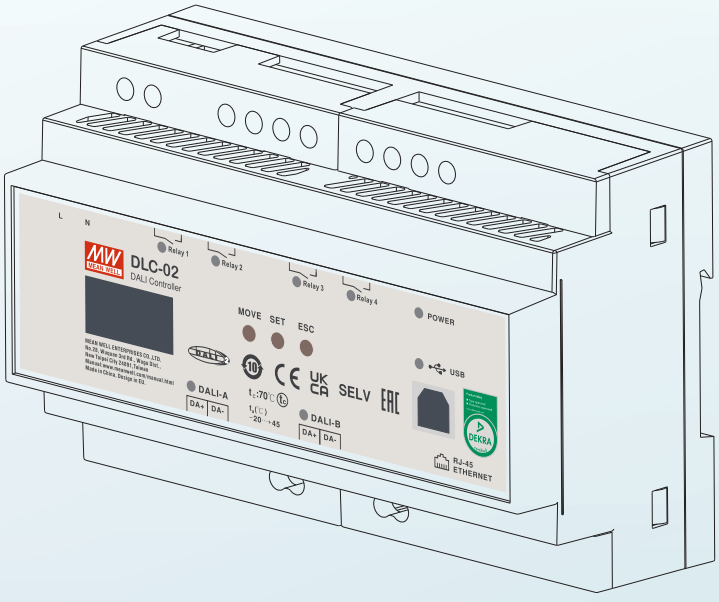
DLC-02
Installation Manual

DALI 2

DALI Controller



DLC-02 is a DALI-2 application controller to obtain the information of the DALI-2 system from DALI input device and control the DALI ECGs to make a lighting effect. Devices in the DALI bus can be scanned, configure and set through the PC software. It also provides Modbus TCP communication protocol for the user to integrate the system, which is a simple way to install a DALI lighting system.

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1.Safety Guidelines

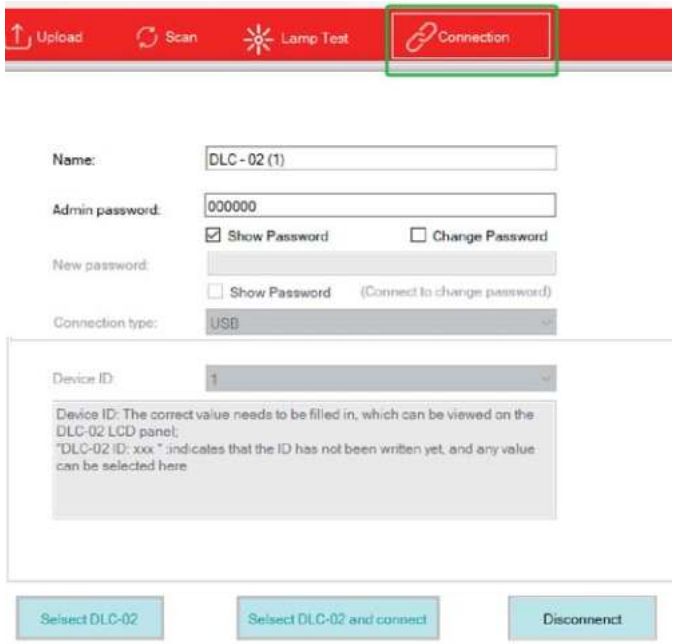
■Risk of electrical shock and energy hazard, all devices should be installed by a qualified technician. Observe the regulations valid in the country of use.

■All faults should be checked by a qualified technician Please do not remove the case from the unit by yourself.

■Please do not install the unit in places with high moisture, high ambient temperature or under direct sunlight.

1.1 Password

DLC-02 requires a password (factory default: 000000) to connect to the DLC software on the computer. On the "Connect" page, you can modify the password for DLC-02.



Note: (1) If you forget the connection password, you can use the DLC-02 control panel to reset it to the factory default password as follows: press the "ESC" key -> "System" -> "Other"-> "Reset to default" .

(2) After resetting to the factory default password, the parameters of DLC-02 will be cleared.

2.Overview

2.1 Version / Compatibility

This manual can be applied for devices with above firmware version 3.0.

2.2 Overview Device

DLC-02:Input:100~305Vac

Model Encoding:

D L C - 0 2

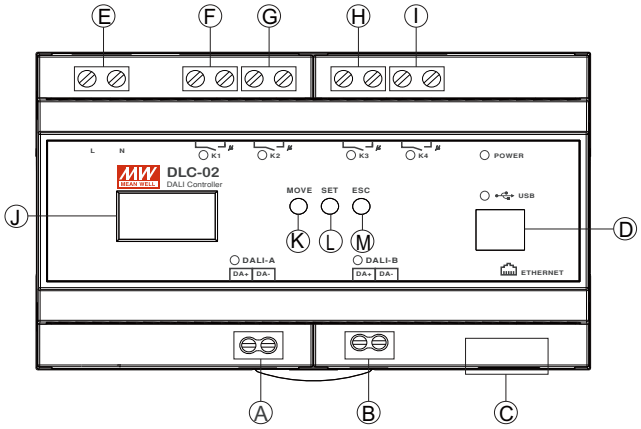
Number of output channels

Series name

2.3 Features

- Multi-master DALI-2 application controller
- Support for EN62386 DALI 2.0 Part 207/209/301/302/303/304
- Support for DT8 colour control device (colour temperature、RGB(W) and xy-coordinate)
- Two independent DALI bus channels with built-in DALI power supply (up to 250mA per bus)
- Connect up to 2×64 DALI ECGs and 2X12 DALI input devices
- Support up to 16 sets of sequences and each set of sequence can be set to 16 steps
- OLED display, LED indicators and buttons for local operation
- Built-in with 250V/5A X 4 relay
- Easy installation and configuration through PC software
- Built-in Modbus TCP/IP communication protocol
- Various control effects can be realized based on time events and input devices

2.4 Displays and Operating Elements

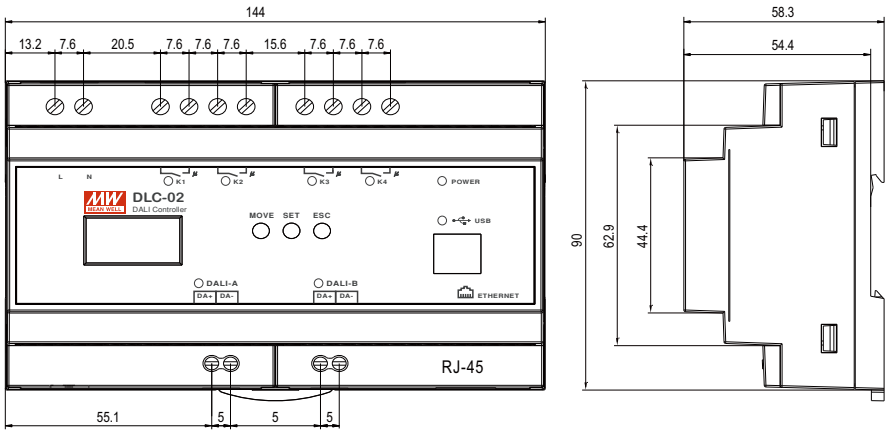


Ⓐ :DALI bus A terminal
Ⓑ :DALI bus B terminal
Ⓒ :RJ45 socket
Ⓓ :USB connection (Type B)
Ⓔ :AC connection
Ⓕ :Connections for the relay output K1
Ⓖ :Connections for the relay output K2
Ⓗ :Connections for the relay output K3
Ⓘ :Connections for the relay output K4
Ⓙ :OLED display
Ⓚ :Move button for the display
Ⓛ :Set button for the display
Ⓜ :Exit button for the display

2.5 Status LED

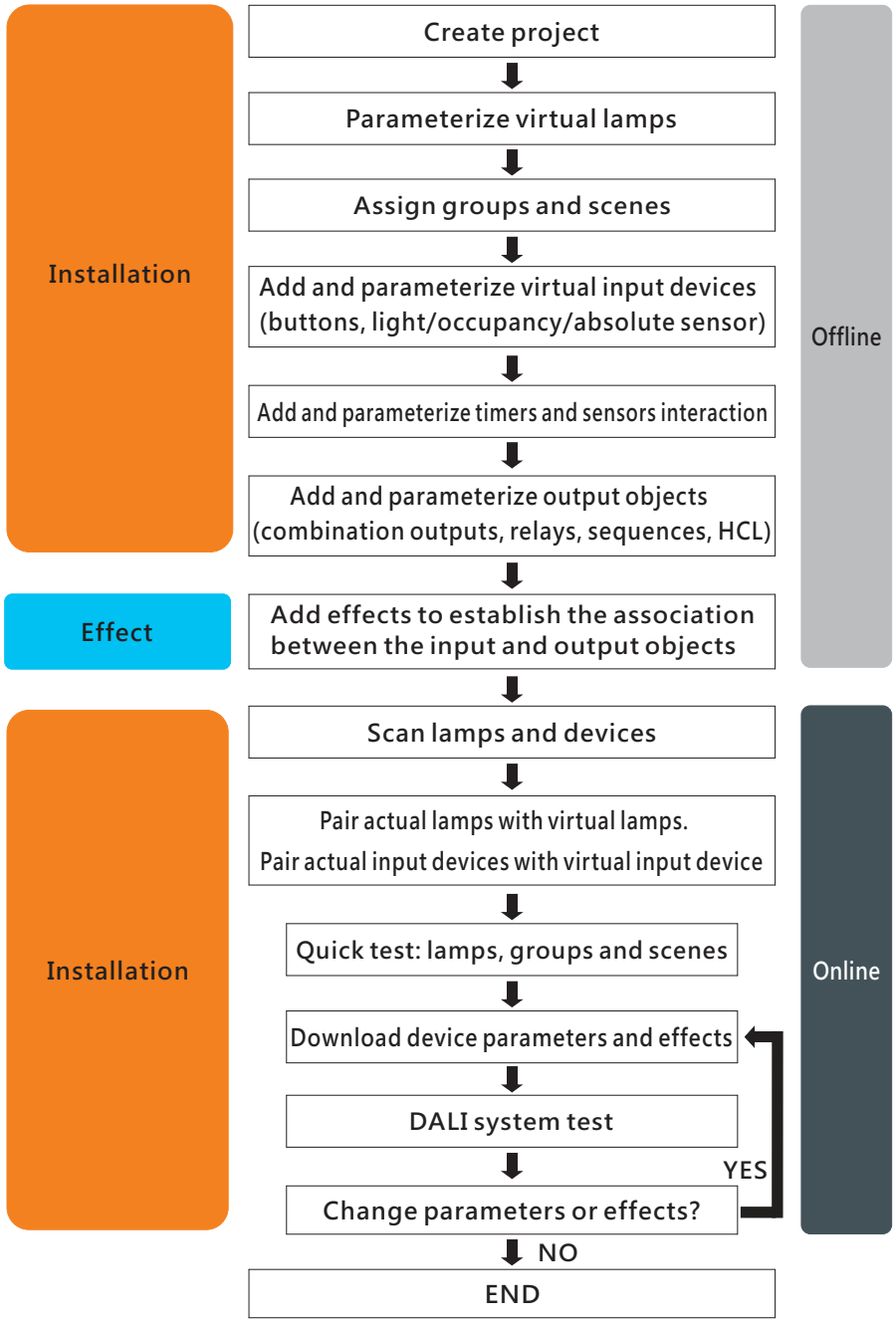
LED Indicator	Status
POWER	● Normal working ○ NOT connected to AC
K1, K2, K3, K4	● Relay ON (short) ○ Relay OFF (open)
DALI-A, DALI-B	● Bus voltage normal ○ NO bus voltage provided
USB	● USB connected ○ NO USB detected

2.6 Mechanical specification



3. Installation and Settings

3.1 Operation process



3.2 Application Example

The following example illustrates how to create a new project.

3.2.1 "Scene"

Consider hotel lighting as an example. In a room, there are four tunable white LED lamps installed. The hotelier has specified the need for four scene modes that guests can select to create different atmospheres by using a switch panel. These four scene modes are: 'conversation mode,' 'reading mode,' 'rest mode,' and 'lamp off'.

Lamps and devices:
(1) 4 pcs of tunable white lamps, model: Meanwell LCM-40TW
(2) 1 pcs of DALI 2 input device: button sensor,
PowerNex PNLA-DLT-206-EU

Lamp settings:
(1) Lamp 1 to 4: Bus A - Group 0
(2) Scene 0: Brightness is 100%, colour temperature is 6500K
(3) Scene 1: Brightness is 80%, colour temperature is 4500K
(4) Scene 2: Brightness is 30%, colour temperature is 3000K
(5) Lamp off: Brightness is 0

Effect presentation:

Effect number	Trigger method	Effect Description
conversation mode	Short push button 1 (<500ms)	● Group 0: Trigger scene 0
reading mode	Short push button 2 (<500ms)	● Group 0: Trigger scene 1
rest mode	Short push button 3 (<500ms)	● Group 0: Trigger scene 2
lamp off	Short push button 4 (<500ms)	● Turn off all lamps

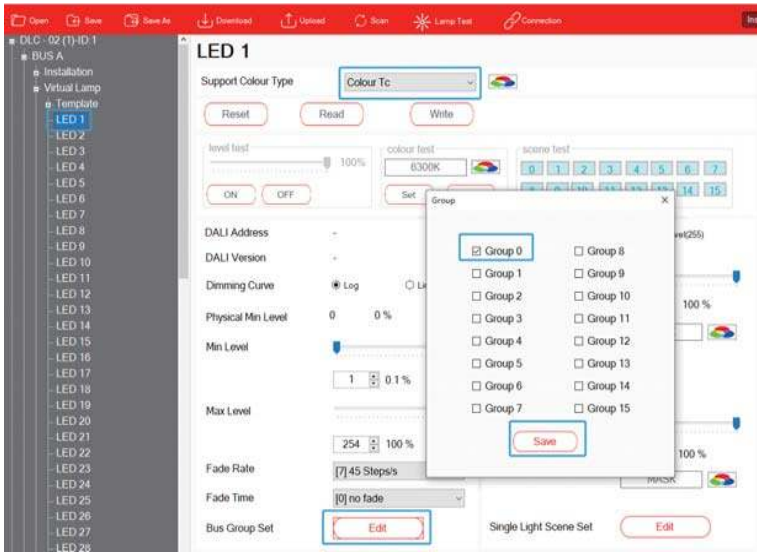
The implementation steps are as follows (Steps 1 to 3 can be set offline, while Steps 4 to 6 need to be set online):

Step 1: Parameterize virtual lamps, assign groups and scenes (Offline)

※ Set virtual lamp types and groups

1.Select LED 1 on the virtual lamp page, set Colour Type to "Colour Tc". Click on "Bus Group Set - Edit" to open the group editing window. Check "Group 0" to add LED 1 to this group. Click "Save" to complete the settings.

2.Using the same method, select "Colour Tc" for "Colour Type" for LED 2~LED 4 and add them to "Group 0".



※ Set scenes

Select LED 1 on the virtual lamp page, click on "Single Light Scene Set - Edit" to open the scene editing window, check "Scene 0", "Scene 1", "Scene 2".

Scene 0 corresponds to "Conversation mode", with a brightness of 100% and a colour temperature of 6500K.

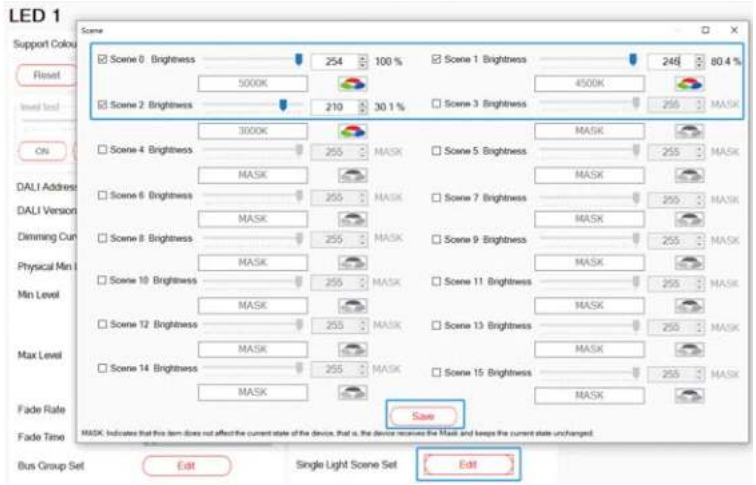
Scene 1 corresponds to "Reading mode", with a brightness of 80% and a colour temperature of 4500K.

Scene 2 corresponds to "Rest mode", with a brightness of 30% and a colour temperature of 3000K.

Click "Save" to complete the settings.

Use the same method to set the scene for LED 2~LED 4.

Tip: If you want the light to change smoothly, you can adjust the fade time.

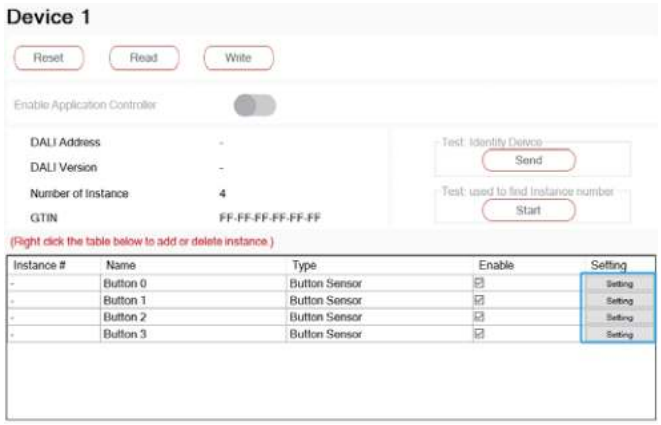


Step 2: Add and parameterize virtual input devices "Buttons" (Offline)

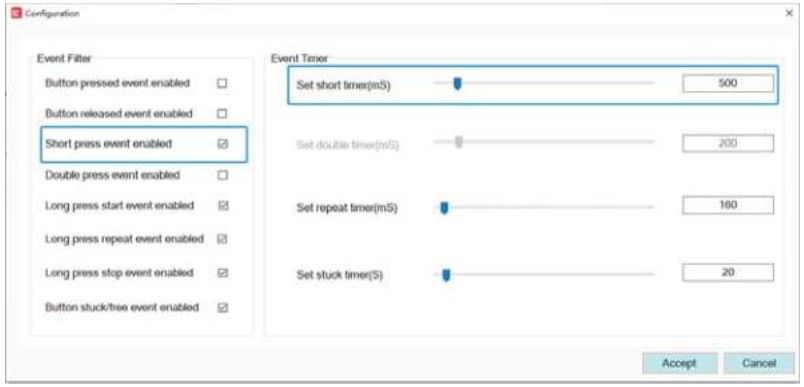
※Add input device instances

Select Device 1 on the virtual lamp page, right-click in the instance table and select "+Add". By default, there is already 1 button, and add 3 more buttons.

※ Set input device instances
Click on the setting option and set the 4 button parameters respectively.

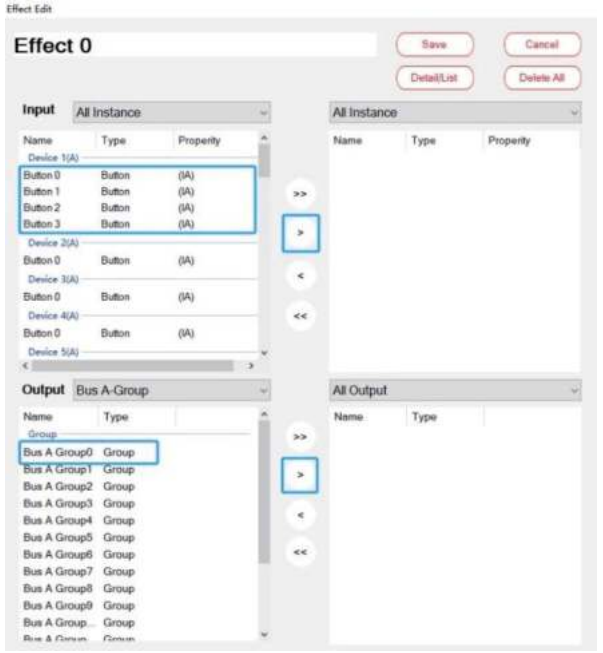


Check "Short press event enabled", set the short time to 500mS, and click "Accept" to complete the setting. Use the same parameters to set the button 1~button 3.
Please refer to section 4.3.3.4 for relevant parameter descriptions.

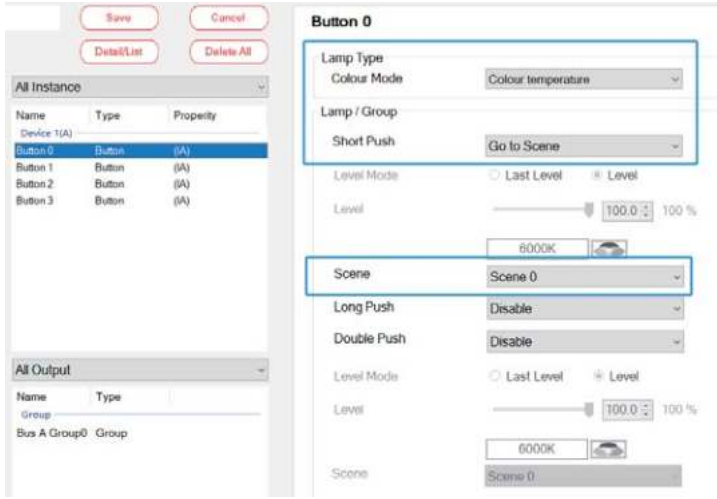


Step 3: Add effects to establish the association between the buttons and lamps (Offline)
※ Click "+Add" to add an effect:

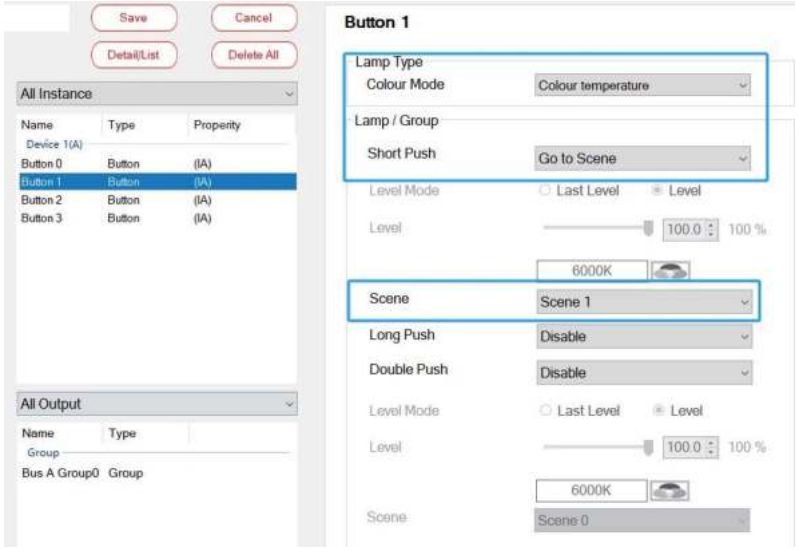
※ In the "Input" list, move Button 0~Button 3 of "Device 1" to the right area. In the "Output" list, move "Bus A Group 0" to the right area.



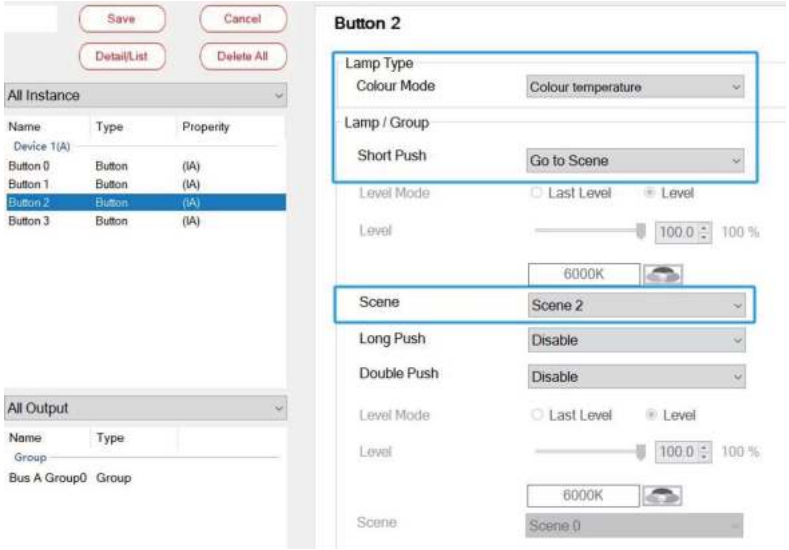
※ Select Button 0, "Colour Mode" is set to "Colour temperature", "Lamp/Group - Short Press" is set to "go to Scene", and select "Scene 0";



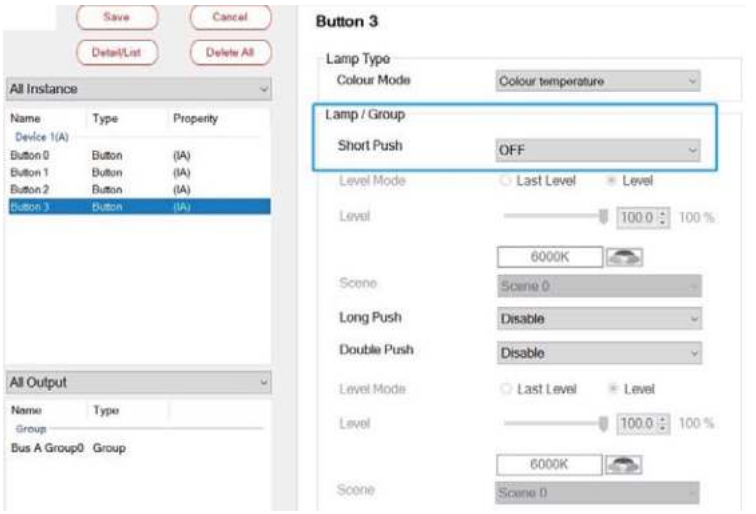
※ Select Button 1, "Colour Mode" is set to "Colour temperature", "Lamp/Group - Short Press" is set to "go to Scene", and select "Scene 1";



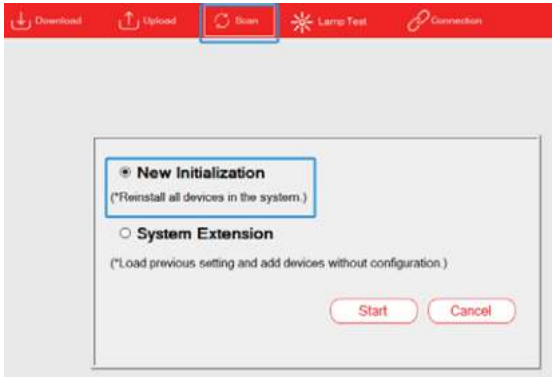
※ Select Button 2, "Colour Mode" is set to "Colour temperature", "Lamp/Group - Short Press" is set to "go to Scene", and select "Scene 2";



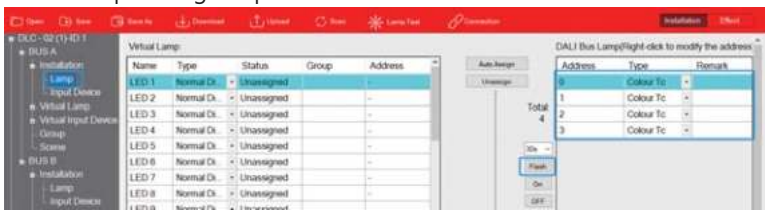
※ Select Button 3, "Colour Mode" is set to "Colour temperature", "Lamp/Group - Short Press" is set to "Off". Click "Save" after setting.



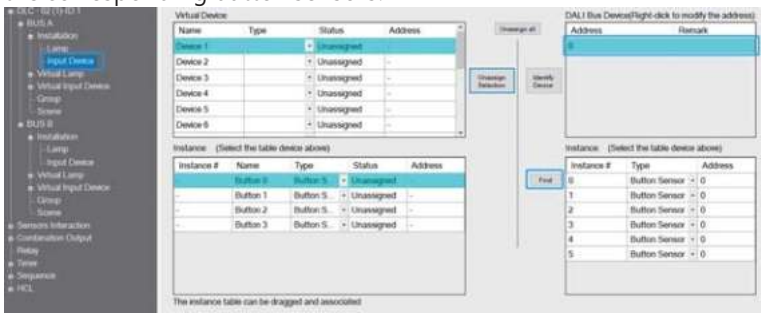
Step 4: Scan lamps and input devices (Online)
Connect the button device and 4 Colour Tc lamps in the room to bus A, and use the "Scan - New Initialization" to assign DALI addresses to them.



After scanning, click "BUS A - Installation - Lamp", 4 Colour Tc lamps (0~3) appear on this page. Respectively click "Flash" to find the corresponding lamp.



Click "BUS A - Installation – Input Device", one input device "0" with 6 button sensors appear on this page. Click "Find" to find the corresponding button sensors.

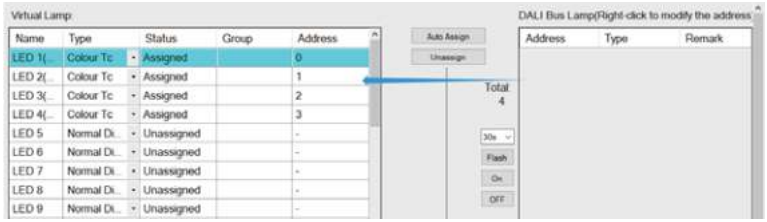


Step 5: Pair actual lamps with virtual lamps. Pair actual buttons with virtual input devices. (Online)

※ Pair actual lamps with virtual lamps

Select a lamp "0", hold down the left mouse button to move it to the left area and pair it with the virtual lamp "LED 1". Pair the lamps "1" ~ "3" with LED 2~LED 4 in the same way.

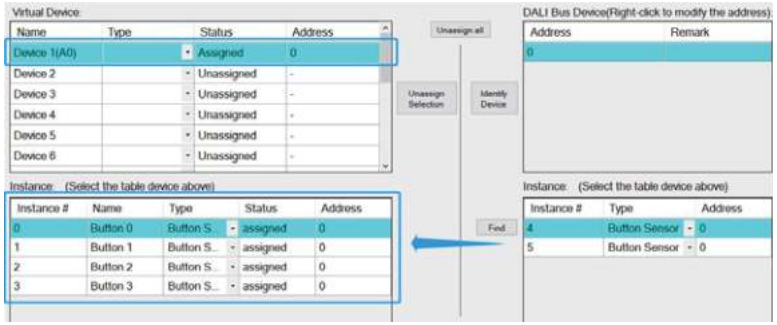
Note: If the lamp types are different, they will not be able to pair with each other.



※Pair actual buttons with virtual input devices.

Select the button sensor "0" instance, hold down the left mouse button to move it to the left area and pair it with the "Button 0". Pair the instances "1" ~ "3" with "Button 1" ~ "Button 3" in the same way.

Note: If the lamp types are different, they will not be able to pair with each other.



Step 6: Download device parameters and effects (Online)

Click "Download" to download the device parameters and effects to the input devices, lamps and DLC-02.

3.2.2 "Sequence" and "Summer Time"

This example utilises the "Timer" and "Sequence" functions in conjunction with "Summer Time" or daylight saving time to create intelligent lighting for office applications.

Lamps and devices:

(1)8 pcs of tunable white lamps, model: Meanwell LCM-40TW

Lamp and time settings:

(1)Lamp 1 to 8: Bus A - Group 0

(2)Summer time: The start time is 2:00 on the last Sunday of March each year, the end time is 3:00 on the last Sunday of October, and the offset time is 1 hour.

(3)Sequence description

①8:00 am: turn on all lamps in the office in advance and set brightness to 60% and colour temperature to 4000K.

②8:30 am：start work, set lamp brightness to 100% and colour temperature to 6500K.

③11:55 am：it's almost lunch break, set lamp brightness to 80% and keep colour temperature unchanged.

④12:00 am：lunch break, turn off all lamps.

⑤12:55 pm：soon to work time, set lamp brightness to 50% and colour temperature to 3200K.

⑥13:00 pm：start work, set lamp brightness to 100% and colour temperature to 6500K.

⑦17:30 pm：off-duty time, set lamp brightness to 80% and keep colour temperature unchanged;

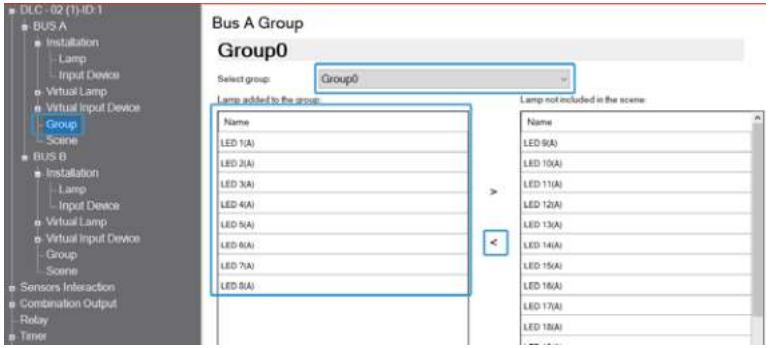
⑧18:00 pm：turn off all lamps.

Effect presentation:

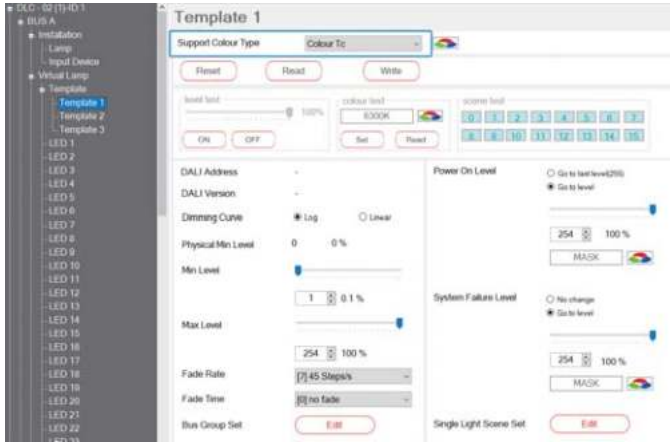
Trigger method	Effect Description
Timer 1	● Start sequence ① 8:00, lamp brightness is 60% and colour temperature is 4000K. ② 8:30, lamp brightness is 100% and colour temperature is 6500K. ③ 11:55, lamp brightness is 80% and colour temperature is 6500K. ④ 12:00, Lamps off. ⑤ 12:55, lamp brightness is 50% and colour temperature is 3200K. ⑥ 13:00, lamp brightness is 100% and colour temperature is 6500K. ⑦ 17:30, lamp brightness is 80% and colour temperature is 6500K. ⑧ 18:00, Lamps off, stop sequence.

The implementation steps are as follows (Steps 1 to 4 can be set offline, while Steps 5 to 8 need to be set online):

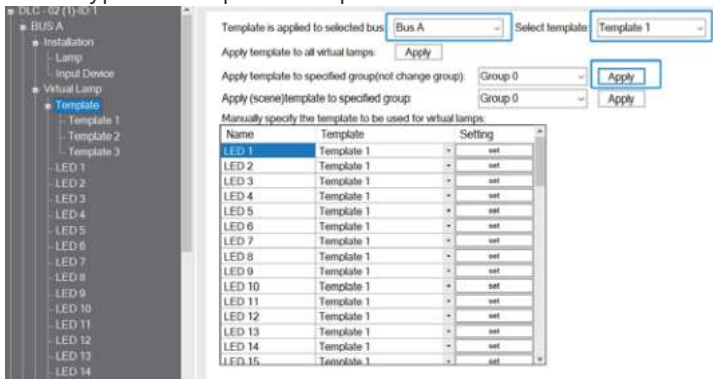
Step 1: Parameterize virtual lamps and assign groups (Offline)
※Assign group
On the "BUS A - Group" page, add LED 1 (A)~LED 8 (A) to Group 0.



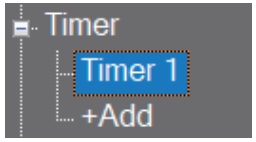
※Set virtual lamp type
Use the "Template" function to parameterize 8 pcs of lamps at once.
Select "Template 1" on the virtual lamp page, "Support Colour Type" is set to "Colour Tc". If you want the light to change slowly, you can set parameters such as fade time.



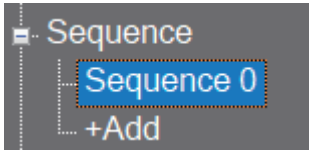
Then select "Template" to open a page. On this page, "Template is applied to selected bus" is set to "Bus A" and "Select template" is set to "Template 1", then click "Apply". After clicking, the colour type of the 8 pcs of lamps is set to "Colour Tc".

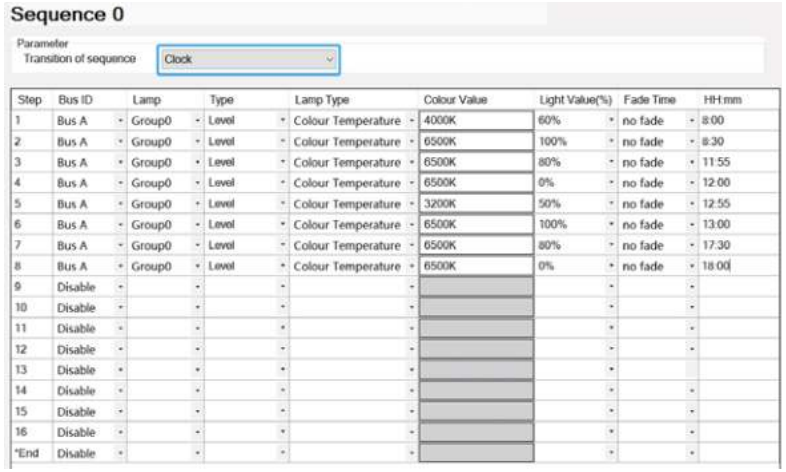


Step 2: Add and parameterize timer (Offline)
Add a "Timer 1", and set "8:00 am on working days" as a "timed event".



Step 3: Add and parameterize sequence (Offline)
Add a "sequence 0", and set "Transition of sequence" to "Clock".
The settings of other parameters are shown in the table below.



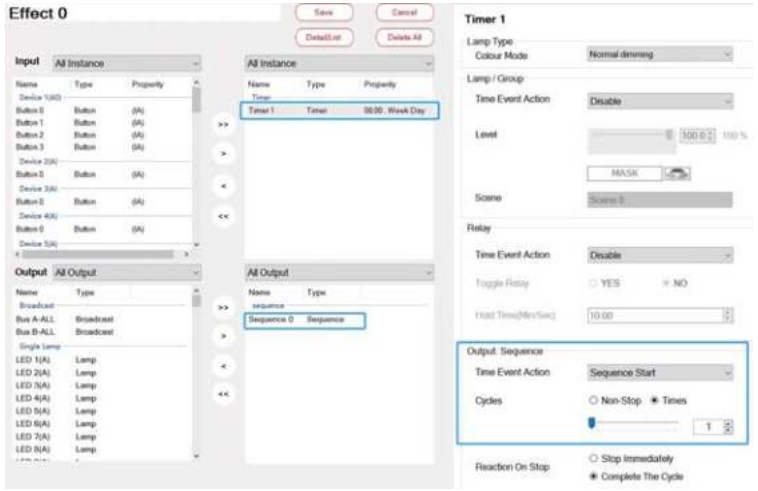


Step	Bus ID	Lamp	Type	Lamp Type	Colour Value	Light Value(%)	Fade Time	HH:mm
1	Bus A	Group0	Level	Colour Temperature	4000K	60%	no fade	8:00
2	Bus A	Group0	Level	Colour Temperature	6500K	100%	no fade	8:30
3	Bus A	Group0	Level	Colour Temperature	6500K	80%	no fade	11:55
4	Bus A	Group0	Level	Colour Temperature	6500K	0%	no fade	12:00
5	Bus A	Group0	Level	Colour Temperature	3200K	50%	no fade	12:55
6	Bus A	Group0	Level	Colour Temperature	6500K	100%	no fade	13:00
7	Bus A	Group0	Level	Colour Temperature	6500K	80%	no fade	17:30
8	Bus A	Group0	Level	Colour Temperature	6500K	0%	no fade	18:00
9	Disable							
10	Disable							
11	Disable							
12	Disable							
13	Disable							
14	Disable							
15	Disable							
16	Disable							
*End	Disable							

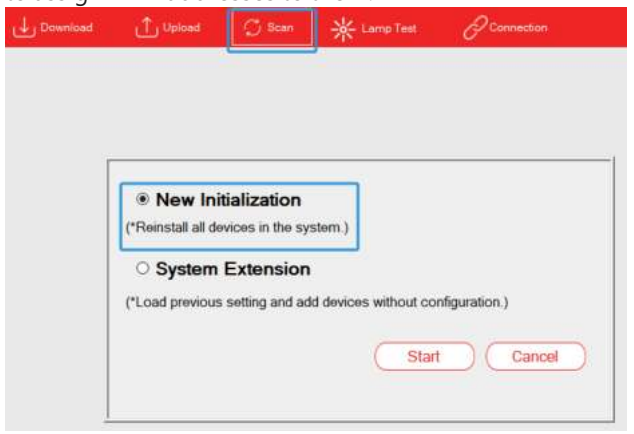
Step 4: Add an effect to establish the association between "Timer 1" and "sequence 0". (Offline)
※ Click "+Add" to add an effect:

※In the "Input" list, move Timer 1 to the right area. In the "Output" list, move "Sequence 0" to the right area.
Click Timer 1, "Timer Event Action" is set to "Sequence Start", "Cycles" is set to "Times" with "1". Click "Save" to complete the settings.

