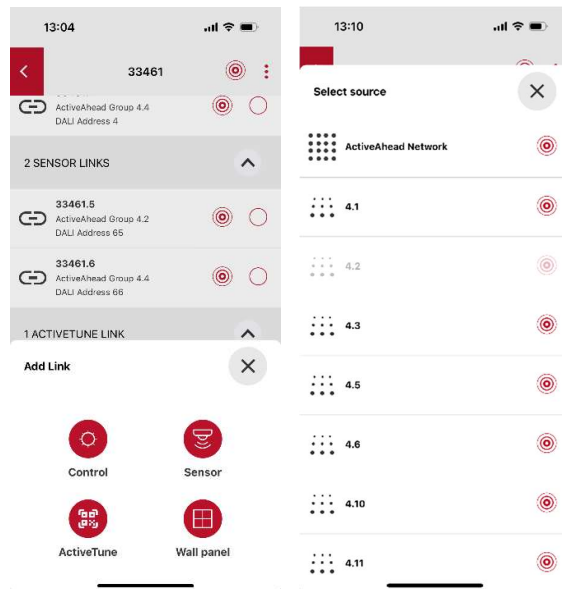

Figure 10: Adding a sensor link

Adding an ActiveTune Link

One ActiveTune link can have up to four ActiveTune QR codes behind it. When an ActiveTune link is added it has no ActiveTune QR codes yet stored to it.

Up to eight ActiveTune and wall panel links combined can be added to one Node Link. Consequently, the maximum number of ActiveTune QR codes on one Node Link device is 32 (eight times four). Each ActiveTune link takes one DALI-2 input device address on the DALI system.
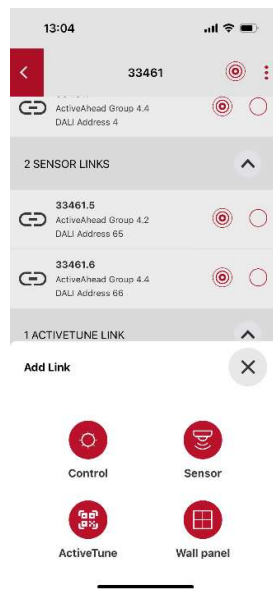
Figure 11: Adding an ActiveTune link

ActiveTune QR codes are added to the four available slots on each ActiveTune link. These slots are visible on the Slots tab when viewing an ActiveTune link. Camera is used to scan the added ActiveTune QR code. There are different ActiveTune QR code stickers for light level only control only and for light level with tunable white control. The slots indicate which absolute instance unit instances the slot in question uses on the DALI system. The lower instance number is for the light level control slider and the higher number is used for the tunable white control slider on the ActiveTune mobile app.
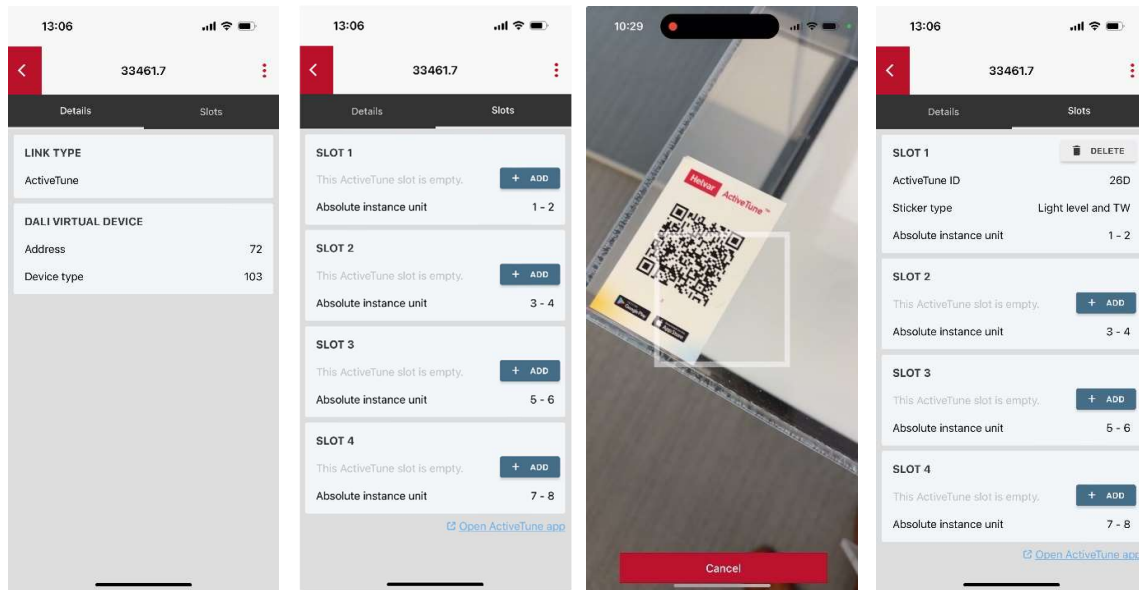
Figure 12: Adding an ActiveTune QR code on to a slot

Deleting a QR code from a slot makes the slot free and it can be used again. Adding and deleting slots do not impact the DALI system because the DALI-2 input address will always have eight instances preserved for the potential ActiveTune QR codes.

Adding a Wall Panel Link

One wall panel link can have up to four wireless wall panels behind it. When a wall panel link is added it has no wireless wall panels yet stored to it.

