



Buspro DALI-2 Gateway
MC64-DALI2.431
User Manual

Version 1.0.0

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GZ HDL Technology Co., Ltd

Modification Record

This record accumulates instructions for each document update. The latest version of the document contains updates from all previous document versions.

No.	Version	Modification Content	Data
1	V1.0.0	First official release	2023/01/03

1 Overview

This user manual mainly describes the installation, wiring, functions and configuration of Buspro's DALI-2 gateway (model: MC64-DALI2.431).

With built-in DALI power supply, DALI-2 gateway (See Figure 1) supports both HDL Buspro protocol and DALI Buspro. By the debugging software, users can configure DALI-2 gateway, including channel control, zone dimming, scene setting etc. After debugging, through the mobile phone App, users can proceed smart control for the lighting devices.



Figure 1.

1.1 Product Functionalities

- (1) Up to 64 DALI drivers supported, low limit and high limit settable for each channel
- (2) Up to 16 separate zones, zone dimming supported
- (3) 16 scenes for each zone, up to 90.51s running time for each scene
- (4) Auto status recall for scene settings after reboot
- (5) Color temperature control function supported, which can be applied to broadcast, channel, group and scene control of DT8 type color temperature control ballasts.
- (6) Short circuit protection for DALI wires
- (7) Both manual and online update supported

1.2 Product Installation

See Figure 2 - 3

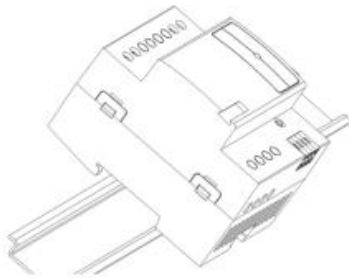


Figure 2.

1. Fix the DIN rail with screws, then buckle the bottom cap of DALI-2 gateway on the edge of the DIN rail;

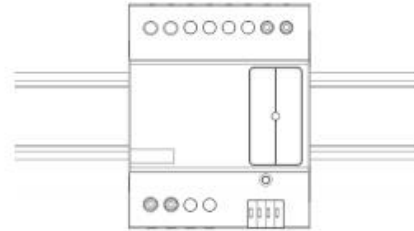


Figure 3.

2. Slide DALI-2 gateway to the desired position.

1.3 Components and Operation

Operation – See Figure 4 & Below table



Figure 4.

Button / Indicator	Function	Operation / Indicator Status
Programming Button (Indicator located at the back)	Programming mode	Long press programming button for 2s, then the indicator turns red.
	Running mode	The indicator flashes green in every 2s.
	Buspro communication	The indicator flashes red.
	DALI-2 gateway positioning	The indicator flashes red per second.
	Firmware updating for DALI-2 gateway	The indicator flashes red quickly.
DALI Indicator	DALI-2 gateway running normally	The indicator turns green.
	DALI communication	The indicator flashes red.
FUN Button	Turn on/off broadcast	To turn on broadcast, short press FUN button then the status indicator turns red; To turn off broadcast, short press FUN button again, then the status indicator turns off.
Test Button	Re-assign address	To re-assign address, long press the test button for 30s. Then the status indicator flashes green during processing.
	Ballast test	To start all-lamp-flash test, short press the test button; to shut down all-lamp-flash test, short press the test button again. After starting test, if not shut down in 10 minutes, the test will be auto-off. During testing, the status indicator will be on then off in every 2s.

Wiring – See Figure 5.

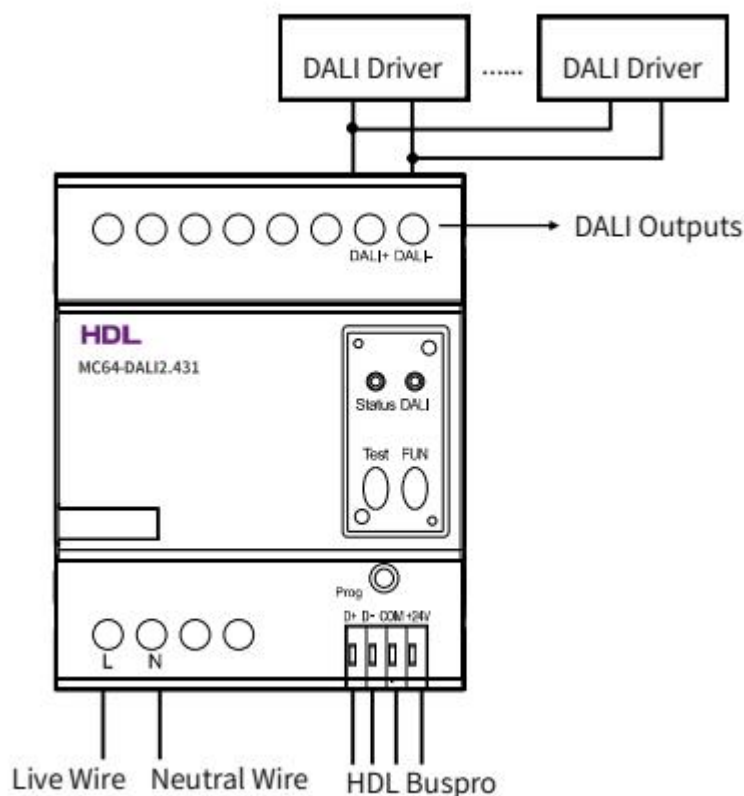


Figure 5.

1.4 Safety Precautions

- (1) The installation and testing for the product must be carried out by HDL Automation Co., Ltd. or its appointed service agencies. The electric construction shall comply with local laws and safety regulations.
- (2) The device should be installed with DIN rail in DB box. HDL will not be responsible for any consequence caused by the inexpert or faulty installation and wiring methods, which are not in accordance with the instructions contained in this operating instruction.
- (3) Please do not privately disassemble or replace any parts of the product. Otherwise, it may cause mechanical fault, electric shock, fire or personal injuries.
- (4) Please contact our after-sales departments or our designated service agencies for your maintenance service. Product failures caused by private disassembly are not subject to this warranty.

- (5) It is not allowed to exceed the range.

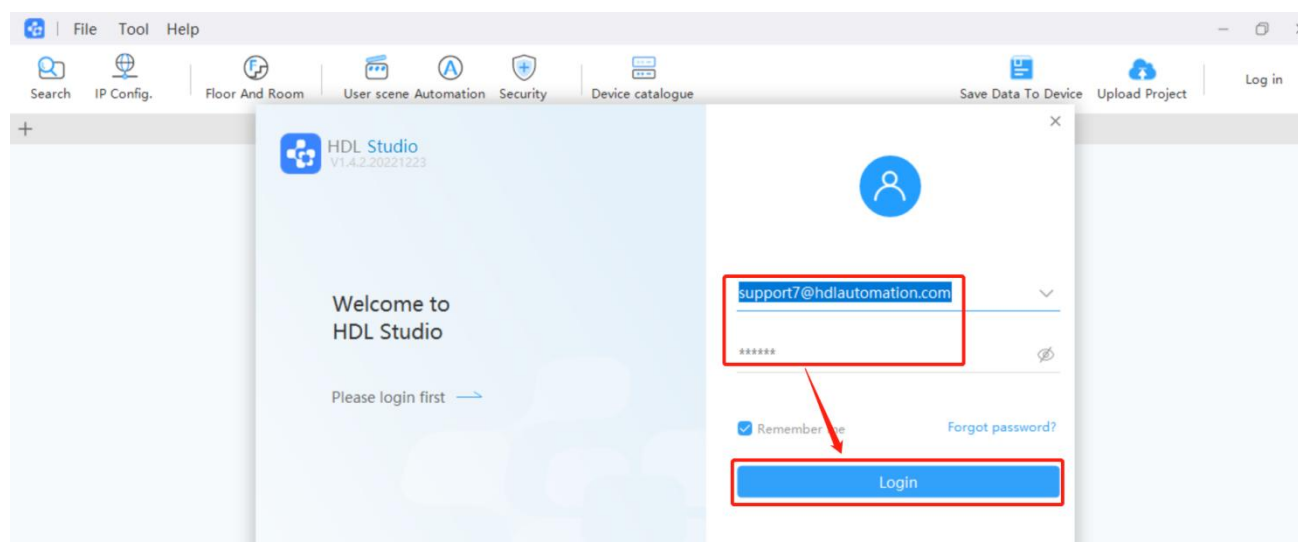
2. Configuration

Buspro DALI 2 Gateway can only be edited from HDL Studio software, which means you can't edit the DALI2 Gateway via Buspro2 Setup software.