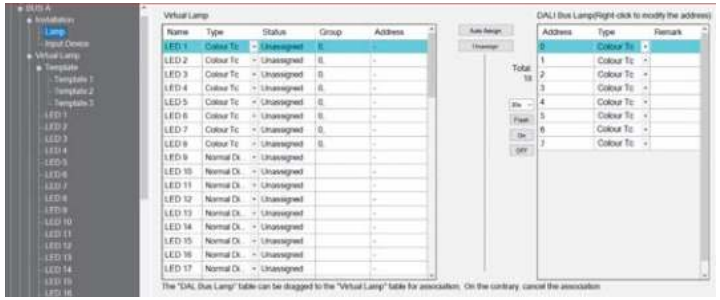
Note: When using the "Sequence" function, the lamp colour mode needs to be set on the "Installation - Sequence" page. The parameter for lamp colour mode on the "Effect" page is invalid for "sequence".



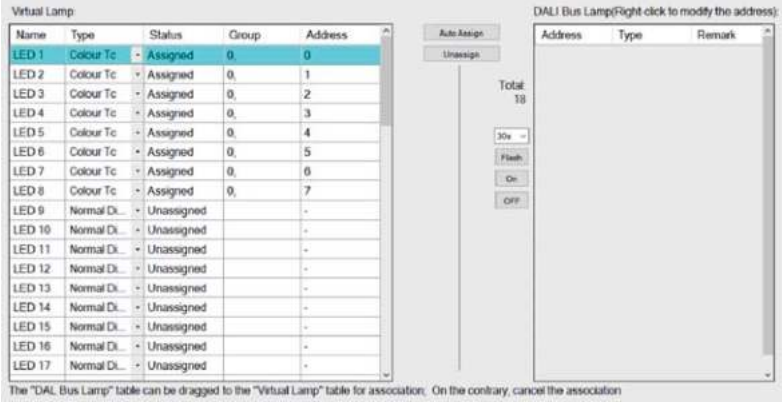
Step 5: Scan lamps (Online)
Connect the 8 pcs of lamps to BUS A, and use the "Scan – New Initialization" to assign DALI addresses to them.



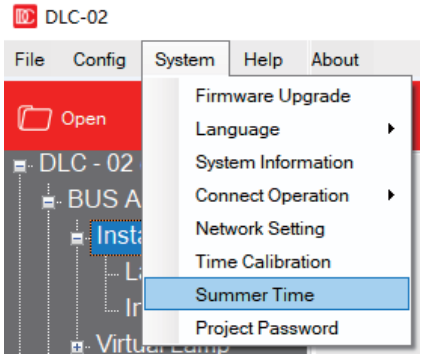
After scanning, click "BUS A - Installation - Lamp", 8 pcs of Colour Tc lamps (0~7) appear on this page. Respectively click "Flash" to find the Corresponding lamp.

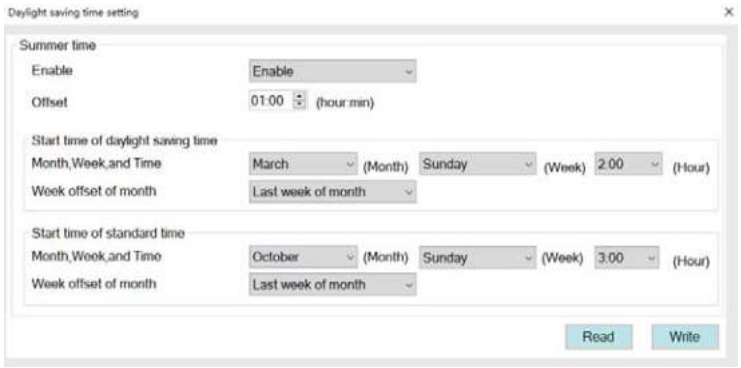


Step 6: Pair actual lamps with virtual lamps (Online)
Use "Auto Assign" to pair the lamps "0" ~ "7" with LED 1~LED 8 automatically in sequence.



Step 7: Set Summer time (Online)
Select "System" -> "Summer Time", open a setting window, and set the start time of daylight saving time to 2:00 on the last Sunday of March each year, the start time of standard time to 3:00 on the last Sunday of October, and the offset time to 1 hour. The parameters are shown in the following figure.





Step 8: Download device parameters and effects (Online)
Click "Download" to download the device parameters and effects to the lamps and DLC-02.

3.2.3 "Colour Cycle"

This example demonstrates the use of the 'Sequence' function for decorative lighting on a four-story house.

Lamps and devices:
(1)64 pcs of RGB lamps, model: Lunatone DALI RGB LED Dimmer
(2)1 pcs of DALI-2 input device: button sensor type, LOYTEC LDALI-BM2

Lamp settings:
(1)Lamp 1 to 16: Bus A - Group 0 (Corresponding to the first floor);
Lamp 17 to 32: Bus A - Group 1 (Corresponds to the second floor);
Lamp 33 to 48: Bus A - Group 2 (Corresponds to the third floor);
Lamp 49 to 64: Bus A - Group 3 (Corresponds to the fourth floor);
(2)Sequence description
①Short push a button to set the brightness of all lamps on the outer wall to 100%, and set the colour of the lamps on the first floor to red, the second floor to green, the third floor to blue, and the fourth floor to yellow.
②10s later, set the colour of the lamps on the first floor to yellow, the second floor to red, the third floor to green, and the fourth floor to blue.
③10s later, set the colour of the lamps on the first floor to blue, the second floor to yellow, the third floor to red, and the fourth floor to green.
④10s later, set the colour of the lamps on the first floor to green, th e second floor to blue, the third floor to yellow, and the fourth floor to red.

⑤10s later, set the colour of the lamps on the first floor to red, the second floor to green, the third floor to blue, and the fourth floor to yellow.
Cycle through ① to ⑤ until the execution of double push the button, then immediately stop the cycle, and turn off all lamps.

Effect presentation:

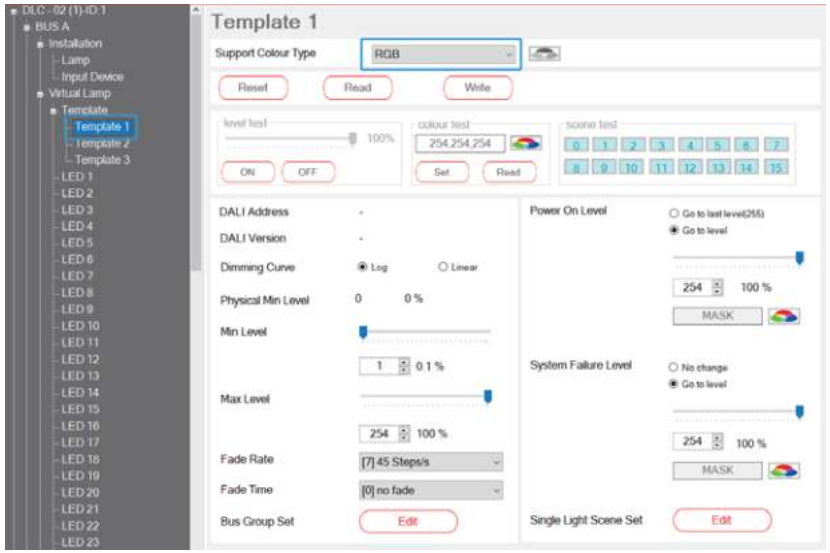
Trigger method	Effect Description
Short push button 1 (<500ms)	● Start sequence
Double push button 1 (<1000ms)	● Stop sequence, and turn off all lamps

The implementation steps are as follows (Steps 1 to 4 can be set offline, while Steps 5 to 7 need to be set online):

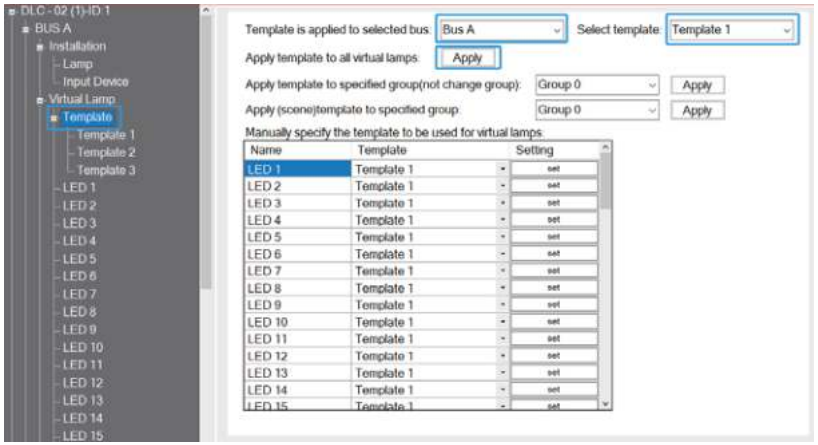
Step 1: Parameterize virtual lamps and assign groups (Offline)

※Parameterize virtual lamps

Due to the use of many lamps with the same parameters in this example, we can use the "Template" function to parameterize them at once.
Select "Template 1" on the virtual lamp page, and "Support Colour Type" is set to "RGB". If you want the light to change slowly, you can set parameters such as fade time.

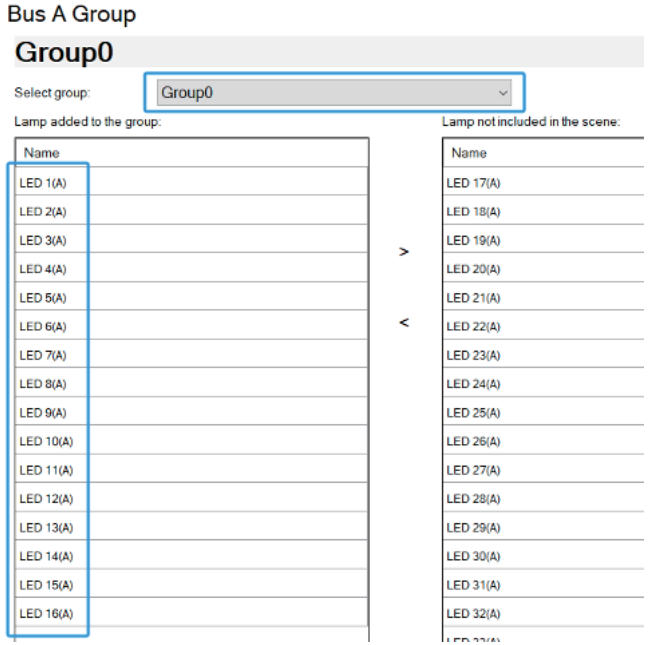


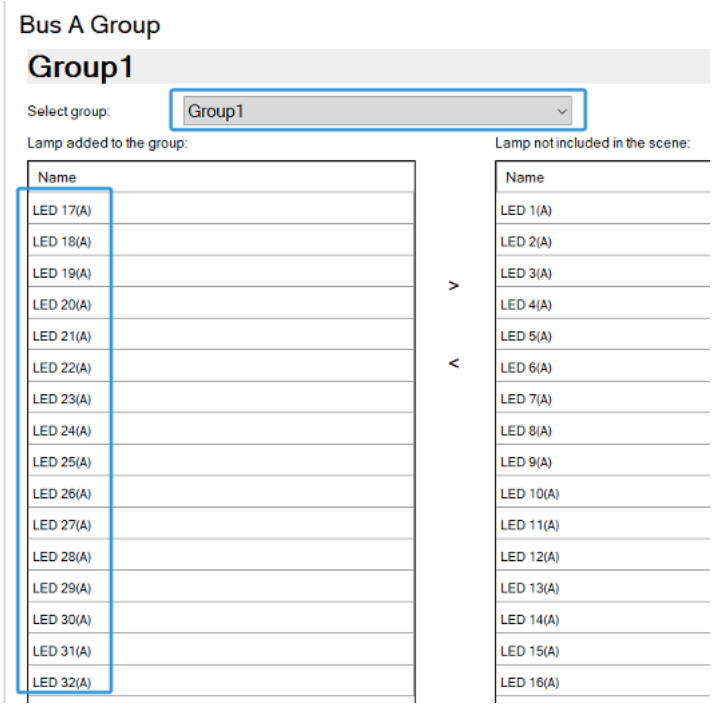
Then select "Template" to open a page. On this page, "Template is applied to selected bus" is set to "Bus A" and "Select template" is set to "Template 1", then click "Apply". After clicking, the colour type of all lamps on the Bus A is set to "RGB".

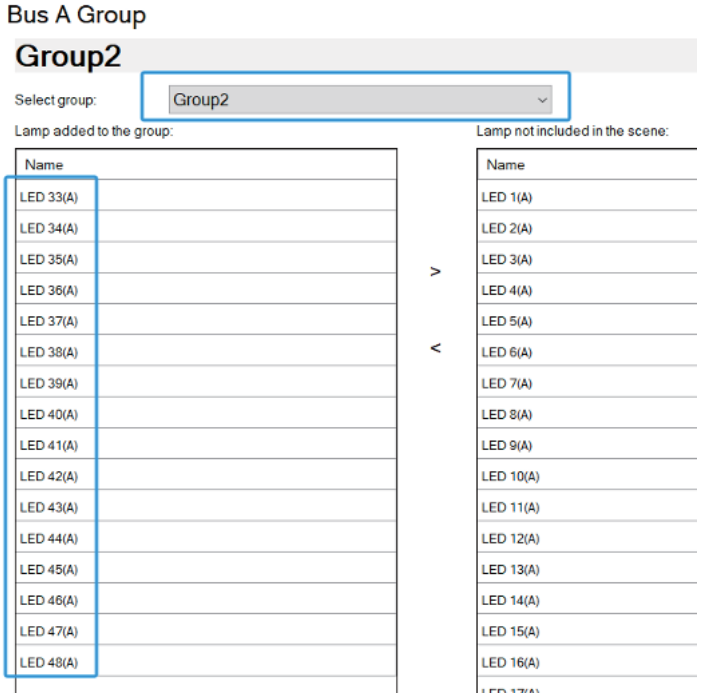


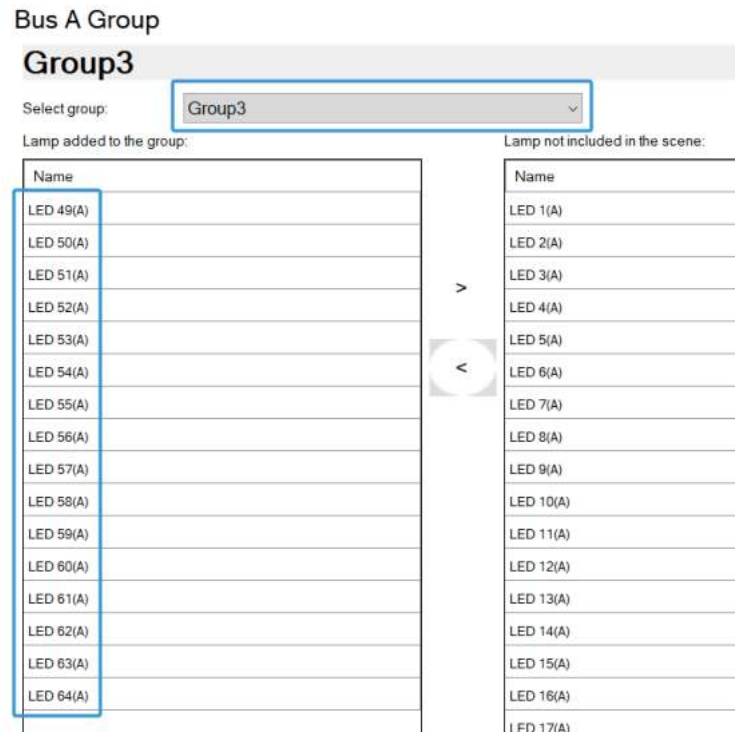
※Assign groups

On the "BUS A – Group" page, "Select group" is set to "Group 0", and move LED 1~LED 16 to "Group 0". In the same way, move LED 17~LED 32 to "Group1", move LED 33~LED 48 to "Group2", and move LED 49~LED 64 to "Group3".



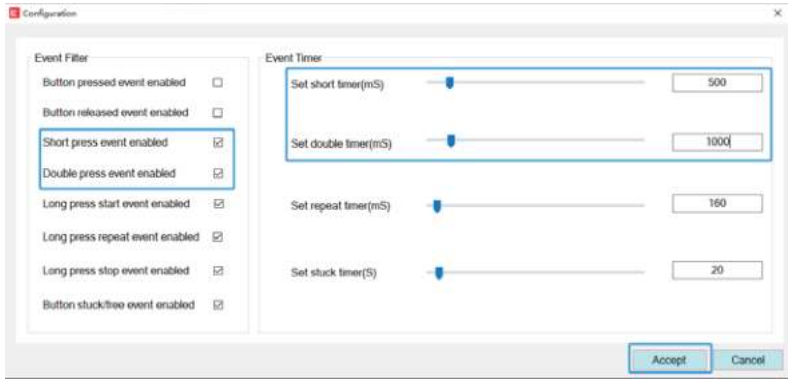




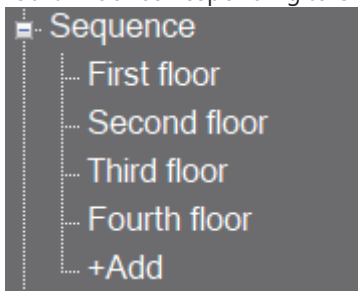


Step 2: Add and parameterize virtual input devices "Buttons" (Offline)
Select Device 1 on the virtual lamp page. By default, there is already 1 button. Click on the setting option and set the button 0 parameters.

Check "Short press event enabled" and "Double press event enabled", set the short time to 500mS and double time to 1000ms, and click "Accept" to complete the setting. Please refer to section 4.3.3.4 for relevant parameter descriptions.



Step 3: Add and parameterize sequence (Offline)
4 sequences are added and renamed as the first, second, third and fourth floor, which are used respectively to set the colour changing effects of lamps on each floor.
Note: The first floor corresponding to Group 0, the second floor corresponding to Group 1, the third floor corresponding to Group 2, the fourth floor corresponding to Group 3.



The colour and brightness settings of lamps on each floor is as follows:

First floor

Parameter
Transition of sequence: Fixed transition period

Step	Bus ID	Lamp	Type	Lamp Type	Colour Value	Light Value(%)	Fade Time	Delay Time(s)
1	Bus A	Group0	Level	RGB	254,0,0	100%	2.0 s	10
2	Bus A	Group0	Level	RGB	0,254,0	100%	2.0 s	10
3	Bus A	Group0	Level	RGB	0,0,254	100%	2.0 s	10
4	Bus A	Group0	Level	RGB	254,254,0	100%	2.0 s	10
5	Disable							
6	Disable							
7	Disable							
8	Disable							
9	Disable							
10	Disable							
11	Disable							
12	Disable							
13	Disable							
14	Disable							
15	Disable							
16	Disable							
*End	Disable							

Second floor

Parameter
Transition of sequence: Fixed transition period

Step	Bus ID	Lamp	Type	Lamp Type	Colour Value	Light Value(%)	Fade Time	Delay Time(s)
1	Bus A	Group1	Level	RGB	254,254,0	100%	2.0 s	10
2	Bus A	Group1	Level	RGB	254,0,0	100%	2.0 s	10
3	Bus A	Group1	Level	RGB	0,254,0	100%	2.0 s	10
4	Bus A	Group1	Level	RGB	0,0,254	100%	2.0 s	10
5	Disable							
6	Disable							
7	Disable							
8	Disable							
9	Disable							
10	Disable							
11	Disable							
12	Disable							
13	Disable							
14	Disable							
15	Disable							
16	Disable							
*End	Disable							

Third floor

Parameter
Transition of sequence: Fixed transition period

Step	Bus ID	Lamp	Type	Lamp Type	Colour Value	Light Value(%)	Fade Time	Delay Time(s)
1	Bus A	Group2	Level	RGB	0,0,254	100%	2.0 s	10
2	Bus A	Group2	Level	RGB	254,254,0	100%	2.0 s	10
3	Bus A	Group2	Level	RGB	254,0,0	100%	2.0 s	10
4	Bus A	Group2	Level	RGB	0,254,0	100%	2.0 s	10
5	Disable							
6	Disable							
7	Disable							
8	Disable							
9	Disable							
10	Disable							
11	Disable							
12	Disable							
13	Disable							
14	Disable							
15	Disable							
16	Disable							
*End	Disable							

Fourth floor

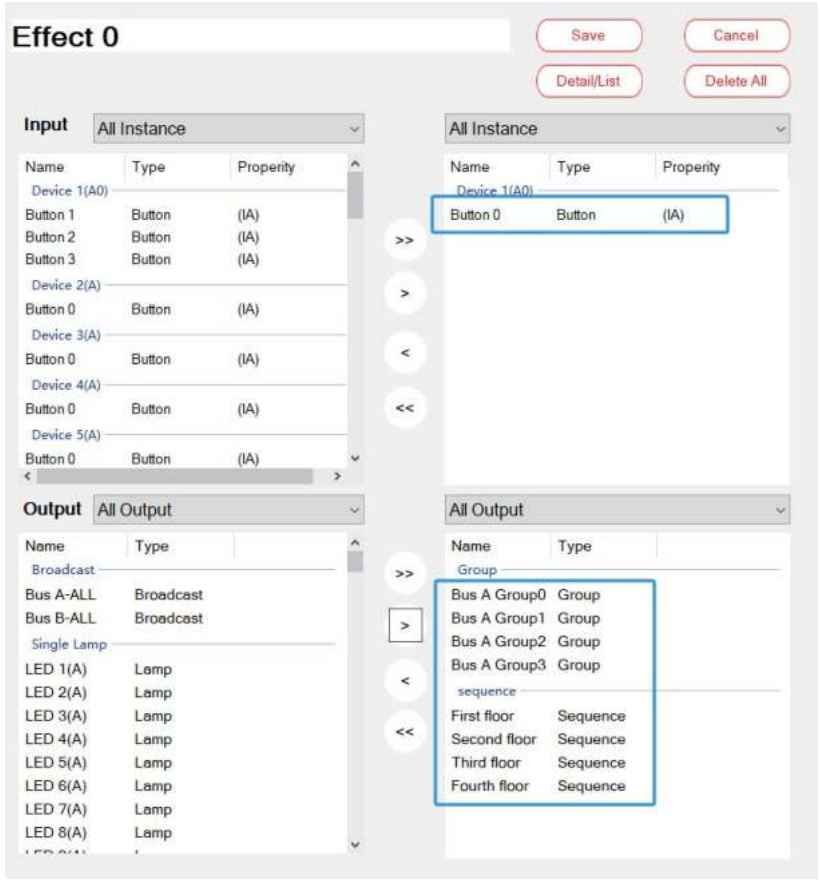
Parameter
Transition of sequence: Fixed transition period

Step	Bus ID	Lamp	Type	Lamp Type	Colour Value	Light Value(%)	Fade Time	Delay Time(s)
1	Bus A	Group2	Level	RGB	0,254,0	100%	2.0 s	10
2	Bus A	Group2	Level	RGB	0,0,254	100%	2.0 s	10
3	Bus A	Group2	Level	RGB	254,254,0	100%	2.0 s	10
4	Bus A	Group2	Level	RGB	254,0,0	100%	2.0 s	10
5	Disable							
6	Disable							
7	Disable							
8	Disable							
9	Disable							
10	Disable							
11	Disable							
12	Disable							
13	Disable							
14	Disable							
15	Disable							
16	Disable							
*End	Disable							

Step 4: Add an effect to establish the association between Button 0 and Sequence. (Offline)

※ Click "+Add" to add an effect:

※In the "Input" list, move Button 0 to the right area. In the "Output" list, move "first floor" ~ "fourth floor" and "BUS A Group 0" ~ "BUS A Group 3" to the right area.



※ Click Button 0, "Lamp/Group – Double Push" is set to "OFF".

"Output: Sequence – Short Push" is set to "Sequence Start".

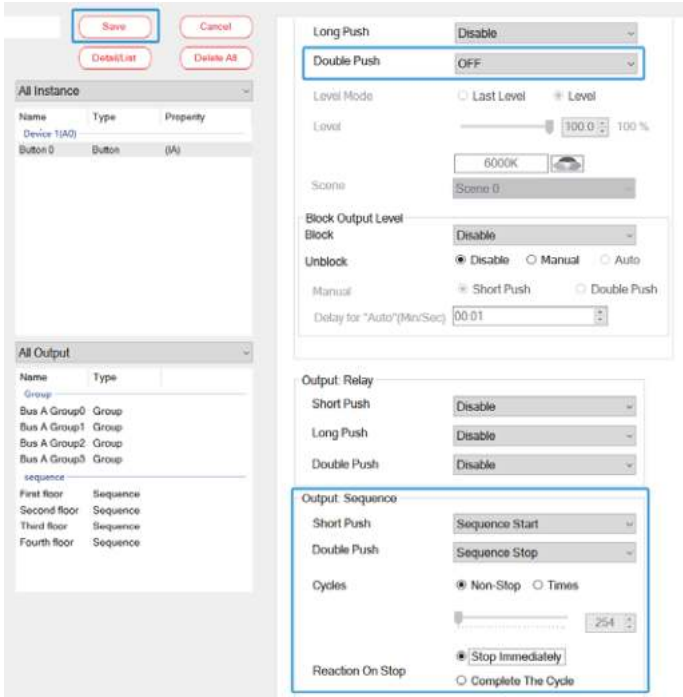
"Output: Sequence – Double Push" is set to "Sequence Stop".

"Cycles" is set to "Non-Stop", which means that the sequence has been cyclic operation.

"Reaction On Stop" is set to "Stop Immediately", which means that the current operation will be stopped immediately when receiving double pushing Button 0.

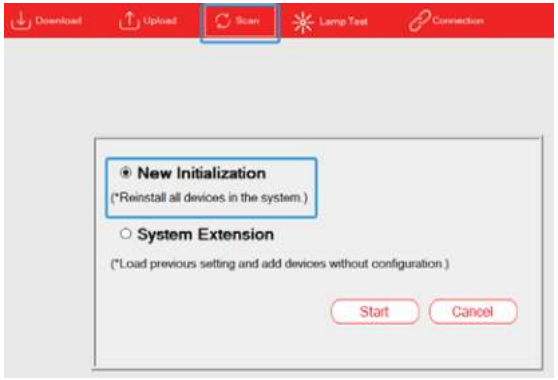
Click "Save" to complete the settings.

Note: When using the "Sequence" function, the lamp colour mode needs to be set on the "Installation - Sequence" page. The parameter for lamp colour mode on the "Effect" page is invalid for "sequence".

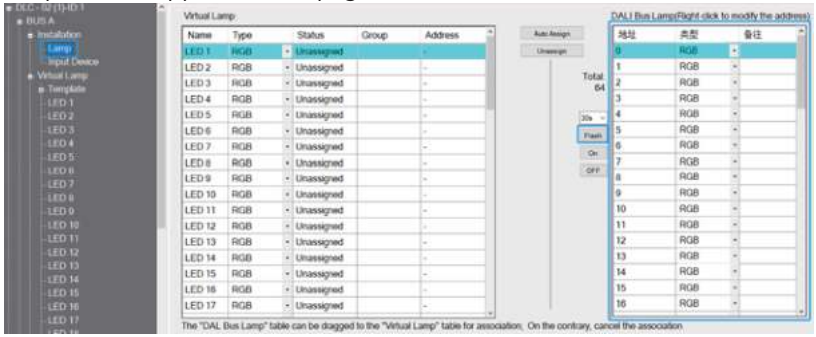


Step 5: Scan lamps and input devices (Online)

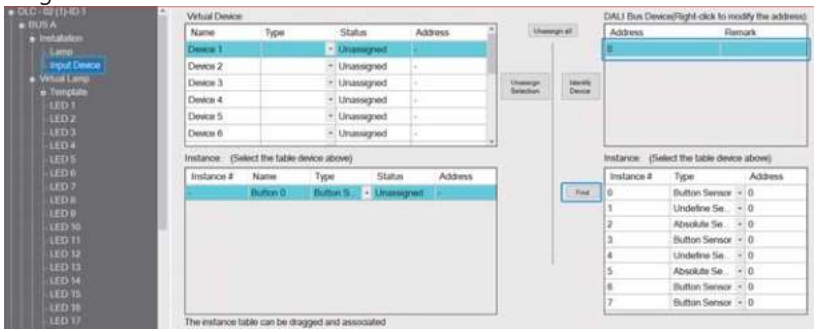
Connect the button devices and 64 pcs of RGB lamps to bus A, and use the "Scan - New Initialization" to assign DALI addresses to them.



After scanning, click "BUS A - Installation - Lamp", 64 pcs of the RGB lamps (0~63) appear on this page.



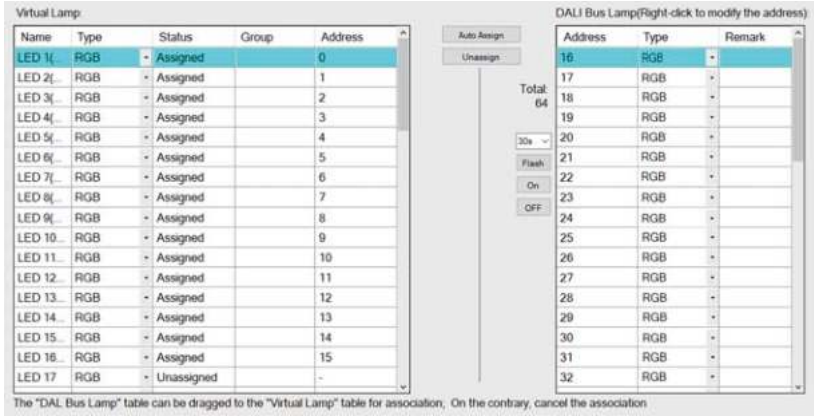
Click "BUS A - Installation – Input Device", one input device "0" with 4 button sensors appear on this page. Click "Find" to find the corresponding button.



Step 6: Pair actual lamps with virtual lamps. Pair actual buttons with virtual input devices. (Online)

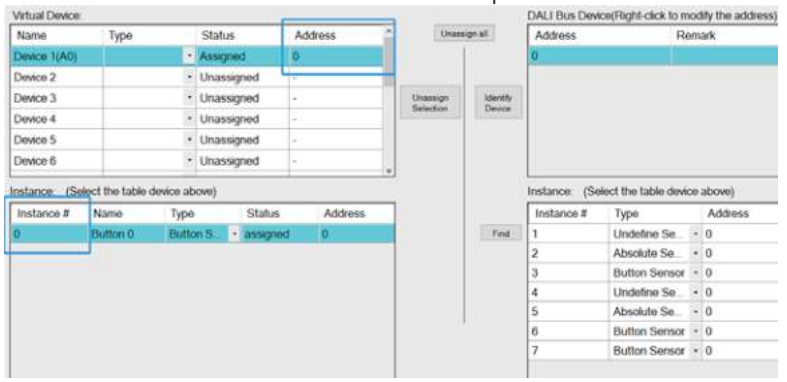
※Pair actual lamps with virtual lamps

On the "BUS A – Installation – Lamp" page, according to the actual floor where the lamps are located, move them to the left area and pair them with the corresponding virtual lamps.



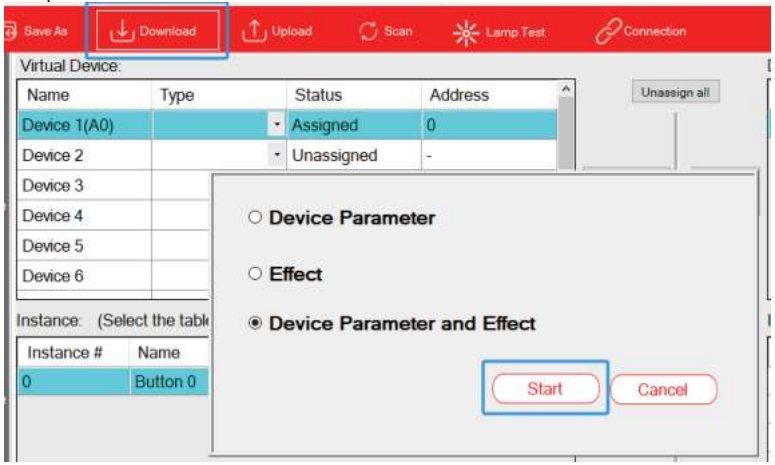
※ Pair actual buttons with virtual input device.

In the right area, select the button sensor "0" instance, hold down the left mouse button to move it to the left area and pair it with the "Button 0".



Step 7: Download device parameters and effects (Online)

Click "Download" to download the device parameters and effects to the lamps and DLC-02.



3.2.4 "Sensors Interaction"

In an indoor basketball court, it is necessary for all lamps to illuminate upon entry and turn off when everyone leaves. However, individual occupancy sensors have limited detection ranges, and even when multiple sensors are employed, they may work independently, leading to suboptimal results. The 'Sensor Interaction' function allows the combination of multiple sensors into an array, thereby not only achieving a broader sensing range but also optimized effects. In the following example, three sensors are utilized to create a sensor array, effectively controlling all lamps.

Lamps and devices:

(1)64 pcs of lamps, model: Meanwell HBG-200-48DA

(2)3 pcs of DALI-2 input device: occupancy sensor, LOYTEC LDALI-MS2

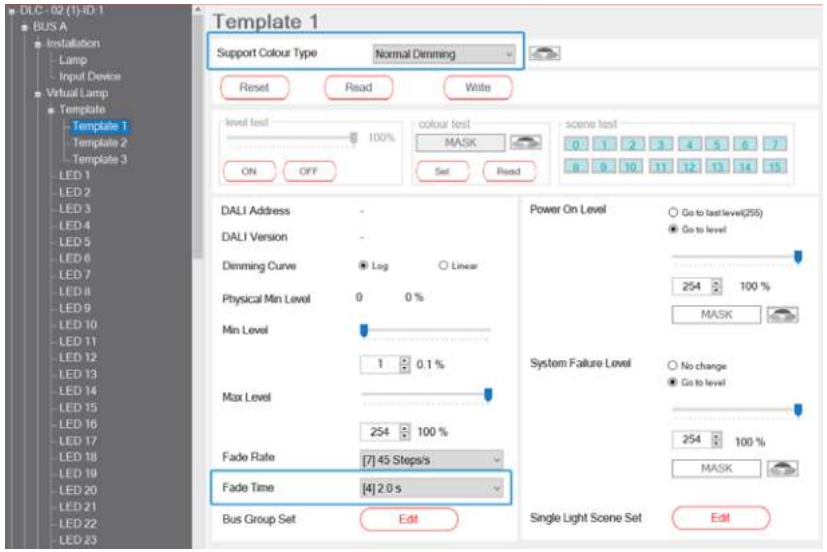
Lamp settings:
(1) 64 pcs of lamps: Bus A

Effect presentation:

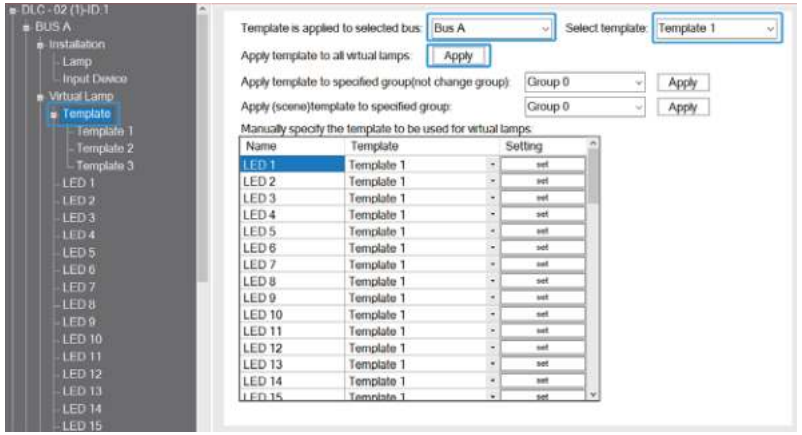
Trigger method	Effect Description
When someone is present	●Bus A–ALL (Broadcast): The brightness of all lamps is set to 100%.
When no one is present	●Bus A–ALL (Broadcast):Turn off all lamps

The implementation steps are as follows (Steps 1 to 4 can be set offline, while Steps 5 to 7 need to be set online):

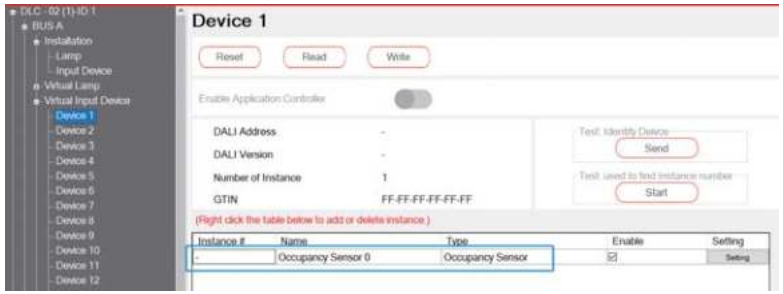
Step 1: Parameterize virtual lamps (Offline)
We can use the "Template" function to set the type of 64 pcs of lamps to "Normal Dimming" at once. Meanwhile, if you want the light to change slowly, you can set parameters such as fade time.
Select "Template 1" on the virtual lamp page, "Support Colour Type" is set to "Normal Dimming" and "Fade Time" is set to "2.0s".

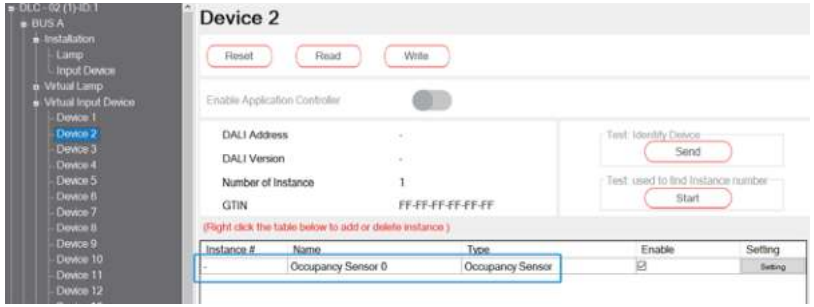


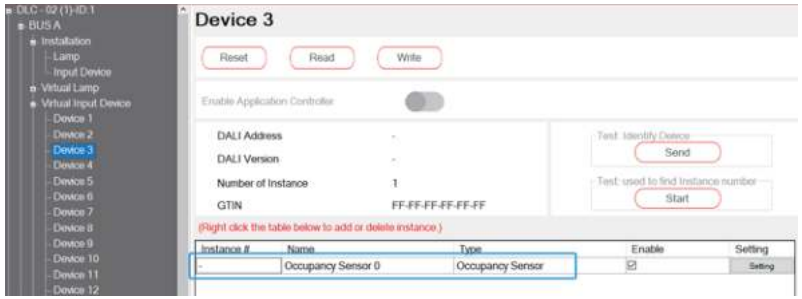
Then select "Template" to open a page, on this page, "Template is applied to selected bus" is set to "Bus A" and "Select template" is set to "Template 1", then click "Apply" to complete the required settings.