Up to eight ActiveTune and wall panel links combined can be added to one Node Link. Consequently, the maximum number of wireless wall panels on one Node Link device is 32 (eight times four). Each wireless wall panel link takes one DALI-2 input device address on the DALI system.
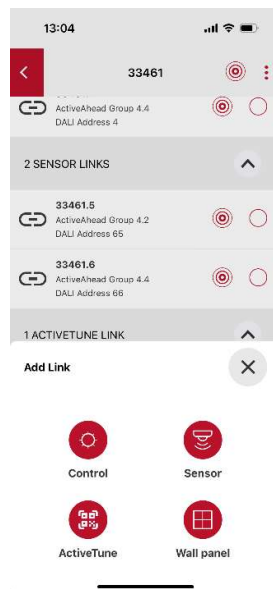

Figure 13: Adding a wall panel link

Wireless wall panels are added to the four available slots on each wall panel link. These slots are visible on the Slots tab when viewing a wall panel link. Near Field Communication (NFC) is used to discover the added wireless wall panel. The slots indicate which push button instances the slot in question uses on the DALI system. The instance number order from lowest to highest instance number correspond to the following button order top left, bottom left, top right and bottom right on the wireless wall panel.
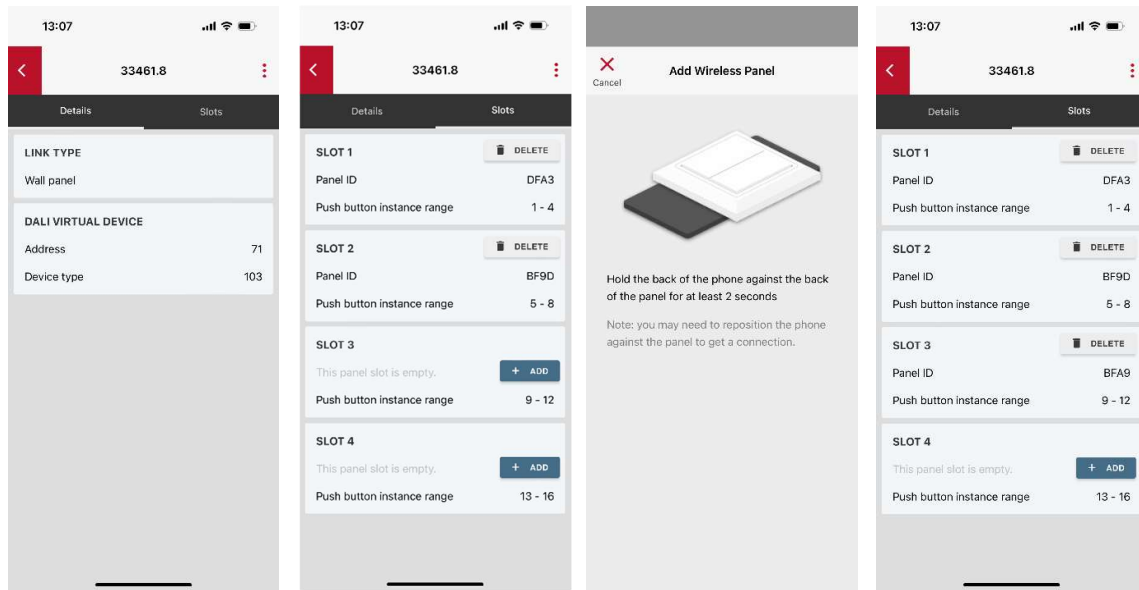
Figure 14: Adding a wireless wall panel on to a slot

Deleting a wireless wall panel from a slot makes the slot free and it can be used again. Adding and deleting slots do not impact the DALI system because the DALI-2 input address will always have 16 instances preserved for the potential wireless wall panels.

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Removing a link

A link can be removed by opening the wanted link and selecting the *Remove link* option from the top Options menu. The action needs to be verified on the notification pop-up. If the link had a DALI address on the DALI system side, it will remain on the DALI system side. If the DALI address must be removed also from the DALI system then it must be separately done using the DALI system commissioning tool. Not removing the DALI address from the DALI system may cause a missing device alert on the DALI system side because the DALI address in question no longer points to something.

Figure 15: Link removal

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Contol link details

Opening one control link shows the details of the link including the link type, control options, DALI address and the ActiveAhead mesh target.

Figure 16: Control link details

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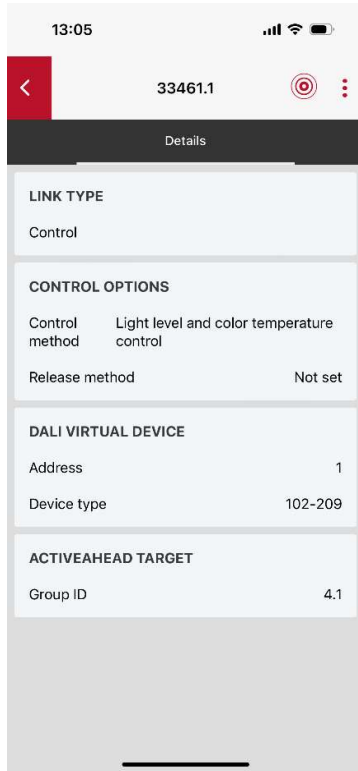## Sensor link details

Opening one sensor link shows the details of the link including the link type, DALI address and the ActiveAhead mesh source.
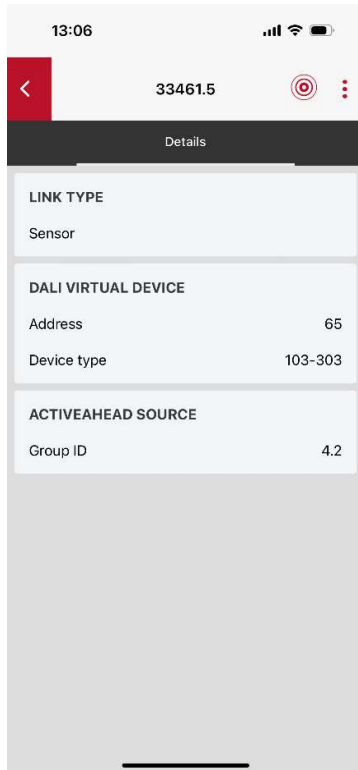

Figure 17: Sensor link details

ActiveTune link details

Opening one ActiveTune link shows the details of the link including the link type and the DALI address.