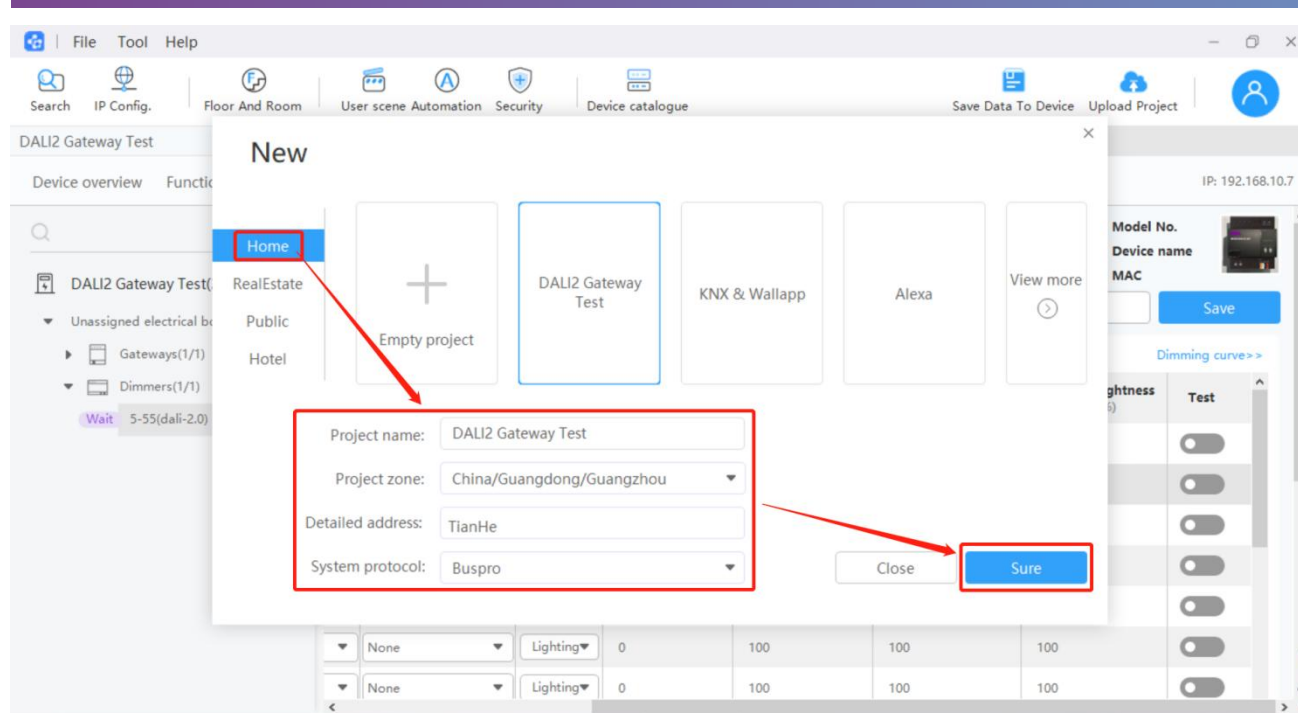
The following is a description of the configuration with HDL Studio(1.4.2.20221223), HDL-MGWIP.430 Buspro LINK gateway and DALI2 gateway (hardware is APM32F103RCT6 and firmware is HDL_V4.01U_2022/11/28) as an example.

2.1 Add Buspro devices to the project

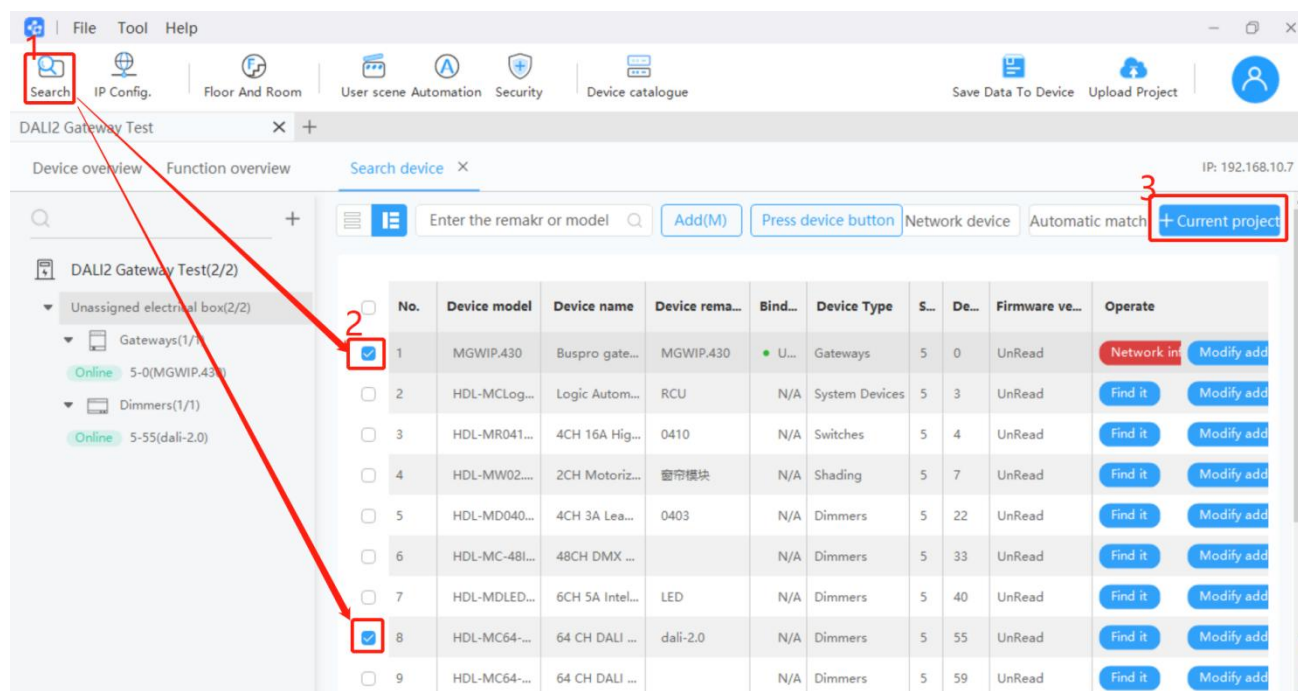
1. Login the HDL Studio with your On Pro debug account.



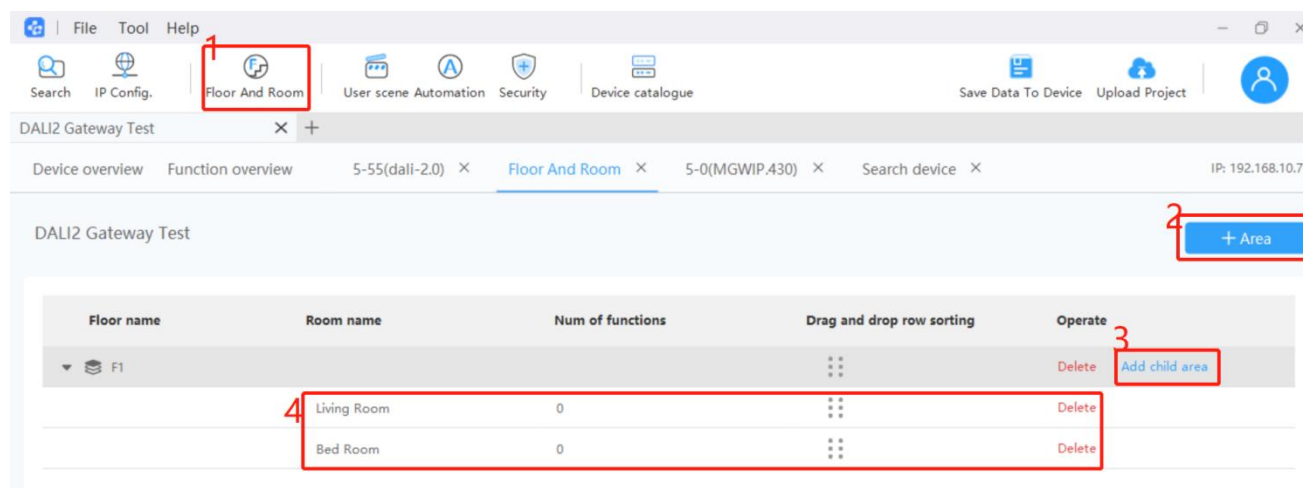
2. Create a new project or open the existing project.