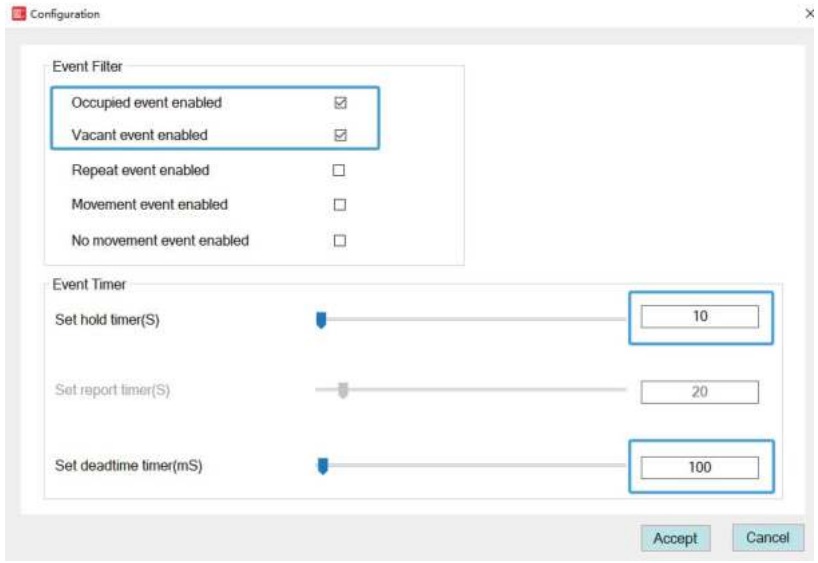
Step 2: Add and parameterize virtual input devices "Occupancy Sensor" (Offline)
※Add input device instances
Select Device 1 on the virtual lamp page, right-click in the Instance table and select "+Add", then add 1 occupancy sensor.
In the same way, select Device 2 and Device 3, then add 1 occupancy sensor for them.



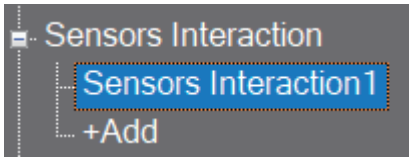


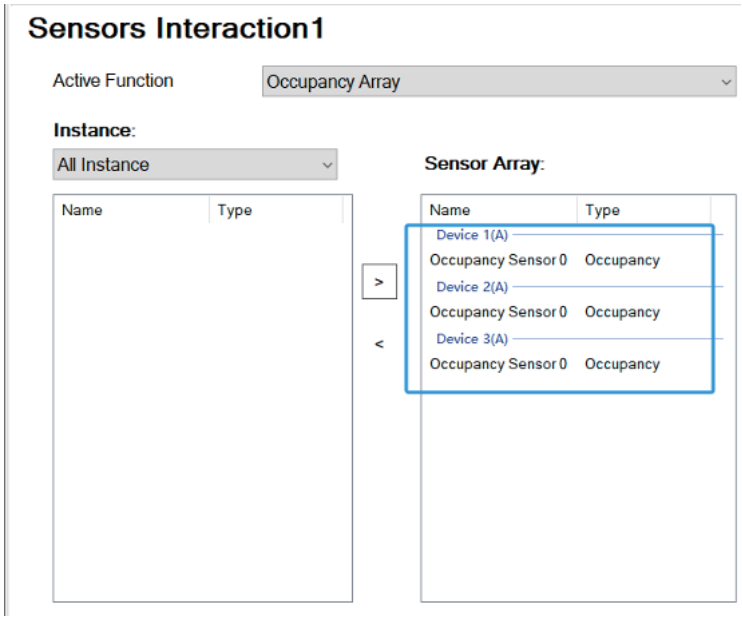


※Set input device instances
Click on the setting option and set the occupancy sensor of Device 1~ Device 3 with same parameters as follow.
Check "Occupied event enabled" and "Vacant event enabled". Then, "Set hold timer(S)" is set to 10 and "Set deadtime time(mS)" is set to 100.
Please refer to section 4.3.3.4 for relevant parameter descriptions.



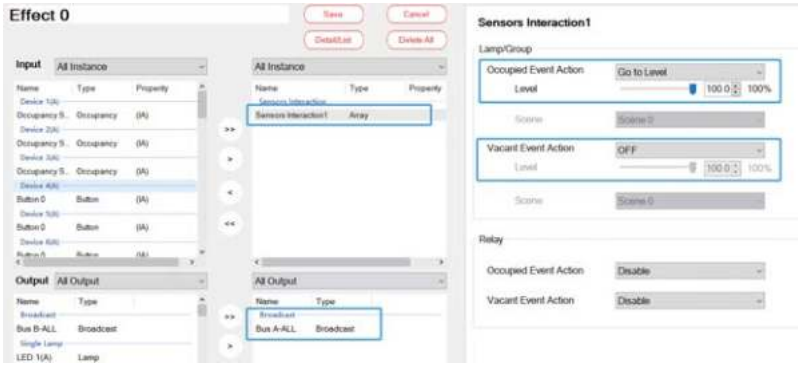
Step 3: Add and parameterize sensors interaction (Offline)
Add a "Sensors Interaction 1", the Active Function of which is set to "Occupancy Array". Then, move a total of 3 occupancy sensors from Device 1 to Device 3 to the right Sensor Array area.



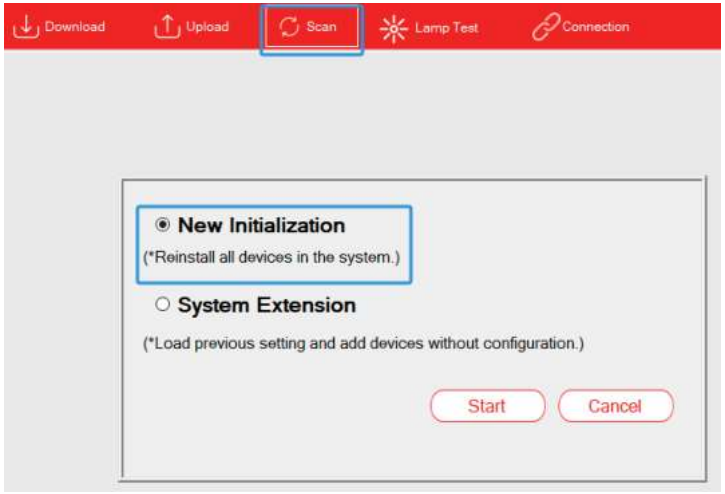


Step 4: Add an effect to establish the association between "Sensor Interaction 1" and 64 pcs of lamps on the Bus A. (Offline)
※ Click "+Add" to add an effect:

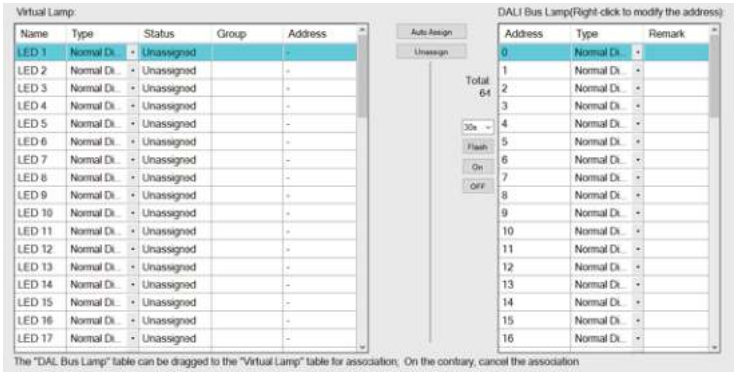
※ In the "Input" list, move "Sensors Interaction 1" to the right area. In the "Output" list, move "Bus A-ALL" to the right area.
※ Click Sensors Interaction 1, "Occupied Event Action" is set to "Go to Level" with 100%, and "Vacant Event Action" is set to "OFF". Click "Save" to complete the settings.



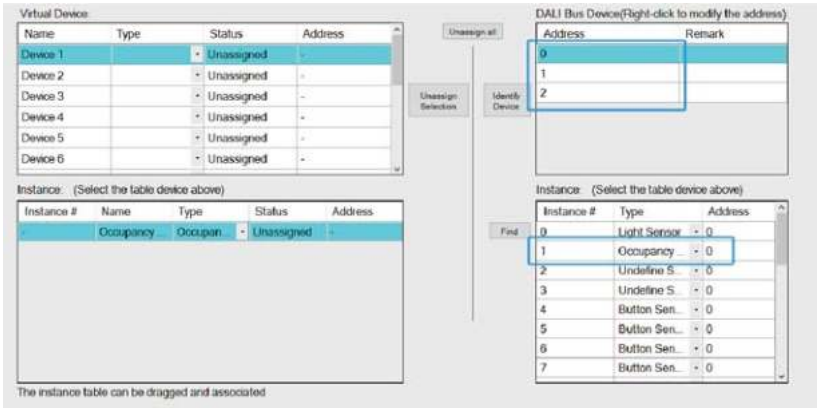
Step 5: Scan lamps and input devices (Online)
Connect 3 occupancy sensor devices and 64 pcs of lamps to Bus A, and use the "Scan - New Initialization" to assign DALI addresses to them.

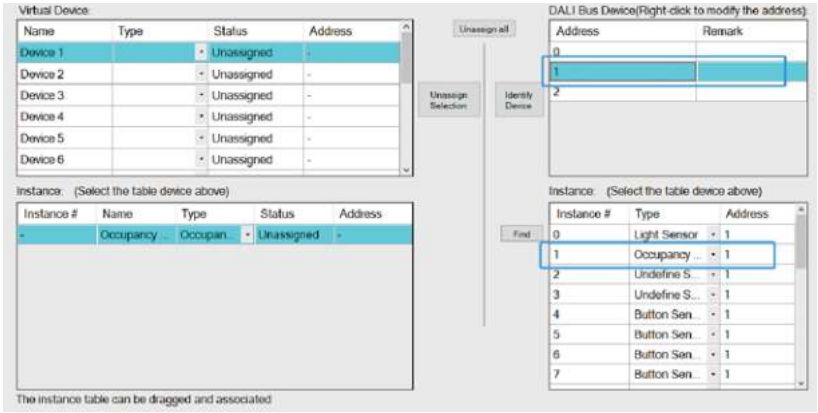


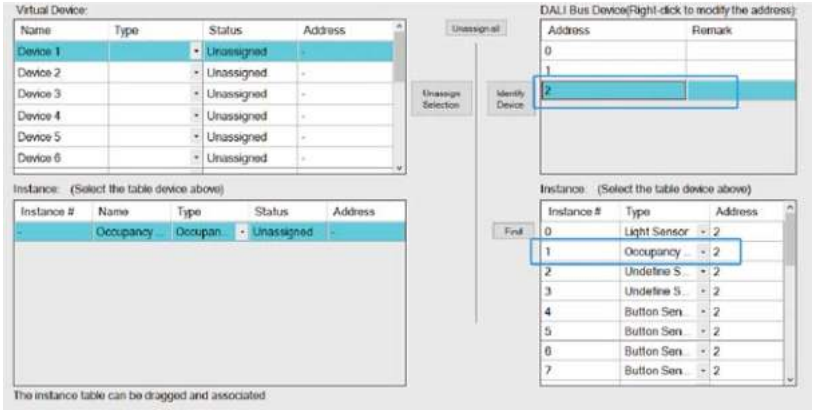
After scanning, click "BUS A - Installation - Lamp", 64 pcs of lamps (0~63) will appear in the right area of this page.



Click "BUS A - Installation – Input Device", and 3 input devices will appear in the right area of this page, each with an occupancy sensor instance.



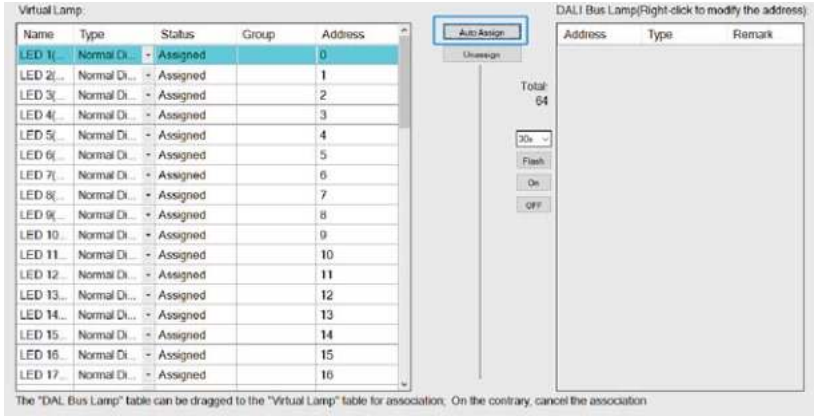




Step 6: Pair actual lamps with virtual lamps. Pair occupancy sensors with virtual input devices. (Online)

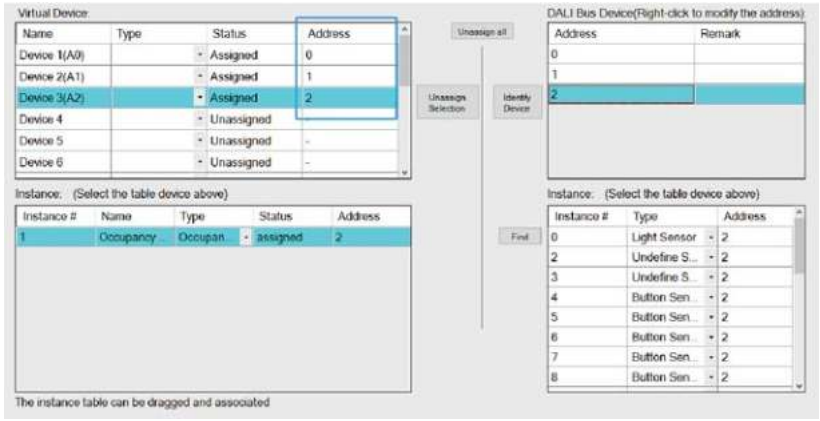
※Pair actual lamps with virtual lamps

In this example, all 64 pcs of lamps on the Bus A are controlled simultaneously, so the "Auto Assign" function will enable faster pairing of 64 pcs of lamps on Bus A with virtual lamps.



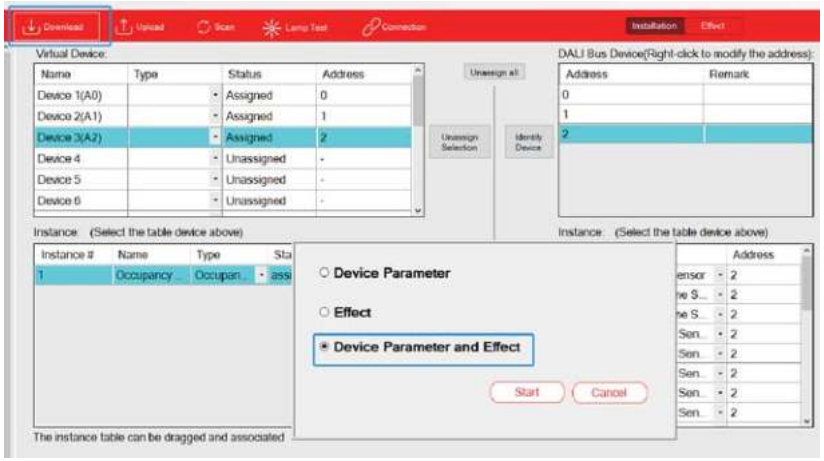
※ Pair occupancy sensors with virtual input devices.

Complete the pairing of 3 input devices referring to the operation as follow. In the right area, select the occupancy sensor "1" instance, hold down the left mouse button to move it to the left area and pair it with the "Occupancy sensor 0".



Step 7: Download device parameters and effects (Online)

Click "Download" to download the device parameters and effects to the input devices, lamps and DLC-02.



3.2.5 "HCL"

Taking office lighting as an example, simulate the natural variation process of sunlight and dynamically adjust the brightness and colour temperature of the lighting in the office. Short push the button to activate HCL function, double push the button to deactivate it and turn off all lamps.

Time	Colour temp.	Light level
8:00	3500K	80%
9:00	4000K	90%
10:00	4500K	100%
11:00	5000K	100%
12:00	5300K	0%
13:00	5600K	100%
14:00	6000K	100%
15:00	5600K	100%
16:00	5000K	100%
17:00	4500K	90%
18:00	4000K	80%
19:00	3500K	70%
20:00	3200K	70%

Lamps and devices:

(1) 8 pcs of tunable white lamps, model: LCM-40TW

(2) 1 pcs of DALI-2 input device: button sensor type, LOYTEC LDALI-BM2

Lamp and HCL settings:

(1) Lamp 1 to 8: Bus A - Group 0

(2) HCL setting table

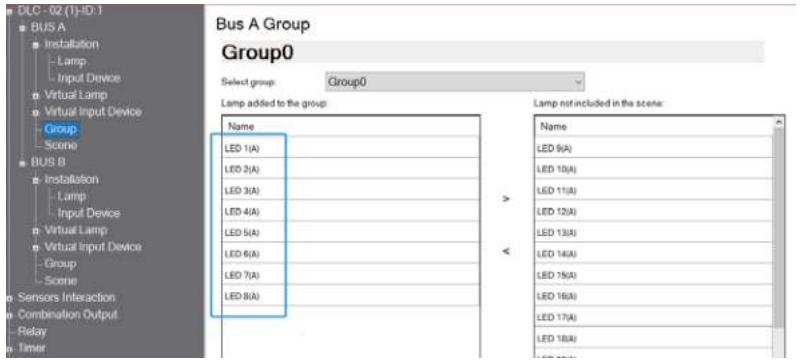
Time	Colour temp.	Light level
8:00	3500K	80%
9:00	4000K	90%
10:00	4500K	100%
11:00	5000K	100%
12:00	5300K	0%
13:00	5600K	100%
14:00	6000K	100%
15:00	5600K	100%
16:00	5000K	100%
17:00	4500K	90%
18:00	4000K	80%
19:00	3500K	70%
20:00	3200K	70%

Effect presentation:

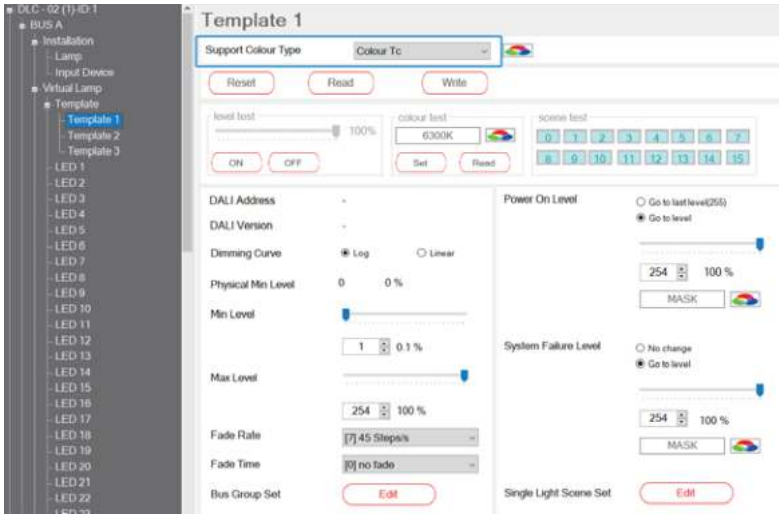
Trigger method	Effect Description
Short push button 1 (<500ms)	● Group 0: start HCL
Double push button 1 (<1000ms)	● Group 0: stop HCL and turn off all lamps

The implementation steps are as follows (Steps 1 to 4 can be set offline, while Steps 5 to 7 need to be set online):

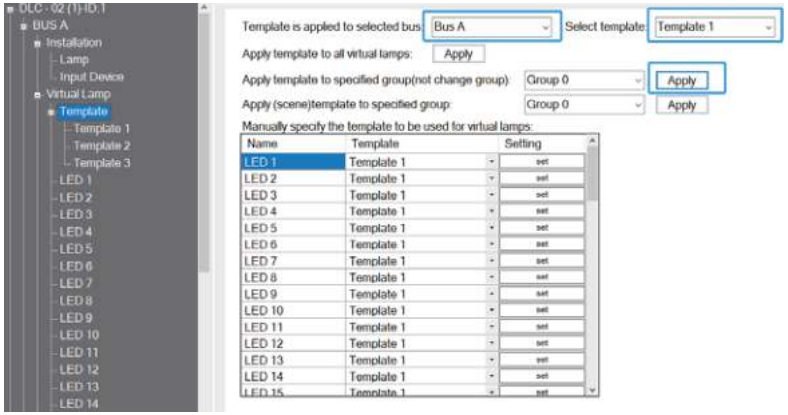
Step 1: Parameterize virtual lamps and assign groups (Offline)
※ assign groups
On the Group page, add LED 1 (A)~LED 8 (A) to Group 0.



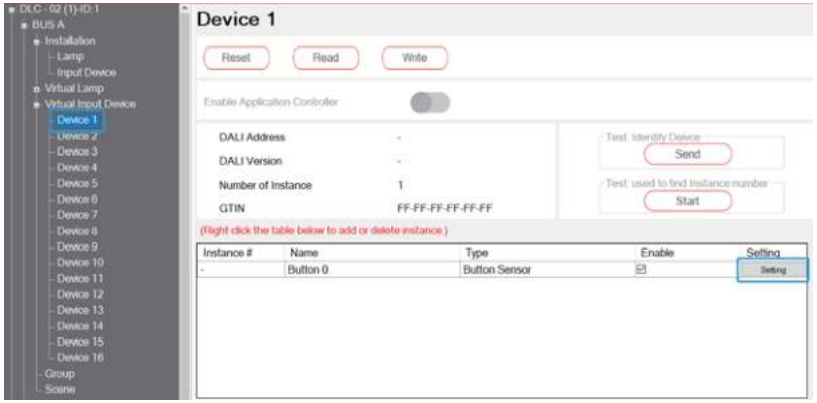
※ Parameterize virtual lamps
Use the "Template" function to parameterize 8 pcs of lamps at once. Select "Template 1" on the virtual lamp page, "Support Colour Type" is set to "Colour Tc"



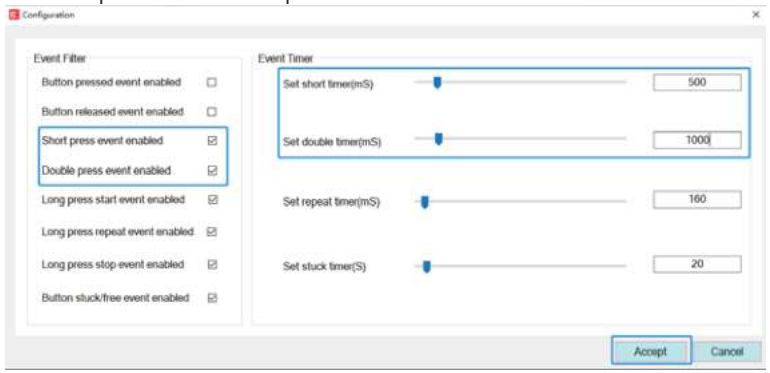
Then select "Template" to open a page. On this page, "Template is applied to selected bus" is set to "Bus A" and "Select template" is set to "Template 1", then click "Apply". After clicking, the colour type of the 8 pcs of lamps is set to "Colour Tc".



Step 2: Add and parameterize virtual input devices "Buttons" (Offline)
Select Device 1 on the virtual lamp page. By default, there is already 1 button. Click on the setting option and set the button 0 parameters.



Check "Short press event enabled" and "Double press event enabled", set the short time to 500mS and double time to 1000ms, and click "Accept" to complete the setting. Please refer to section 4.3.3.4 for relevant parameter descriptions.



Step 3: Add and parameterize HCL (Offline)
Add a "HCL 0".

※"Bus" is set to "Bus A" and "Lamp" is set to "Group". "Interval time correction" is set to 2 minutes, which means that the complete process of changing the colour temperature and brightness of the lamp is divided into 30 steps (1 hour/2 minutes=30) every 1 hour, with an interval time of 2 minutes for each step. And the "Fade time" is set to 2 seconds, which means that the light will reach the colour temperature and brightness set for each step within 2 seconds.

For example, at 8:00, set the colour temperature of the lamps to 3500K and the brightness to 80%; At 9:00, set the colour temperature of the lamps to 4000K and the brightness to 90%. From 8:00 to 9:00, every 2 minutes, the colour temperature of the lamps needs to increase by 16.67K (500K/30= 16.67K) within 2 seconds, and the brightness needs to increase by 0.33% (10%/30=0.33%) within 2 seconds.

※ Parameterize "HCL 0" as shown in the table below. If you want the light to change slowly, you can increase fade time.

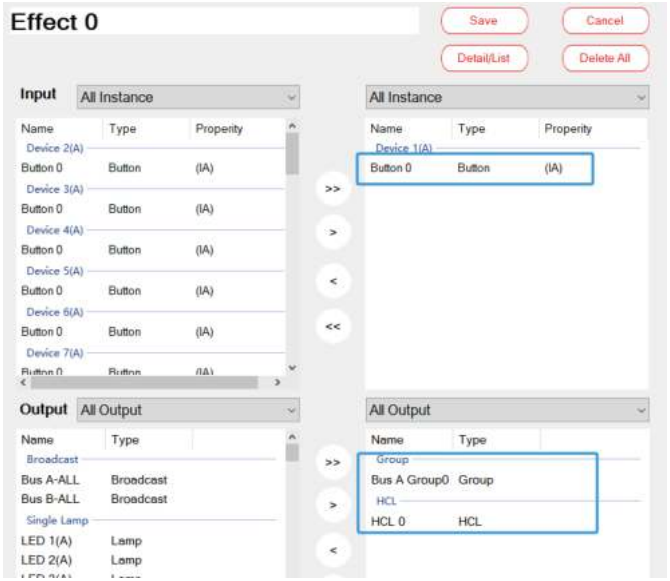
HCL 0

Parameter
Bus: Bus A
Lamp: Group0
Interval time correction: 2 minute

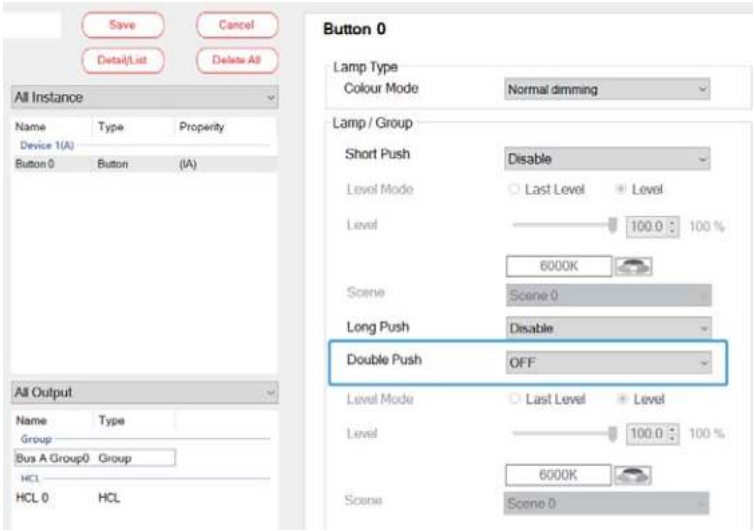
Step	Enable	Colour Value(K)	Light Value(%)	Fade Time	Hh:mm
1	disable				1:00
2	disable				2:00
3	disable				3:00
4	disable				4:00
5	disable				5:00
6	disable				6:00
7	disable				7:00
8	enable	3500	80%	2.0 s	8:00
9	enable	4000	90%	2.0 s	9:00
10	enable	4500	100%	2.0 s	10:00
11	enable	5000	100%	2.0 s	11:00
12	enable	5300	0%	2.0 s	12:00
13	enable	5600	100%	2.0 s	13:00
14	enable	6000	100%	2.0 s	14:00
15	enable	5600	100%	2.0 s	15:00
16	enable	5000	100%	2.0 s	16:00
17	enable	4500	90%	2.0 s	17:00
18	enable	4000	80%	2.0 s	18:00
19	enable	3600	70%	2.0 s	19:00
20	enable	3200	70%	2.0 s	20:00
21	disable				21:00
22	disable				22:00
23	disable				23:00

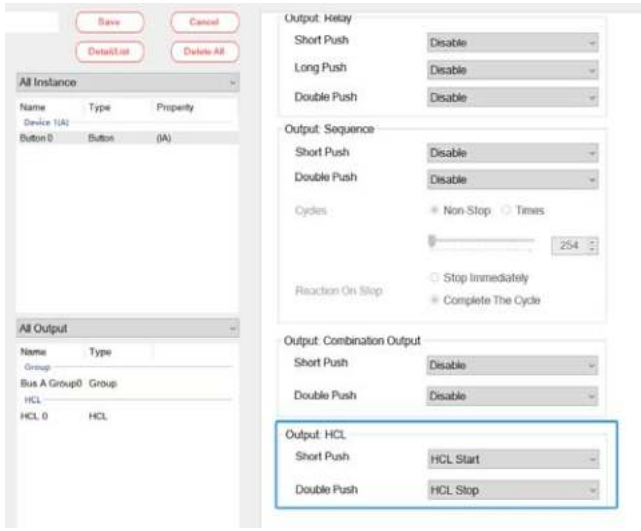
Step 4: Add an effect to establish the association between Button 0 and HCL 0. (Offline)
※ Click "+Add" to add an effect:

In the “Input” list, move Button 0 to the right area. In the “Output” list, move “BUS A Group 0” and “HCL 0” to the right area.

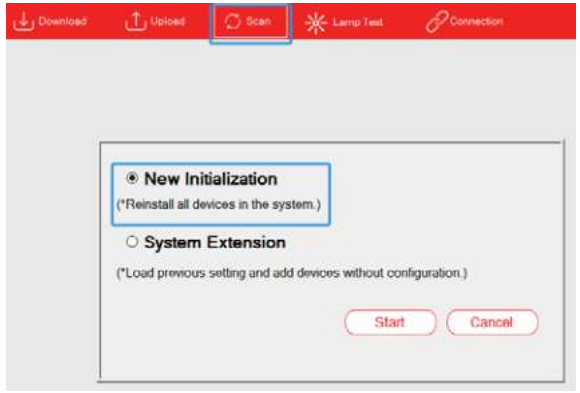


※ Click Button 0, “Lamp/Group – Double Push” is set to “OFF”.
“Output: HCL – Short Push” is set to “HCL Start”.
“Output: HCL – Double Push” is set to “HCL Stop”.
Click “Save” to complete the settings.

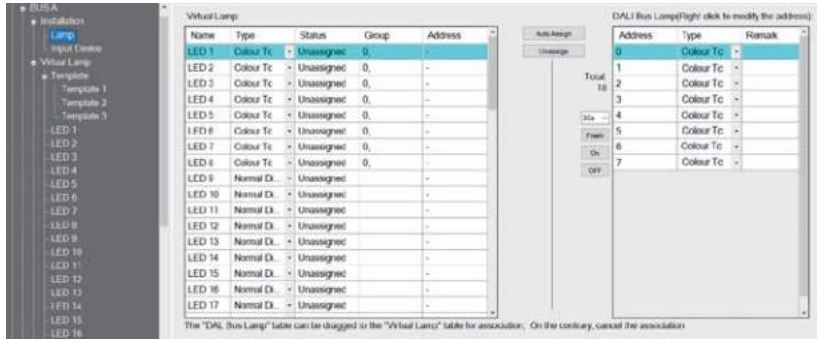




Step 5: Scan lamps and input devices (Online)
Connect the button devices and 8 pcs of lamps to bus A, and use the “Scan - New Initialization” to assign DALI addresses to them.



After scanning, click “BUS A - Installation - Lamp”, 8 pcs of Colour Tc lamps (0~7) appear on this page. Click “Flash” to find the Corresponding lamp.

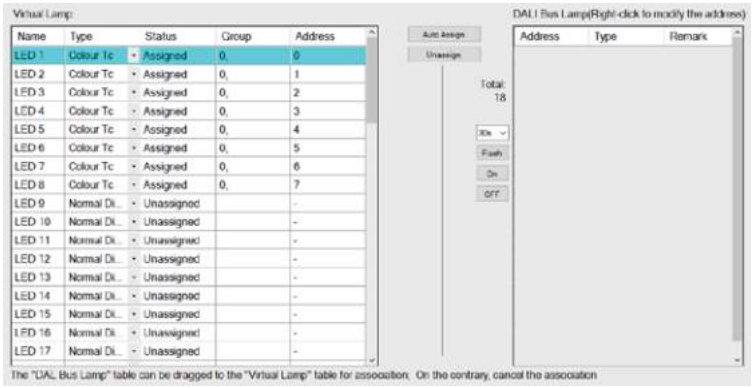


Click "BUS A - Installation – Input Device", one input device "0" with 4 button sensors appear on this page. Click "Find" to find the corresponding button.

Step 6: Pair actual lamps with virtual lamps. Pair button sensors with virtual input devices. (Online)

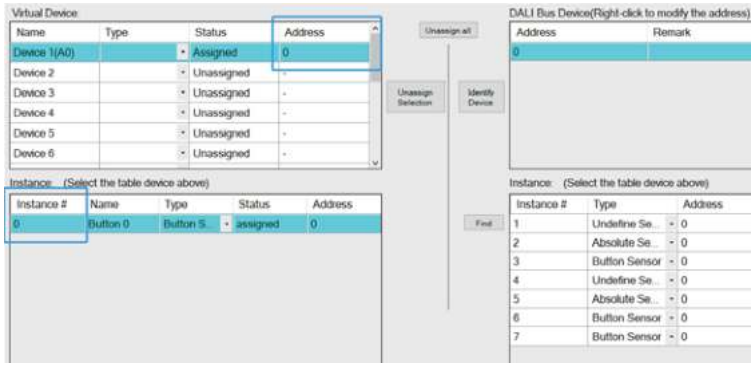
※ Pair actual lamps with virtual lamps

On the "BUS A – Installation – Lamp" page, use "Auto Assign" to pair the Colour Tc lamps "0" ~ "7" with LED 1~LED 8 automatically in sequence.



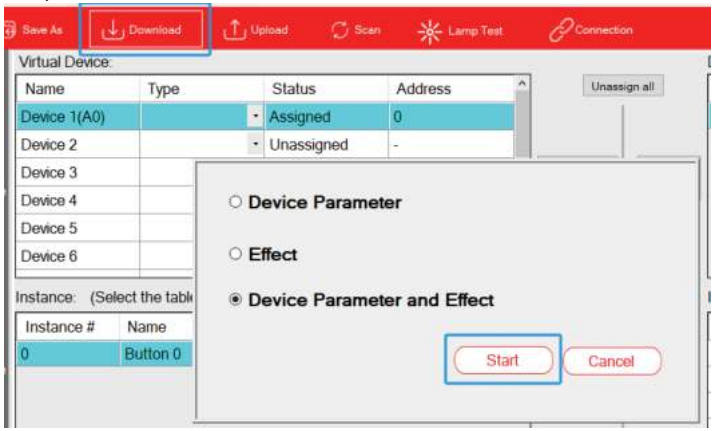
※ Pair a button sensor with a virtual input device.

In the right area, select the button sensor "0" instance, hold down the left mouse button to move it to the left area and pair it with the "Button 0".



Step 7: Download device parameters and effects (Online)

Click "Download" to download the device parameters and effects to the lamps and DLC-02.



3.2.6 "Combination Output"

Assuming there is only one switch, it is necessary to simultaneously control four lamps to work at different brightness levels, and also control the relay to close. In this case, the combination output can be used to achieve this.

Lamps and devices:

(1) 4 pcs of lamps, model: LCM-40DA

(2) 1 pcs of DALI-2 input device: button sensor type, model: LOYTEC LDALI-BM2

Effect presentation:

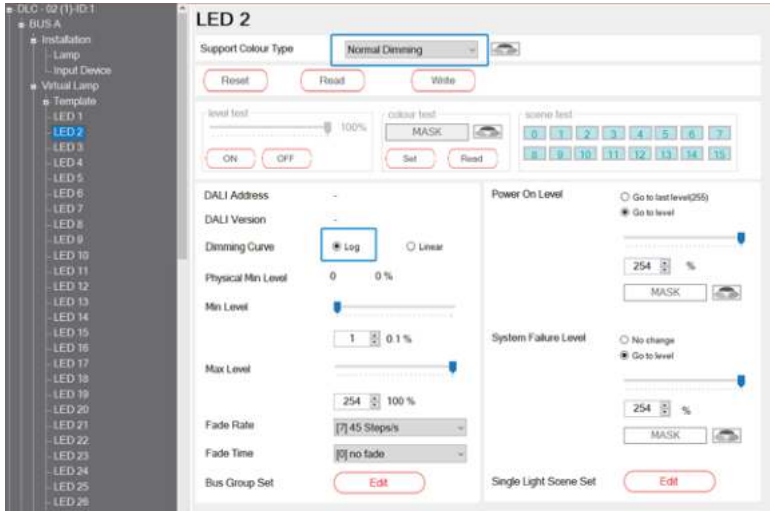
Trigger method	Effect Description
Short push button 0 (<500ms)	●LED 1: The brightness is 10%. ●LED 2: The brightness is 40%. ●LED 3: The brightness is 70%. ●LED 4: The brightness is 100%. ●Relay K1: Closed.

The implementation steps are as follows (Steps 1 to 4 can be set offline, while Steps 5 to 7 need to be set online):

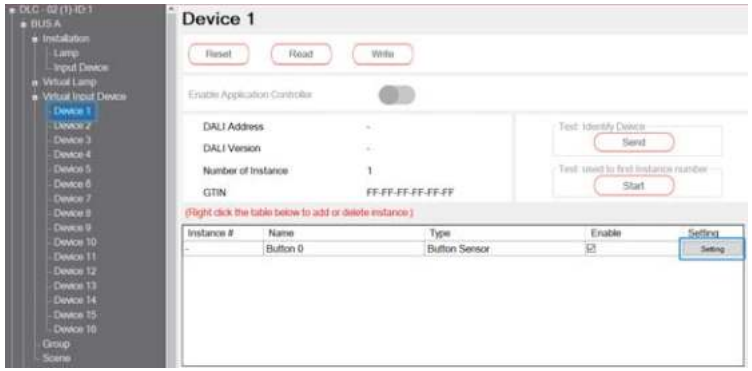
Step 1: Parameterize virtual lamps (Offline)

Select LED 1 on the virtual lamp page, and "Colour type" is set to "Normal Dimming". Similarly, select "Normal Dimming" as "Colour Type" for LED 2~LED 4. If you want the light to change smoothly, you can adjust the fade time.

Note: When using the "Combination Output" function, it is necessary to set the dimming curve of each lamp to "Log".

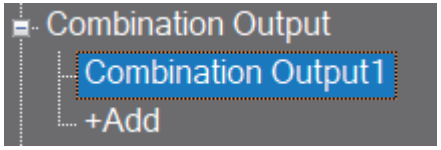


Step 2: Add and parameterize virtual input devices "Buttons" (Offline)
Select Device 1 on the virtual lamp page. By default, there is already 1 button. Click on the setting option and set the button 0 parameters.

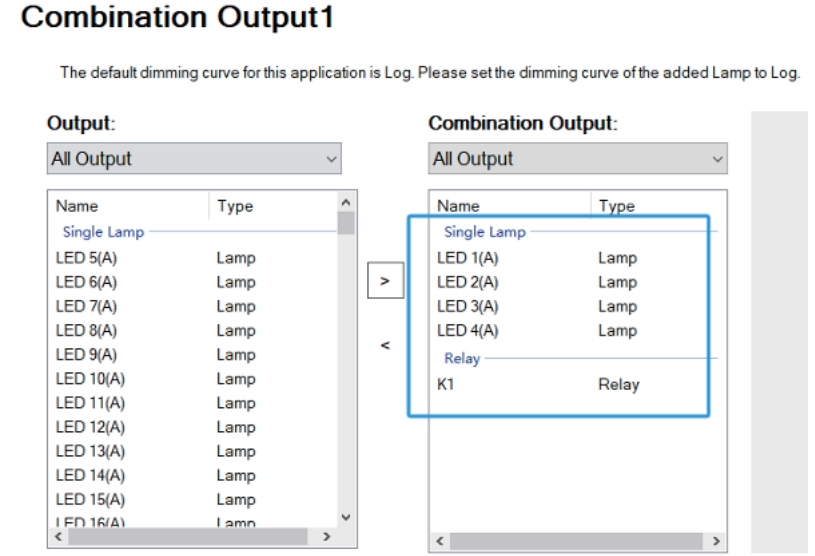


Check "Short press event enabled", set the short time to 500mS, and click "Accept" to complete the setting. Please refer to section 4.3.3.4 for relevant parameter descriptions.