Figure 18: ActiveTune link details
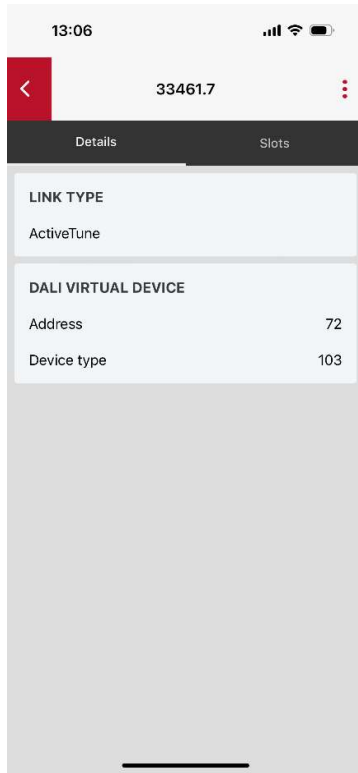
Wall panel link details

Opening one wall panel link shows the details of the link including the link type and the DALI address.

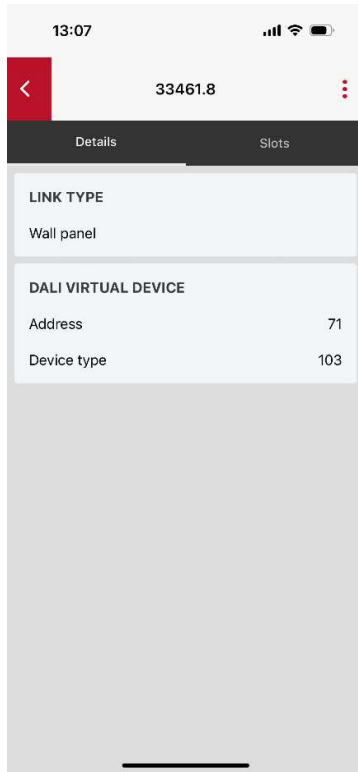
Figure 19: Sensor link details

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Over-the-Air Update

Node Link supports OTA updates to update its firmware. When the firmware update starts Node Link will release the possible active controls on ActiveAhead side so that the ActiveAhead Nodes are put on automatic mode. DALI side communication is blocked for the duration of the OTA update. This means that the links will appear as missing devices on the DALI system.
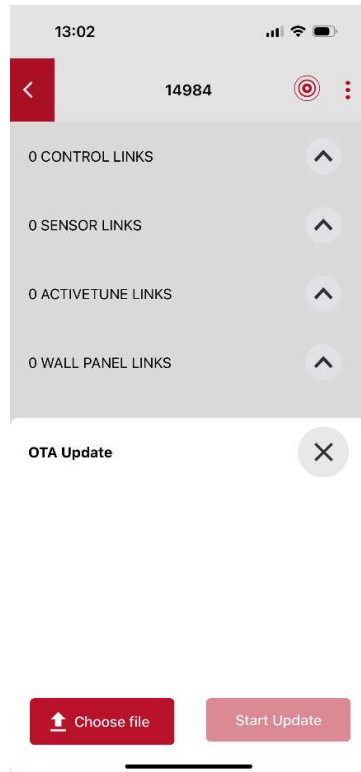