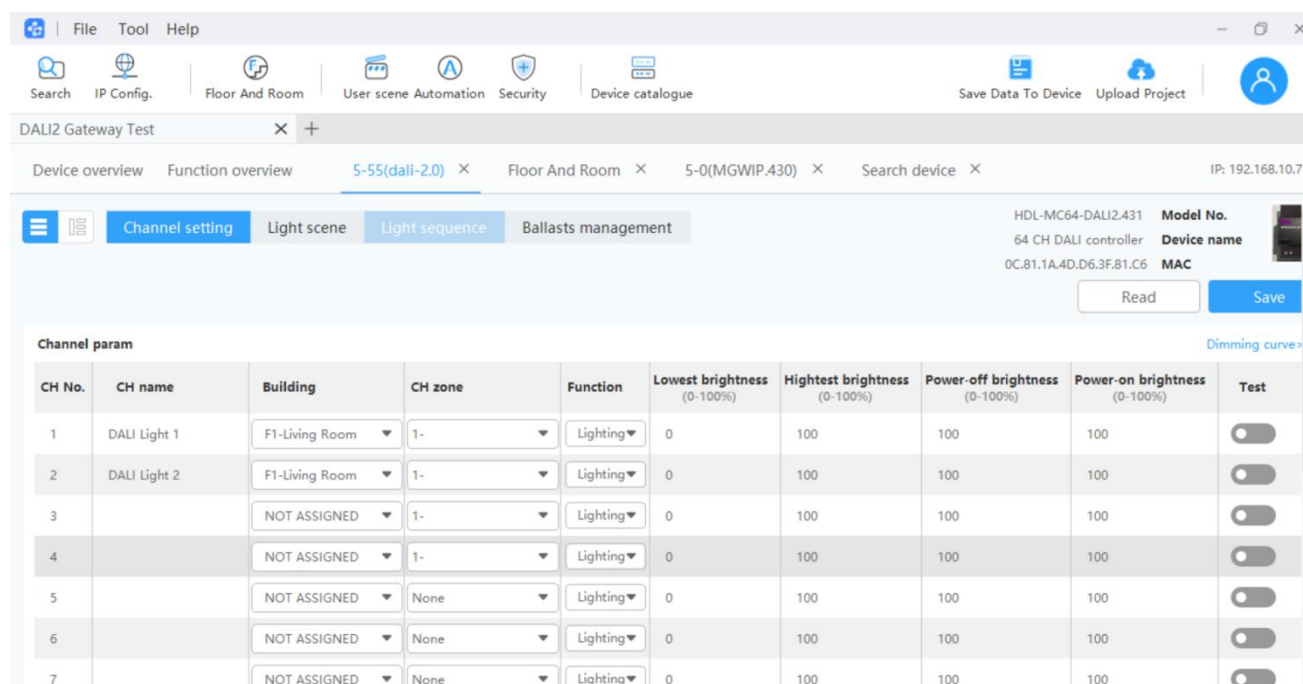
- Find and click the online "Search" button, add the MGWIP.430 Buspro Link Gateway and DALI2 gateway to the project.



- In Floor and Room, click "+ Area" to add new floor , then click "Add child area" , assign new room.