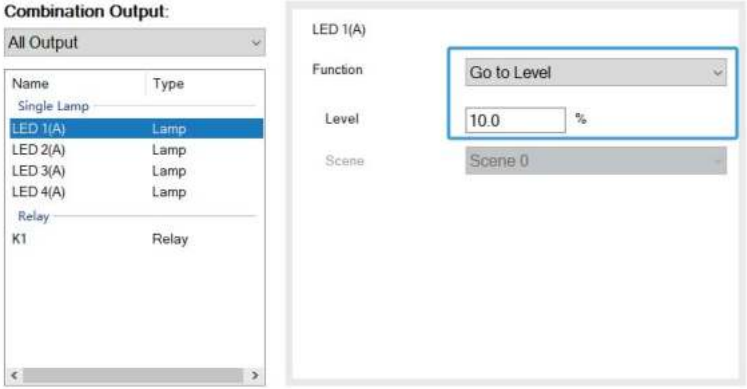
Step 3: Add and parameterize "Combination Output" (Offline)
Add a "Combination Output 1"



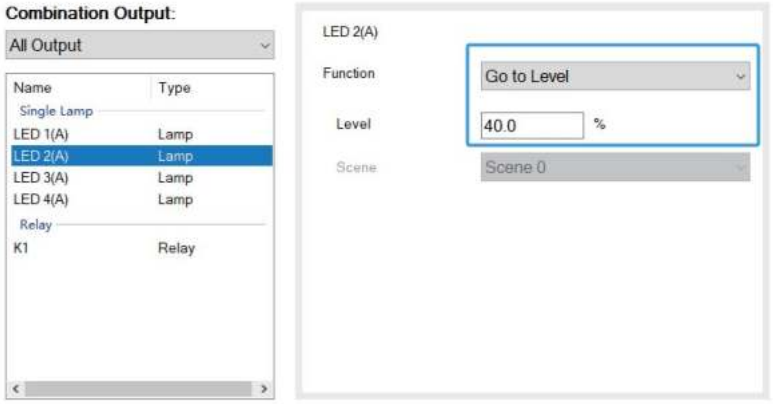
Add LED1~LED4 and Relay K1 to "Combination Output 1".
Note: When using the "Combination Output" function, it is necessary to set the dimming curve of each lamp to "Log".



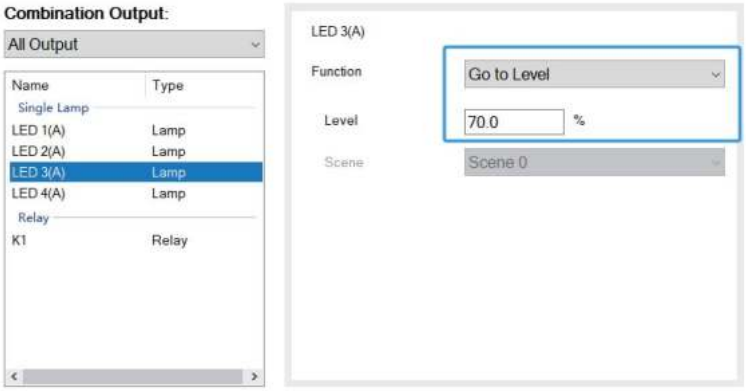
Select LED 1, "Function" is set to "Go to Level" and the "Level' is set to "10%".



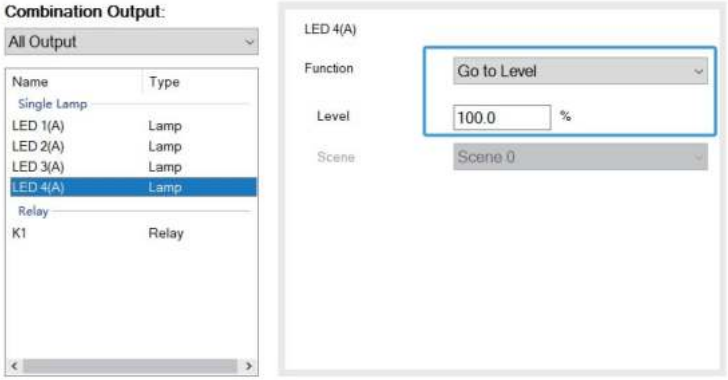
Select LED 2, "Function" is set to "Go to Level" and the "Level' is set to "40%".



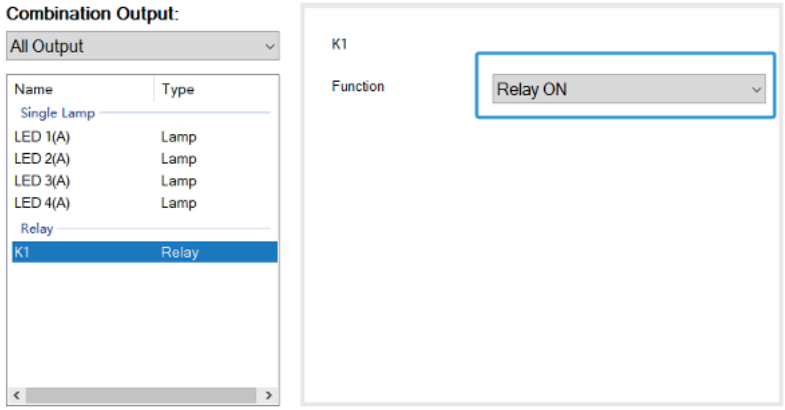
Select LED 3, "Function" is set to "Go to Level" and the "Level' is set to "70%"



Select LED 4, "Function" is set to "Go to Level" and the "Level' is set to "100%".



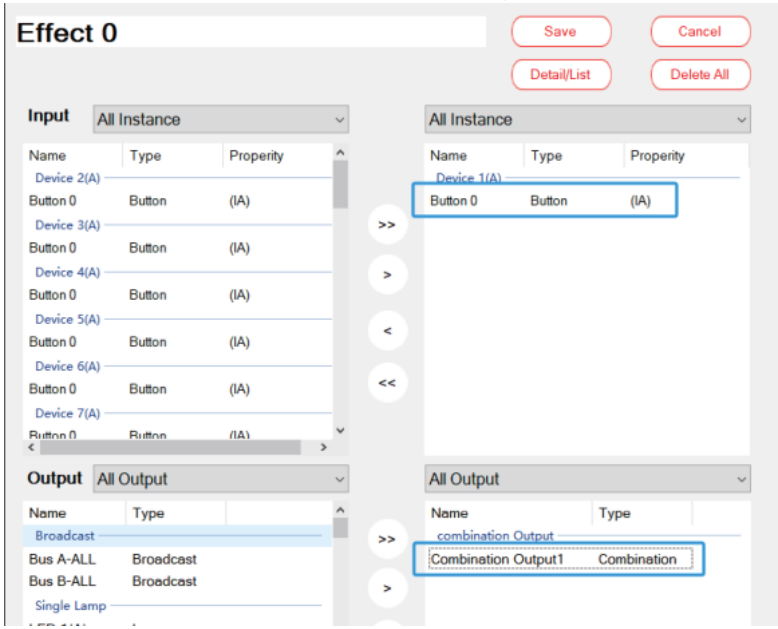
Select K1, "Function" is set to "Relay ON".



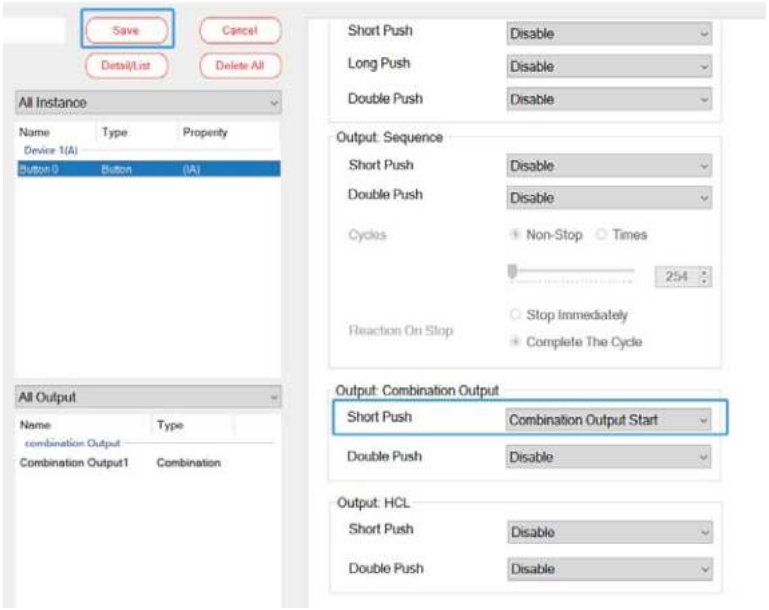
Step 4: Add an effect to establish the association between Button 0 and Combination Output 1. (Offline)

※ Click "+Add" to add an effect 0:

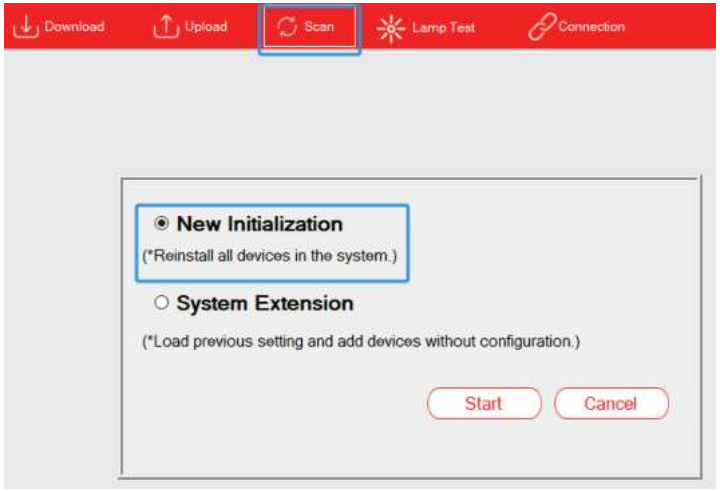
In the "Input" list, move Button 0 to the right area. In the "Output" list, move "Combination Output 1" to the right area.



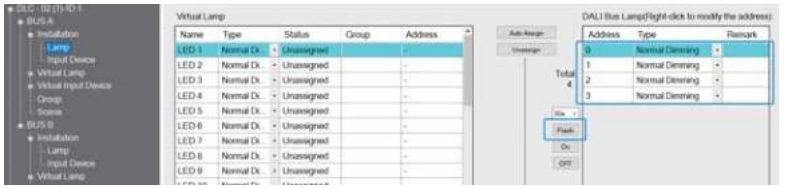
※ Click Button 0, "Output: Combination Output – Short push" is set to "Combination Output Start".
Click "Save" to complete the settings.



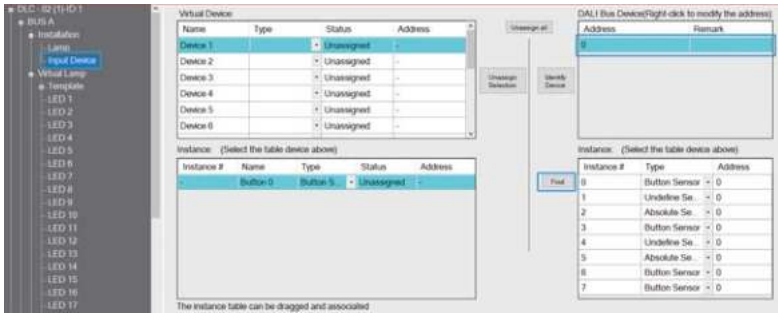
Step 5: Scan lamps and input devices (Online)
Connect the button devices and 4 pcs of lamps to bus A, and use the "Scan- New Initialization" to assign DALI addresses to them.



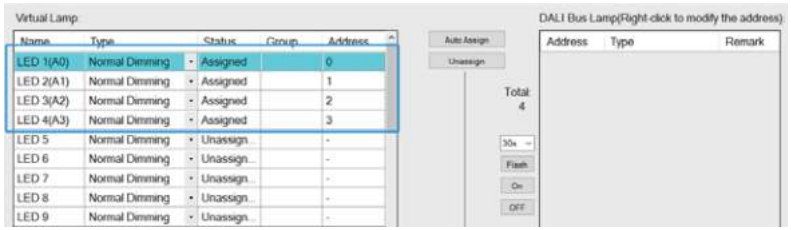
After scanning, click "BUS A - Installation - Lamp", 4 pcs of lamps (0~3) appear on this page. Click "Flash" to find the Corresponding lamp.



Click "BUS A - Installation – Input Device", one input device "0" with 4 button sensors appear on this page. Click "Find" to find the corresponding button.

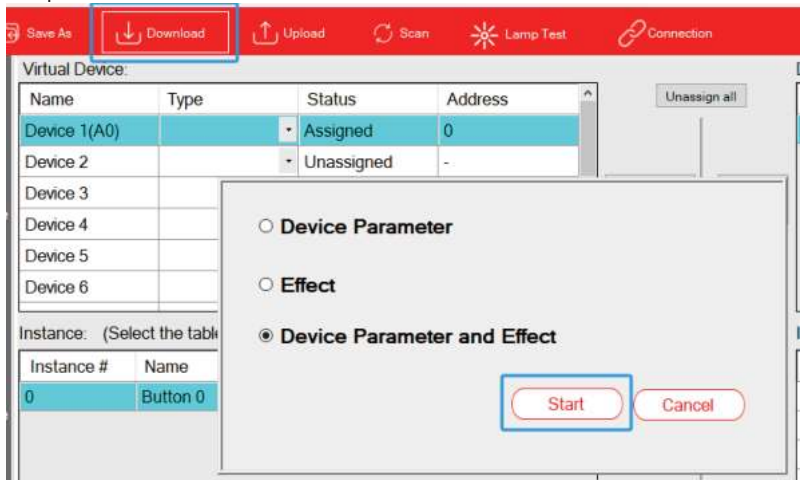


Step 6: Pair actual lamps with virtual lamps.Pair button sensors with virtual input devices. (Online)
※Pair actual lamps with virtual lamps
On the "BUS A – Installation – Lamp" page, use "Auto Assign" to pair the lamps "0" ~ "3" with LED 1~LED 4 automatically in sequence.



※ Pair a button sensor with a virtual input device.
In the right area, select the button sensor "0" instance, hold down the left mouse button to move it to the left area and pair it with the "Button 0".

Step 7: Download device parameters and effects (Online)
Click "Download" to download the device parameters and effects to the lamps and devices.



3.2.7 "Light Sensor" and "Block"

Taking library lighting applications as an example, when the natural light outside the window is strong, there is a need to dim the indoor lighting accordingly to save energy. Conversely, when the light outside is low, the lighting system has to maintain a constant brightness. In such cases, a light sensor can be employed to achieve this requirement.

When the light sensor isn't required to control the lamps during specific occasions, the 'block' function can be used to deactivate the light sensing. To reactivate the light sensor, release the 'block' function.

Lamps and devices:
(1) 16 pcs of lamps, model: XLC-40-H-DA2
(2) 1 pcs of DALI-2 input device: button sensor type, model: LOYTEC LDALI-BM2
(3) 1 pcs of DALI-2 input device: light sensor type, model: LOYTEC LDALI-BS2-BT

Lamp settings
(1) Lamp 1~16: Group 0

Effect presentation:

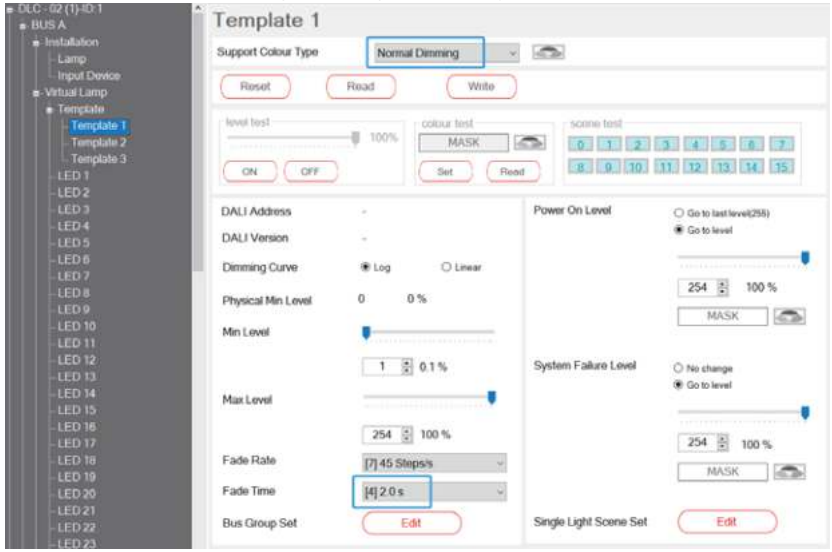
Trigger method	Effect Description
Detection value of light sensor	●When the detection value of the light sensor is between 1800lx and 3500lx, the brightness of Group 0 remains unchanged. ●When the detection value of the light sensor is between 1600lx and 1800lx, gradually increase the brightness of Group 0. ●When the detection value of the light sensor is between 3500lx and 3700lx, gradually decrease the brightness of Group 0. ●When the detection value of the light sensor is less than 1600lx, set the brightness of Group 0 to 100%. ●When the detection value of the light sensor is greater than 3700lx, turn off Group 0 (0%).
Short push button 0 (<500ms)	●Group 0: OFF ●Disable the effect of light sensors on Group 0.
Double push button 0 (<1000ms)	●Group 0: ON ●Enable the effect of light sensors on Group 0.

The implementation steps are as follows (Steps 1 to 3 can be set offline, while Steps 4 to 6 need to be set online):

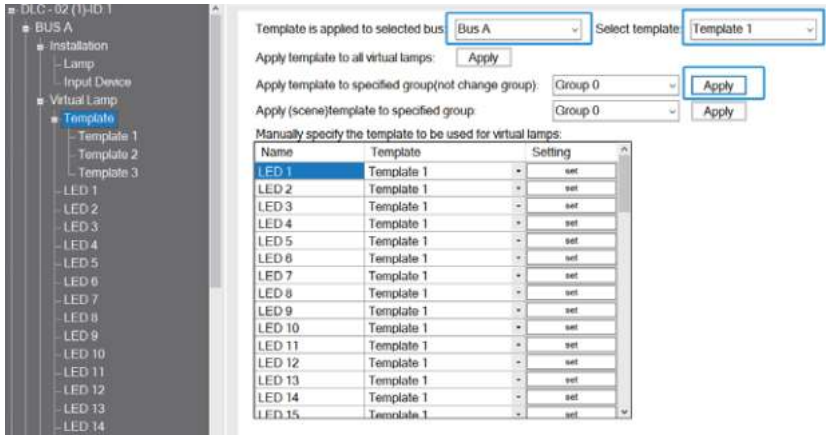
Step 1: Parameterize virtual lamps and assign groups (Offline)
※ Assign group
On the "BUS A - Group" page, add LED 1 (A)~LED 16 (A) to Group 0.

※ Parameterize virtual lamps

Use the "Template" function to parameterize 16 pcs of lamps at once. Select "Template 1" on the virtual lamp page, "Support Colour Type" is set to "Normal Dimming" and "Fade time" is set to 2.0s. Adjusting the fade time can make the light change smoothly.



Then select "Template" to open a page. On this page, "Template is applied to selected bus" is set to "Bus A" and "Select template" is set to "Template 1", then click "Apply". After clicking, the colour type of the 16 lamps is set to "Normal Dimming" and fade time is set to 2.0s.

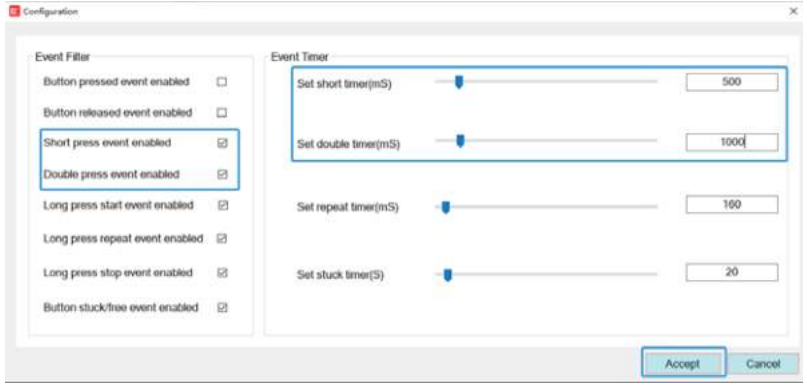


Step 2: Add and parameterize virtual input devices "Button" and "Light sensor" (Offline)

※ Add and parameterize virtual input devices "Button"

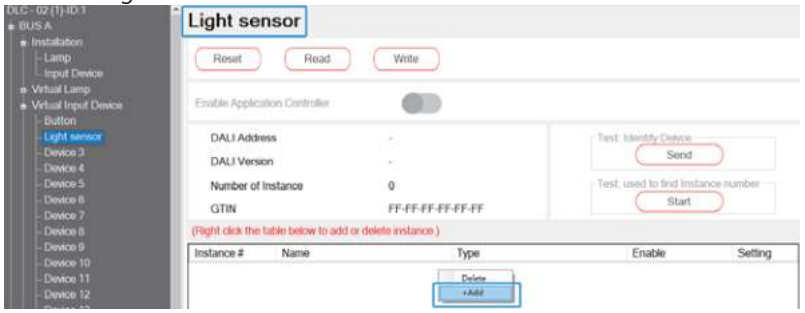
Select Device 1 and rename it as "Button" on the Virtual Input Device page. By default, there is already 1 button. Click on the setting option and set the Button 0 parameters.

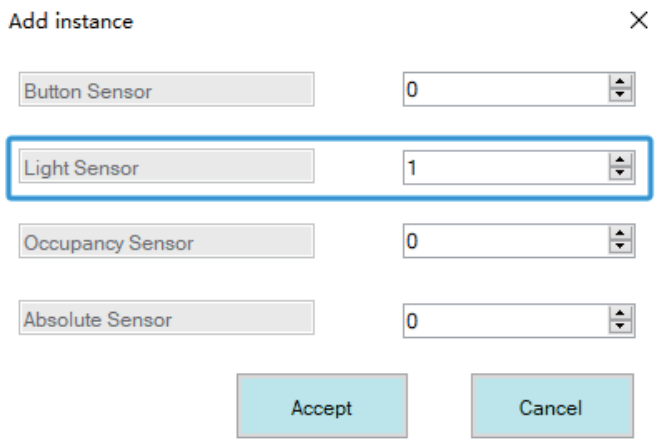
Check "Short press event enabled" and "Double press event enabled", set the short time to 500mS and double time to 1000ms, and click "Accept" to complete the setting. Please refer to section 4.3.3.4 for relevant parameter descriptions.



※ Add and parameterize virtual input devices "Light Sensor"

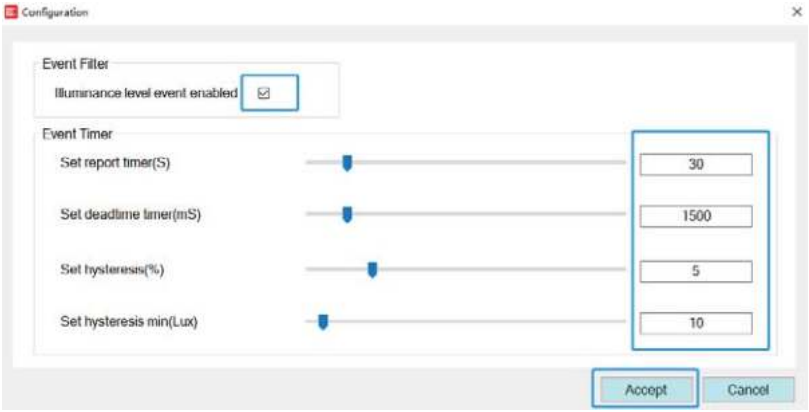
Select Device 2 and rename it as "Light sensor" on the Virtual Input Device page. Right-click in the instance table and select "+Add" to add an instance of a light sensor.





Click on the setting option and set the light sensor parameters.

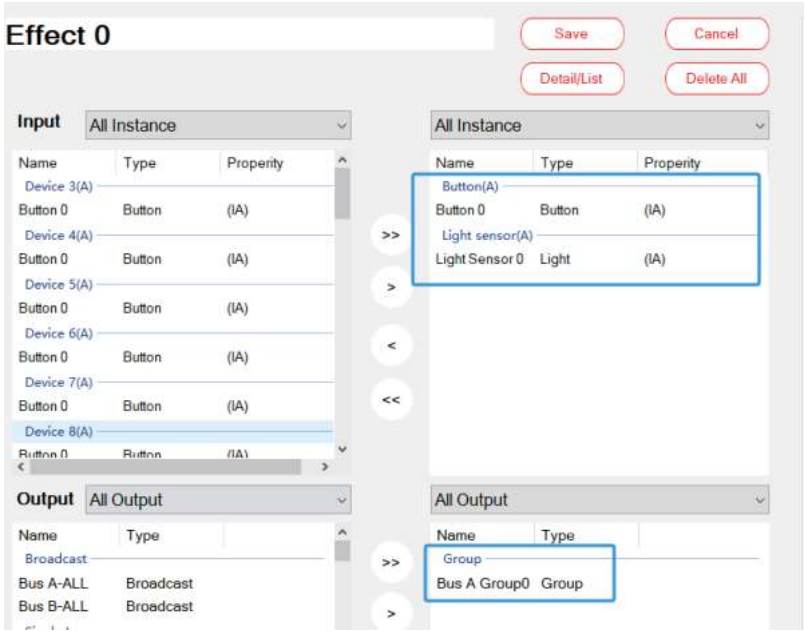
Check "Illumination level event enabled", "Set report time" is set to 30S, "Set deadtime time" is set to 1500mS, "Set hysteresis" is set to 5%, and "Set hysteresis min" is set to 10Lux. Click "Accept" to complete the setting. Please refer to section 4.3.3.4 for relevant parameter descriptions.



Step 3: Add an effect to establish the association between Button 0, light sensor 0 and Group 0. (Offline)

※ Click "+Add" to add an effect 0:

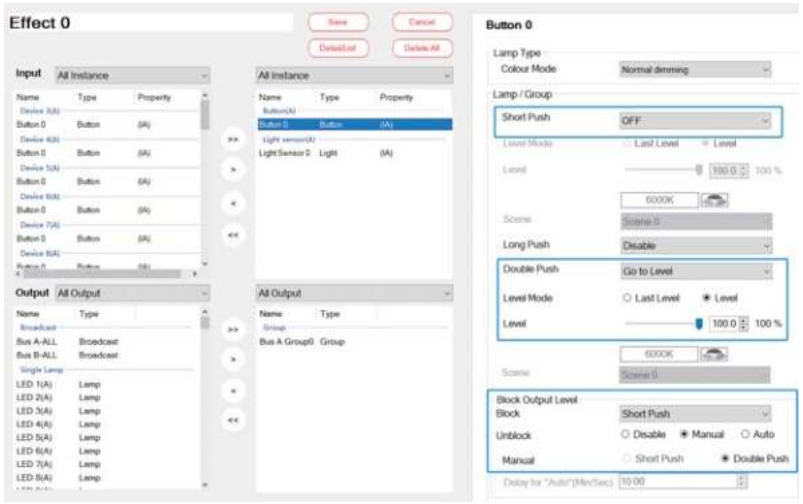
In the "Input" list, move Button 0 and Light sensor 0 to the right area. In the "Output" list, move "Bus A Group 0" to the right area.



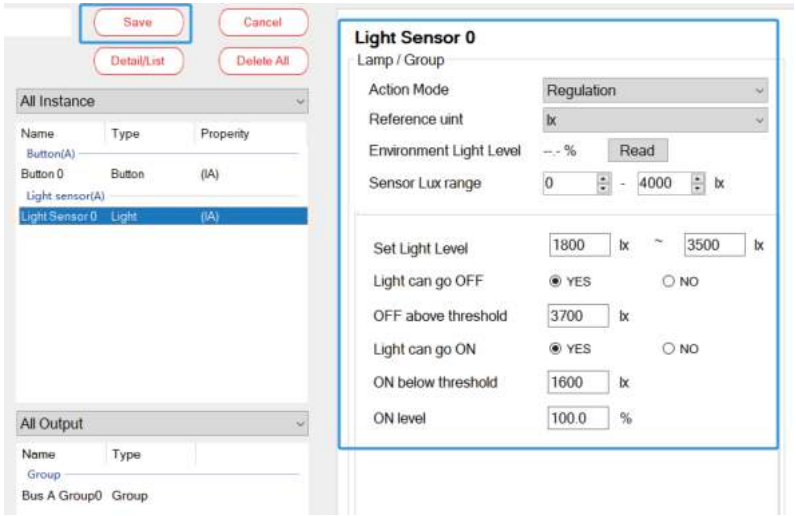
※ Click Button 0,

"Lamp/Group – Short push" is set to "OFF" and "Lamp/Group – Double push" is set to "Go to level" with a level of 100%.

"Block Output Level – Block" is set to "Short Push", "Unblock" is set to "Manual" and the manual operation is Double Push. It means that short pushing the button 0 can disable the effect of all sensors on Group 0 and double pushing the button 0 can enable the effect of all sensors on Group 0. In this example, the blocked sensor refers to the light sensor.



※ Click Light Sensor 0, and configure the parameters as shown in the following figure.
Note: Please refer to the actual specifications of the light sensor for the setting of the "lighting range of the light sensor".
Click "Save" to complete the settings.



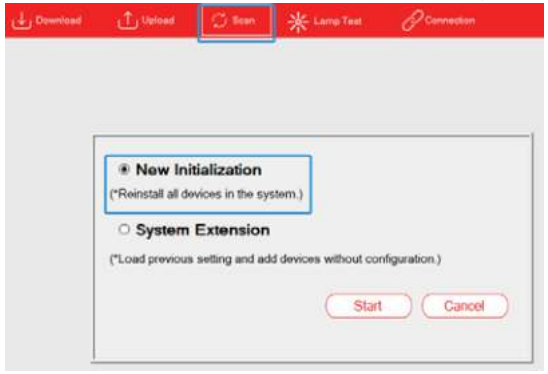
The following image is a screenshot of the light sensor (LDALI-MS2-BT) specification manual:

L-DALI Multi-Sensor

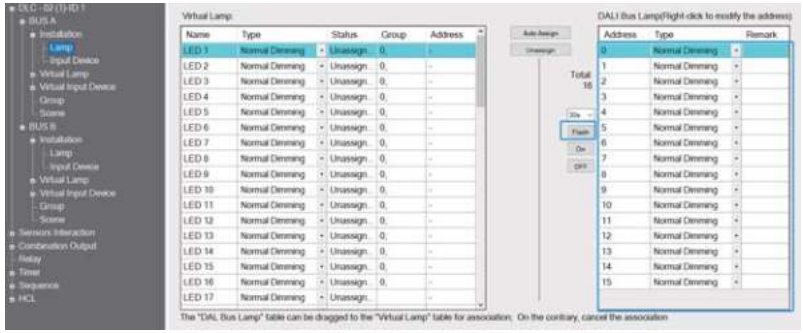
LDALI-MS2-BT / LDALI-MS4-BT

Specifications		
Type	LDALI-MS2-BT	LDALI-MS4-BT
Dimensions (mm)	Total Ø: 104, DIM40 flush-mounted Ø: 60 mounting depth: 30	Total Ø: 68, DIM061 mounting hole Ø: 58 mounting depth: 42
Installation	Ceiling mount: • Direct installation in false ceilings (spring mount included) • Flush-mounted installation • On-wall (surface mounting box included)	Ceiling mount: • Direct installation in false ceilings (spring mount included)
Power supply	DALI bus, 6 mA / 10 mA at 16 V DC (Bluetooth disabled/enabled), max. 10mA (inrush current)	
Operating conditions	0 °C to 50 °C, 10 – 90 % RH, noncondensing, degree of protection: IP20	
Interfaces	1 x DALI 1 x infrared remote control receiver 3 x digital input (dry contact, not protected against overvoltage) 1 x Bluetooth interface	
DALI protocol conformance (IEC 62386 parts)	101 ed2, 103 ed1 (input device), 301 ed1 (digital inputs, IR remote), 303 ed1 (PIR), 304 ed1 (lux sensor)	
Bluetooth & RF characteristics	Maximum output power: + 4 dBm Frequency range: 2402 - 2480 Mhz	
Occupancy detection	PIR and acoustic, sensitivity adjustable	
Passive infrared motion detector	Detection diameter: 10.8 m @ 3 m mounting height (92 m^2),136 zones, opening angle: 122° (up to 5 m mounting height) Highbay-application: 5 m – 12 m mounting height, detection area: 256 m^2 (opening angle: 73.6° @ 12 m, 122° @ 5 m)	Detection diameter: 7.2 m @ 3 m mounting height (44 m^2),156 zones, opening angle: 100° (up to 5 m mounting height)
Mounting height	max. 12 m	max. 5 m
Illuminance measurement	0 – 4000 lux, resolution: 0.125 lux	
Temperature measurement	-5 °C to 60 °C, resolution: 0.1 °C, accuracy: ±0.2 °C (0 °C to 70 °C)	
Rel. Humidity measurement	0 % – 100 %, resolution 0.5 %, accuracy: typ. ±2.2 % R.H. @ 25 °C, 20 % – 80 % R.H. typ. ±4 % R.H. @ 25 °C, 0 % – 20 % R.H. and 80 % – 100 % R.H.	
Connection wires profile	0.2 – 1.5 mm^2 [AWG 28 – 14]	

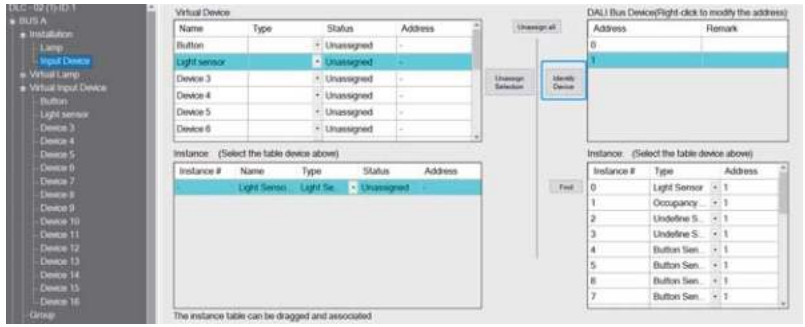
Step 4: Scan lamps and input devices (Online)
Connect the button devices, light sensor and 16 pcs of lamps to bus A, and use the "Scan - New Initialization" to assign DALI addresses to them.



After scanning, click "BUS A - Installation - Lamp", 16 pcs of lamps (0~15) appear on this page. Click "Flash" to find the Corresponding lamp.



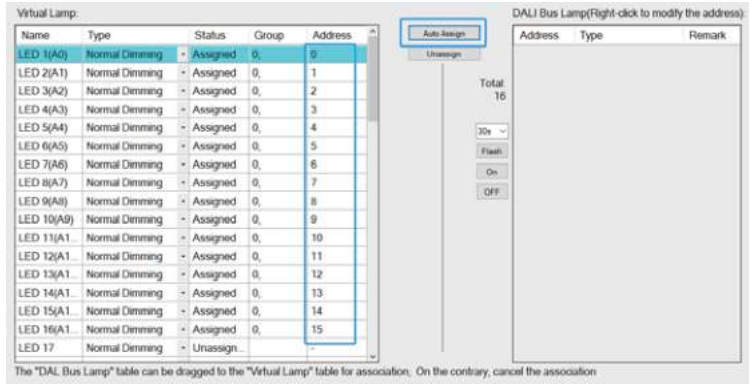
Click "BUS A - Installation – Input Device", two input device "0" and "1" appear on this page. Select device "1", and click "Identify Device", the indicator of the light sensor will continuously flash, which means that the device "1" corresponds to a light sensor and device "0" corresponds to a button sensor.



Step 5: Pair actual lamps with virtual lamps. Pair a button sensors or light sensors with virtual input devices. (Online)

※Pair actual lamps with virtual lamps

On the "BUS A – Installation – Lamp" page, use "Auto Assign" to pair the lamps "0" ~ "15" with LED 1~LED 16 automatically in sequence.

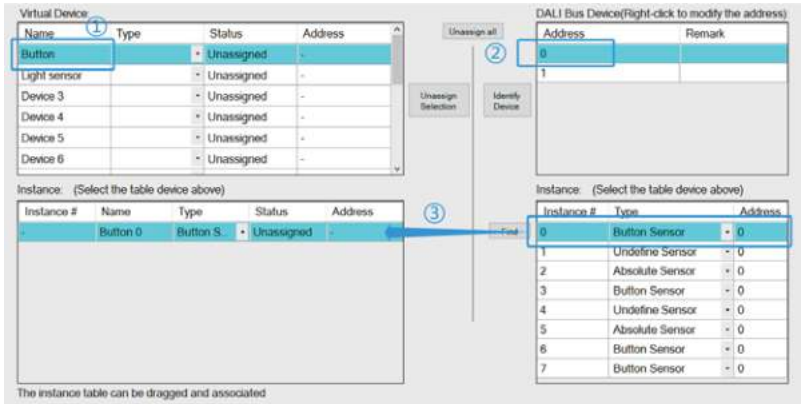


※ Pair a button sensor with a virtual input device.

①Select "Button" on the Virtual Device table.

②Select device "0" on the DALI Bus Device table.

③Move the button sensor "0" instance to the left area and pair it with the "Button 0".

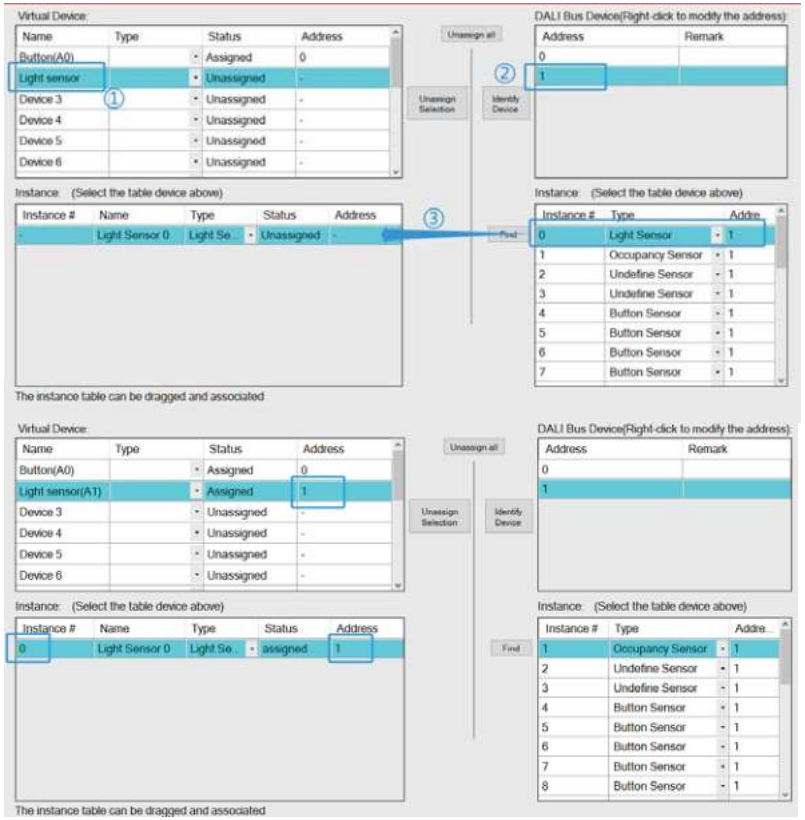


※ Pair a light sensor with a virtual input device.

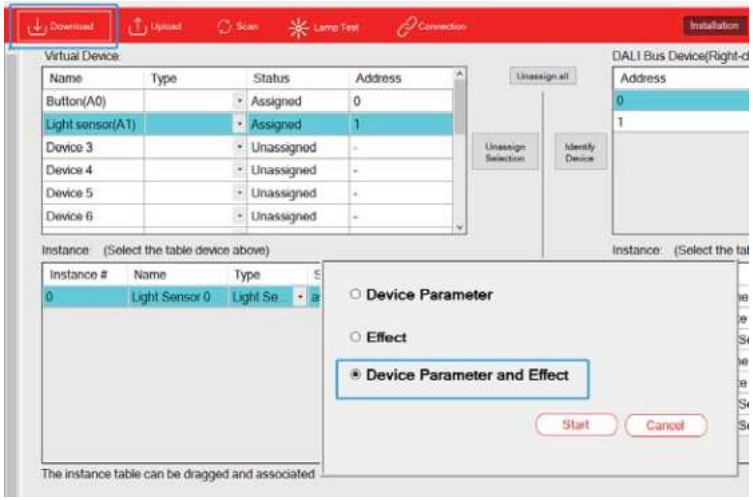
①Select "Light sensor" on the Virtual Device table.