Figure 20: OTA update

Designer PC Software Usage

The added links will show up on the connected DALI system and can be configured using the commissioning tool of the DALI system. In case of Helvar Imagine system, Designer PC software is used for the commissioning. In this chapter, we go through how the links show up on the Designer software and how can they be configured using it. This document assumes prior knowledge of the Designer software and will only highlight selected points when configuring the links on the Designer.
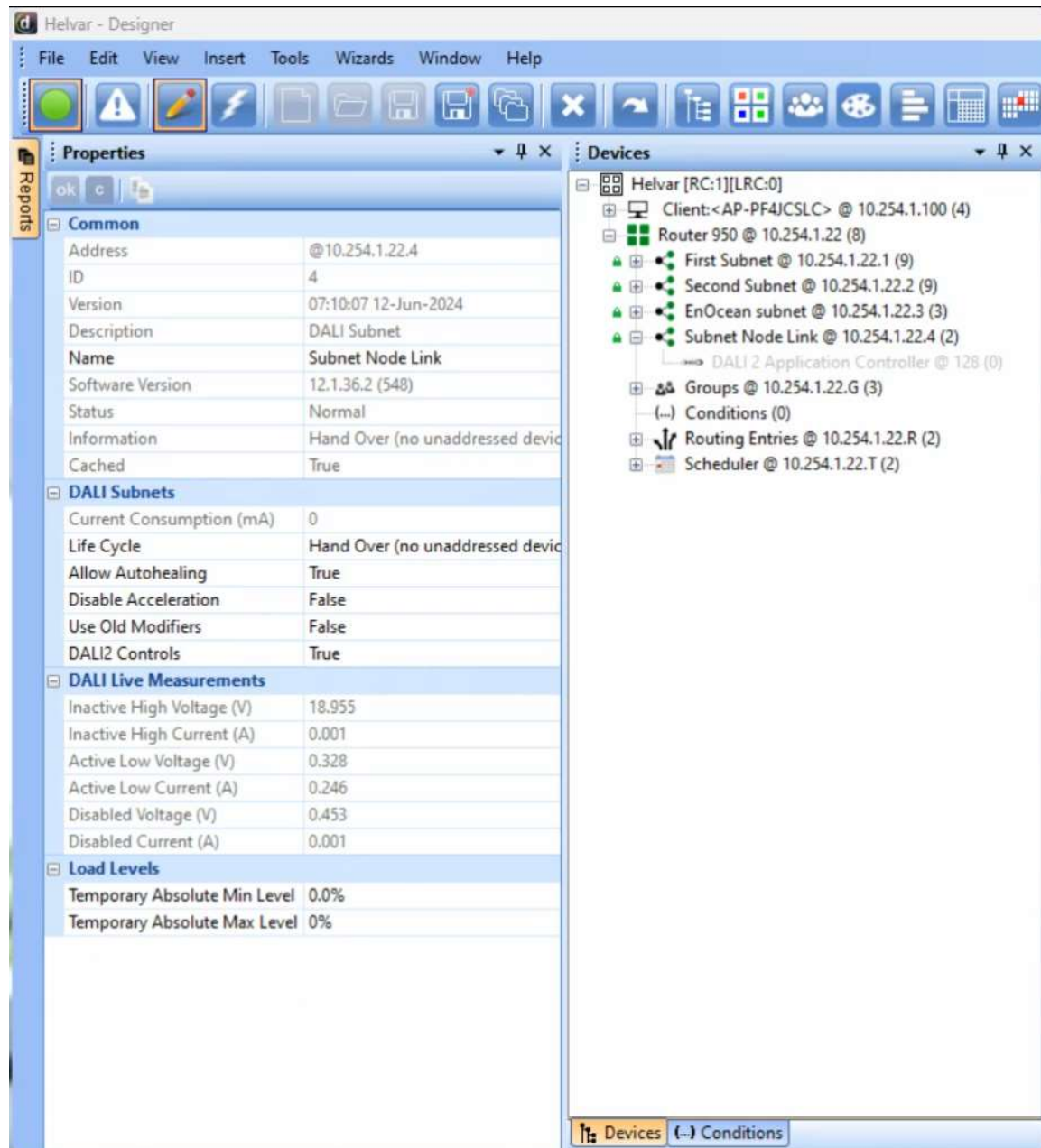

Figure 21: Helvar Designer Software

DALI Addressing and Naming

Imagine system gives DALI addresses to the added links automatically if there are addresses left on the DALI subnet in question. Because the DALI addressing is random, also the links get random addresses. Thus, links will need to be similarly identified and renamed as are the normal DALI devices.

Links targeting the entire ActiveAhead mesh network have a different GTIN than the links targeting an ActiveAhead group. This allows to differentiate between these two types of ActiveAhead mesh targets and may remove the need of identifying the entire ActiveAhead network when naming the links on the DALI system.

Identifying a Link

Links can be identified using the methods provided by the Designer. Identify command will identify the linked ActiveAhead mesh target meaning an ActiveAhead group or the entire network. In case of a sensor link, identification will identify any possible light sources on the targeted group or network. Typically, an ActiveAhead Node connects both sensor(s) and light source(s) to the system and thus identifying a control link or a sensor link has the same effect.
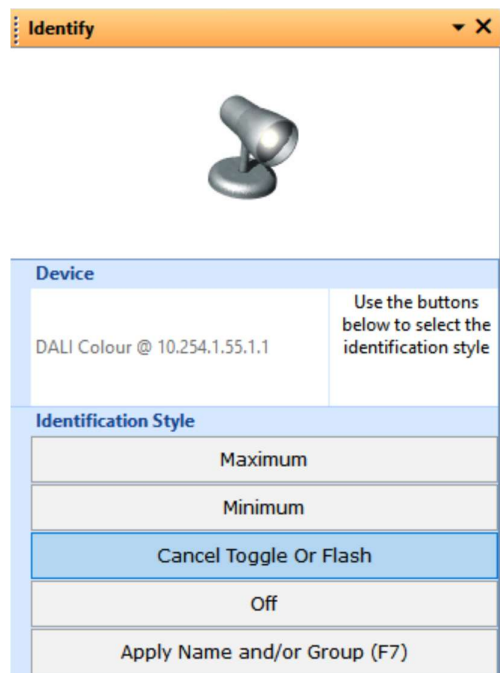

Figure 22: Identify in Designer

Naming a Link

It is recommended to name the links on the DALI system so that they can be recognised. Naming happens the same way as for any other DALI device.

Working with Control Links

The control links show up for the DALI system as if they would be standard DALI-2 loads. Thus, they can be configured and used as such. However, there are features and functions which are either adapted or ignored by the Node Link when it communicates with the ActiveAhead network. In this chapter, we go through what can be done with the loads and what those mean to the ActiveAhead system.

Setting Details

Standard DALI-2 details can be configured for the control links. These are stored on to the Node Link while it does not use all of them when communicating with the ActiveAhead system. The ones which are not used with ActiveAhead are still stored and given as the response when requested by the DALI system. The below table lists which details are supported and whether they are used towards the ActiveAhead system.