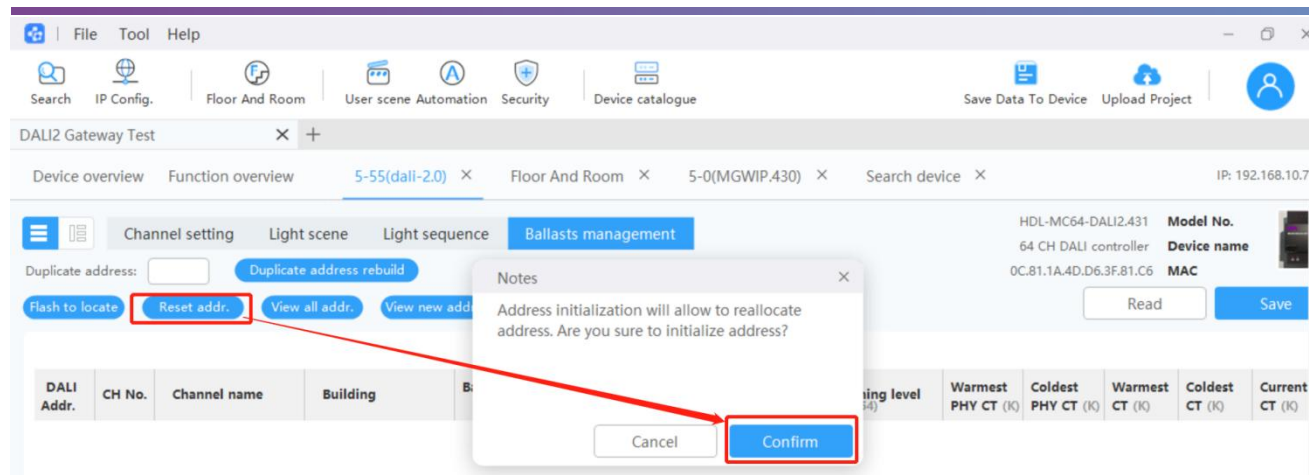


2.2 Edit the DALI 2 Gateway

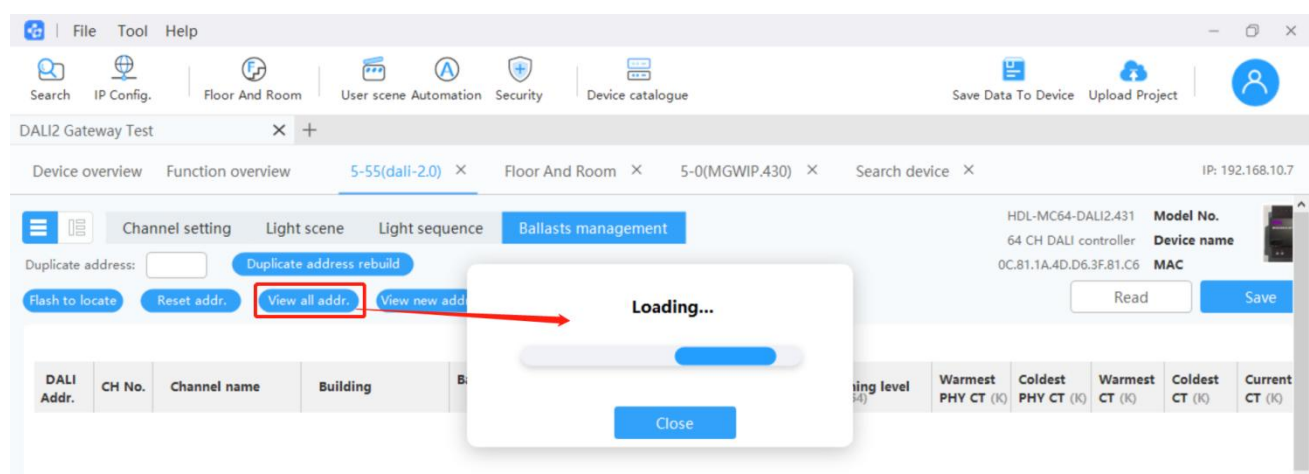


2.2.1 Ballasts Management

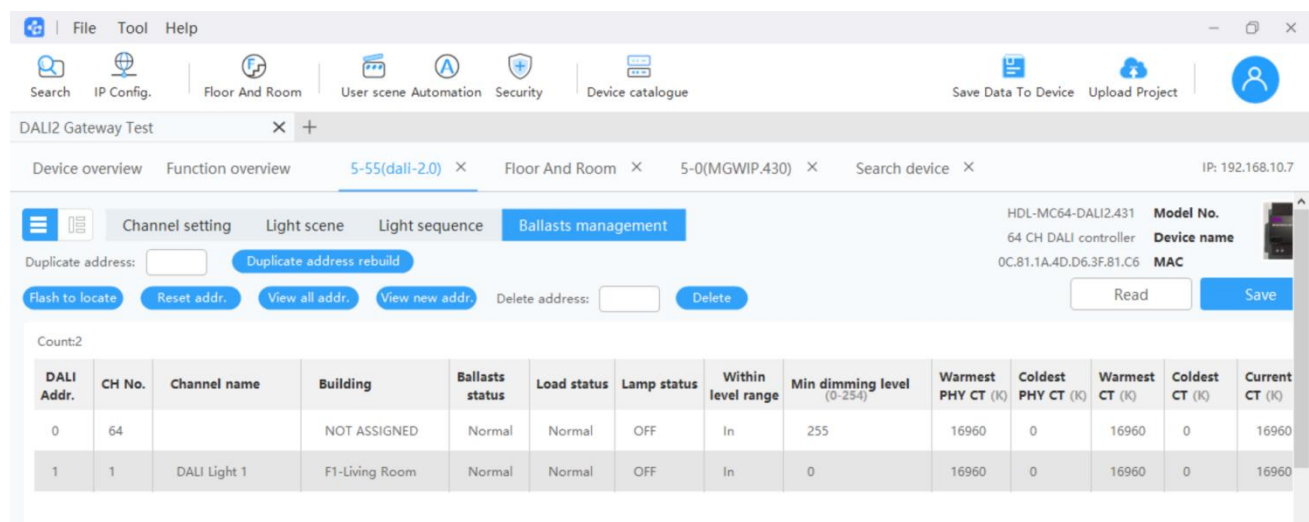
1. In Ballasts management, during first debugging, please click “Reset addresses” to assign All the DALI addresses

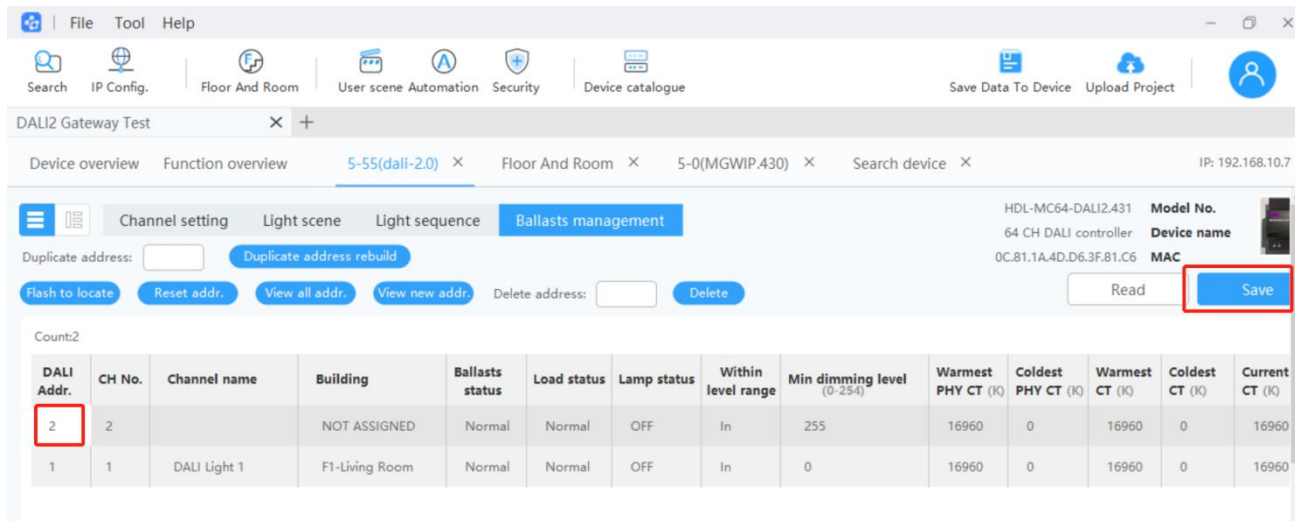


2. Click "View all the DALI addresses"

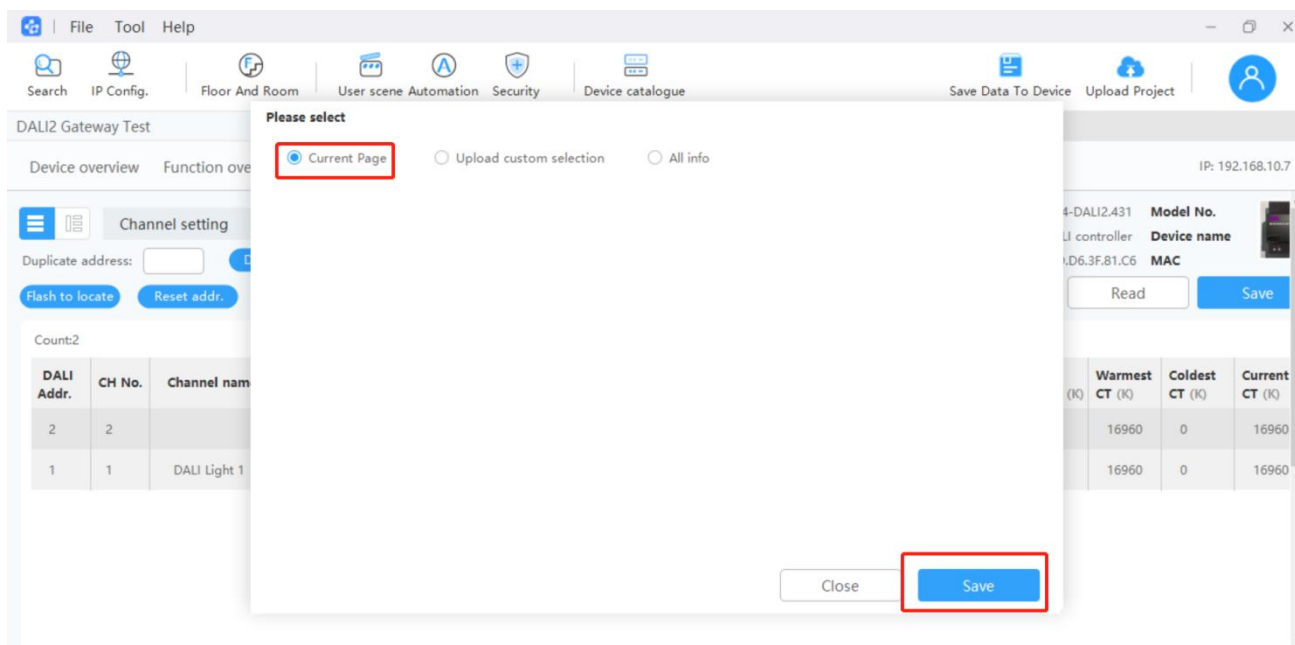


3. As you can see, there are 2 DALI addresses at the view list. DALI address 0 means the channel 64. Select "0" to modify the DALI address to 2, then click "Save".





4. Confirm and update dali master data to ballasts



5. After the DALI addresses initialization, if you can see the duplicated DALI addresses, please fill the duplicated address and click “Duplicated address rebuild” button

Device overview Function overview 5-55(dali-2.0) Floor And Room 5-0(MGWIP.430) Search device IP: 192.168.10.7

Channel setting Light scene Light sequence **Ballasts management**

Duplicate address: Duplicate address rebuild

Flash to locate Reset addr. View all addr. View new addr. Delete address: Delete Read Save

Count:2

DALI Addr.	CH No.	Channel name	Building	Ballasts status	Load status	Lamp status	Within level range	Min dimming level (0-254)	Warmest PHY CT (K)	Coldest PHY CT (K)	Warmest CT (K)	Coldest CT (K)	Current CT (K)
1	1	DALI Light 1	F1-Living Room	Normal	Normal	OFF	In	0	16960	0	16960	0	16960
2	2	DALI Light 2	F1-Living Room	Normal	Normal	OFF	In	0					

6. If you want to add a new dali address without affecting the current dali address, please click “View new address” button instead of “reset address” button.