②Select device "1" on the DALI Bus Device table.

③Move the Light Sensor "0" instance to the left area and pair it with the "Light Sensor 0".

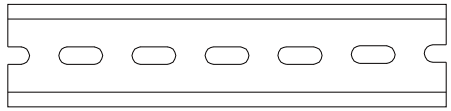


Step 6: Download device parameters and effects (Online)
Click "Download" to download the device parameters and effects to the lamps and devices.



3.3 Mounting

- Mount as shown in figure only, with DALI terminals down or else sufficient cooling will not be possible.
- Admissible DIN-rail：TS35/7.5 or TS35/15.
- For rail fastening：



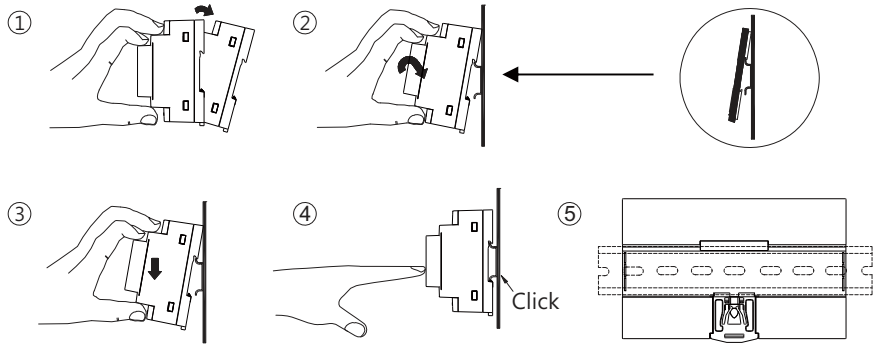
①Tilt the unit slightly rearwards

②Fit the unit over top hat rail

③Slide it downward until it hits the stop

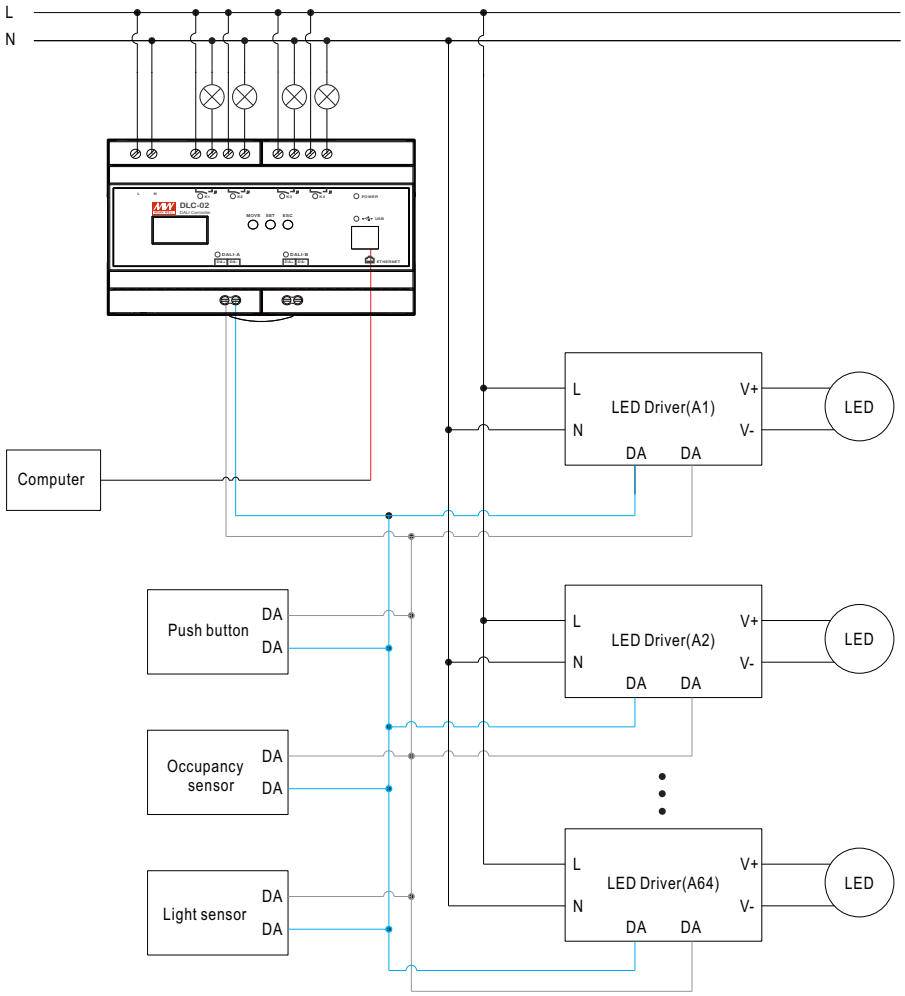
④Press against the bottom for locking

⑤Shake the unit slightly to check the locking action



3.4 Electrical Configuration

- The maximum number of ECGs connected is 64 per bus
- The maximum length is 300m (with a cable cross-section of 1.5 mm²)



3.5 Wiring

- Use wires with an adequate cross-section
- Use suitable mounting tools to do the wiring
- Select suitable wires according to the table below

DLC-02 wiring instructions:

Type	AC and relay terminals L,N,K1,K2,K3,K4	DALI bus terminals DALI-A,DALI-B
Solid wire	0.5 ~ 4.0mm	0.5 ~ 4.0mm
Stranded wire	0.5 ~ 2.5mm²	0.5 ~ 2.5mm²
American wire gauge	12 ~ 26AWG	12 ~ 26AWG
Wire stripping length	7 ~ 8mm	7 ~ 8mm
Screwdriver	3mm Slotted	3mm Slotted
Recommended tightening torque	5 kgf-cm (4.4 lb-in)	5 kgf-cm (4.4 lb-in)

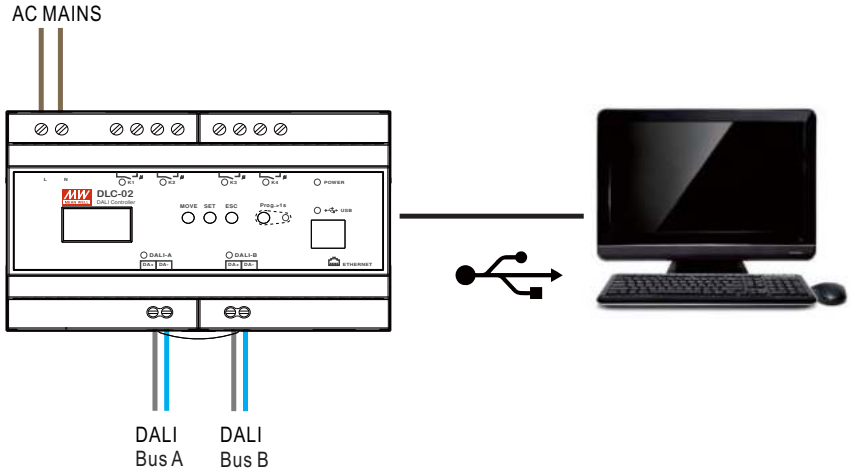
DALI bus wiring requirement:

Lead length	Min. lead diameter
Up to 100m	0.5mm²
100-150m	0.75mm²
151-300m	1.5mm²

3.6 Operation Interface

3.6.1 DLC software

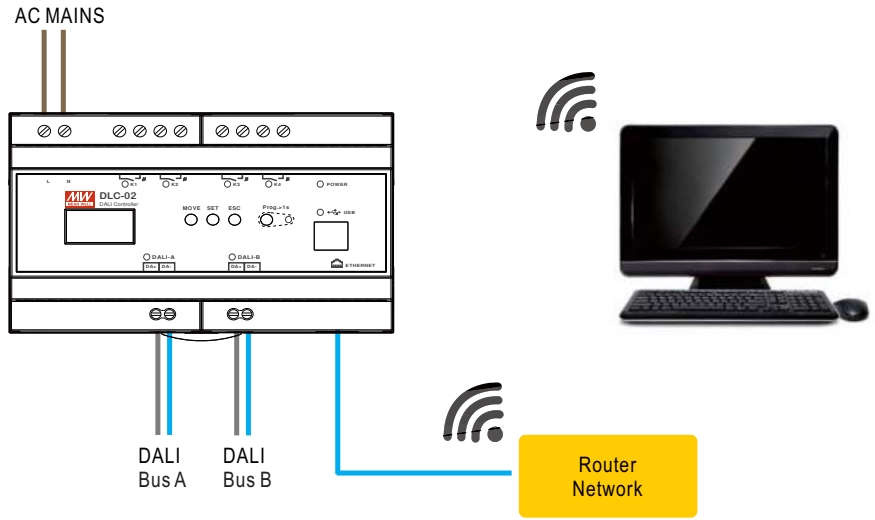
DALI addressing can be implemented through the DLC software. The software also can set maximum level, minimum level, fade rate/time, power on level, system failure level, group, scene, timer, sequence and effect.
(For detailed information, please refer to the Chapter 4)



3.6.2 Modbus TCP communication

DLC-02 supports Modbus TCP communication protocol. Using this communication function can control and monitor all devices on the DLC-02 bus. Refer to Chapter 5 for details.

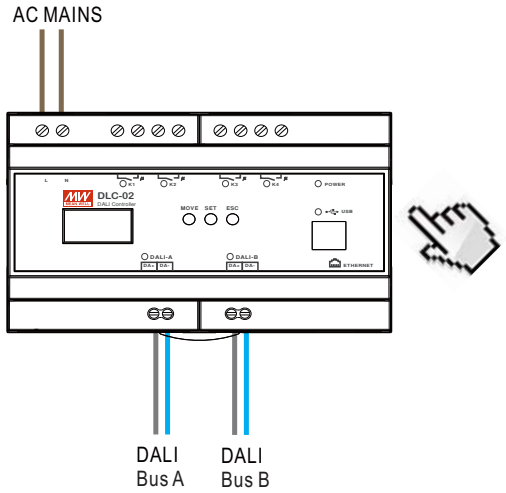
Note: Modbus TCP communication does not support DALI addressing and effect setting.



3.6.3 OLED display

You can set maximum level, minimum level, fade rate, fade time, group and scenes on the OLED display. (For detailed information, please refer to the Chapter 6).

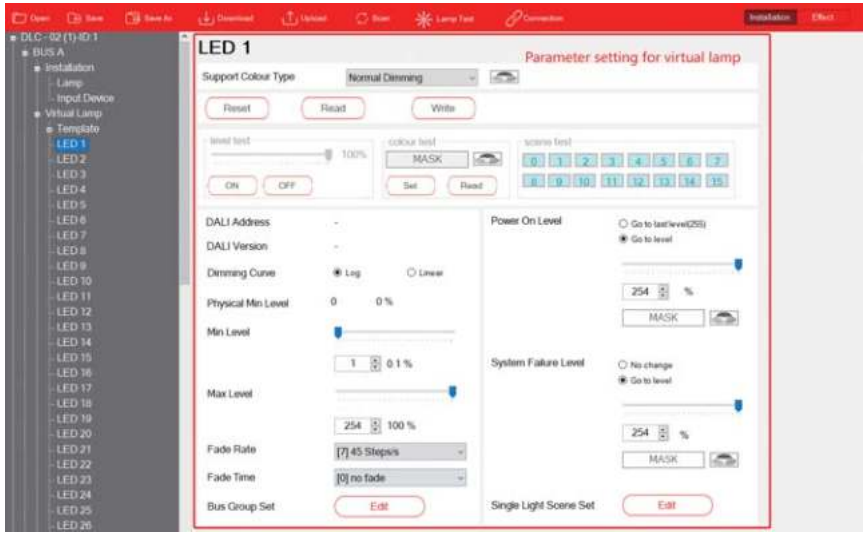
Note: DALI addressing and effect setting are not supported on OLED display.

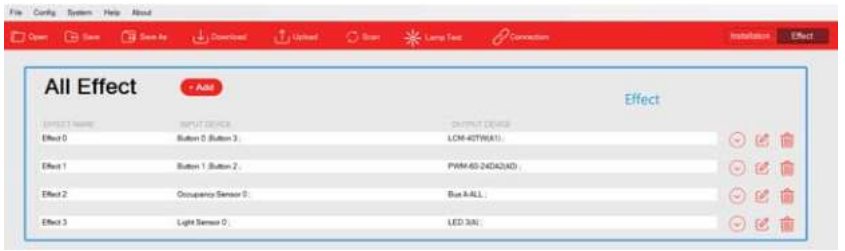


4.DLC-02 Software Interface

■ On the "Installation" interface of the DLC-02 software, you can assign the lamps address, and set the maximum level, minimum level, fade rate, fade time, power on behavior, Bus fault response, group, scene and effect, you can also test lamps online.

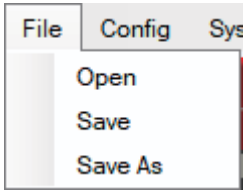
■ Relationship between DALI-2 input devices and lamps is set on the "Effect" interface.





4.1 Main Functional Area

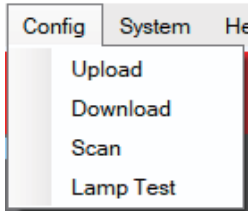
4.11 Fire



●"Open": Open an existing project.
●"Save": Save the current configuration.
●"Save As": Save the current configuration as a new project.

4.12 Configuration

In the Configuration, you can upload or download parameters, scan DALI devices and test lamps.



●Upload
Read back device parameters of the lamps and input devices and effect configurations of the DLC-02.
Note: ① for a configured DALI system, you can use "upload" to read back the device parameters and effect configuration;
②"Upload" can read back the effect configuration of DLC-02, while "scan" cannot

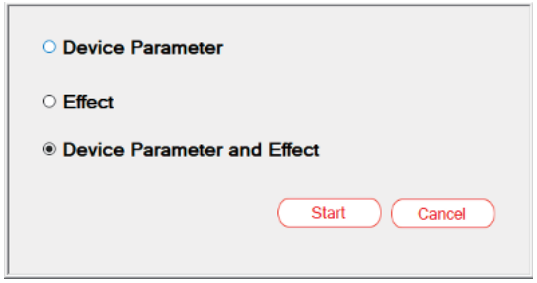
●Download Write device parameters or effects to lamps, input devices or DLC02. You can select "Device Parameter", " Effect " and "Device Parameter and Effect".

※"Device Parameter": Only download device parameters to the lamps and input devices, the effects of DLC-02 remain unchanged.

※ " Effect ": Only download effects to the DLC-02, the device parameters of the lamps and input devices remain unchanged

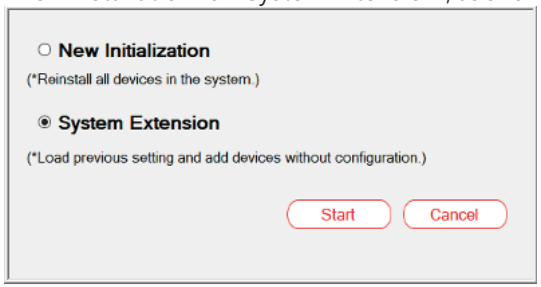
.

※ "Device Parameter and Effect": Download both device parameters and effects to the lamps, input devices and DLC-02.



●Scan

Assign addresses to the devices connected to the DALI bus, you can choose "New Installation" or "System Extension", as shown below:

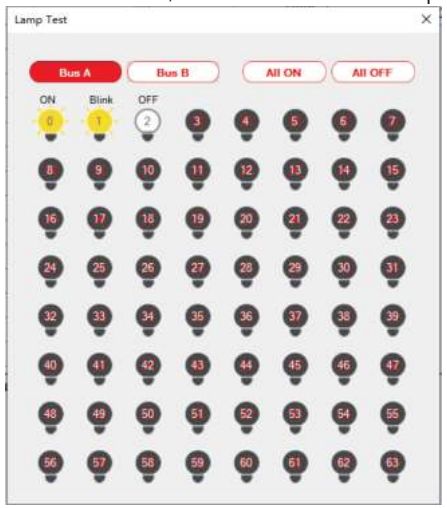


※ "New Installation": All devices on the DALI bus are re-addressed, but the previous parameters of devices remain unchanged.

※ "System Extension": Keep the address and DALI parameters of the original devices, and assign addresses to other new devices.

●Lamp test

You can turn on, blink or turn off the lamps on the window, as shown below.



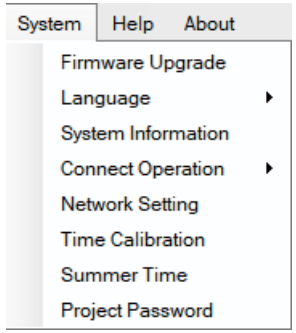
※ Bus A/B selection: When a bus is selected, the icon is displayed in red.

※ Turn on/off all lamps on this bus.

※ You can click the corresponding lamp icon to turn on, blink and turn off the lamp. The number inside the icon represents the lamp address.

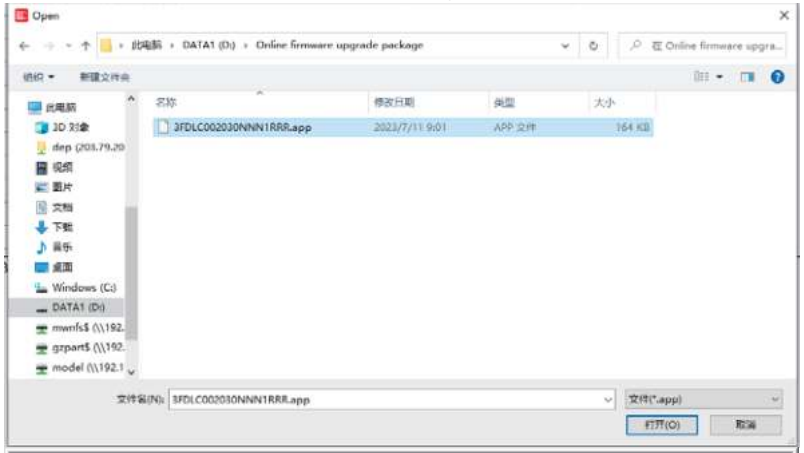
4.1.3 System

In the system bar, you can update firmware and choose different languages, view system information and Connect Operation, set network, calibration time, Summer time and Project Password.



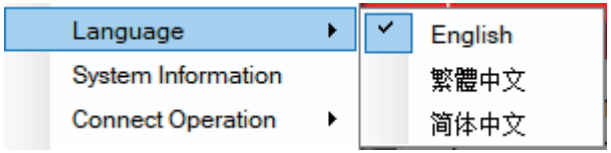
● Firmware upgrade

The upgrade file can be downloaded from the MEANWELL official website or the following link
https://www.meanwell.com.cn/Upload/PDF/DLC-02/DLC-02-SOP-C.pdf
For detailed instructions on firmware upgrades, please refer to Chapter 6.1



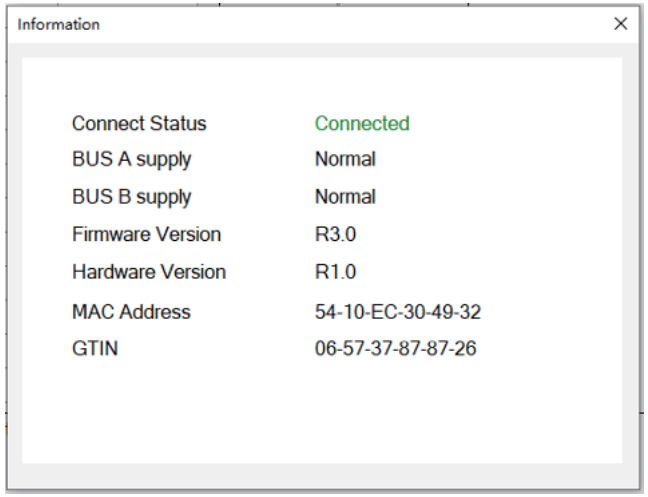
● language

The DLC software supports three languages: English, Traditional Chinese and Simplified Chinese



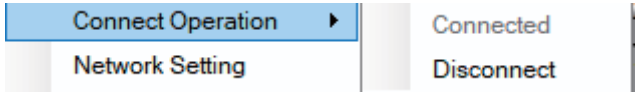
● System Information

The interface shows USB connection status, bus power status, firmware/hardware version, MAC address and GTIN.

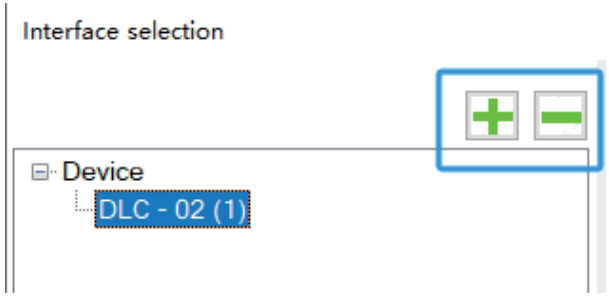


● Connect Operation

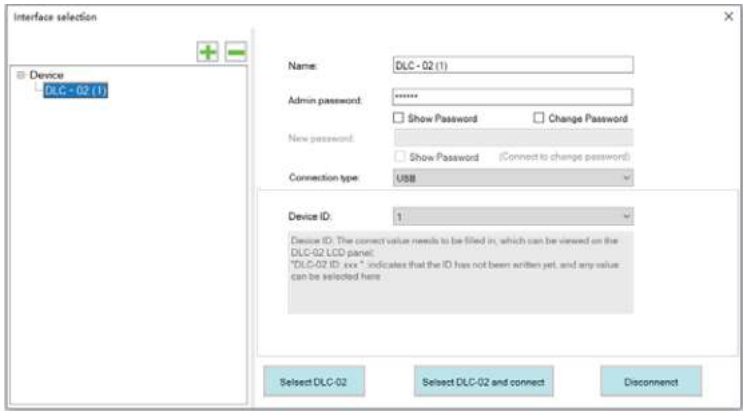
Click "Connect Operation" to pop up the "interface selection" screen



Click "+" and "-" to increase or decrease the quantity of DLC-02,
At the same time, the software can only be connected to one device,
If you need to connect other devices, disconnect the current DLC-02 first



The default password is “000000” · If you want to modify it · Please select 'Change Password' · Enter the new password in the 'New Password' field · Click "Select DLC-02 and Connect" to complete



The connection type can be selected as "USB" or "TCP".

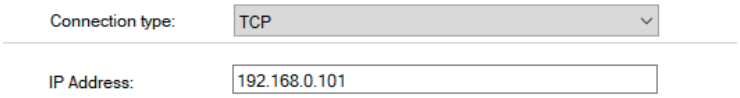
※ connection type：USB

When selecting "USB" connection, there will be a device ID option, which can be viewed on the LCD panel of DLC-02 · If the panel displays "DLC-02 ID: 001", the device ID option must be selected as 1 · If the panel displays "DLC-02 ID: XXX", it means that the ID has not been written yet. At this time, you can choose any value from 1 to 254。

You can also Select "System → Other → Restore Default Values" on the DLC-02 control panel to reset the ID number

※ connection type：TCP

When selecting the "TCP" connection, the computer needs to be in the same domain as DLC-02,Fill in the IP address displayed on the DLC-02 LCD screen in the "IP address" to complete the connection.



● Set network information

Set the IP address of DLC-02 and click "Write" after setting.

When the network connection is correct, the IP address will be displayed on the LCD screen of DLC-02.

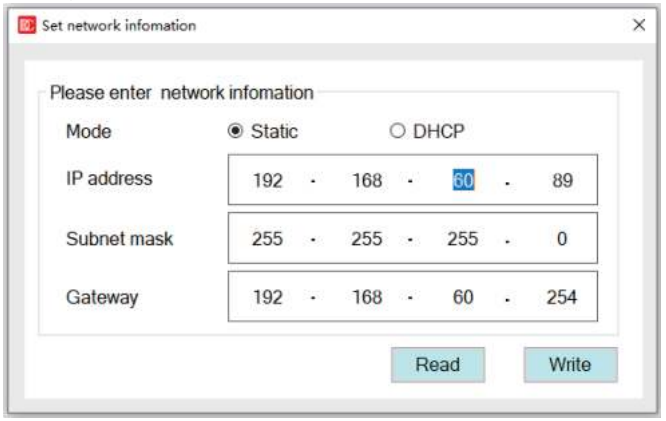
After setting the IP address, Modbus TCP communication operation can be enabled or DLC-02 can be connected to PC software through the network.

※ Static

If there is no DHCP server in the network or if you want to use a static IP address, please select “Static” mode, enter IP address, subnet mask, gateway

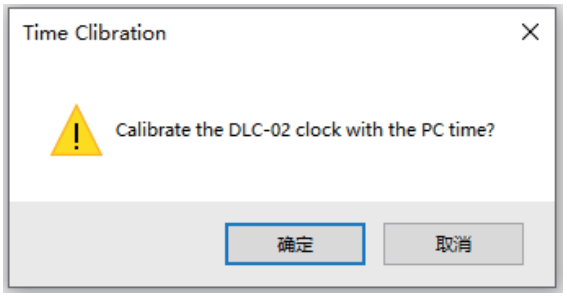
※ DHCP

If there is a DHCP server in the network, please select the 'DHCP' mode and click 'Write', DLC-02 will be automatically assigned an IP address and displayed on the LCD screen.



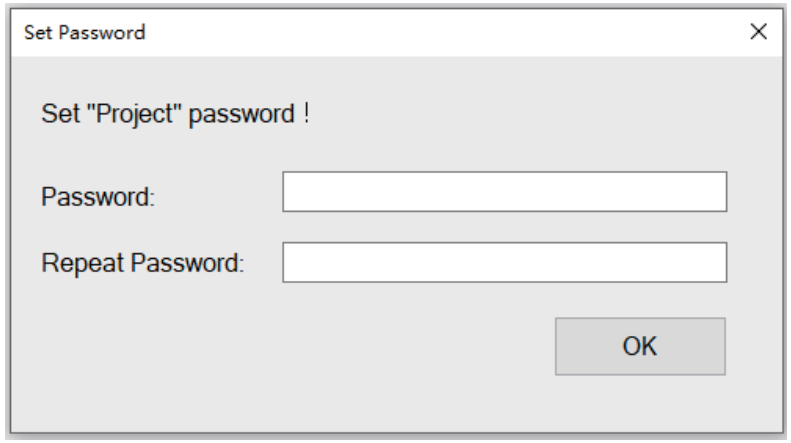
● Time calibration

Update to DLC-02 using the current date and time of the computer



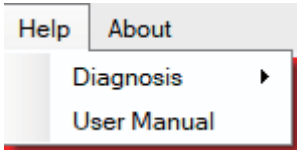
● Project Password

The project does not have a password by default, when the password is set, you need to enter your password to open it



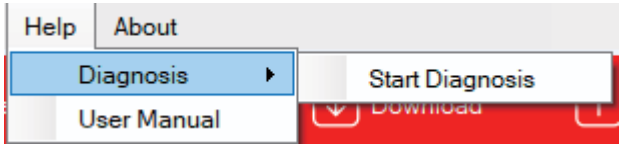
4.1.4 Help

The help bar can open diagnosis and connect to the user manual.



● diagnosis

Click "start Diagnosis" to view the data of DALI-A and DALI-B ports



Open: Open DALI Port Diagnostic File

Save As: Save the data as a diagnostic file, and MEANWELL technicians can analyze the problem based on this file.

Start: Start viewing DALI port data, default to start status

Stop: Stop viewing DALI port data.

Clear: Clear data from Bus A and Bus B windows

Find Text: Finds the specified instruction in the data of the window

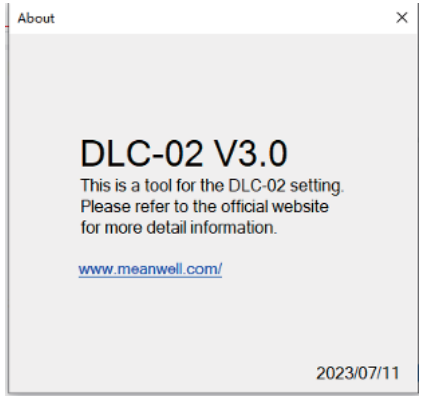
Note: When the software has other sub windows in use, it will not be able to operate the diagnostic function, Windows such as "Write Configuration", "Read Configuration", "Device Search", "Lamp Test", and "Effects" are open.

● manual

Open the network connection of DLC-02 user manual online

4.1.5 About

Display information about software version.



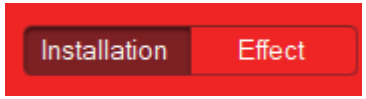
4.1.6 Shortcut bar

Refer to chapter 4.1.1, 4.1.2 and 4.1.3 for relevant parameter descriptions

4.2 Installation and effect

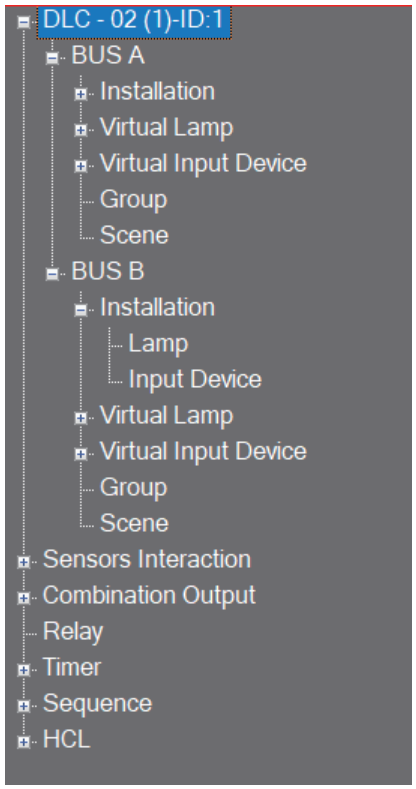
● Select "Installation" to enter DALI devices' parameter setting and test interface.See chapter 4.3.

● Select "Effect" to enter the effect setting interface. See Chapter 4.4 for details



4.3 DALI bus window

Displays the Installation, Virtual lamp, Virtual Input Device, Group, Scene, Sensors Interaction, Combination Output, Relay, Timer, Sequence and HCL. The installation, virtual lamp, and virtual input device parameter settings of DALI A and DALI B buses are the same, taking DALI A bus as an example to illustrate.



4.3.1 Installation

Lamp and input device under the installation menu, you can view the actual lamps and input devices connected to the bus

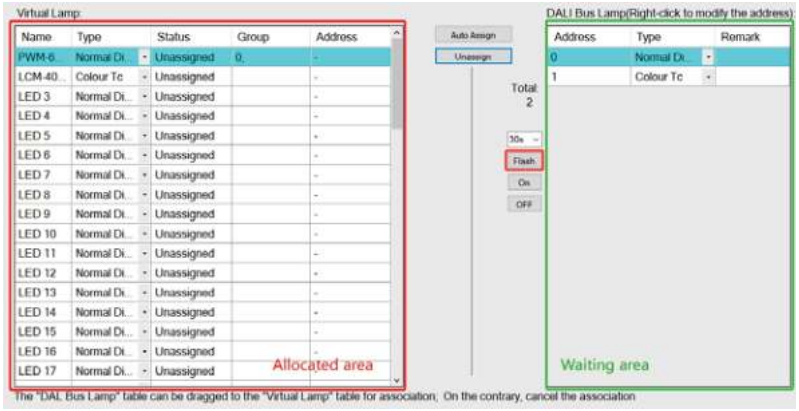
4.3.1.1 lamp

After using the “Scan” function, click "Bus A- Installation - Lamp" to enter the pairing interface between virtual Lamp and DALI Bus Lamp. As shown in the following figure, Displays the addressed lamps and their addresses (0, 1), types in Waiting area.

Select a lamp in the Waiting area, click and hold the left button, drag it to the allocated area and pair with it. After pairing, the status changes from 'Unassigned' to 'Assigned'.

Note: Only the same type can be paired. The type of lamps in the allocated area needs to be set in the virtual lamp, refer to chapter 4.3.2.

Select one of the lamps, click "flash" to find the real position of the lamp.

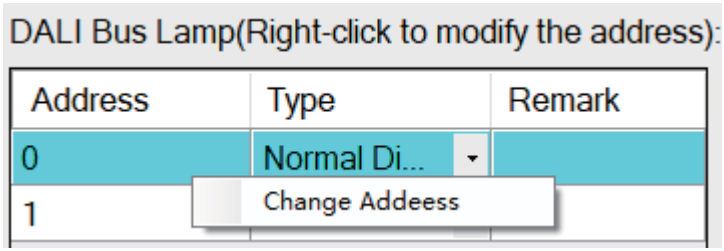


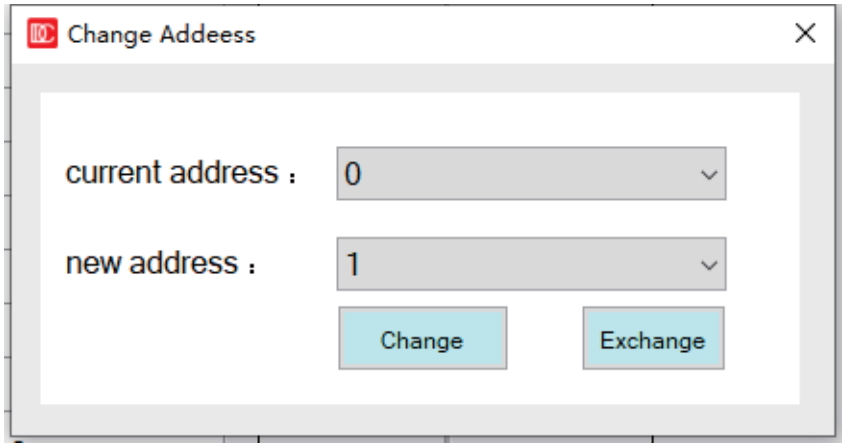
The following table shows a description of the relevant parameters：

Parameter	Comment
Auto Assign	Automatically associate DALI Bus lamp with virtual lamp
Unassign	Disassociate all lamps
30S	The duration setting for flashing can be selected from 2, 10,30,60and 300 seconds
flash	Select a lamp and click to flash
On	Select a lamp and click to turn it on
OFF	Select a lamp and click to turn it off

●change address：

Right click on the selected DALI bus lamp and the "Change Address" option will pop up. Users can modify the DALI short address of the lamp.





※ Use the "Change" button to change the current address to another unused address on the bus.

※ Use the "Exchange" button to swap the current address with other used addresses on the bus.

Note: ※ If the number of devices on a single DALI bus (A or B) is equal to 64, you can use the "Exchange" function to change the device address on the bus.

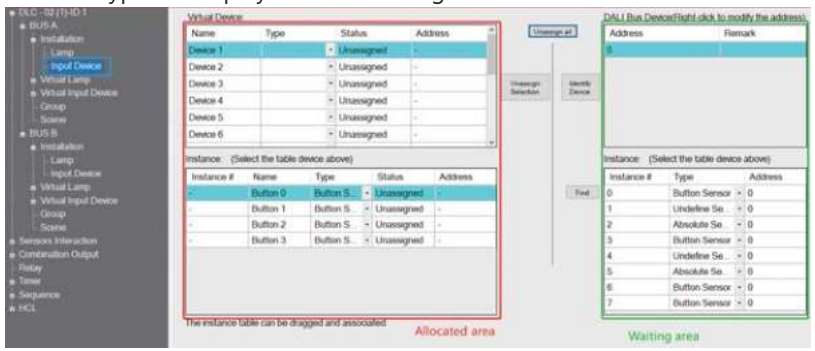
※ "Change address" function can be used for lamp maintenance and replacement. The specific implementation steps are as follows:

1. Name and save the configured original project, such as "original project";
2. After the lamp is damaged, replace it with a new lamp to DALI bus, and use the "scan" - >" system expansion "function to scan back the bus lamps (the purpose is to assign addresses to new lamps);
3. Use PC software to change the address of the newly replaced lamp to that of the original lamp in the "original project";
4. Import the "original project" into the PC software, and then perform the "Download" operation.

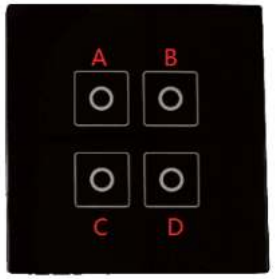
4.3.1.2 Input devices

After using the “Scan” function, click "Bus A- Installation – Input Device" to enter the pairing interface between virtual Device and DALI Bus Device.

As shown in the following figure, the addressed input device address 0 and instance type are displayed in the waiting area.

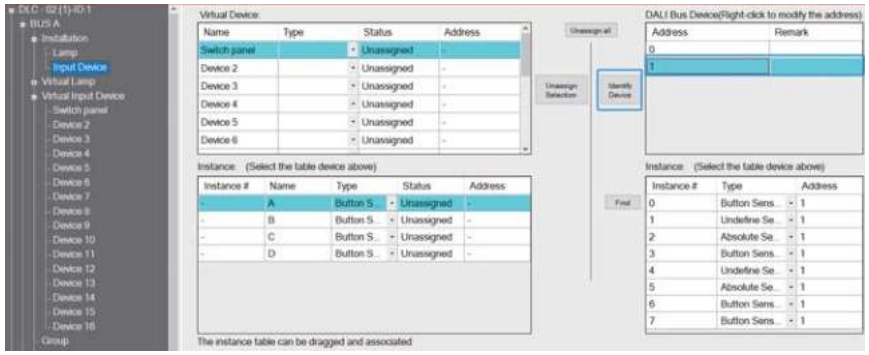


Taking the switch panel as an example (with four buttons), Users does not know which instance the A/B/C/D buttons on the switch panel correspond to, the explanation is as follows

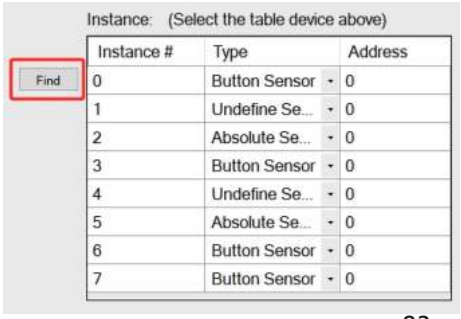


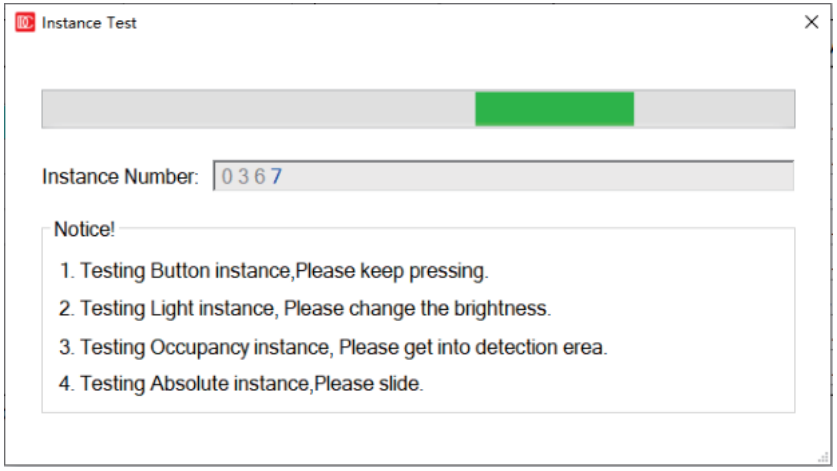
First, add four buttons to the virtual input device interface and rename them A /B /C /D

Then click "Scan" to get the online device, select an input device on the DALI bus, click " Identify Device" and the corresponding input device will respond with a flashing indicator light, Different devices respond differently, based on the actual device.



After finding the corresponding device, click "Find" , press and hold the buttons on the switch panel in the order of numbers A/B/C/D, the instance number column displays "0, 3, 6, 7", which means that the A B C D keys correspond to instances 0, 3, 6, and 7 respectively





Note: Different input device types have different testing actions

- Testing Button instance, please keep pressing
- Testing Light instance, please change the brightness
- Testing Occupancy instance, please get into detection erea.
- Testing Absolute instance, please slide

Find the actual input instance and select it, click and hold the left button, drag it to the allocated area and pair with it. After pairing, the status changes from 'Unassigned' to 'Assigned'. Pairing 'Instance 0' with 'Button A' · 'Instance 3' with 'Button B', 'Instance 6' with 'Button C', 'Instance 7' with 'Button D'.