Table 1: Supported DALI details and how they are used towards ActiveAhead

DALI detail	Supported by Node Link	Used towards ActiveAhead
Scene	Yes	Yes (as direct light level command)
Group	Yes	Yes, but not visible to the Nodes
Physical minimum	Yes	No
Physical maximum	Yes	No
DALI-2 smart data points	No	No

Scenes

Standard 16 DALI scenes can be stored for each control link. When recalling a scene for a load link, it is converted to the stored light output level and colour temperature when sending the command to the ActiveAhead network.

Releasing ActiveAhead to Automatic Mode

Release mode is selected when a control link is created using the ActiveAhead mobile app. Release can be done with Scene 16 and / or light level 0 %. Imagine application controllers have internal logic for sending messages at times also outside schedules, input actions, etc. configured logic. For example, they may at times ensure that the lights are on the level they are supposed to. To avoid Imagine application controller from taking control unwantedly it is recommended to *turn power on this channel to* parameter *off* and *system fail level* to *ignore* as highlighted in the picture below.
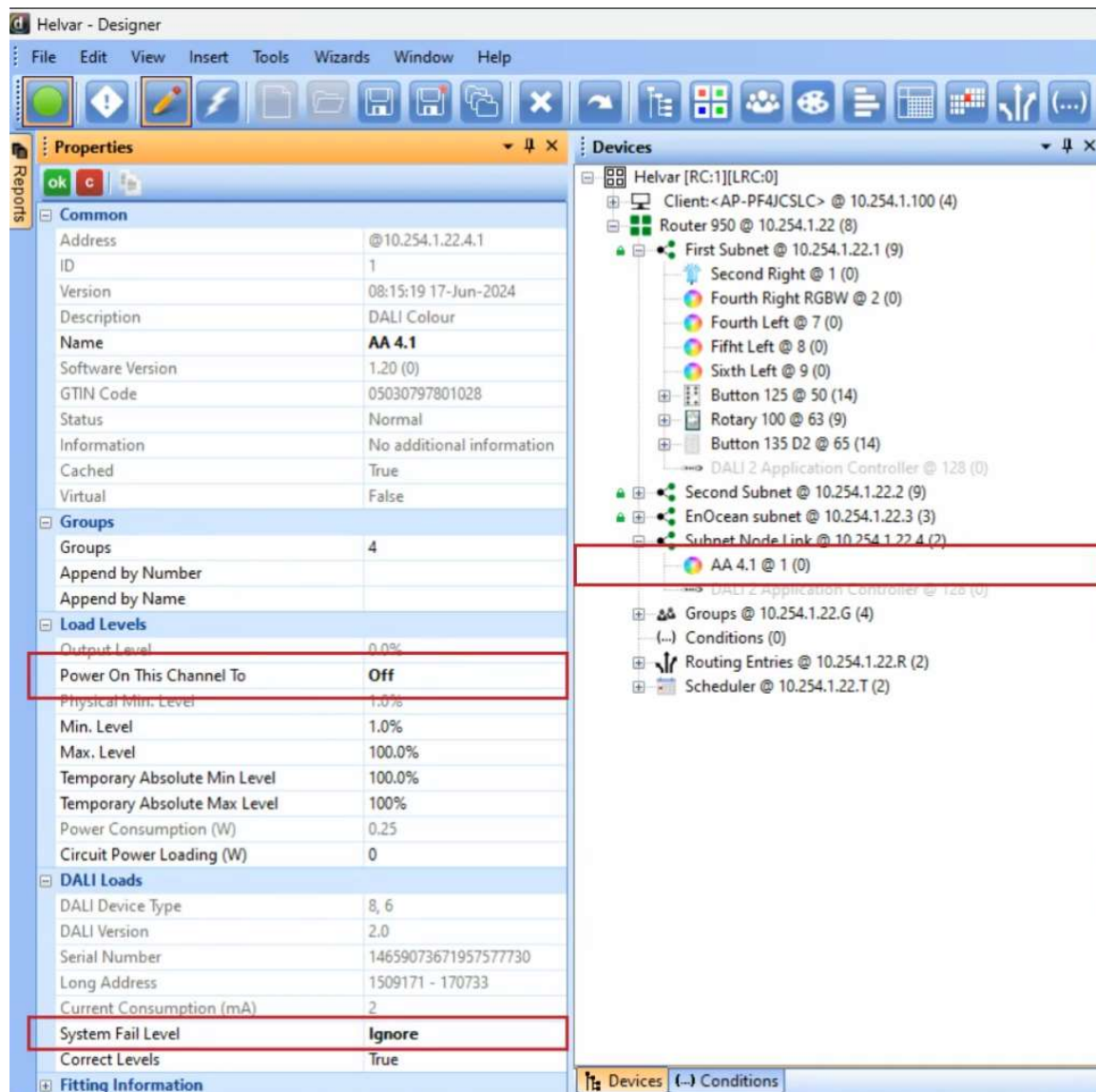
Figure 23: Setting power on and failure levels