Device overview Function overview 5-55(dali-2.0) Floor And Room 5-0(MGWIP.430) Search device IP: 192.168.10.7

Channel setting Light scene Light sequence **Ballasts management**

Duplicate address: Duplicate address rebuild

Flash to locate Reset addr. View all addr. **View new addr.** Delete address: Delete Read Save

Count:2

DALI Addr.	CH No.	Channel name	Building	Ballasts status	Load status	Lamp status	Within level range	Min dimming level (0-254)	Warmest PHY CT (K)	Coldest PHY CT (K)	Warmest CT (K)	Coldest CT (K)	Current CT (K)
1	1	DALI Light 1	F1-Living Room	Normal	Normal	OFF	In	0	16960	0	16960	0	16960
2	2	DALI Light 2	F1-Living Room	Normal	Normal	OFF	In	0					

2.2.2 Channel Settings

Channel param

CH No.	CH name	Building	CH zone	Function	Lowest brightness (0-100%)	Highest brightness (0-100%)	Power-off brightness (0-100%)	Power-on brightness (0-100%)	Test
1	DALI Light 1	F1-Living Room	1-	Lighting	0	100	100	100	<input type="checkbox"/>
2	DALI Light 2	F1-Living Room	1-	Lighting	0	100	100	100	<input type="checkbox"/>
3		NOT ASSIGNED	1-	Lighting	0	100	100	100	<input type="checkbox"/>
4		NOT ASSIGNED	1-	Lighting	0	100	100	100	<input type="checkbox"/>
5		NOT ASSIGNED	None	Lighting	0	100	100	100	<input type="checkbox"/>
6		NOT ASSIGNED	None	Lighting	0	100	100	100	<input type="checkbox"/>
7		NOT ASSIGNED	None	Lighting	0	100	100	100	<input type="checkbox"/>

1. Name the channel 1&2 with DALI Light 1, DALI Light 2. Click the building to assign Channel 1&2 to F1->Living Room. Click Channel Zone, assign channel 1&2 to same zone

Current selected zone:

Zone list: Auto set zone by building **Add**

Channel under zone: Remove selected

Unassigned channel: **Add channel to zone**

CH No.	CH name
1	DALI Light 1
2	DALI Light 2
3	
4	
5	

2. Because they are DT8 DALI ballast, in function, change the function type to Color temperature type. In this way, the two dali channels can be displayed in the Buspro gateway view as color temperature lamps instead of dimmer lamps.

Channel param

CH No.	CH name	Building	CH zone	Function	Lowest brightness (0-100%)	Highest brightness (0-100%)	Power-off brightness (0-100%)	Power-on brightness (0-100%)	Test
1	DALI Light 1	F1-Living Room	1-	Color te	0	100	100	100	<input type="checkbox"/>
2	DALI Light 2	F1-Living Room	1-	Color	0	100	100	100	<input type="checkbox"/>
3		NOT ASSIGNED	None	Lighting	0	100	100	100	<input type="checkbox"/>
4		NOT ASSIGNED	None	Lighting	0	100	100	100	<input type="checkbox"/>
5		NOT ASSIGNED	None	Lighting	0	100	100	100	<input type="checkbox"/>
6		NOT ASSIGNED	None	Lighting	0	100	100	100	<input type="checkbox"/>
7		NOT ASSIGNED	None	Lighting	0	100	100	100	<input type="checkbox"/>

Lowest brightness: when the dimming value reaches below the lowest brightness, its brightness will directly change to 0, and the setting range: 0~upper limit

Highest brightness: when the brightness value reaches above the highest brightness, its brightness value will directly change to the maximum level value. Setting range: low limit ~ high limit.

Power off brightness: brightness when disconnecting dali signal.

Power on brightness: brightness when dali signal line is connected.

Test: Turn on/off the dali channel.

2.2.3 Light Scene

The screenshot shows the 'Light scene' configuration page in the DALI2 Gateway Test software. The interface includes a top menu bar with options like File, Tool, and Help. Below it, there's a navigation bar with tabs for Device overview, Function overview, and a selected tab for '5-55(dali-2.0)'. The main area is divided into two sections: 'Device scene (BUS) list' and 'Channel list'. The 'Device scene (BUS) list' table has columns for Scene No., Scene name, Onpro Display, Running time (mm:ss), and Test. The 'Channel list' table has columns for CH No., CH name, Brightness, and Color temp. On the right, there's a sidebar with device information: HDL-MC64-DALI2.431, Model No., 64 CH DALI controller, Device name, and MAC address. There are also buttons for 'Read' and 'Save'.

Field output: Select one scene and directly output this scene.

Restore scene: You can select the Custom scene or Before power failure.

Scene name: The remark of the scene.

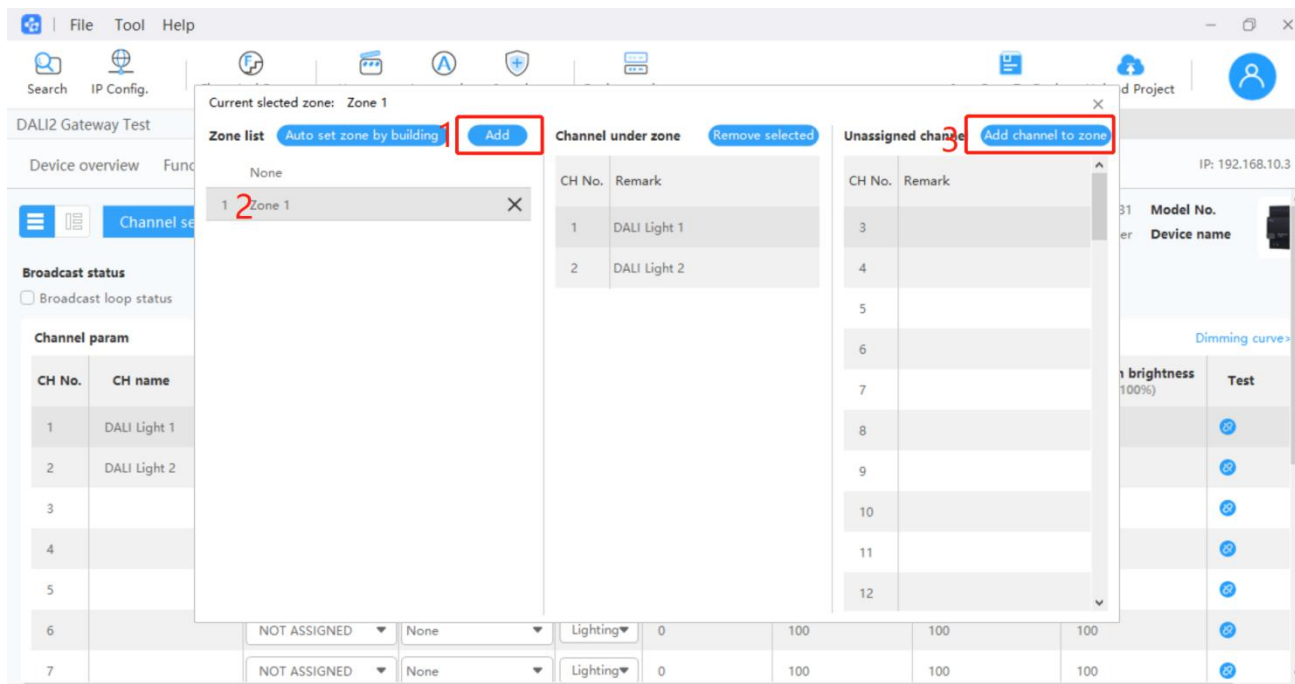
Running time: The fading time of scene. That is, the time to complete the scenario from 0 to 100%.