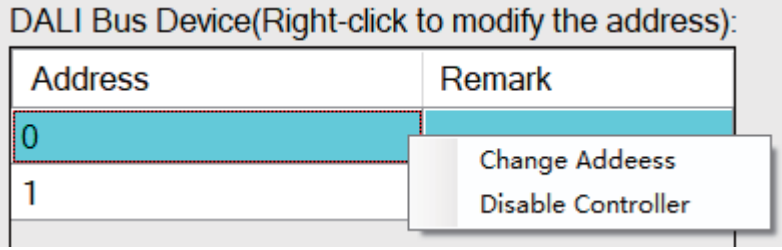
Note:1. Only the same type can be paired. The instance type in the allocated area needs to be set in the Virtual Input Device, Refer to chapter 4.3.3

The following table shows a description of the relevant parameters：

Parameter	Comment
Unassign all	Unpaired all virtual input devices with actual input devices
Unassign Selection	Unpaired the selected virtual input device with actual input device
Identify Device	Identify online input devices, Select an input device, click "Identify Device" and the corresponding input device will respond such as flashing indicator lights and alarm sounds.
Find	Find instances of input devices

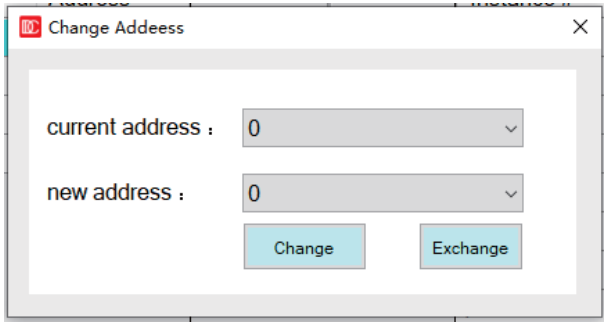
● Change address

Select an input device and right-click to modify its address and disable controller functionality



※ Use the "Change" button to change the current address to another unused address on the bus.

※ Use the "Exchange" button to swap the current address with other used addresses on the bus.

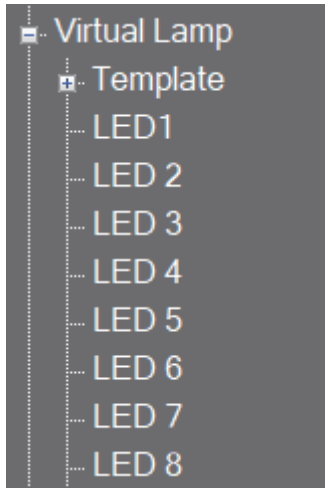


※ Disable controller

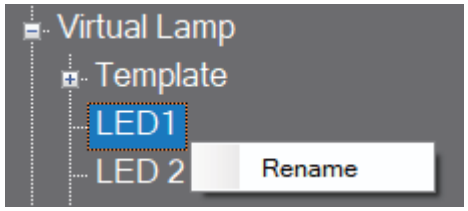
For devices that can operate in both "input device" mode and "controller" mode, this function can be used to turn off the controller mode, you can select an online input device and click "disable controller"

4.3.2 Virtual Lamp

There are Template and 64 virtual lamps under this menu, where the parameters of the lamps can be edited offline.

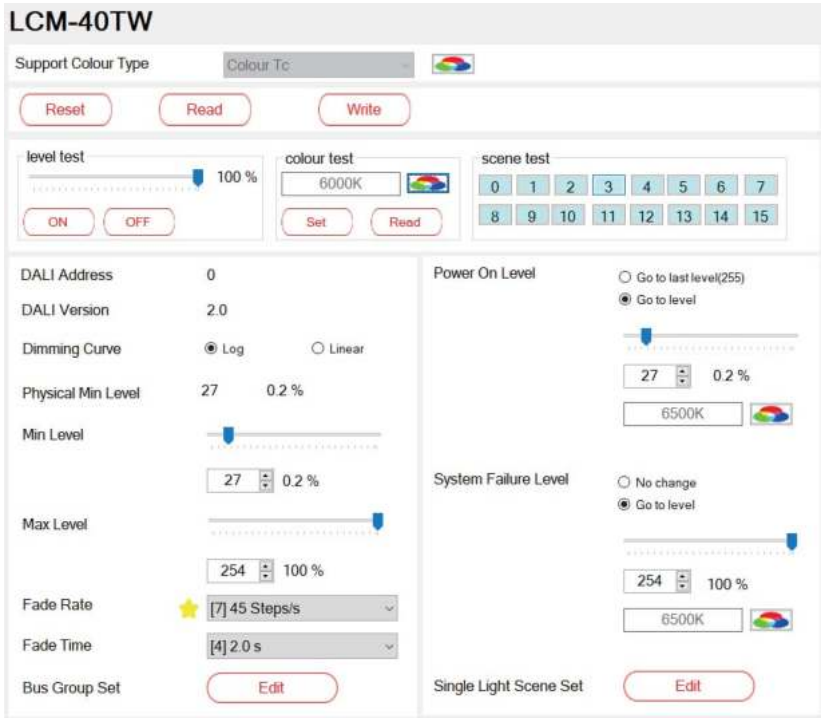


Right-click on the selected virtual lamp and 'Rename' will pop up. Users can customize the lamp name

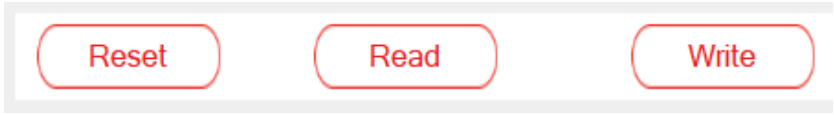


4.3.2.1 Parameter setting and testing

Select a lamp device and click the left mouse button to enter the lamp DALI parameter setting and test interface.



4.3.2.1.1 Parameter reset / read / write



To reset, read, and write parameters, the virtual lamps must be associated with the actual lamps.

●Reset: first restore DALI parameters of the equipment to "factory default parameters", and then the PC software will read the parameters of the device and display them on the software interface.

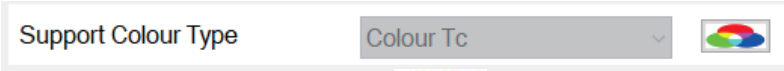
Note: "Reset" refers to resetting the internal parameters of the device.

●Read: read the current configuration information of the device and display it on the software interface.

●Write: download the current configuration information to this device.

4.3.2.1.2 Colour type

If the device belongs to DT8, the "colour type" column will automatically display the colour type of the device. There are four colour types: colour TC, RGB, RGBW and XY coordinate



●If the device is colour TC type, click Enter the colour temperature configuration interface, you can set the colour temperature single step increment, physical warmest / coldest colour temperature value, and customized warmest / coldest colour temperature value of the lamp

The following table shows a description of the relevant parameters：

Parameter	Value	Comment
Colour Temperature	●1~100 [unit：Mirek]	One-step increment of colour temperature during colour temperature adjustment
Tc Step Increment		
Colour Temperature Tc Physical Warmest	●1500K~10000K	The actual warm colour temperature value of the lamp
Colour Temperature Tc Physical Coolest	●1500K~10000K	The actual cool colour temperature value of the lamp
Colour Temperature Tc Warmest	●1500K~10000K	User-defined warmest colour temperature value of the lamp
Colour Temperature Tc Coolest	●1500K~10000K	User-defined coolest colour temperature value of the lamp

4.3.2.1.3 Lamp test

Lamp test includes: dimming test, colour test (except DT6 equipment) and scene test.

Before testing, the virtual lamps must be associated with the actual lamps.

The following table shows a description of the relevant parameters：

Parameter	Value	Comment
Level test	●brightness ● ON ● OFF	●Slide the slider to the specified brightness. When the slider is released, the brightness of the lamp will change. "brightness" refers to the user-defined brightness value of the lamp ● ON :Set the brightness of the light to 100% ● OFF :Turn off lamps
If the colour type of the device is "Colour Tc", the colour temperature adjustment test can be performed		
Colour test	●Colour Temperature Tc Warmest~ Colour Temperature Tc Coolest	Slide the slider to the specified colour temperature ●The "Colour Temperature Tc Warmest" refers to the user-defined warmest colour temperature value of the lamp ●The "Colour Temperature Tc Coolest" refers to the user-defined coolest colour temperature value of the lamp.For related settings, please refer to Chapter 4.3.2.2.

If the colour type of the device is "RGB(W)", the RGB colour adjustment test can be performed		
RGB Colour test	● #000000~ #FFFFFF ●R/G/B：0~255	There are two input methods "HEX" and "RGB" in the colour picker. If it is "RGBW", you can also set its "white value", the range is 0~100
If the colour type of the device is "xy coordinate", the HEX colour adjustment test can be performed		
HEX Colour test	● x：0~0.8 ● y：0~0.9	●There are two input methods "axis" and "xy" in the colour picker ●"MASK": Indicates that the colour does not change, that is, the previous colour value is maintained
Set	● Set	SET Click "Set" to change the lamp colour
Read	● Read	Click "Read" to read the current colour value of the lamp
Scene test	●	Click the scene number to trigger the scene

4.3.2.1.4 DALI parameter setting

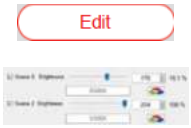
This screen displays DALI's short address, version, and minimum luminance (physical) values. Users can also customize the maximum and minimum luminance values, dimming rate/time, power-on action, bus fault response, group and scene functions of the luminance. If it is a DT8 device, you can also configure its colour information.

The following table shows a description of the relevant parameters：

Parameter	Value	Comment
DALI address	● 0~63	Display the address of the lamp in the DALI bus
DALI version	● X.X	Displays the version number of the lamp."2.0" means DALI version 2.0
Physical min level	● 0~254	Displays the minimum physical dimming gear of the lamp
Min level	● 0~254	Customize the minimum brightness of the lamp. Note: The minimum brightness can only be greater than or equal to the minimum physical dimming gear of the lamp
Max level	● 0~254	Customize the maximum brightness of the lamp
Fade rate	●358 Step/s ●253 Step/s ..... ●2.8 Step/s	Sets the dimming fade rate for the lamp.The fade rate refers to the speed at which the brightness changes when the light is dimmed. This parameter is mainly used for relative dimming

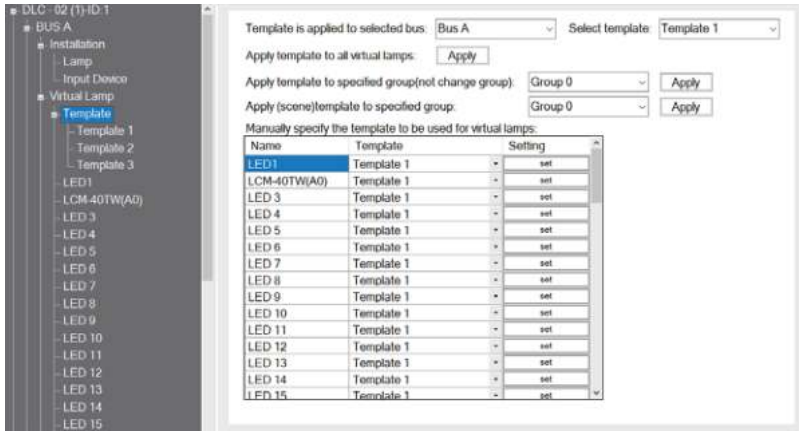
Parameter	Value	Comment
Fade time	●no fade ●0.7s ●1.0s ..... ●90.5s	Set the dimming fade time for the lamp. The fade time refers to the time when the dimming action is completed after receiving a DAPC command. This parameter is mainly used for absolute dimming.
Bus group set	● Edit	Click the "Edit" button to enter the group menu, select the group and click "Save" to add the lamp to the group
Power on behavior	●go to last level ●go to power on level	●go to last level: After the DALI K device is connected to the AC, the brightness of the lamp returns to the brightness before the AC power failure ●go to power on level: After the DALI device is connected to AC, the brightness of the lamp uses a custom value
Brightness slider	●	This option is only available when "Power on behavior" is selected as "go to power on level", which is used to set the brightness of the lamp after AC power-on. Note: The minimum setting range is limited by the "min. level"
colour control	●	●This option is only available when "Power on behavior" is selected as "go to power on level", click " " to set the colour of the lamp after AC power-on. ●When the lamp type is "Colour Tc", set its colour temperature value; ●When the lamp type is "RGB(W)", set its RGB value and white value; ●When the lamp type is "xy coordinate", set the xy colour value; ●"MASK" means that the colour of the lamp does not change, that is, the colour value before the AC power failure is maintained

Parameter	Value	Comment
Failure behavior	●no change ●go to sys. Failure level	●no change: When the DALI bus is powered off, the brightness of the lamps remains unchanged ●go to sys. Failure level: When the DALI bus is powered off, the brightness of the fixture is set to a custom brightness value. Note: When the AC is powered on for the first time, because the power-on time of the DLC-02 is not synchronized with the power-on response time of the DALI drivers, if the bus fault detection of the DALI drivers is earlier than the output of the DLC-02 DALI commands, the DALI drivers will respond to bus faults first
Brightness slider	● 	This option is only available when "Failure behavior" is selected as "go to sys. Failure level", which is used to set the brightness of the lamp after the DALI bus is powered off. Note: The minimum setting range is limited by the "min. level"
colour control	● 	●This option is only available when "Failure behavior" is selected as "go to sys. Failure level", click " " to set the colour of the lamp after the DALI bus is powered off ●When the lamp type is "Colour Tc", set its colour temperature value; ●When the lamp type is "RGB(W)", set its RGB value and white value; ●When the lamp type is "xy coordinate",set the xy colour value; ●"MASK" means that the colour of the lamp does not change, that is, the colour before the power failure of the DALI bus is maintained

Parameter	Value	Comment
Single light scene set	● 	●Click the "Edit" button to enter the scene menu. Check and configure the scene information and click "Save" to complete the lighting scene setting. ●When the lamp type is "Colour Tc", set its colour temperature value; ●When the lamp type is "RGB(W)", set its RGB value and white value; ●When the lamp type is "xy coordinate", set the xy colour value; ●"MASK" means that the brightness or colour of the lamp does not change,that is, the current brightness and colour are maintained

4.3.2.2 Template

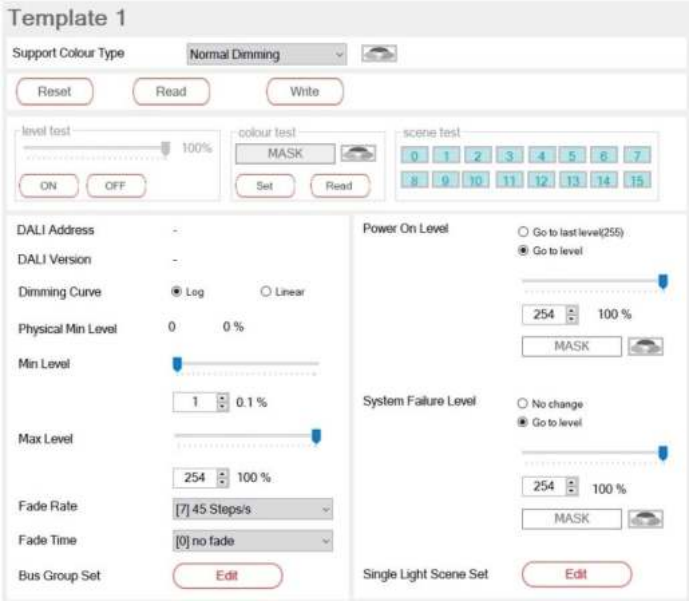
Lamp parameters can be set through templates, which can greatly improve the efficiency of engineering configuration.



The following table shows a description of the relevant parameters：

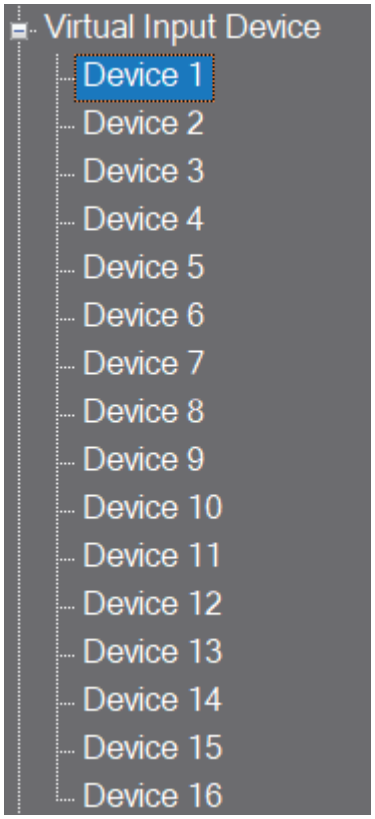
Parameter	Value	Comment
Bus with template	● Bus A ● Bus B	Bus with template
Select Template	● Template 1 ● Template 2 ● Template 3	Select Template
Apply templates to all virtual lamps	------	Apply the selected template to all lamps on the selected bus
Applying templates to groups(do not change the group)	● Group 0~ Group 15	Apply the selected template to the selected bus group
Using (scene) template groups	●Group 0~ Group 15	●Apply the selected template's scene to the selected bus's group
Assign templates to virtual lamps	●LED1~LED64	Assign template parameters to lamp

Explanation of the parameter setting interface for Template1~Template3, please refer to Chapter 4.3.2.1



4.3.3 Virtual Input Device

16 virtual DALI input devices on the bus are displayed. Select a device and right-click to rename it



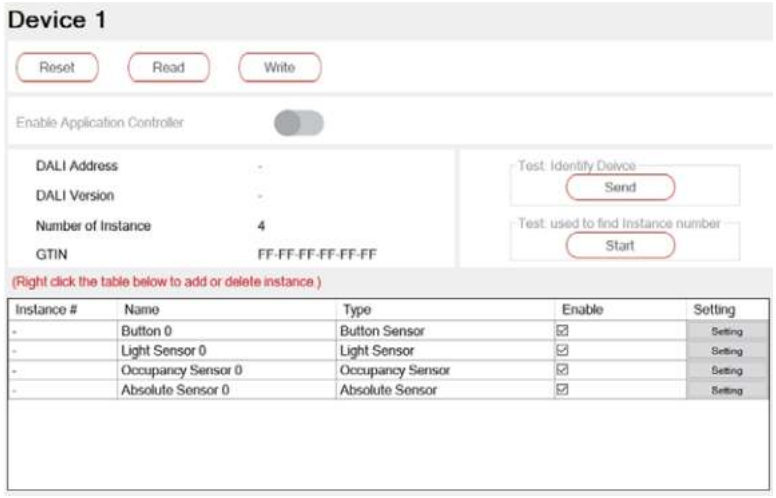
4.3.3.1 Rename

●Rename：You can modify the name in the green area below, and the character length is up to 12 characters

4.3.3.2 Input device attributes

This screen displays information about the input device, such as the short address, DALI version, total number of instances, and GTIN code. You can restore the input device to factory default settings, read the internal configuration information of the device, and write the configuration information set by the PC software to the input device.

To perform reset/read/write operations, the virtual input device must be associated with the actual input device.



The following table shows a description of the relevant parameters：

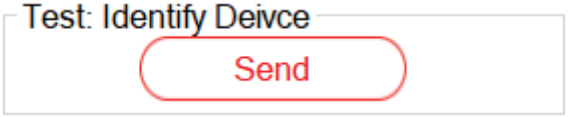
Parameter	Value	Comment
Reset	● Reset	Restore the device to "factory defaults"
Read	● Read	Read the internal configuration information of the device
Write	● Write	Write the configuration information set by the PC software into the device
Enable application controller	● ●	This function can be used to switch the working mode of a device that can work in both "Input Device" mode and "Controller" mode ● ：as a controller device ● ：as an input device

Parameter	Value	Comment
DALI address	● 0~63	Displays the short address of the input device
DALI version	● X.X	Displays the DALI version of the input device
Number of instance	------	Displays the number of events for the input device
GTIN	● XX-XX-XX -XX-XX-XX	Displays the Global Trade Item of the input device
Test: ：Identify input devices	● Send	Help users find input devices. See Section 4.3.3.3 for details .Used after associating with actual input devices
Test: used to find instance number	● Start	Help users find target events. See Section 4.3.3.3 for details. Used after associating with actual input devices
Enable	●check ● uncheck	●check： Select the event as the input event ●uncheck：This event is not used as an input event Note: Input events will only be displayed in the “Effect” interface when "check" is selected
Setting	● Setting	Set the relevant parameters of the input device. See chapter 4.3.3.4 for details

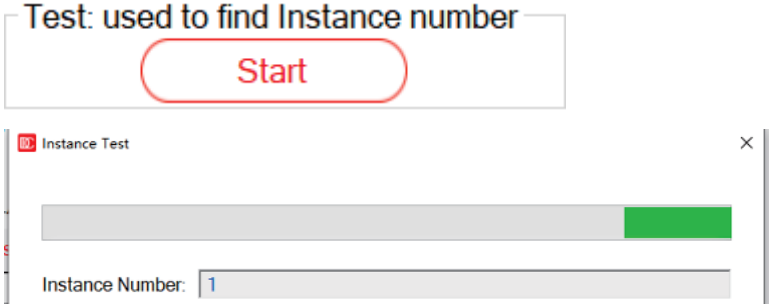
4.3.3.3 Query the instance number corresponding to the device and Identify input devices

To use ' used to find instance number ' and 'Identify Device', it is necessary to associate the actual input device. For detailed instructions, please refer to "Identify Device" and "Find" in Chapter 4.3.1.2

Click "Send" to identify the input device



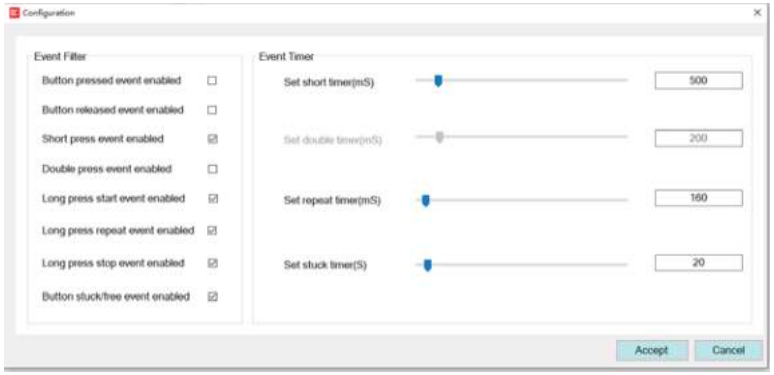
Click "Start" to enter instance testing and search for the corresponding instance number



4.3.3.4 Input device parameter setting description

The PC software also provides input device parameter setting function, Click on " Setting " ,The parameter setting screen is displayed. The following lists parameter Settings for different input device types :

●Button

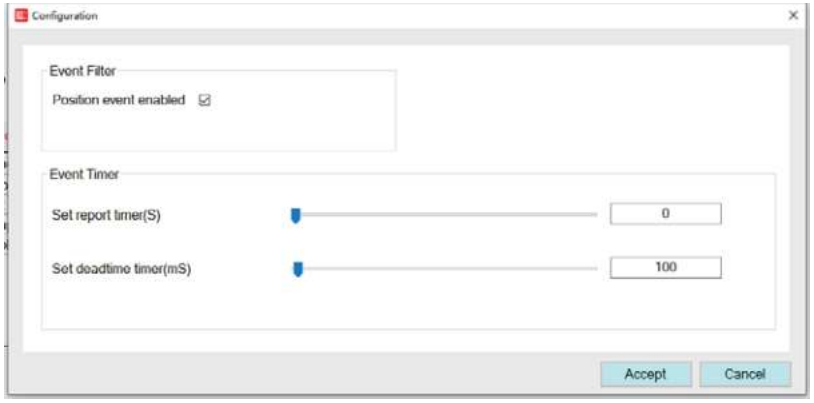


The following table shows a description of the relevant parameters :

Parameter	Value	Comment
Button pressed event enabled	●check ●uncheck	Enable or disable "button pressed event"
Button released event enabled	●check ●uncheck	Enable or disable "button released event"
Short press event enable	●check ●uncheck	Enable or disable "Short press event" Note: Only when "check" is selected, the "short press" function of the button in the "Effect" interface will be effective
Double press event enable	●check ●uncheck	Enable or disable "Double press event" Note: Only when "check" is selected, the "Double press" function of the button in the "Effect" interface will be effective
Long press start event enabled	●check ●uncheck	Enable or disable "Long press start event" Note: Only when "check" is selected, the "Long press" function of the button in the "Effect" interface will be effective
Long press repeat event enabled	●check ●uncheck	Enable or disable "Long press repeat event". Note: Only when "check" is selected, the "Long press" function of the button in the "Effect" interface will be effective
Long press stop event enabled	●check ●uncheck	Enable or disable "Long press stop event". Note: Only when "check" is selected, the "Long press" function of the button in the "Effect" interface will be effective
Button stuck/ free event enabled	●check ●uncheck	Enable or disable "Button stuck/ free event "
Set short time (ms)	● 500~5100ms	This option is only available when "check" is selected for "short press event enable", which is used to set the effective time of the short press of the key. Pressing and releasing within this time is considered a short press.

Set double time (ms)	● 200~2000ms	This option is only available when "check" is selected for " double press event enable", which sets the double-click valid time of the button. If two presses and releases are completed within this time, it is considered a double-click
Set repeat time (ms)	● 100~2000ms	This option is only available when "check" is selected for "long press repeat event enabled", which sets the repeat report time of button long press. Note: This parameter affects the dimming rate of the lamp.
Set stuck time (ms)	● 10~255s	This option is only available when "check" is selected for "Button stuck/ free event enabled", which is used to set the stuck time of the button, that is, if the time of long pressing the button exceeds the set value, the long pressing command will not be sent

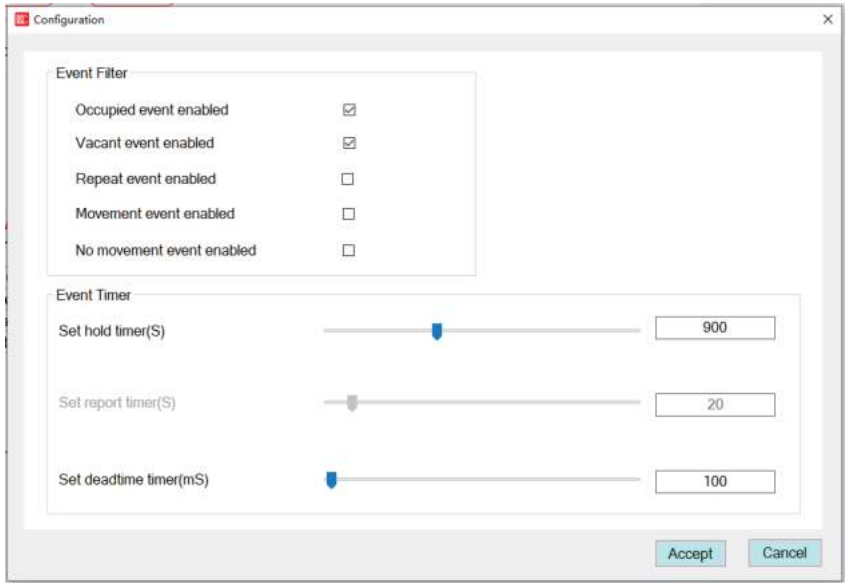
● Absolute sensor



The following table shows a description of the relevant parameters :

Parameter	Value	Comment
Position event enabled	●check ●uncheck	Enable or disable "Position report-ing event". Note: Only when "check" is selected, the "Slider" function in the "Effect" interface will be effective
Set report time (s)	● 0~255s	This parameter is only available when the " Position event enabled " is selected as "check", which is used to set the interval time for reporting the current location event
Set dead time (ms)	● 0~12750ms	This parameter is only available when the " Position event enabled " is selected as "check". When an event acts, it will be fed back to the DALI bus after a set time

● Occupancy/motion sensor



The following table shows a description of the relevant parameters：

Parameter	Value	Comment
Occupied event enabled	●check ●uncheck	Enable or disable "Occupied event"
Vacant event enabled	●check ●uncheck	Enable or disable "Vacant event"
Repeat event enabled	●check ●uncheck	Enable or disable "Movement event"
Movement event enabled	●check ●uncheck	Enable or disable "Movement event"
No movement event enabled	●check ●uncheck	Enable or disable "No movement event"
Set hold timer（s）	● 1~2540s	The duration of a status specified by DALI regulations. That is, from one state to another state will remain at least this time
Set report time（s）	● 0~255s	This parameter is only available when " Repeat event enabled " is selected as "check:", which is used to set the interval between repeated reports of the currently specified event
Set dead time timer（ms）	● 0~12750ms	When an event acts, delay the set time and then feed back to the DALI bus

● Light sensor

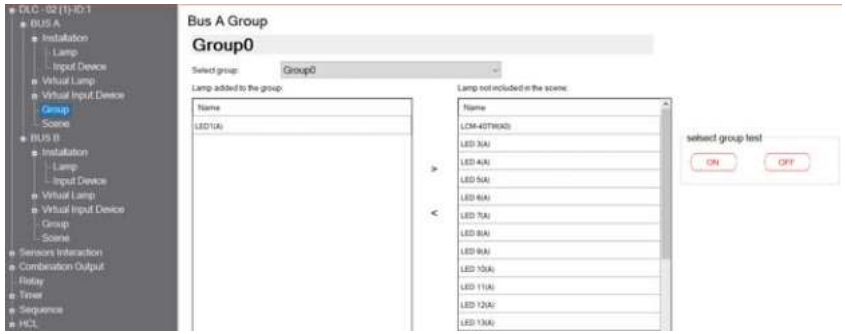
The following table shows a description of the relevant parameters：

The following table shows a description of the relevant parameters：

Parameter	Value	Comment
Luminance level event enabled	●check ●uncheck	Enable or disable "Luminance level event"
Set report timer（s）	● 0~255s	This parameter is only available when "Luminance level event enabled" is selected as "check", which is used to set the interval time for reporting the current brightness event
Set dead time timer（ms）	● 0~12750ms	This parameter is only available when "Luminance level event enabled" is selected as "check". When an event acts, delay the set time and then feed back to the DALI bus
Set hysteresis (%)	● 0~25%	These parameters are only available when "Luminance level event enabled" is selected as "check". The brightness value detected by the light sensor is not a fixed value, but changes dynamically, and a dynamic change interval can be set through these two parameters. When the detected current brightness is not within this interval, the current brightness value event will be reported
Set hysteresis min (lux)	● 0~255 lux	

4.3.4 Group

The group interface shows the grouping information of the lamps on the bus. You can modify the grouping of the lamps again and perform on/off test of lamps.You can confirm whether the lamps have been added to the corresponding group by ON/OFF the group Lamps



ON : Turn on all lamps in this group

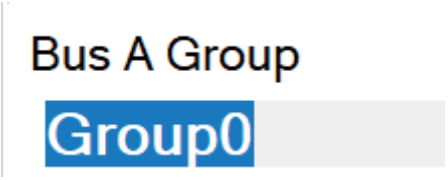
OFF : Turn off all lamps in this group

> : Exit the selected lamp from this group

< : Add the selected lamp to this group

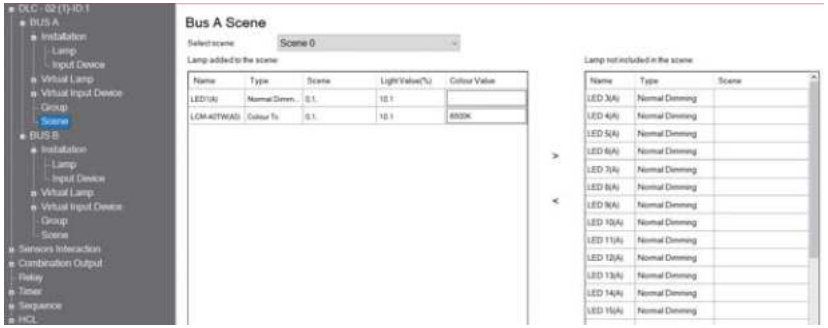
Hold down "Ctrl" or drag with the left mouse button to perform multiple selection operations.

● Reenter text in the group name position to rename the group



4.3.5 scene

The scene interface displays the scene information of the lamps on the bus, and you can modify the scene of the lamps again



> : Exit the selected lamp from this group

< : Add the selected lamp to this group

4.3.6 Sensors Interaction

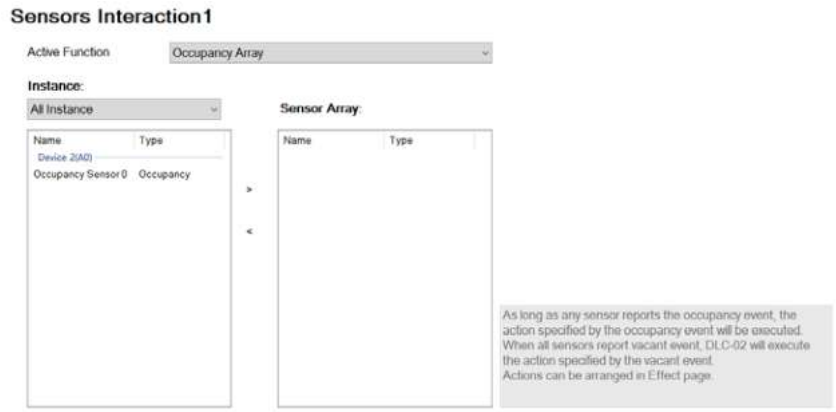
Sensors Interaction has two modes: "Occupancy Array" and "Light regulation when occupied", As an input device on the 'Effects' page.

●Occupancy Array: Composed of multiple Occupancy sensors,

After any Occupancy sensor returns an event, perform the action specified by the Occupied Event Action

● Light regulation when occupied: Consisting of an Occupancy sensor or an Occupancy Array and a brightness sensor,

●Click on the "+Add" option to create a new "Sensors Interaction", right-click to 'rename' and 'delete' it. Note: Renaming allows a maximum character length of 24 bits



> : Exit the selected lamp from this group

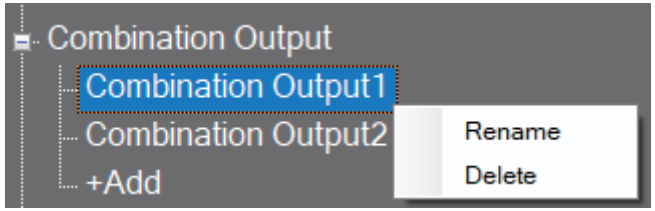
< : Add the selected lamp to this group

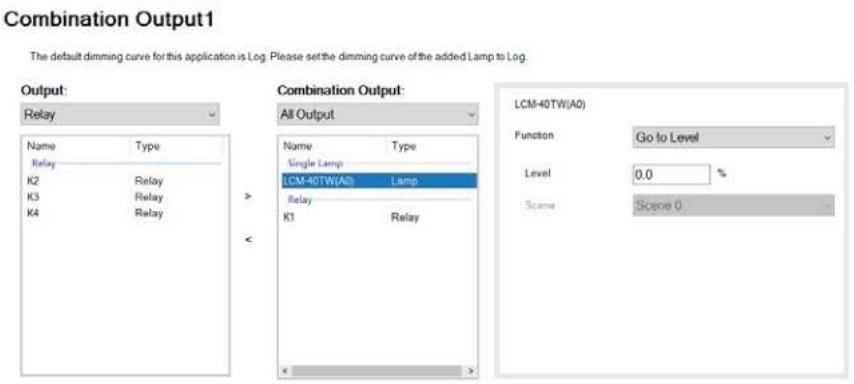
4.3.7 Combination output

Lamps, groups, and relays can all be integrated into the same combination output, one button can control different lamps to output different brightness, DT8 lamps can be set for brightness and color values in the scene, and the trigger of the combined output can be controlled by a timer or button switch

●Click on the "+Add" option to create a new combination output, right-click to 'rename' and 'delete' it

Note: Renaming allows a maximum character length of 24 bits



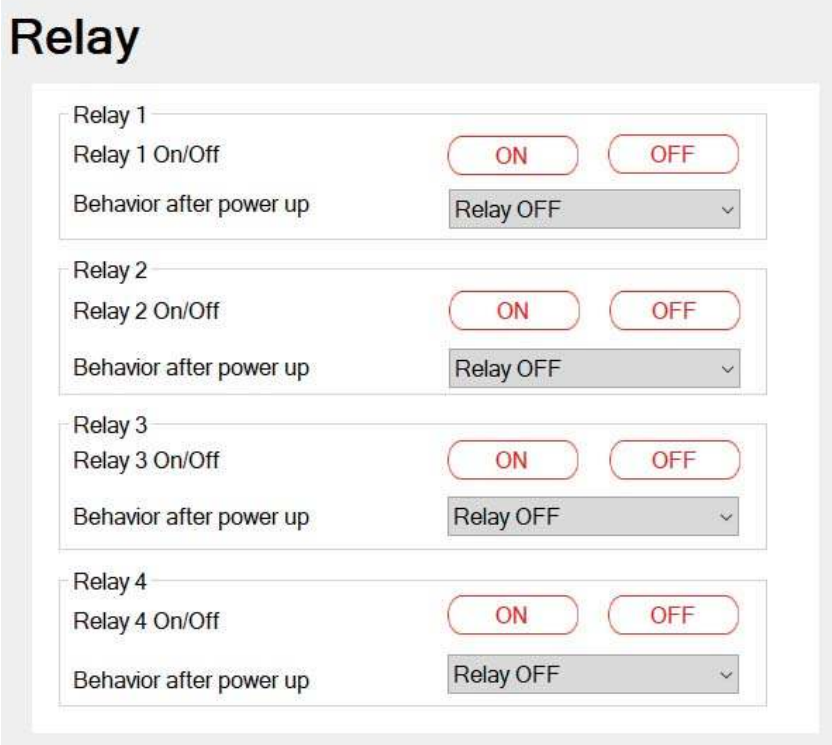


The following table shows a description of the relevant parameters：

Parameter	Value	Comment
Function	●go to level ●go to scene ●Relay on ●Relay off	When the type of combination output is lamp, you can choose go to level or go to scene, and the type of combination output is relay, you can choose relay on or relay off
Level	● 0~100%	Custom brightness values for combination output lamps. Select "Function" as "go to level" and this option is available.
scene	● scene 0~ scene 15	Custom scene for combination output lamps Select "Function" as "go to Scene" and this option is available.

4.3.8 Relay

In the relay interface, you can set the behavior after power up of the relay as on or off, or control the relay on/off action online.



The following table shows a description of the relevant parameters：

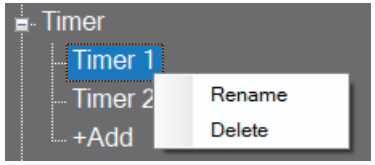
Parameter	Value	Comment
Relay 1-4	●ON ●OFF	●ON: the internal contact of the relay is closed; ●OFF: The internal contact of the relay is open.
behavior after power up	● Relay on ● Relay off	The behavior of the relay after power up.

4.3.9 Timer

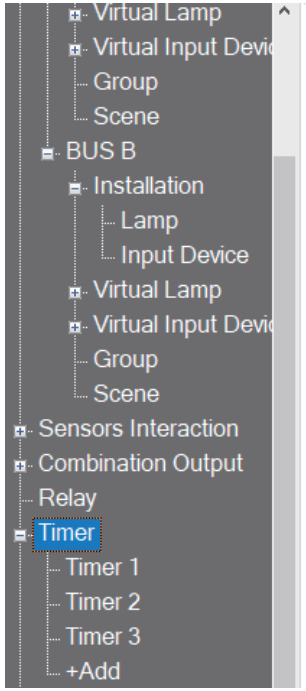
The built-in timer function of DLC-02 allows you to set corresponding action events according to different time. For example, during lunch break on weekdays, some or all lamps onDALI bus should be adjusted or switched off.

Click The "Add Timer" option to create a new timer event. Up to 255 timer events can be created.Click the right mouse button to "rename" and "delete" it.

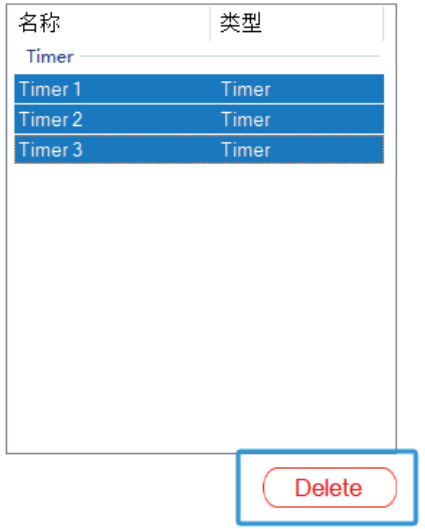
Note: Up to 24 characters are allowed for renaming.