Working with sensor links

The sensor links show up for the DALI system as if they would be standard DALI-2 sensors. They can be configured and used accordingly. They can be grouped with real DALI devices and / or with control links from the ActiveAhead system.
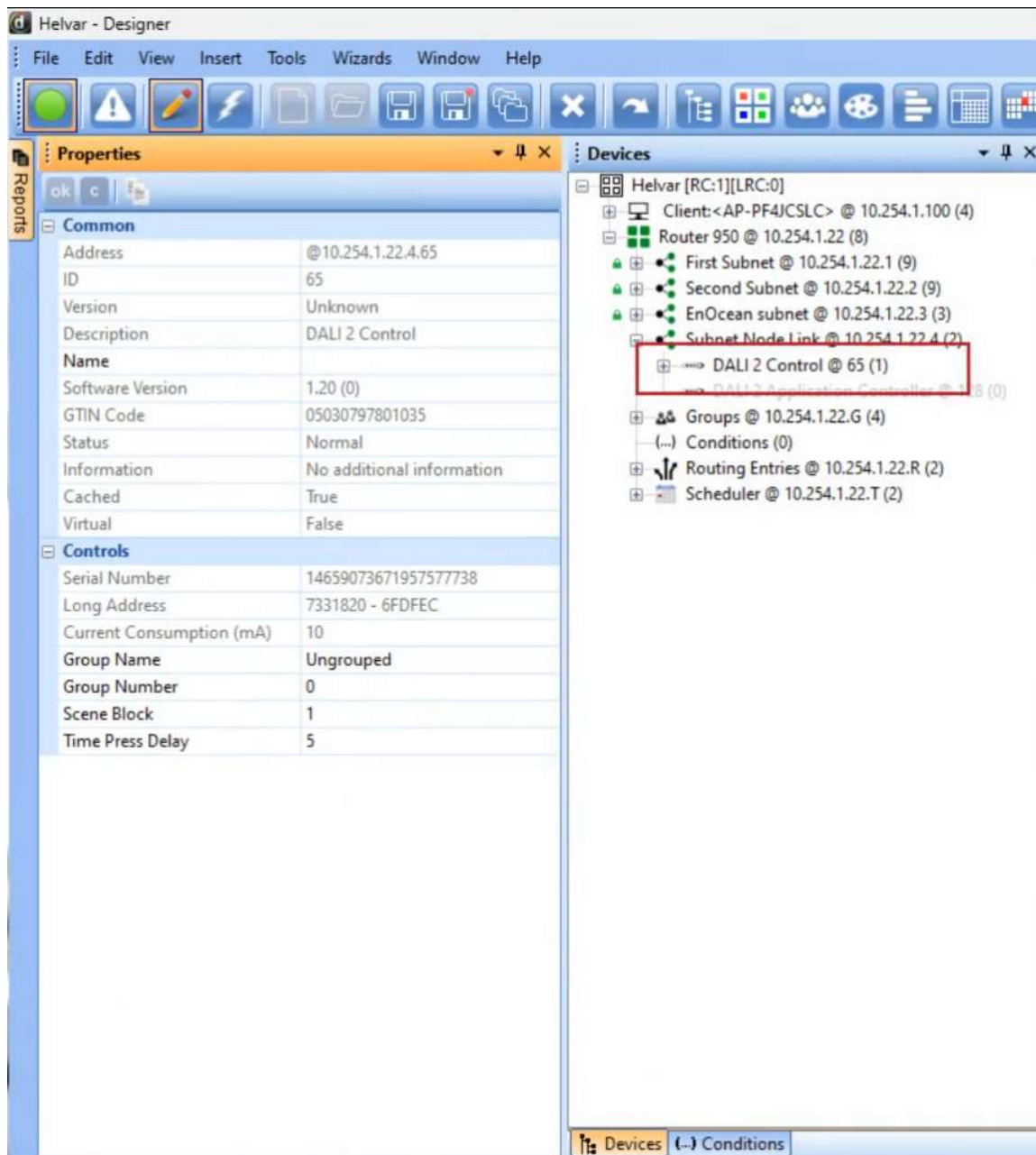
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Figure 24: Sensor link on the Designer software

Working with ActiveTune links

The ActiveTune links show up for the DALI system as if they would be standard DALI-2 sliders with eight instances. Each ActiveTune QR code is added to one of the four slots on one ActiveTune link and each QR code is assigned two instances. The first instance of each pair is for the intensity slider and second instance for the colour temperature slider. Even though each ActiveTune QR code preserves two instances, the colour temperature slider is not present on the ActiveTune app for intensity only ActiveTune QR codes. The instance numbers can be checked from the ActiveAhead mobile app when viewing the ActiveTune link in question.