To add the DALI light to the zone and edit the scene, you can follow below steps:

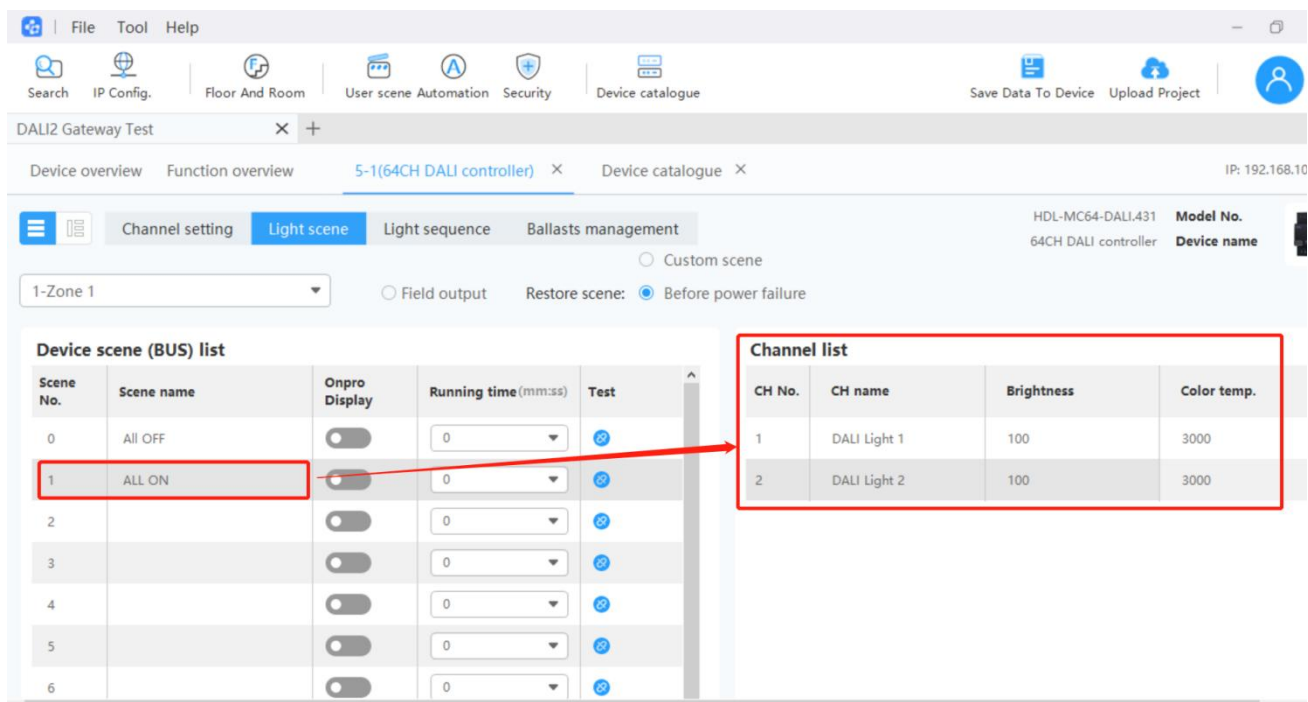
1. In channel setting, click the area of zone.

The screenshot shows the 'Channel setting' page in the DALI2 Gateway Test software. The interface includes a top menu bar with options like File, Tool, and Help. Below it, there's a navigation bar with tabs for Device overview, Function overview, and a selected tab for '5-1(64CH DALI controller)'. The main area is divided into two sections: 'Broadcast status' and 'Channel param'. The 'Channel param' table has columns for CH No., CH name, Building, CH zone, Function, Lowest brightness, Highest brightness, Power-off brightness, Power-on brightness, and Test. The 'CH zone' column is highlighted with a red box. On the right, there's a sidebar with device information: HDL-MC64-DALI.431, Model No., 64CH DALI controller, Device name, and a 'Dimming curve' link.

2. Add new zone and name this zone, then add corresponding DALI channels to the zone, save the data to DALI2 module.



3. Go to Light Scene, select the scene number 1 to edit the brightness and color temperature of channels. Then save the data to DALI2 module. (Notes: The scene 0 is to turn off all the channels by default.)



2.2.4 Light Sequence

The screenshot displays the HDL Studio software interface for configuring a DALI light sequence. The top navigation bar includes 'File', 'Tool', and 'Help'. The main toolbar contains icons for 'Search', 'IP Config.', 'Floor And Room', 'User scene Automation', 'Security', and 'Device catalogue'. The 'Light sequence' tab is active, showing a table with 7 steps. Step 1 is enabled and assigned to 'F1-Living Room'. The 'Step list' table on the right shows two channels, 'DALI Light 1' and 'DALI Light 2', both with a brightness of 100 and color temperature of 2700.

Enable	No.	Building	Step (1-64)	Step delay (0-25.5s)	Running time (s)	Test
<input checked="" type="checkbox"/>	1	F1-Living Room	2	4.0	4	<input type="checkbox"/>
<input type="checkbox"/>	2	NOT ASSIGNED	2	4.0	4	<input type="checkbox"/>
<input type="checkbox"/>	3	NOT ASSIGNED	0	25.5	0	<input type="checkbox"/>
<input type="checkbox"/>	4	NOT ASSIGNED	0	25.5	0	<input type="checkbox"/>
<input type="checkbox"/>	5	NOT ASSIGNED	0	25.5	0	<input type="checkbox"/>
<input type="checkbox"/>	6	NOT ASSIGNED	0	25.5	0	<input type="checkbox"/>
<input type="checkbox"/>	7	NOT ASSIGNED	0	25.5	0	<input type="checkbox"/>

CH No.	CH name	Brightness	Color temp.
1	DALI Light 1	100	2700
2	DALI Light 2	100	2700

To trigger the DALI light sequence, you can follow as below:

1. Enable a light sequence, step (1-64) is channel number, step delay is interval time between the last step and current step, running time is execution time of each step. (Note: Each time you activate a new sequence, you can only start from 1 to the target steps. The current sequence cannot be adjusted)
2. Currently the DALI sequence can't be directly added to Studio's user scene, you should configure the logic table in logic module, UV switch as condition, DALI sequence as target. Control the user scene to control UV switch of logic module to trigger the DALI sequence.
3. In logic module's target, to trigger light sequence one, control zone 1 sequence 1; to trigger light sequence 2, control zone 1 sequence 2, etc.

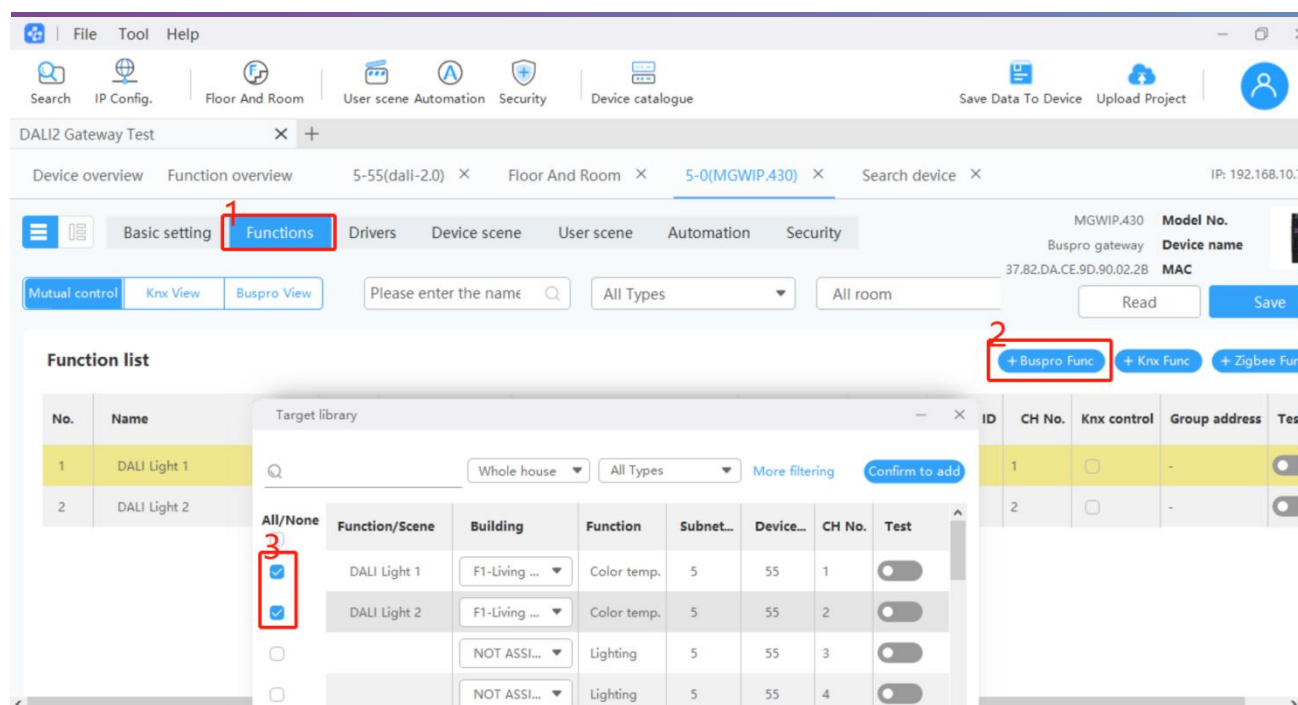
2.3 Add the DALI lights to Buspro Link Gateway