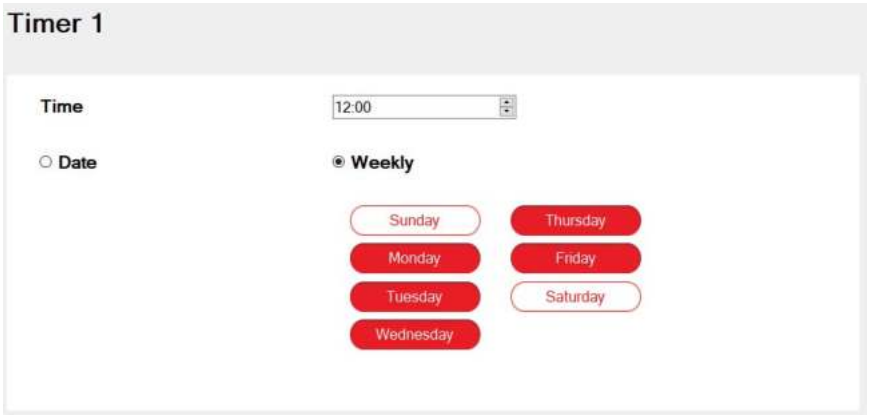


If you want to delete multiple timers at the same time, you can press and hold "Ctrl" on the "Timer" page, select multiple timers, and then click "Delete".



Timer batch deletion:





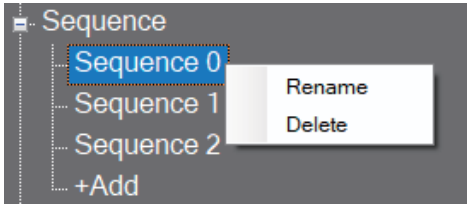
The following table shows a description of the relevant parameters：

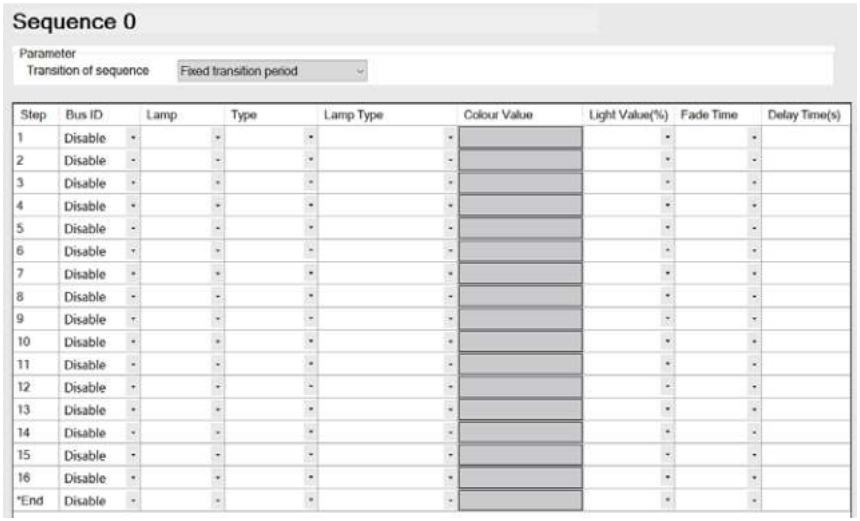
Parameter	Value	Comment
time	●00:00~23:59	Set the time of the timed event. Note: The action associated with the timing event and the output device can be set in the "Effect" interface
mode	● Date ● Weekly	●Date: Set the specific date to execute the timed event(single); ●Weekly: Set the day of the week to execute the timed event (loop)

4.3.10 Sequence

In the Sequence interface, you can set the brightness or colour of a single lamp or group at different times. Click the "Add Sequence" option to create new sequence events. Up to 8 sequences can be set. Each sequence can be set to 17 steps. Click the right mouse button to "rename" and "delete" it.

Note: Up to 24 characters are allowed for renaming.





The following table shows a description of the relevant parameters：

Parameter	Value	Comment
Transition of sequence	●Fixed transition period ●times	●Fixed transition period: Perform the set steps in sequence according to the set delay time, when there is no delay in the first step, it will be executed directly ●times: Execute according to the set HH: mm Run the sequence. If the current time has exceeded the set sequence number time, it will search for the closest time point between the "elapsed time" and the current time to execute
Step	● 1~*16	sequence run order
Bus ID	● Disable ● Bus A ● Bus B ● Relay	Select Disable, Bus A, Bus B, or Relay
Lamp	●LED 1~64 ●Group 0~15 ●Broadcast ●Relay1-4	Select the control object: specify lamp or group or broadcast to the bus When "Bus ID" is selected as "Relay", the optional control objects are Relay1~4.

Parameter	Value	Comment
Type	●Level ●Scene	This option is only available when 'Lamp' is not 'Relay'
Lamp type	●Normal Dimming ●Colour Temperature ●xy coordinate ●RGB ●RGBW	Select the colour type of the control object, and select it according to the colour type of the actually connected lamps.
Colour value	●RGB Colour ●RGBW Colour ●Colour temperature ●xy Colour	This option is only available when " Lamp type " is not selected as "Normal Dimming", which is used to set the colour of the controlled object
Light value （%）	●0~100%	Set the brightness of the controlled object
Fade time	●no change ●no fade · 0.7s · 1.0s · ...64.0s · 90.5s	Set the dimming fade time of the controlled object. ●no change: maintain the last dimming time
Delay time / HH:MM	●1-65535S ●0:00~23:59	When the "transition of sequence " is selected as " Fixed transition period ", this parameter is the delay time (1-65535). When " transition of sequence " is selected as "times", this parameter is hours: minutes
*END	------	"*End" means: After all loops of the sequence are completed, an end step is executed at the end. Assumption: After executing sequence 1, if you want to set the lamp to a certain brightness or colour, you can set it in "*End". Note: The number of cycles of the sequence is set in the "Effect" interface, which can be set to cycle 1 to 255 times or infinite times

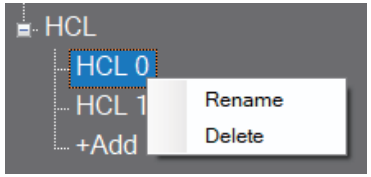
Note: Please refer to chapter 4.5 for an example of "Sequence" setting

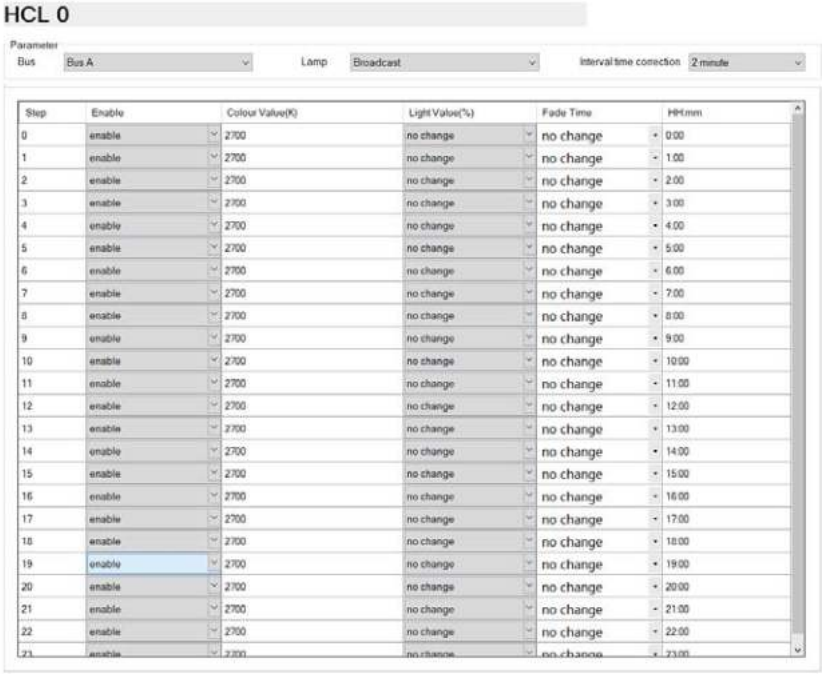
4.3.11 HCL (Human Centric Lighting)

The Human Centric Lighting function adjust brightness and color temperature based on time relationship, it can put people in a comfortable state.

●Click on the "+Add" option to create a new HCL, right click to 'rename' and 'delete' it

Note: The maximum length is 24 characters





The following table shows a description of the relevant parameters：

Parameter	Value	Comment
BUS	●Bus A ●Bus B	Select the bus that needs to be controlled
	●Broadcast ●Group 0~15 ●LED 1~64	●Broadcast：The controlled object is all the lamps of the selected Bus ●Group0~15 ●LED1~64
Interval time correction	●2 minute ●10 minute ●30 minute	Adjusting the interval time for color temperature and brightness. If the interval time is selected as 2 minutes, adjust the color temperature and brightness of the lamp every 2 minutes. For example, the interval time correction is selected as 2 minutes, the color temperature set at 12:00 is 2000K, and at 13:00 is 3000K, The color temperature per minute is (3000K-2000K)/60=16.7K, So every 2 minutes, the color temperature of the lamp increases by 16.7K * 2=33.4K, at 12:30, the output color temperature is: 2000K+30 * 16.7K=2501K.
Step	●1~23	Step No
Enable	●disable ●enable	Enable this step, if only one step is Enable and the rest are disabled, the HCL function will not work

Parameter	Value	Comment
Colour value	●1000~10000	The colour value of the corresponding time for this step
Light value	●0~100% ●no change	The light value of the corresponding time for this step
Fade time	●no change ●no fade，0.7s，1.0s，...64.0s，90.5s	Set the dimming fade time of the controlled object.
HH:MM	●0:00~23:00	hours: minutes

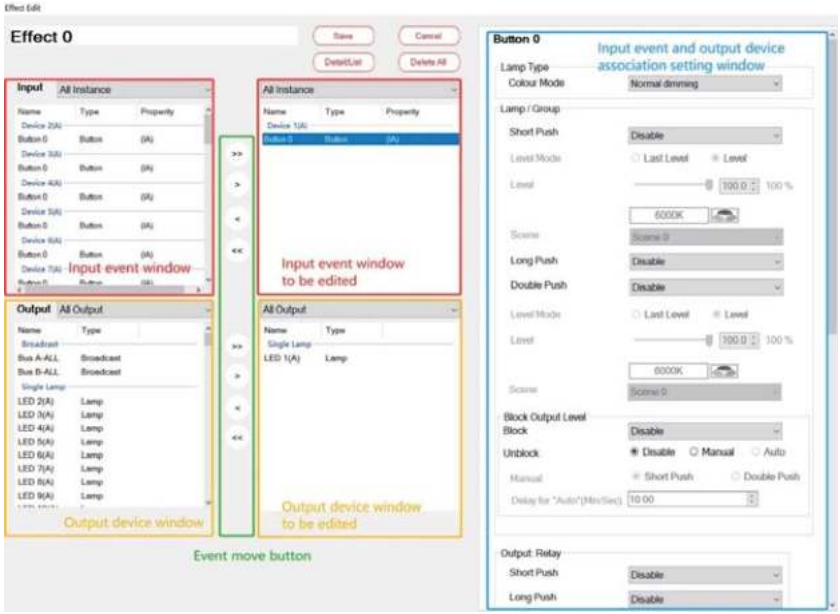
4.4 Effect

●Effects are the core function of DLC-02, used to edit the logical relationship between the controller device and the controlled device as well as the timing Settings. The entire light system will not work if it is not in use.

4.4.1 Effect List

● Click the effect icon in the shortcut bar, switch to the effect page, you can add, delete, edit the effect here.

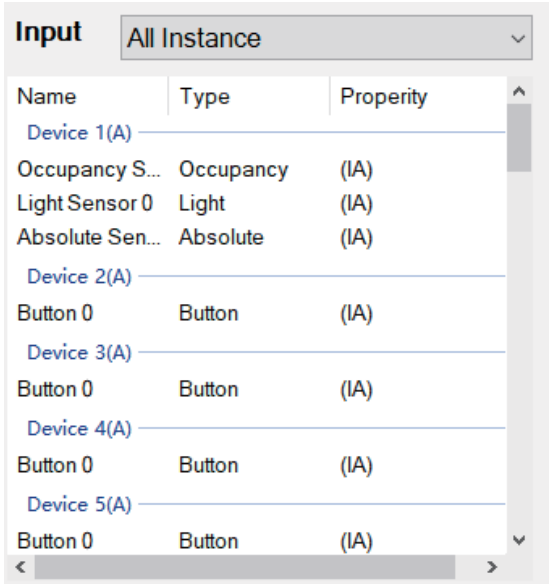
●In the edit effect page, you can select input devices and output devices to add to the current effect, so as to establish a connection relationship.



4.4.2 Effect Description

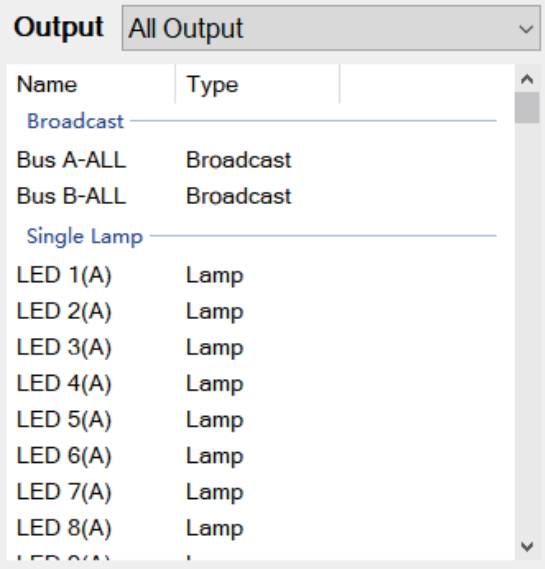
4.4.2.1 Input event window

Displays currently available input events. A specific input event can be displayed from a drop-down menu. Input events include buttons, sliders, Occupancy sensors and light sensors, which can be associated with the lamp and used as the control side in DALI.



4.4.2.2 Output device window

The current available output devices are displayed. Specific output devices can be displayed via the drop-down menu. In the DALI system, they act as controlled devices.

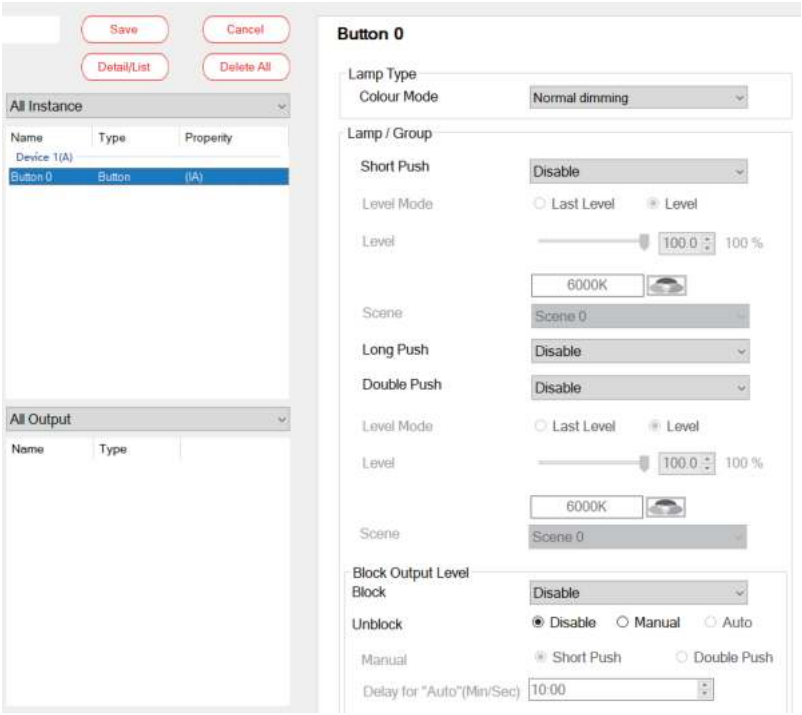


4.4.2.3 Event Move button

» : Move all input events or output devices to the edit window
› : Move the selected input event or output device to the edit window
‹ : Move the selected input events or output devices out of the edit window
« : Remove all input events or output devices from the edit window

4.4.3 Input event: Button

Set Buttons to control lamps, relays and sequence events. When a Button is selected, the following parameter appears：



The following table shows a description of the relevant parameters：

Parameter	Value	Comment
Lamp type	●Normal Dimming Choose a driver type ●Colour temperature ●xy coordinate ●Colour RGB ●Colour RGBW	Choose a driver type

<table>
<tr><th>Parameter</th><th>Value</th><th>Comment</th></tr>
<tr><td rowspan="3">Lamp/Group:
Short push</td><td>●Disable
●Off
●Go to level
●Go to scene
●Toggle (level and off)
●Toggle (scene and off)</td><td rowspan="3">●Disable: Disable short push function to control lamps.
●Off: The associated lamp is turned off.
●Go to level: The brightness of the associated fixture is adjusted to the custom dimming value.
●Go to scene: Trigger a custom scene.
●Toggle (level and off): Short push to switch the brightness of the associated lamp between custom dimming value and lamp off.
That is, a short push, the brightness of the lamp is adjusted to the custom dimming value, and then a short push, the lamp is turned off.
Note: The operation logic of flipping (level and off) is to first send the "QUERY LAMP POWER ON" command to query whether any of the lamps/groups/ broadcasts to be controlled is on. If there are lamps in the ON state, execute the "OFF" command, otherwise, execute the DAPC (level) dimming command. If one of the lamps is set to Fade time of 90.5s, the entire OFF time is the longest time. If you operate the broadcast at this time, there will be no response. Need to wait for Fade time.</td></tr>
<tr><td>When the colour type of the lamp is Colour temperature, the following parameters will be added
●Go to level and Tc
●Go to Tc
●Toggle (level/Tc and off)</td></tr>
<tr><td>When the colour type of the lamp is “xy coordinate” or “Colour RGB” or “Colour RGBW”,the following parameters will be added
●Go to level and Colour
●Go to Colour
●Toggle (level/ Colour and Off)</td></tr>
</table>

<table>
<tr><th>Parameter</th><th>Value</th><th>Comment</th></tr>
<tr><td rowspan="3">Lamp/Group:
Short push</td><td>●Disable
●Off
●Go to level
●Go to scene
●Toggle (level and off)
●Toggle (scene and off)</td><td rowspan="3">●Toggle (scene and off): Short push, the brightness of the associated lamp switches between custom scenes and lamp off. That is, a short push, the brightness of the lamp is adjusted to the custom scene, and then a short push, the lamp is turned off.
●Go to level and Tc: Short push to adjust the lamp to custom brightness and colour temperature.
●Go to Tc: Short push to adjust the lamp to custom colour temperature.
●Toggle (level/Tc and off): Short push to adjust the lamp to custom brightness and colour temperature, short push again to turn off the lamp.
●Go to level and Colour: Short push to adjust the lamp to custom brightness and colour.
●Go to Colour: Short push to adjust the lamp to colour.
●Toggle (level/Colour and Off): Short push to adjust the lamp to custom brightness and colour, short push again to turn off the lamp.
Note: Before using the short push function, you need to enable the short push event.
For details, please refer to Chapter 4.3.3.4 "button".</td></tr>
<tr><td>When the colour type of the lamp is Colour temperature, the following parameters will be added
●Go to level and Tc
●Go to Tc
●Toggle (level/Tc and off)</td></tr>
<tr><td>When the colour type of the lamp is “xy coordinate” or “Colour RGB” or “Colour RGBW”,the following parameters will be added
●Go to level and Colour
●Go to Colour
●Toggle (level/ Colour and Off)</td></tr>
</table>

Parameter	Value	Comment
Level Mode	●last Level ●Level	Define whether the brightness value of the short push is a custom brightness value or the last brightness value (excluding 0%) · This option is only available when the "Doublet push" selects "Go to level" or "Toggle(Level and Off)".
Level	●0~254 When the colour type of the lamp is "colour temperature" or "xy coordinate" or "Colour RGB" or "Colour RGBW", the following parameters will be added	This option is only available when the "short push" selects "Go to level" or " Toggle(Level and Off) "
scene	●Scene 0~ scene 15	This option is only available when "short push" is selected as "Go to scene" or "Toggle (scene and off)"

Parameter	Value	Comment
Lamp/Group: Long push	●disable ●dimming ●dimming up ●dimming down ●dimming (enable on/off) ●dimming up (off to on) ●dimming down (dim to off)	●disable: Disable long push to control lamps. ●dimming: Long push, dim up or down alternately, you cannot turn on or off the lamp through this command. ●dimming up: Long push to dim up, the lamp cannot be turned on by this command. ●dimming down: Long push to dim down, the lamp cannot be turned off by this command. ●dimming (enable on/off)： Long push, dim up or down alternately, you can turn on or off the lamp through this command. ●dimming up (off to on): Long push to dim up, the lamp can be turned on by this command. ●dimming down (dim to off)： Long push to dim down, the lamp can be turned off by this command. ●change Tc: Long push to adjust cool or warm colour temperature. ●colder: Long push to cool the colour temperature. ●warmer: Long push to warm up the colour temperature. ●dim to warm: Long push to adjust cool or warm colour temperature. However, the warmer the colour temperature, the lower the brightness; the cooler the colour temperature, the higher the brightness. ●Diming x: Increase or decrease the x value ●Diming y: Increase or decrease the y value
	When the colour type of the lamp is Colour temperature, the following parameters will be added. ●change Tc ●colder ●warmer ●dim to warm	
	When the colour type of the lamp is "xy coordinate", the following parameters will be added. ●Diming x ●Diming y	

Parameter	Value	Comment
Lamp/Group: Long push	When the colour type of the lamp is "colour RGB" or "colour RGBW", the following parameters will be added. ●change red ●red increase ●red decrease ●change green ●green increase ●green decrease ●change blue ●blue increase ●blue decrease ●change white ●white increase ●white decrease ●RGB circle	●change red: Long push to increase or decrease the brightness of red. ●red increase: Long push to increase the brightness of red. ●red decrease: Long push to decrease the brightness of red. ●change green: Long push to increase or decrease the brightness of green. ●green increase: Long push to increase the brightness of green. ●green decrease: Long push to decrease the brightness of green. ●change blue: Long push to increase or decrease the brightness of blue. ●blue increase: Long push to increase the brightness of blue. ●blue decrease: Long push to decrease the brightness of blue. ●change white: Long push to increase or decrease the brightness of white. ●white increase: Long push to increase the brightness of white. ●white decrease: Long push to decrease the brightness of white. ●RGB circle: Long push to cycle through RGB colours.(Over 32 different colours)

Parameter	Value	Comment
Lamp/Group: Double push	●Disable ●Off ●Go to level ●Go to scene ●Lock motion detection ●Unlock motion detection	●Disable: Disable short push function to control lamps. ●Off: The associated lamp is turned off. ●Go to level: The brightness of the associated fixture is adjusted to the custom dimming value. ●Go to scene: Trigger a custom scene. ●Lock motion detection: Short push, this lamp does not respond to the command of the motion sensor. ●Unlock motion detection: Short push, this lamp responds to the command of the motion sensor. ●Go to level and Tc: Short push to adjust the lamp to custom brightness and colour temperature. ●Go to level and Colour: Short push to adjust the lamp to custom brightness and colour.
	When the colour type of the lamp is Colour temperature, the following parameters will be added. ●Go to level and Tc	
	When the colour type of the lamp is "xy coordinate" or "Colour RGB" or "Colour RGBW", the following parameters will be added. ●Go to level and Colour	
Level Mode	●last Level ●Level	Define whether the brightness value of the double push is a custom brightness value or the last brightness value (excluding 0%) This option is only available when the "Doublet push" selects "Go to level"

Parameter	Value	Comment
Level	When the colour type of the lamp is "colour temperature" or "xy coordinate" or "Colour RGB" or "Colour RGBW", the following parameters will be added	This option is only available when the "Doublet push" selects "Go to level"
scene	●Scene 0~ scene 15	This option is only available when "Double push" is selected as "Go to scene".
Block	●Disable ●Short push ●Double push	●Disable: Disable block function。 ●Short push：Short push to block the status of the device in the 'Output' column and cannot be changed. ●Double push：double push to block the status of the device in the 'Output' column and cannot be changed. For example, 1. Add "Lamp A0" in the output column. If the blocking function is enabled, the "Lamp A0" in the output column will be locked, and the other 'Effects' cannot control ' Lamp A0 '. for example, configure two effects, Effect1 and Effect2; after Effct1 locks "Lamp A0", and Effct2 cannot control "Lamp A0", However, if Effect3 is configured to control "broadcast/group" dimming, "Lamp A0" in this group will respond to the dimming action of Effect3.

Parameter	Value	Comment
Block	●Disable ●Short push ●Double push	2.Add "broadcast" to the output column. If the blocking function is enabled the "broadcast" in the output column will be locked and other "effects" will not be able to directly control the dimming of the "broadcast", But the bus lamps can be controlled through the "Lamp Address/Group" function of the Effect. 3. Add "Sequence" to the output column, if the blocking function is enabled, the "Sequence" status of the output column will be locked, The Sequence will not continue to run, and it cannot be stopped or started. After unblocking, if the Sequence is already in the start state, it will continue to run. 4. Add "HCL" to the output column, if the blocking function is enabled, the "HCL" status of the output column will be locked, HCL will not continue to run and cannot be stopped or started. After unblocking, if HCL is already in the start state, it will continue to run.

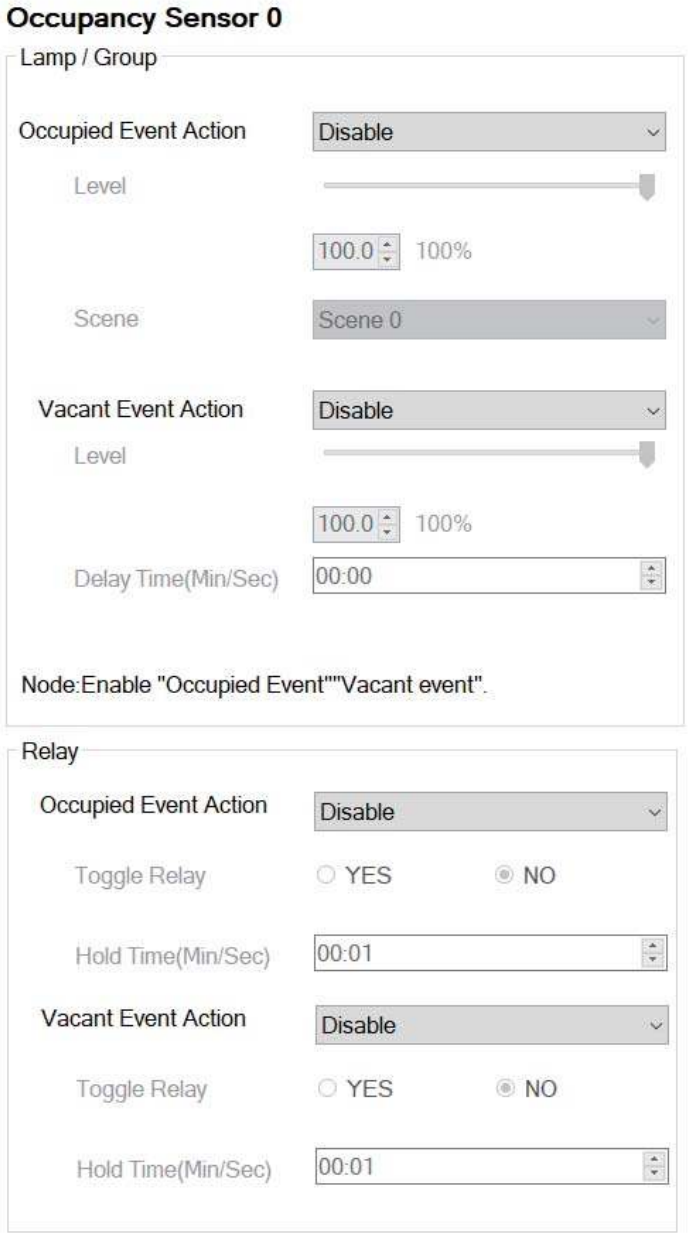
Parameter	Value	Comment
Unblock	●Disable ●Manual ●Auto	●Disable: Disable unblock function ●Manual: Manual unblocking function ●Auto: Automatic unblocking function
Manual	●Short push ●Double push	When the parameter "Unblock" is selected as "Manual", a short push or double push appears to release the block function
Delay for Auto (min/sec)	1sec~ 59min：59sec	Appears when the parameter "Unblock" is selected as "Manual", Automatically unlock according to the set delay time
Relay: Short push	●disable ●relay on ●relay off ●relay toggle	●disable: Disable short push to control relay. ●relay on: Short push to open the relay. ●relay off: Short push to close the relay. ●relay toggle: With a short push, the associated relay toggles between "on" and "off". That is, with a short push, the relay is on, then a short push, the relay is off.
Relay: Long push	●disable ●relay on ●relay off ●relay toggle	●disable: Disable long push to control relay. ●relay on: Long push to open the relay. ●relay off: Long push to close the relay. ●relay toggle: With a Long push, the associated relay toggles between "on" and "off". That is, with a long push, the relay is on, then a long push, the relay is off.

Parameter	Value	Comment
Relay: Double push	●disable ●relay on ●relay off ●relay toggle	●disable: Disable double push to control relay. ●relay on: Double push to open the relay. ●relay off: Double push to close the relay. ●relay toggle: With a double push, the associated relay toggles between "on" and "off". That is, with a double push, the relay is on, then a double push, the relay is off.
Sequence: Short push	●disable ●Sequence start ●Sequence stop ●Sequence toggle	●disable: Disable short push to control sequence. ●Sequence start: Short push to start sequence. ●Sequence stop: Short push to stop sequence ●Sequence toggle: Short push to start or stop sequence. That is, with a short push, the sequence is executed, then a short push, the sequence is stopped.
Sequence: Double push	●disable ●Sequence start ●Sequence stop ●Sequence toggle	●disable: Disable double push to control sequence. ●Sequence start: Double push to start sequence. ●Sequence stop: Double push to stop sequence ●Sequence toggle: Double push to start or stop sequence. That is, with a double push, the sequence is executed, then a double push, the sequence is stopped.
Cycles	●Non-stop ●times	●Non-stop: Repeating the sequence all the time. ●times: Limit the number of sequence loops, which can be limited to 1-255 times.

Parameter	Value	Comment
Reaction on stop	●stop immediately ●complete the cycle	●stop immediately: Immediately stop the current operation after receiving the command "Sequence stop"; ●complete the cycle: After receiving the command "Sequence stop", it will stop after completing the current cycle.
Combination Output: Short push	●Disable ●Combination Output start	●Disable: Disable Combination Output ●Combination Output start: Short push to start the combination output
Combination Output: Double push	●Disable ●Combination Output start	●Disable: Disable Combination Output ●Combination Output start: Double push to start the combination output
HCL: Short push	●Disable ●HCL start ●HCL stop	●Disable: Disable HCL ●HCL start: Short push to start the HCL. ●HCL stop: Short push to stop the HCL.
HCL Double push	●Disable ●HCL start ●HCL stop	●Disable: Disable HCL ●HCL start: Double push to start the HCL. ●HCL stop: Double push to stop the HCL.

4.4.4 Input events: Occupancy sensor

Set the Occupancy sensor to control lamps or relays. If occupancy sensor is selected, the following parameter appears：



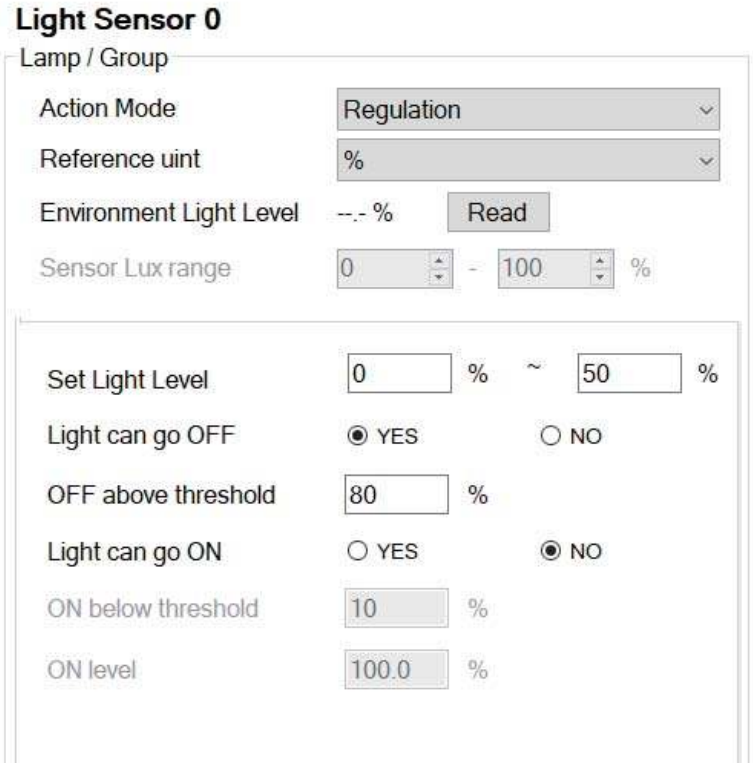
The following table shows a description of the relevant parameters：

Parameter	Value	Comment
Lamp/group: Occupy Event Action	●Disable ●Off ●Go to level ●Go to last level ●Go to scene	●Off: Turn off the lamps When someone is detected ●go to level: When someone is detected, the associated lamp dims to a custom brightness value. ●Go to last level: When someone is detected, the associated lamp dims to the previous brightness value. ●Go to scene: When someone is detected the associated lamps trigger a custom scene
Lamp/group: Level	●0~100%	Custom dimming values for occupancy sensors This option is only available when " Occupy Event Action " is selected as "Go to Level"
Lamp/group: Scene	●Scene 0-Scene 15	Customized scenarios for occupancy sensors This option is only available when " Occupy Event Action " is selected as "Go to Level"
Lamp/group: Vacant Event Action	●Disable ●OFF ●Go to level ●Go to last level	●Disable ●OFF: After detecting a vacant event, turn off the lamps ●Go to level: Dim the lamps to the customized brightness after detecting the Vacant event ●Go to last level: Dim to the previous brightness value after detecting the Vacant event
Delay Time (Min/Sec)	●00:00~59:59 (Min/Sec)	Appears when the parameter " Vacant Event Action " is selected as "OFF", When the Vacant Event Action is triggered, turn off the lamps after a delay of "hold time"

Parameter	Value	Comment
Relay: Occupied Event Action	●Disable ●Relay ON ●Relay OFF	●Disable ●Relay ON: When someone is detected, open associated relay ●Relay OFF: When someone is detected, close associated relay.
Toggle relay	●YES ●NO	●YES: Within the set time, the relay returns to its original state. ●NO: After the sensor detects the action, the relay will be turned on or off and then keep this state.
Hold time (Min/Sec)	●00:00~59:59 (Min/Sec)	This option is only available when "yes" is selected for "Toggle relay", which means that when sensor detects the action, the relay will be turned on or off, and the original state will be restored after a delay of "hold time".
Relay: Vacant Event Action	●Disable ●Relay ON ●Relay OFF	●Disable ●Relay ON: When “Vacant Event Action” is detected, open associated relay. ●Relay OFF: When “Vacant Event Action” is detected, close associated relay.
Toggle relay	●YES ●NO	●YES: Within the set time, the relay returns to its original state. ●NO: After the sensor detects the action, the relay will be turned on or off and then keep this state.
Hold time (Min/Sec)	●00:00~59:59 (Min/Sec)	This option is only available when "yes" is selected for "Toggle relay", which means that when sensor detects the action, the relay will be turned on or off, and the original state will be restored after a delay of "hold time".

4.4.5 Input event: Light sensor

Control the lamps to maintain the target brightness range set by the Light sensor to achieve constant brightness.
There are three action modes for the Light sensor: Regulation、Step Changing and sunlight follow. When the action mode is selected as "Regulation", the following parameters will appear:

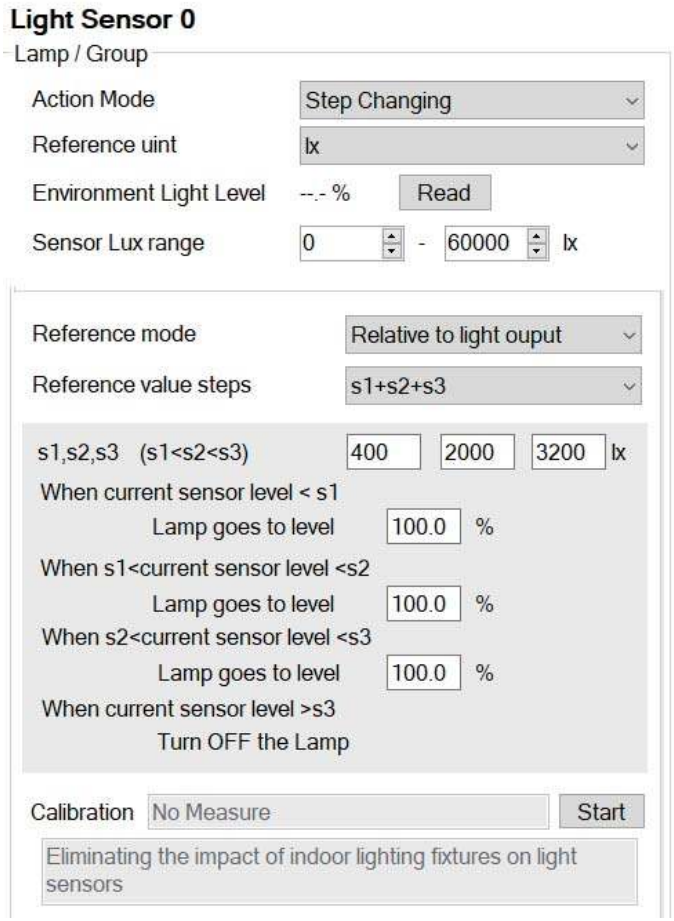


The following table shows a description of the relevant parameters：

Parameter	Value	Comment
Sensor mode	●Disable ●Regulation ●Step Changing ●sunlight follow	●Select action mode
Reference unit	●% ●lx	●%：Convert the value returned by the light sensor into 0-100% ●Lx: Convert the value returned by the light sensor into lux

Parameter	Value	Comment
Environment light level		The percentage or illuminance value of brightness collected by the light sensor.
Sensor Lux range	●0~60000 lx	Appears when 'lx' is selected for 'Reference unit'. Set the lux range of the light sensor, which will be marked in the manual of the sensor
Set Light Level	●x~y	Set the maintain brightness value, where x represents the upper limit of maintain brightness value and y represents the lower limit of maintain brightness value.
Light can go OFF	●YES ●NO	●YES: Able to turn off the lamps ●NO: Unable to turn off the lamps
OFF above threshold	●0~59900 lx ●0~97%	When selecting 'Yes' for' Light can go OFF ', the value of the light sensor is above this threshold, turn off the lamp
Light can go ON	●YES ●NO	●YES: Able to turn on the lamps ●NO: Unable to turn on the lamps
OFF below threshold	●0~59900 lx ●0~97%	When selecting 'Yes' for' Light can go ON ', the value of the light sensor is below this threshold, turn on the lamp
ON Level	------	When the value of the light sensor is below this threshold, the brightness value when the light is turned on.