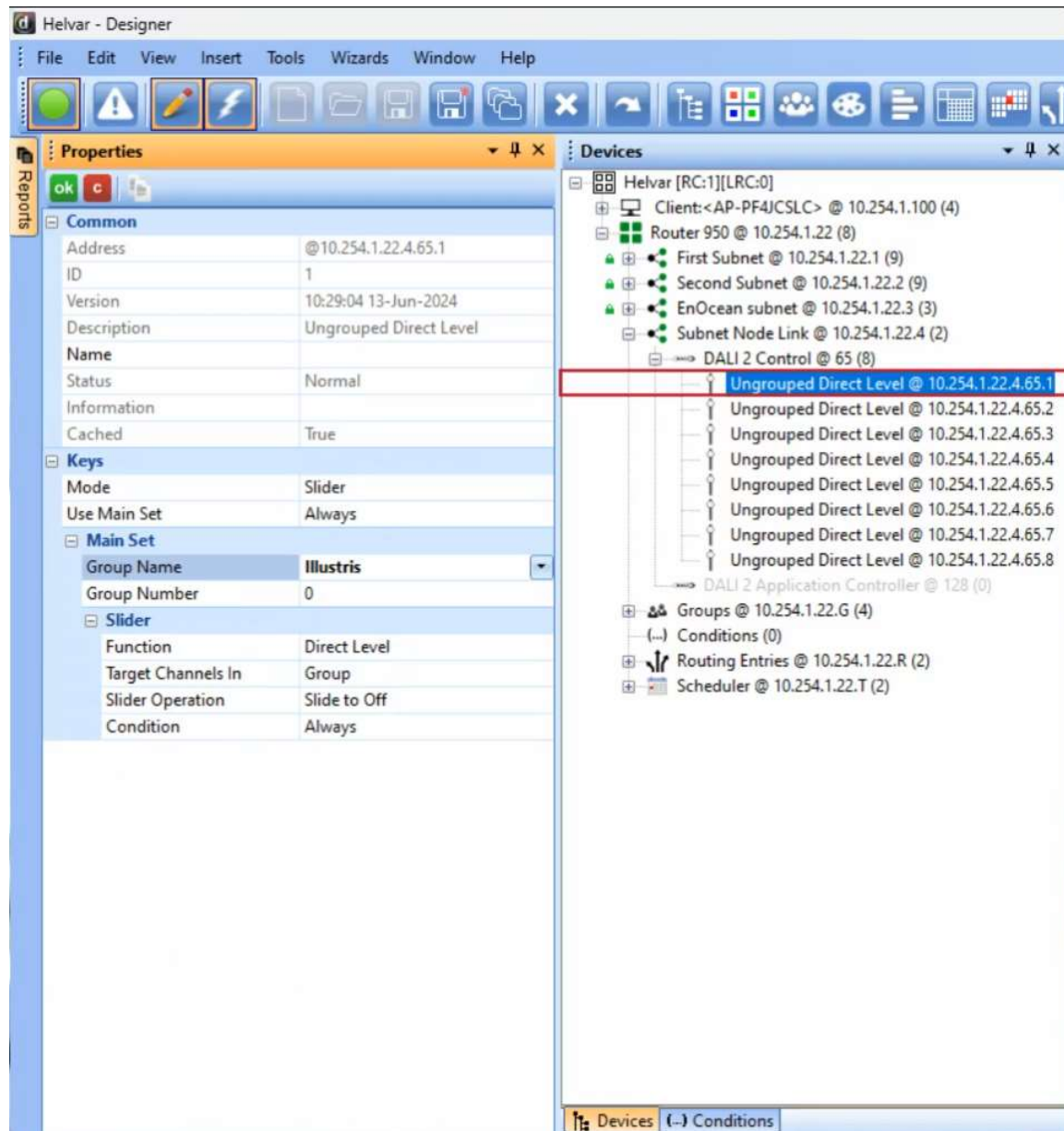The sliders can be configured as they would be physical sliders.

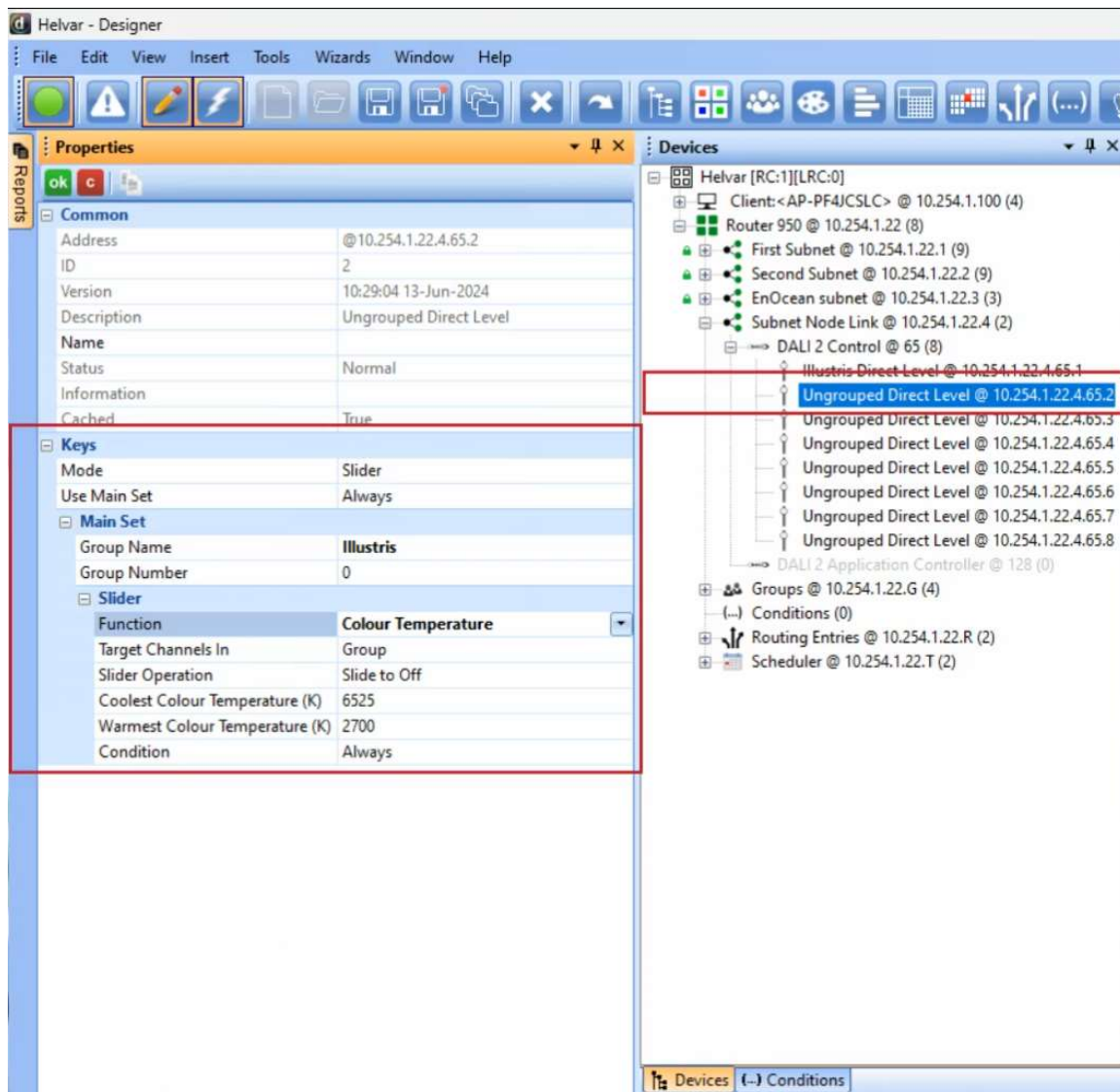**Figure 25: ActiveTune intensity slider on the Designer software**