The screenshot displays the web interface for configuring the Buspro Link Gateway. The top navigation bar includes icons for Search, IP Config., Floor And Room, User scene Automation, Security, and Device catalogue. Below the navigation bar, there are tabs for Device overview, Function overview, and a selected tab for 5-0(MGWIP.430). The main content area is divided into several sections:

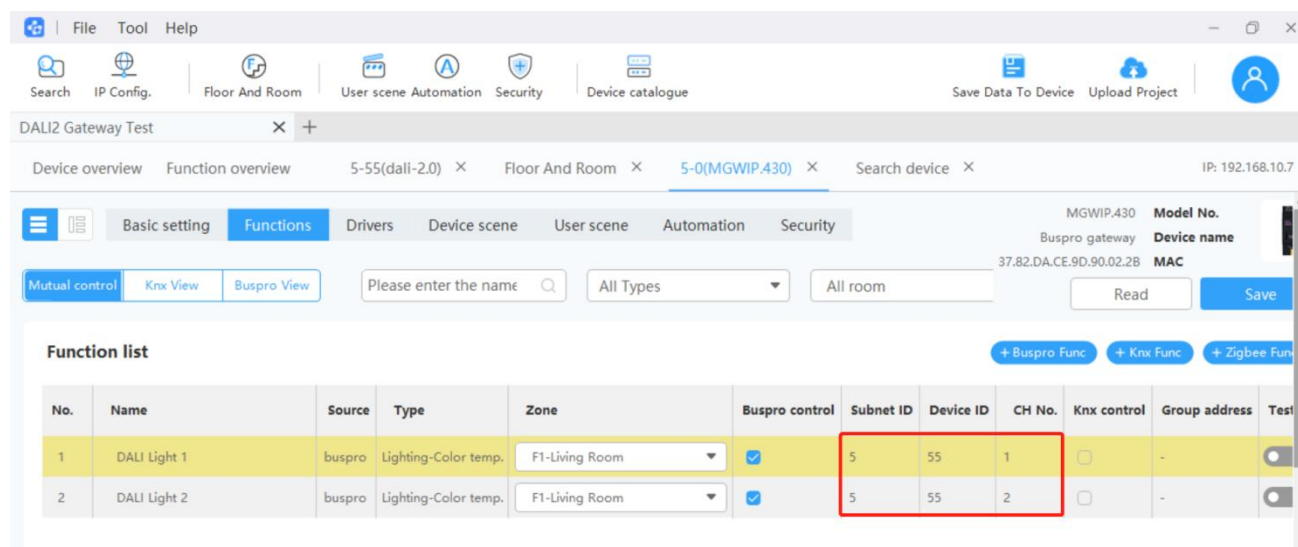
- Network address:** Includes a checkbox for DHCP (checked) and fields for Host IP (192 . 168 . 10 . 100), Router IP (192 . 168 . 10 . 1), Mask (255 . 255 . 255 . 0), IP MAC (02 . 81 . BC . B1 . 44 . 9A), DNS1 (114 . 114 . 114 . 114), and DNS2 (8 . 8 . 8 . 8).
- Connection:** Includes a dropdown for Connect type (MQTT), fields for Project group and Project name, a Designer field, a Website dropdown (bahrain-gateway.hdlcontrol.co), and a status indicator for Connection of Gateway and Cloud (Online).
- Date and time:** Includes fields for Date (YYYY/MM/DD) (2022/12/27) and Time (HH:mm:ss) (11 : 8 : 48), an Auto adjust button, and a checked checkbox for Broadcast time.
- Project information:** Includes fields for Home id (1607572874509840385) and Gateway id (1539846823139012610), and an Unbound gateway button.

On the right side, there are buttons for Pointing device, Clear data, Data backup, Recover data, and Slave access. A status indicator shows 'Online' for the connection of gateway and cloud.

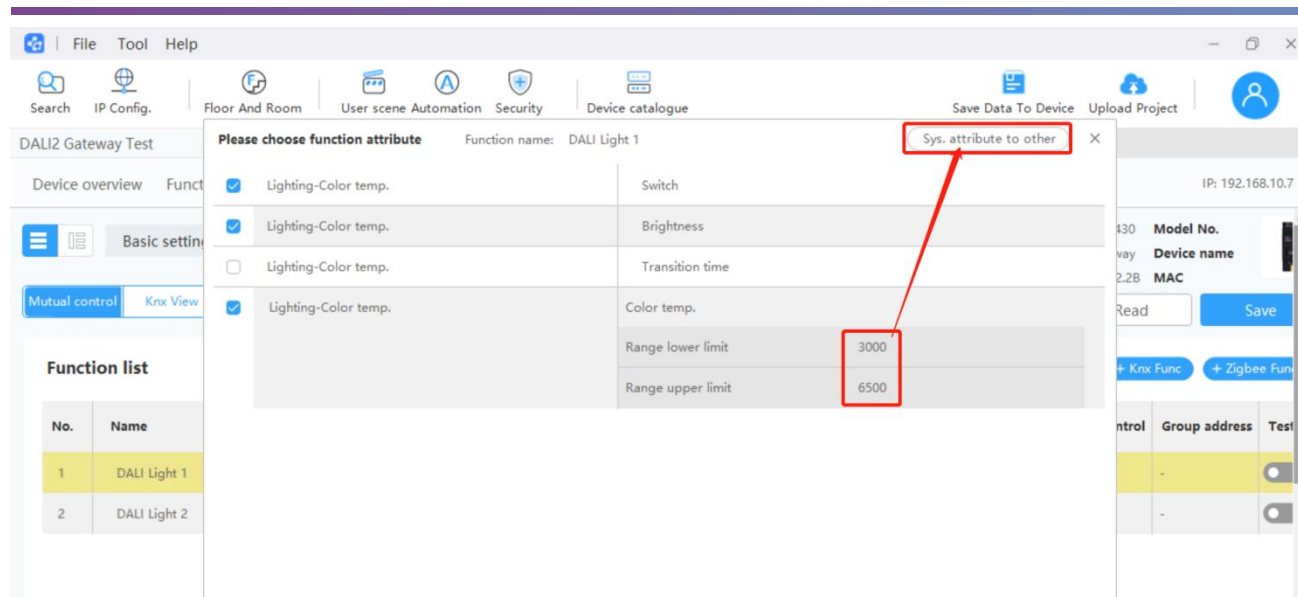
1. In MGWIP.430 basic settings, connect the gateway to Ethernet, select MQTT connection type and Bahrain-gateway.hdlcontrol.com server. Select the Master working mode and click bind the gateway. If you can't see the status of connection of gateway and cloud is green, please click the "apply secret key" button and click "read" to update current status.
2. In MGWIP.430 Function page, click "Buspro Function" button and add those DALI lights and other devices to the Function list.



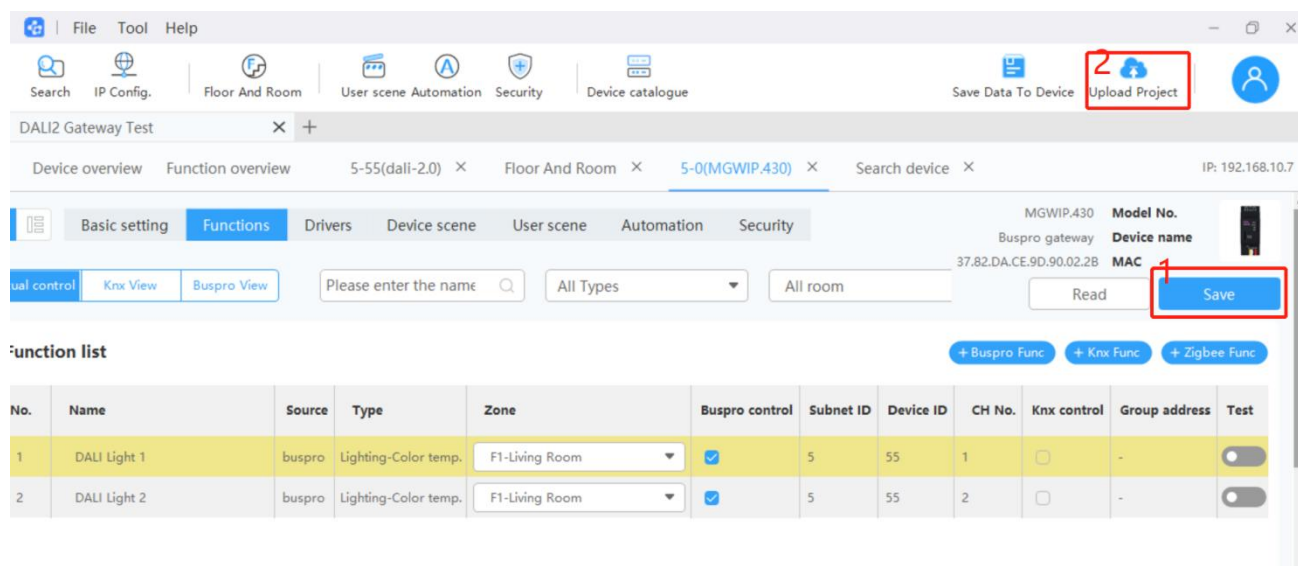
3. Modify the DALI color temperature range. Double click the area of subnet & device ID as below



Modify to the supported color temperature range of DALI ballast, for example 3000K – 6500K. Then click “Sys. Attribute to other” button, it means all the DALI channels’ color temperature range will be modified together.

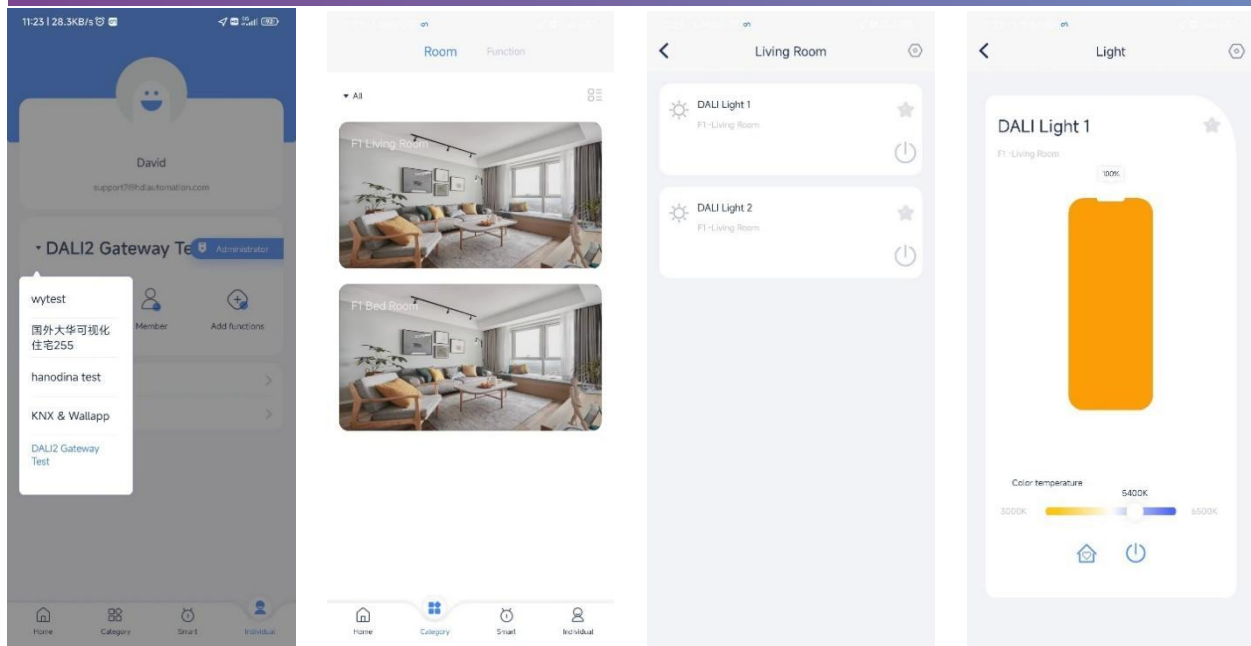


4. Click Save current function list, then click “Upload Project” to cloud.



2.4 Check the Control from On Pro App

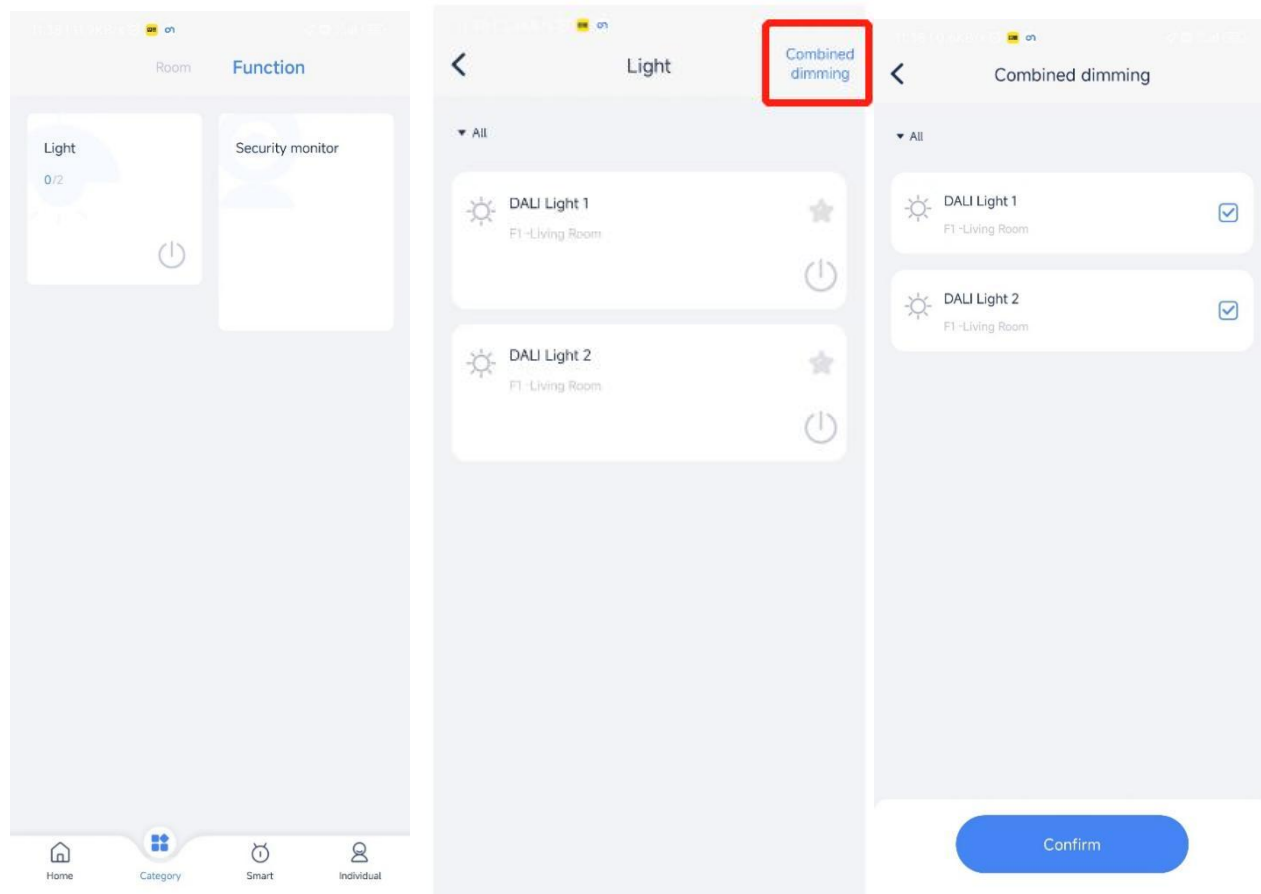
Login the On Pro App with same debug account, switch to DALI2 Gateway Test Project. You can see the 2 DALI lights and control them. (Tips: to download the On Pro App, please go to Google Play or Apple Play Store, search “On Pro”, download and install the App.)



2.4.1 Combination Control

Only in the Android mobile phone currently, OnPro+V1.6.2 can combine 2 or above DALI lights to control brightness and color temperature together.

1. On the basis that On Pro App can control the color temperature and brightness of these dali lights in a single way. In On Pro App Function->Light interface, click the “Combined dimming” button at the right top corner, select 2 DALI lights.



2. Combine them as a new group. Open and control this Combined dimming,