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Figure 26: ActiveTune colour temperature slider on the Designer software

Working with wall panel links

The wall panel links show up for the DALI system as if they would be standard DALI-2 push buttons with 16 instances. Each wireless wall panel is added to one of the four slots on one wall panel link and each wireless wall panel is assigned four instances. The instance numbers can be checked from the ActiveAhead mobile app when viewing the wall panel link in question.

The push buttons can be configured as they would be physical sliders with the exception that long press function is not supported by the wall panel links.
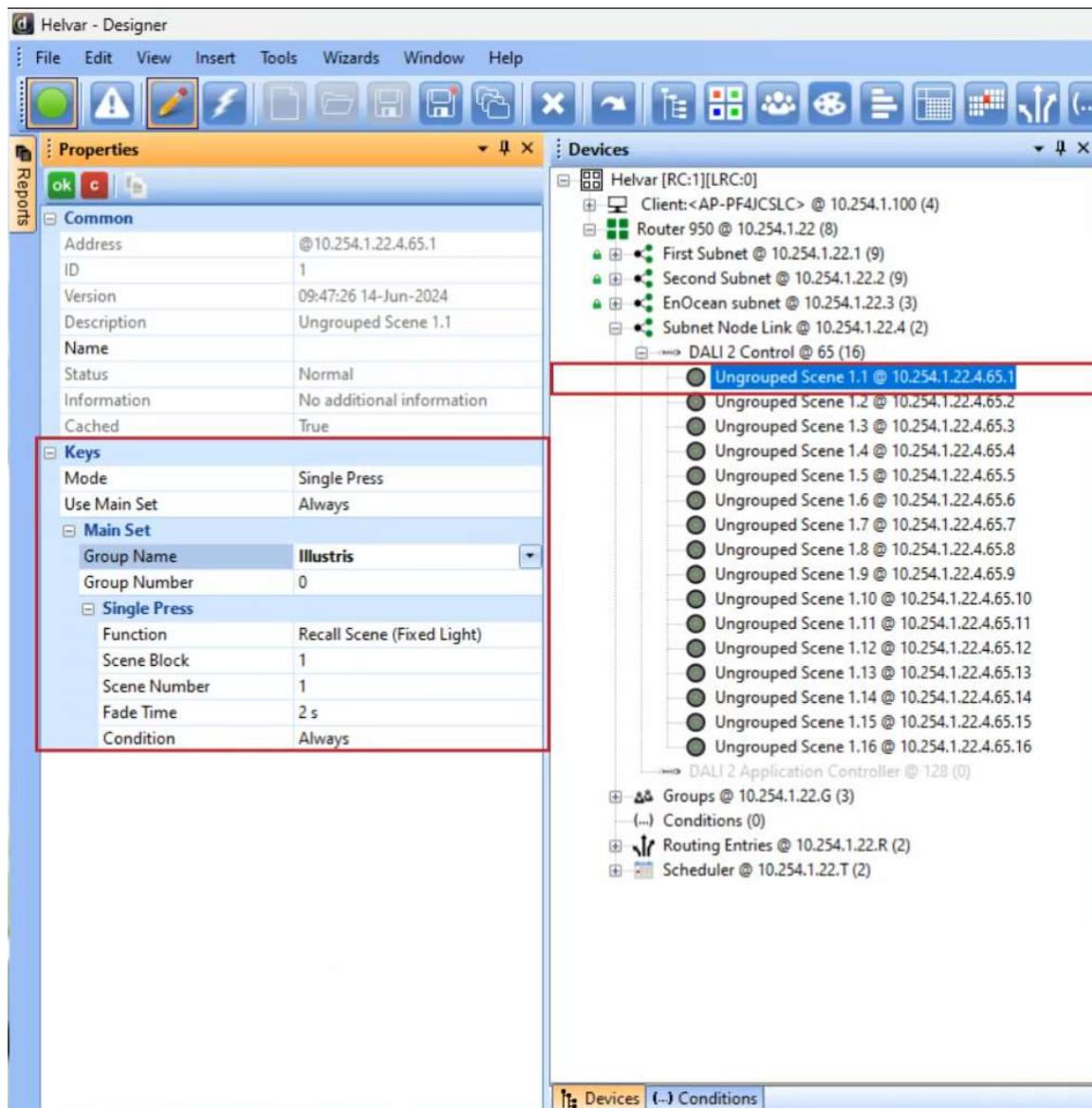
Figure 27: Wall panel link on the Designer software

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