When the action mode is selected as "Step Changing", the following parameters will appear:

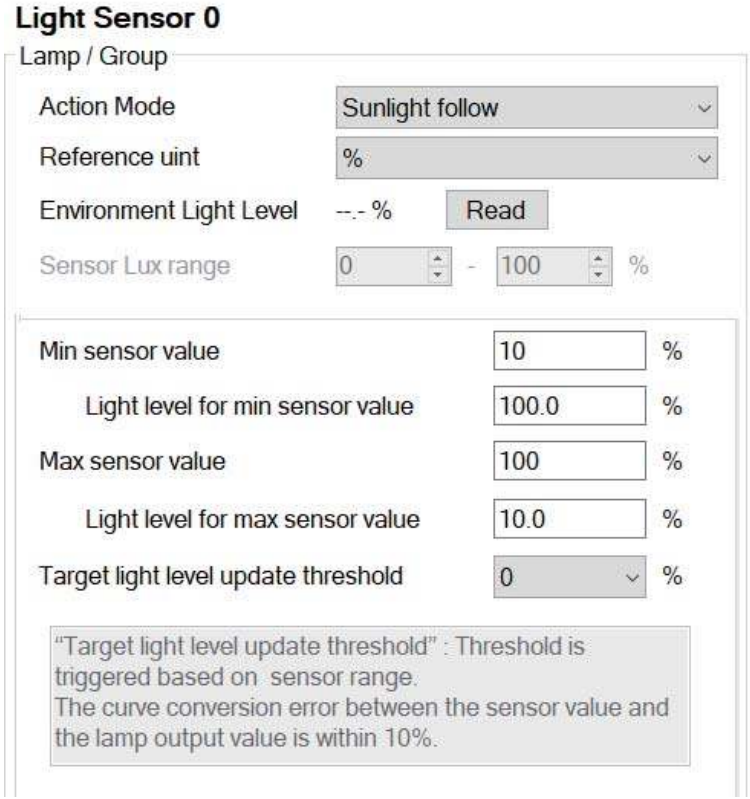


The following table shows a description of the relevant parameters :

Parameter	Value	Comment
Sensor mode	●Disable ●Regulation ●Step Changing ●sunlight follow	●Select action mode
Reference unit	●% ●lx	●% : Convert the value returned by the light sensor into 0-100%. ●Lx: Convert the value returned by the light sensor into lux

Parameter	Value	Comment
Environment light Level		The percentage or illuminance value of brightness collected by the light sensor.
Sensor Lux range	●0~60000 lx	Appears when 'lx' is selected for 'Reference unit'. Set the lux range of the light sensor, which will be marked in the manual of the sensor
Reference mode	●Relative to light output ●Absolute sensor value	●Relative to light output: When the sensor is installed indoors, click "Calibrate" after installing the lamp ●Absolute sensor value: Used when installing sensors outdoors
Reference value steps	●S1 ●S1+S2 ●S1+S2+S3	Number of steps
s1, s2, s3 (s1<s2<s3)	●1~100% ●1~100% ●1~100%	Set a light sensor action value for each step S1、S2 and S3
When current sensor level <s1 Lamp goes to level	●1~100%	When current sensor level is less than S1, the light level of the associated lamp.
When s1< current sensor level <s2 Lamp goes to level	●1~100%	When current sensor level is between s1 and s2, the light level of the associated lamp.
When s2< current sensor level <s3 Lamp goes to level	●1~100%	When current sensor level is between s2 and s3, the light level of the associated lamp.
When current sensor level > s1 Turn OFF the Lamp	------	When current sensor level is higher than s3,turn OFF the associated lamp.
Calibration	------	Appears when 'Reference mode' is selected as' Relative to light output'. Eliminating the impact of indoor lighting fixtures on light sensors.

When the action mode is selected as "sunlight follow", the following parameters will appear:



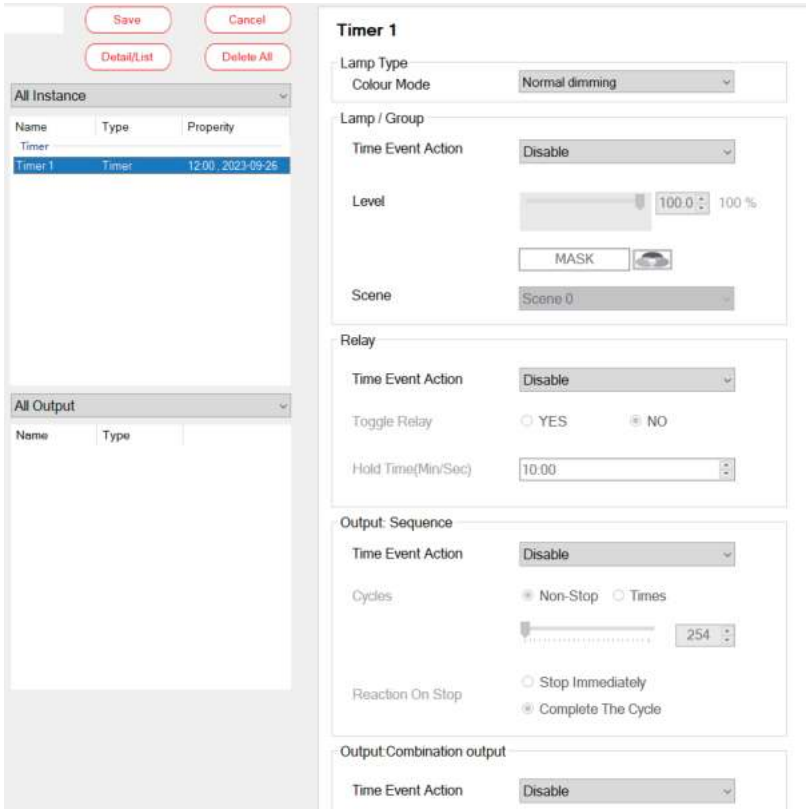
The following table shows a description of the relevant parameters：

Parameter	Value	Comment
Sensor mode	●Disable ●Regulation ●Step Changing ●sunlight follow	●Select action mode
Reference unit	●% ●lx	●%：Convert the value returned by the light sensor into 0-100%. ●Lx: Convert the value returned by the light sensor into lux

Parameter	Value	Comment
Environment light Level		The percentage or illuminance value of brightness collected by the light sensor.
Sensor Lux range	●0~60000 lx	Appears when 'lx' is selected for 'Reference unit'. Set the lux range of the light sensor, which will be marked in the manual of the sensor
Min sensor value	●0~60000 lx ●0~100%	When the current value of the light sensor is less than the "Min sensor value", set the brightness value of the lamp to the " Light level for min sensor value "For example, setting the " Min sensor value " to 10% and 'Light level for min sensor value 'to 50%; When the current value of the light sensor is less than or equal to 10%, adjust the brightness of the associated lamp to 50%;
Light level for min sensor value	●0~100%	When the current value of the light sensor is less than the "Min sensor value",the brightness value of the associated lamp
Max sensor value	●0~60000 lx ●0~100%	When the current value of the light sensor is higher than the "Max sensor value",set the brightness value of the lamp to the " Light level for max sensor value " For example, setting the " Max sensor value " to 90% and 'Light level for max sensor value ' to 10%; When the current value of the light sensor is higher than or equal to 90%, adjust the brightness of the associated lamp to 10%;
Light level for max sensor value	●0~100%	When the current value of the light sensor is higher than the "Max sensor value",the brightness value of the associated lamp

Parameter	Value	Comment
Target light level update threshold	●0% ●5% ●10% ●15% ●20% ●25% ●0 lx ●100 lx ●200 lx ●300 lx ●400 lx ●500 lx	If the value of the light sensor exceeds the threshold, the lamp will be dimmed

4.4.6 Input event: Timer



The following table shows a description of the relevant parameters :

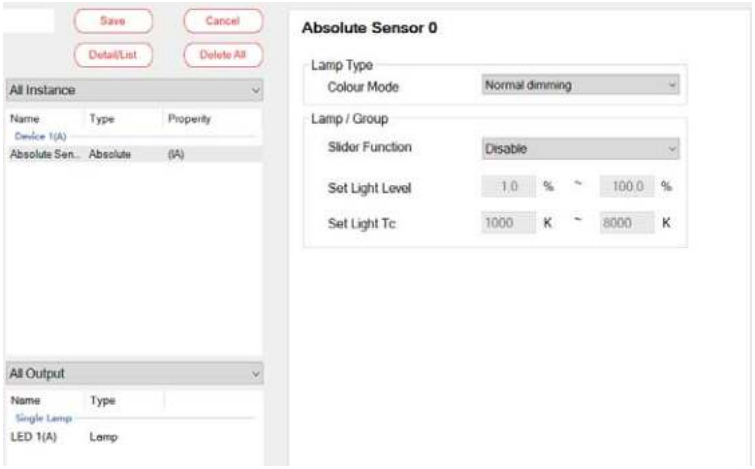
Parameter	Value	Comment
Colour Temperature Tc Step Increment	●Normal Dimming ●Colour temperature ●xy coordinate ●Colour RGB ●Colour RGBW	Choose a colour type
Lamp/group: Timer event action	●disable ●OFF ●go to level (only normal dimming type) ●go to scene ●go to level and Tc (only Colour temperature) ●go to level and colour (except normal dimming type)	●disable: Disable timed events to control lamps. ●OFF: After the timed event is triggered, the associated lamp is turned off. ●go to level: After the timing event is triggered, the brightness of the associated lamp is adjusted to the custom dimming value. ●go to scene: After the timed event is triggered, the custom scene is triggered. ●go to level and Tc ●go to level and colour: After the timing event is triggered, the brightness and colour temperature of the associated lamp are adjusted to custom values.
Lamp/group: level	●0~254 When the colour type of the lamp is "colour temperature" or "xy coordinate" or "Colour RGB" or "Colour RGBW" , the following parameters will be added	This option is only available when "Time Event Action" is selected as "go to level" or "go to level and xx". After a timed event is triggered, the lamp is adjusted to a custom brightness or colour.

Parameter	Value	Comment
Lamp/group: scene	●Scene 0 ~ scene 15	This option is only available when "Time Event Action" is selected as "go to scene". After the timing event is triggered, the lamp is set to a certain scene.
Relay: Time event action	●disable ●relay on ●relay off ●relay toggle	●disable: Disable timed event to control relays. ●relay on: When the timed event is triggered, the relay is turned on. ●relay off: After the timed event is triggered, the relay is turned off. ●relay toggle: Change the state of the relay after a timed event is triggered.
Relay: toggle relay	●YES ●NO	●YES: Within the set time, the relay returns to its original state. ●NO: After the timed event is triggered, the relay will be turned on or off and then keep this state.
Hold time (min/sec)	●00:00~59:59 (min/sec)	This option is only available when "yes" is selected for "Toggle relay", which means that when the timed event is triggered, the relay will be turned on or off, and then the original state will be restored after a delay of "hold time".
Sequence: time event action	●disable ●Sequence start ●Sequence stop	●disable: Disable timed events to control the sequence. ●Sequence start: After the timed event fires, run the sequence. ●Sequence stop: After the timed event fires, stop the sequence.
Cycles	●Non-stop ●times	●Non-stop: Repeating the sequence all the time ●times: Limit the number of sequence loops, which can be limited to 1-255 times.

Parameter	Value	Comment
Reaction on stop	●stop immediately ●complete the cycle	●stop immediately: Immediately stop the current operation after receiving the command "Sequence stop"; ●complete the cycle: After receiving the command "Sequence stop", it will stop after completing the current cycle.
Combination Output: Time Event Action	●Disable ●Combination Output Start	●Disable: Disable timed events to control the Combination Output ●Combination Output Start: After the timed event fires, start the Combination Output
HCL Time Event Action	●Disable ●HCL Start ●HCL Stop	●Disable: Disable timed events to control the HCL ●HCL Start: After the timed event fires, start the HCL. ●HCL Stop: After the timed event fires, stop the HCL.

4.4.7 Input event: Absolute instance

Set the absolute instance to control the brightness and colour of the lamp. When an absolute instance event is selected, the following parameter will appear:



The following table shows a description of the relevant parameters：

Parameter	Value	Comment
Colour mode	●Normal Dimming Choose a driver type. ●Colour temperature ●xy coordinate ●Colour RGB ●Colour RGBW	Choose a driver type.

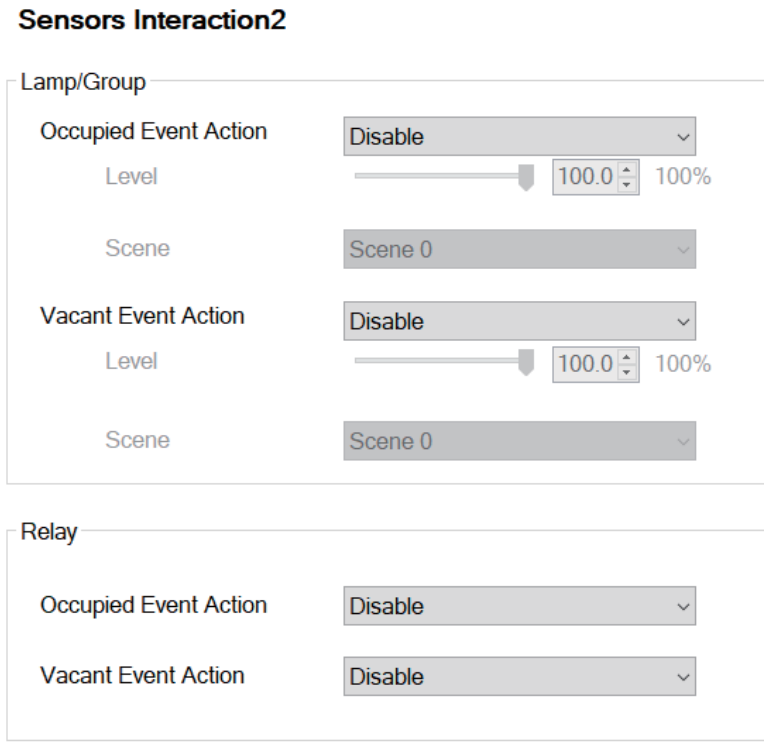
Parameter	Value	Comment
Slider function	●disable ●slider level ●slider Tc (only colour temperature) ●slider x (only xy coordinate) ●slider y (only xy coordinate) ●slider red (only Colour RGB\ Colour RGBW) ●slider green (only Colour RGB\ Colour RGBW) ●slider blue (only Colour RGB\ Colour RGBW) ●slider RGB (only Colour RGB\ Colour RGBW) ●slider white (Colour RGBW)	●disable: Disable sliders to control lamp. ●slider level: Used to set brightness. ●slider Tc: Used to set colour temperature. ●slider x: Used to set the x colour(0~0.8). ●slider y: Used to set the y colour(0~0.8). ●slider red: Used to set the red (0-100%). ●slider green: Used to set the green (0-100%). ●slider blue: Used to set the blue (0-100%). ●slider RGB: Used to set RGB (Over 32 different colours). ●slider white: Used to set the white(0-100%).
Set light level	●0.1%-100.0%	Set Limited dimming sliding range
Set light Tc	●1000-10000K	Set Limited colour temperature sliding range.

4.4.8 Input event: Sensors Interaction

Sensors Interaction has two modes: "Occupancy Array" and "Light regulation when occupied"

4.4.8.1 Occupancy Array

By setting the " Occupancy Array " through the effect, the lamp or relay can be controlled to perform specified actions. When the Sensors Interaction is selected as "Occupancy Array", the following parameters will appear:

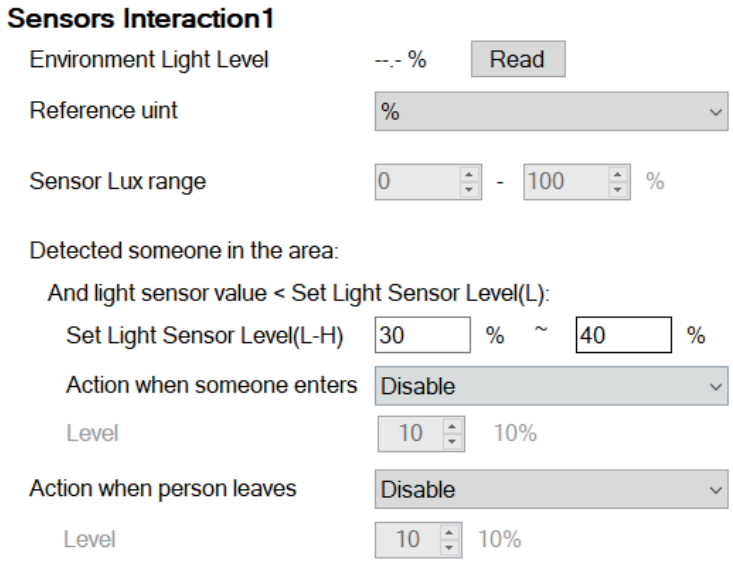


The following table shows a description of the relevant parameters :

Parameter	Value	Comment
Occupied Event Action	●Disable ●OFF ●Go to level ●Go to last level ●Go to scene	●Disable: ●Off: Turn off the lamps when someone is detected. ●go to level: When someone is detected,Adjust the associated lamps to a custom brightness value. ●Go to last level: When someone is detected, Adjust the associated lamps to a custom brightness value the associated lamp dims to the previous brightness value. ●Go to scene: When someone is detected the associated lamps trigger a custom scene
Level	●0~100%	Custom brightness values for "Sensors Interaction" Select " Occupied Event Action " as "go to level" and this option is available.
Scene	●scene 0~ scene 15	Custom brightness values for "Sensors Interaction" Select " Occupied Event Action " as "go to level" and this option is available.
Relay: Occupied Event Action	●Disable ●Relay ON ●Relay OFF	●Disable ●Relay ON: When someone is detected, open associated relay ●Relay OFF: When someone is detected, close associated relay.
Relay: Vacant Event Action	●Disable ●Relay ON ●Relay OFF	●Disable ●Relay ON: When "Vacant Event Action" is detected, open associated relay. ●Relay OFF: When "Vacant Event Action" is detected, close associated relay.

4.4.8.2 Light regulation when occupied"

By setting the " Light regulation when occupied " through the effect, the lamp or relay can be controlled to perform specified actions. When the Sensors Interaction is selected as "Light regulation when occupied", the following parameters will appear:



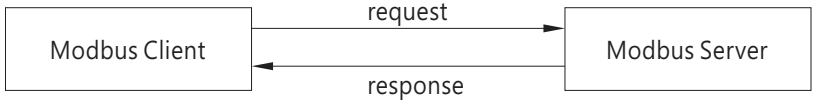
The following table shows a description of the relevant parameters :

Parameter	Value	Comment
Environment light Level	------	The percentage or illuminance value of brightness collected by the light sensor.
Reference unit	●% ●lx	●% : Convert the value returned by the light sensor into 0-100%. ●Lx: Convert the value returned by the light sensor into lux
Sensor Lux range	●0~60000 lx	Appears when 'lx' is selected for 'Reference unit'. Set the lux range of the light sensor, which will be marked in the manual of the sensor

Parameter	Value	Comment
Set light sensor level(L-H)	●0~60000 Lx ●0~100%	Triggered when someone is present in the area and the "Environment light Level" is less than "Set light sensor level(L-H)". The DLC-02 controller will maintain the Environment light value within the range set by the "Set light sensor level (L-H)".
Action when someone enter	●Disable ●Go to level	●Disable ●Go to level: when someone is present in the area and the "Environment light Level" is less than "Set light sensor level(L-H)". adjust to the custom brightness value.
Level	●0~100%	Custom brightness value when someone is present in the area and the "Environment light Level" is less than "Set light sensor value(L)".
Action when person leaves	●Disable ●OFF ●Go to level	●Disable ●OFF: Turn off lamps when someone is detected leaving. ●Go to level: When someone is detected leaving, adjust to the custom brightness value.
Level	●0~100%	Custom brightness value when someone is detected leaving.

5.Modbus TCP interface

This device supports Modbus TCP communication interface. When transmitting data, all Word data must comply with the High Byte transmission principle. The external software (Client) can use this interface to control and monitor THE DLC-02(Server), including the minimum brightness level, maximum brightness level, system power-on behavior, dimming time and other DALI instructions.



IP address: Refer to section 4.1.3 or 6.4.2, communication port: 502

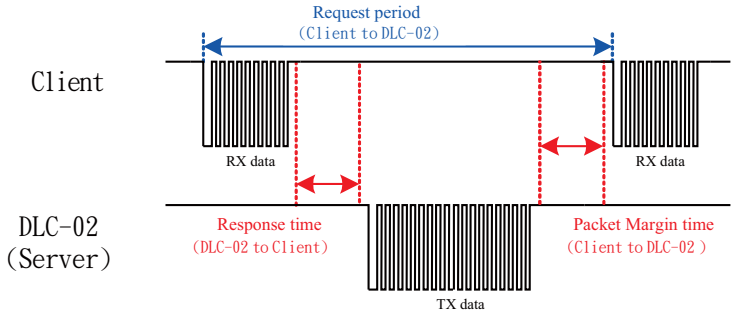
5.1 Communication Timing

Min. request period (Client to DLC-02(Server)): 100mSec。

Max. response time (DLC-02(Server) to Client):

a) The maximum response time between registers 40001 and 40006 and registers 30001 to 30004 shall be determined according to DALI instruction sending time.
b) The maximum response time of registers 41001 to 41004 shall be determined according to DALI instruction sending time.
c) The maximum response time of registers 42001 to 42002 and registers 32001 to 32004 shall be determined according to DALI instruction sending time.
d) The maximum response time of other registers is 20 mSec.
Min. packet margin time (Client to DLC-02(Server)): 20mSec.

Min. packet margin time (Client to DLC-02(Server)): 20mSec.



5.2 Modbus Protocol Packet Architecture

Modbus TCP messages consist of MBAP headers, Function Code, and Data.

MBAP Header	Function Code	Data
7bytes	1bytes	N bytes

MBAP Header(7bytes): Apply the protocol header.

Function Code(7bytes): Data read or write control command code.

Data(1bytes): The data exchange message structure, length and content depend on the control command code

5.3 MBAP Header Definition

MBAP Header consists of the following parts：

name	size	define
Transaction Identifier	2bytes	It is used to identify the correspondence between sending and receiving packets. It is set by the Modbus client, and the server returns the same value.
Protocol Identifier	2bytes	0: Modbus TCP，indicating the communication protocol of the PDUCertainly.
Length	2bytes	Length calculation includes Unit Identifier+ Function Code+Data.
Unit Identifier	1byte	The identification code of the remote slave device, set by the Modbus client, and the server replies with the same value.

5.4 Function Code instructions

Function Code is used to tell the Server device what to do. For example, code 03 will ask the Server device to send back the parameter state value of the sender. Here is the Function Code used by DLC-02.

Function Code	
Read Holding Register	0x03
Write Multiple Register	0x10
Read /Write Multiple Register	0x17

5.5 Data Command Form

Modbus communication architecture mainly realizes the control and monitoring function by reading and writing register address. According to different Function Code Function requests, Data Data framework has the following components

Function Code=03

request：

Starting Address	Quantity of Registers
2bytes	2bytes

response：

Byte Count of Register Value	Register Value
1byte	2bytes×N*

N*= Quantity of Register，N*The maximum is 125。

Function Code=10

request：

Starting Address	Quantity of Registers	Byte Count of Register Value	Register Value
2bytes	2bytes	1byte	2bytes×N*

response：

Starting Address	Quantity of Registers
2bytes	2bytes

N*= Quantity of Registers，N*The maximum is 123。

Function Code=17

request：

Starting Address of Read Register	Quantity of Read Registers	Starting Address of Write Register	Quantity of Write Registers	Byte Count of Write Register Value	Write Register Value
2bytes	2bytes	2bytes	2bytes	1byte	2bytes×N*

response：

Byte Count of Read Register Value	Register Value
1byte	2bytes×M*

N*= Quantity of Write Registers，N*The maximum is 122。

M*= Quantity of Read Registers，M*The maximum is 125。

Hold Register Description：

Register	Name	Length (word)	Read/Write	Description	Function code
40001-40006	Transparent transmission of DALI commands.	6	W	Transparent transmission of DALI commands	0x17
41001-41004	control the control gear	4	W	Control the control gear on/off, brightness and colour. Trigger scenes and lock/unlock motion sensors.	0x10
42001-42002	Query control gear※	2	W	Query the brightness, status, colour type and colour value of the control device, etc.	0x17
43001-43004	Control relay	4	W	Relay on or off	0x10、0x17

※40001-40006 needs to be used with 30001-30004, 42001-42002 needs to be used with 32001-32004, please refer to the Data framework

Input Register Description：

Register	Name	Length (word)	Read/Write	Description	Function code
30001-30004	Read the return value of the transparent DALI command ※	4	R	Returns the return value read from the previously transparently transmitted DALI command.	0x17
32001-32004	read control gear※	4	R	Returns control gear for query information.	0x17
33001-33004	Read relay status	4	R	Return to relay state	0x03、0x17
34001	Read the number of input device events record-ed by DALI A.★	1	R	Returns the number of input device events record-ed by the DALI A bus, up to a maximum of 128.	0x03
34002-34257	Read the number of input device events record-ed by DALI A.★	256	R	Returns the number of input device events record-ed by the DALI A bus, up to a maximum of 128.	0x03
35001	Read the number of input device events record-ed by DALI B.★	1	R	Returns the number of input device events record-ed by the DALI B bus, up to 128.	0x03
35002-35257	Read the number of input device events record-ed by DALI B.★	256	R	Returns the number of input device events record-ed by the DALI B bus, up to 128.	0x03

※40001-40006needs to be used with 30001-30004, and 42001-42002 needs to be used with 32001-32004. Please refer to the Data framework.
★You must use THE DLC-02 software to scan for input Device events.

Data formats of DALI instruction registers 40001 to 40006 are passed through：

Byte	Name	Description
0	command frame header	0x12（stable）
1	serial number	Command serial number (to be sent back)
2	Bus ID	1:DALI A 2:DALI B
3	control command byte	Bit 0: Send DTR0 before DALI command Bit 1: Send DTR1 before DALI command Bit 2: Send DTR2 before DALI command Bit 3: Send DALI Device Type before DALI command Bit 4: Sent twice on the DALI line (required for some DALI commands) Bit 5-7: reserve
4	command mode byte	command mode byte; 0: Send 2Byte DALI command (16 Bit, DATA_MI, DATA_LO) 1: Send 3Byte DALI command (24Bit, DATA_HI, DATA_MI, DATA_LO)
5	High DALI Byte	DATA_HI: DALI command high byte
6	Middle DALI Byte	DATA_MI: bytes in the DALI command
7	Low DALI Byte	DATA_LO: DALI command low byte
8	DTR0	Value to set to DTR0
9	DTR1	Value to set to DTR1
10	DTR2	Value to set to DTR2
11	Device type	Device type(1-8) to send

DALI returns the data format from the value registers 30001 to 30004:

Byte	Name	Description
0	command frame header	0x12 (stable)
1	serial number	The command sequence number is the same as sent before
2	bus ID	1:DALI A 2:DALI B
3	status byte	Status byte: 0: DALI answer = "NO" 1: OK, DALI 8bit data (DALI_LO) 2: OK, DALI 16bit data (high DALI_MI, low DALI_LO) 3: OK, DALI 24bit data (high DALI_HI, median DALI_MI, low DALI_LO) 7: Error message: DALI line short: DALI_LO = 1; DALI receive error: DALI_LO = 2;
4	reserve	reserve
5	Answer	DALI_HI
6	Answer	DALI_MI
7	Answer	DALI_LO (answer to previous command)

Control gear register 41001 to 41004 data format：

Byte	Name	Description
0	Bus ID	1: DALI A 2: DALI B
1	Device address	Single/Group Device Address and Broadcast (1)Single device address: Bit7 Bit6 Bit5 Bit4 Bit3 Bit2 Bit1 Bit0 0 0 0-63 short address (2)Group device address: Bit7 Bit6 Bit5 Bit4 Bit3 Bit2 Bit1 Bit0 1 0 0 0 0-15 group address (3)Broadcast: No address broadcast: 253(0xFD) roadcast with address: 255(0xFF)
2	Feature selection	Feature selection: 1: Turn the light on/off (set the value of Byte 3) 2: Set the brightness value (set the Byte 3 value) 3: Scene trigger (set Byte 3 value) 4: Lock/Unlock Motion Sensor Control (Settings Byte 3 value) 5: Change the colour value (set the value of Byte 3-7) 6-255: Reserved
3	light on/off	0: light off 1: light on
	Set the brightness value	Brightness value: 0-254
	scene trigger	Scene number: 0-15
	Lock/Unlock Motion Sensor Controls	0: Unlock motion sensor control 1: Lock motion sensor control Note: This function can be triggered in DLC-02 PC softwareLock/Unlock motion set by Effectcontrol function, realize manual/automatic control switching.
	Choose colour type	Set the current colour type of the corresponding control gear: 1: colour temperature TC; 2: RGB(W); 3-255: Reserved

<table>
<tr><th>Byte</th><th>Name</th><th>Description</th></tr>
<tr><td>4-7</td><td>set colour value</td><td>Set the current colour value, divided into the following two cases:
(1)If the colour type is colour temperature TC:
<table>
<tr><td>Byte 4</td><td>Byte 5</td><td>Byte 6</td><td>Byte 7</td></tr>
<tr><td colspan="2">colour temperature value (high/low)</td><td colspan="2">0</td></tr>
</table>
Note: The colour temperature value range is 1000-10000K
(2)If the colour type is RGB(W):
<table>
<tr><td>Byte 4</td><td>Byte 5</td><td>Byte 6</td><td>Byte 7</td></tr>
<tr><td>Red</td><td>Green</td><td>Blue</td><td>White</td></tr>
</table>
Note: R/G/B/W value range is 0-254, 255(MASK)</td></tr>
</table>

Query the data format of control Gear registers 42001 to 42002：

<table>
<tr><th>Byte</th><th>Name</th><th>Description</th></tr>
<tr><td>0</td><td>serial number</td><td>Serial number (to be sent back)</td></tr>
<tr><td>1</td><td>Bus ID</td><td>1: DALI A 2: DALI B</td></tr>
<tr><td>2</td><td>Device address</td><td>Single device address definition:
(1)Single device address:
<table>
<tr><td>Bit7</td><td>Bit6</td><td>Bit5</td><td>Bit4</td><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td></tr>
<tr><td>0</td><td>0</td><td colspan="6">0-63 short address</td></tr>
</table></td></tr>
<tr><td>3</td><td>Query selection</td><td>Query selection:
1: Current brightness value
2: Status value
3: current colour type
4: Current colour temperature value
5: Warmest colour temperature value
6: Coolest colour temperature value
7: Current RGB colour value
8: Current RGBW colour value
9-255: Reserved</td></tr>
</table>

Read data format 32001 to 32004 in control Gear registers：

<table>
<tr><th>Byte</th><th>Name</th><th>Description</th></tr>
<tr><td>0</td><td>serial number</td><td>The command sequence number is the same as sent before</td></tr>
<tr><td>1</td><td>Bus ID</td><td>1: DALI A 2: DALI B</td></tr>
<tr><td>2</td><td>Device address</td><td>Single device address definition:
<table>
<tr><td>Bit7</td><td>Bit6</td><td>Bit5</td><td>Bit4</td><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td></tr>
<tr><td>0</td><td>0</td><td colspan="6">0-63 short address</td></tr>
</table></td></tr>
<tr><td>3</td><td>status byte</td><td>Status byte:
0: DALI answer = "NO"
1: OK
7: Error message:
DALI line short circuit: Byte 7 = 1;
DALI receive error: Byte 7 = 2;</td></tr>
<tr><td rowspan="7">4-7</td><td>current brightness value</td><td>Definition of brightness value (Byte 4, Byte 5-7 is 0): 0-254</td></tr>
<tr><td>status value</td><td>Status value definition
(Byte 4, Byte 5-7 are 0):
Bit 0: Drive failure
Bit 1: Lamp failure
Bit 2: The light is on</td></tr>
<tr><td>current colour type</td><td>Bit 3-Bit 7: Reserved
current colour type definition
(Byte 4,Bytes 5-7 are 0):
1: colour temperature TC;
2: RGB(W);
3-255: Reserved</td></tr>
<tr><td>Current colour temperature value</td><td rowspan="3">Definition of colour temperature
<table>
<tr><td>Byte 4</td><td>Byte 5</td><td>Byte 6</td><td>Byte 7</td></tr>
<tr><td colspan="2">colour temperature value (high/low)</td><td colspan="2">0</td></tr>
</table>
Note: The colour temperature value range is 1000-10000K.</td></tr>
<tr><td>warmest colour</td></tr>
<tr><td>coldest colour temperature</td></tr>
<tr><td>Current RGB colour value</td><td>RGB colour value definition:
<table>
<tr><td>Byte 4</td><td>Byte 5</td><td>Byte 6</td><td>Byte 7</td></tr>
<tr><td>Red</td><td>Green</td><td>Blue</td><td>0</td></tr>
</table>
Note: R/G/B value range is 0-254, 255(MASK).</td></tr>
<tr><td>Current RGBW colour value</td><td>RGBW colour value definition:
<table>
<tr><td>Byte 4</td><td>Byte 5</td><td>Byte 6</td><td>Byte 7</td></tr>
<tr><td>Red</td><td>Green</td><td>Blue</td><td>White</td></tr>
</table>
Note: R/G/B/W value range is 0-254, 255(MASK)</td></tr>
</table>

Data format for control relay registers 43001 to 43004:

Byte	Name	Description
0	Control relay 1	0: Relay off 1: relay on
1	reserve	
2	Control relay 2	
3	reserve	
4	Control relay 3	
5	reserve	
6	Control relay 4	
7	reserve	

Read relay status registers 33001 to 33004 data format:

Byte	Name	Description
0	The state of Relay 1	0: Relay off 1: relay on
1	reserve	
2	The state of Relay 2	
3	reserve	
4	The state of Relay 3	
5	reserve	
6	The state of Relay 4	
7	reserve	

Read the data format of register 34001 of input device event number recorded by DALI A bus:

Byte	Name	Description
0	number of events	Number of events to record input device: 0-128
1	reserve	reserve

Note: if the number of events exceeds 128, they will be reset and counted again

Read registers 34002 to 34257 of DALI A's input device event information：

Byte	Name	Description
0	Device address	Single device address: 0-63
1	instance number	Instance number:1-32

Read registers 34002 to 34257 of DALI A's input device event information：

Byte	Name	Description
2	instance type	instance type: 1: Push-button 2: Slider 3: Occupancy/Motion Sensor (Occupancy/Motion sensor) 4: Light sensor 5-255: Reserved
3	key event information	Key event information analysis: 1: key release 2: key pressed 3: short press 4: Double click 5: Long press to start 6: Long press to repeat 7: long press to stop 8: Release after the key is stuck 9: Keys stuck 10-255: Reserved
	Slider event information	Current slider position: 0-100%
	Occupancy/Motion Sensor Event Information	Occupancy/movement sensor event information parsing: 1: The area is empty, no movement detected 2: The area is occupied, no movement detected 3: The area is occupied and movement detected 4-255: Reserved
	Brightness sensor event information	Current brightness value: 0-100%

Note: Each Input Device event occupies 2 registers, and a total of 128 Input Device events can be recorded. When the number of events exceeds 128, records are overwritten starting in register 34002.

DALI B bus registers the number of events recorded in the input device：

Byte	Name	Description
0	number of events	Record the number of events of the input device (0~128)
1	reserve	reserve

Note: if the number of events exceeds 128, they will be reset and counted again.

Read DALI B bus input device event information registers 35002 to 35257 format：

Byte	Name	Description
0	Device address	Single device address: 0-63
1	instance number	Instance number: 1-32
2	instance type	instance type: 1: Push-button 2: Slider 3: Occupancy/Motion Sensor(Occupancy/Motion sensor) 4: Light sensor 5-255: Reserved
3	key event information	Key event information analysis: 1: key release 2: key pressed 3: short press 4: Double click 5: Long press to start 6: Long press to repeat 7: long press to stop 8: Release after the key is stuck 9: Keys stuck 10-255: Reserved
	Slider event information	Current slider position: 0-100%
	Occupancy/Motion Sensor Event Information	Occupancy/movement sensor event information parsing: 1: The area is empty, no movement detected 2: The area is occupied, no movement detected 3: The area is occupied and movement detected 4-255: Reserved
	Brightness sensor event information	Current brightness value: 0-100%

Note: Each Input Device event occupies 2 registers, and a total of 128 Input Device events can be recorded. When the number of events exceeds 128, records are overwritten starting in register 35002.

5.6 Communication Examples

Examples of Modbus TCP control and DALI device query are provided below.

5.6.1 Pass through DALI instructions

Query the minimum brightness value of DALI BUS A0 device, send DALI instruction 0x01A2, the response value is 0xA1.

request：

0x000200000017FF	0x17	0x7531	0x0004	0x9C41	0x0006	0x0C	0x12020100000001A200000000

0x000200000017FF：Header

0x17：Function code 17

0x7531: Indicates that the start ADDRESS of the register to be read is 30001

0x0004: Indicates that the number of registers to be read is 4, that is, 30001 to 30004

0x9C41: Indicates that the start ADDRESS of the register to be written is 40001

0x0006: Indicates that the number of registers to be written is 6, that is, 40001 to 40006 0x0C: Byte Count indicates that subsequent data of 12 bytes is available.

0 x12020100000001a200000000: written to register 40001 to 40006, 5

Material. For details about bytes, see the data formats 40001 to 40006.

response：

0x00020000000BFF	0x17	0x08	0x12020101000000A1

0x00020000000BFF：Header

0x17：Function code 17

0x08: Byte Count, indicating 8 bytes of subsequent data.

0x12020101000000A1: Reads data from registers 30001 to 30004.

For details about bytes, see the data formats 30001 to 30004.

5.6.2 control gear

The colour temperature of the A3 device controlling the Dali-a bus is 3000K

request：

0x00010000000FFF	0x10	0xA029	0x0004	0x08	0x010305010BB80000

0x00010000000FFF：Header
0x10：Function code 10
0xA029: Indicates that the start address of the register to be written is 41001.
0x0004: Indicates that the number of registers to be written is 4, namely 41001 to 41004. 0x08: Byte Count, indicating 8 bytes of subsequent data.
0x010305010BB80000: Write data in registers 41001 to 41004. Please refer to the data format 41001 to 41004 for definitions of bytes

response：

0x000100000006FF	0x10	0xA029	0x0004

0x000100000006FF：Header
0x10：Function code 10
0xA029: Start address of register, same as request data.
0x0004: Number of registers, same as request data.

5.6.3 Querying Control Gear

Query the current brightness value of device A0 of Dali-a bus. The response value is 0xE5.

0x00010000000FFF	0x17	0x7D01	0x0004	0xA411	0x0002	0x04	0x01010001

0x00010000000FFF：Header
0x17：Function code 17
0x7D01: Indicates that the start address of the register to be read is 32001.
0x0004: indicates that the number of registers to be read is 4, that is, 32001 to 32004.
0xA411: Indicates that the start address of register to be written is 42001
0x0002: Indicates that the number of registers to be written is 2, that is, 42001 to 42002. 0x04: Byte Count, indicating subsequent data of 4bytes.
0x01010001: Writes data to registers 42001 to 42002. For details about bytes definitions, see Data format 42001 to 42002

response：

0x00010000000BFF	0x17	0x08	0x01010001E5000000

0x00010000000BFF：Header
0x17：Function code 17
0x08: Byte Count, indicating 8 bytes of subsequent data.
0x01010001E5000000: Reads data from registers 32001 to 32004.
For bytes definitions, refer to the data formats 32001 to 32004.

5.6.4 Reading relay status

Query the status of the four relays of DLC-02. The status of response relay 1 is closed, and that of relays 2 to 4 is off.

request：

0x000100000006FF	0x03	0x80E9	0x0004

0x000100000006FF：Header
0x03：Function code 3
0x000100000006FF：Header 0x03：Function code 3
0x80E9: Indicates that the start address of the register to be read is 33001
0x0004: Indicates that the number of registers to be read is 4, that is, 33001 to 33004

response:

0x000010000000BFF	0x03	0x08	0x0100000000000000

0x000010000000BFF：Header
0x03：Function code 3
0x08: Byte Count, indicating 8 bytes of subsequent data.
0x0100000000000000: Reads data from registers 33001 to 33004.
For details about bytes, see the document formats 33001 to 33004.

5.6.5 Reading Input Device Events recorded by DALI A

Instance 2 of sensor A1 is occupied and movement is detected.
request：

0x000200000006FF	0x03	0x84D2	0x0002

0x000200000006FF：Header
0x03：Function code 3
0x84D2: indicates that the start address of the register to be read is 34002
0x0002: Indicates that the number of registers to be read is 2, that is, 34002 to 33003

response:

0x000200000007FF	0x03	0x04	0x01020303

0x000200000007FF：Header
0x03：Function code 3
0x04: Byte Count, indicating subsequent data of 4 bytes.
0x01020303: Reads data from registers 34002 to 34003. For details about bytes, see the data formats 34002 to 34257

5.7 Incorrect Response

Error handling will occur when sending data that does not conform to the format or that is not supported by Function code.

The error code is as follows:

Exception Code	Description
0x01	This Function code is not supported
0x03	illegal data

The error response format is as follows

Function Code with MSB=1	Exception Code
1byte	1byte

For example, the sent data is incorrect

0x000200000008FF	0x03	0x84D2	0x0002

response：

0x000200000003FF	0x83	0x03

0x000200000003FF：Header
0x83: the highest position of the Function Code that sends data 1 0x03: Exception Code, which indicates that the data sent is invalid

6. Maintenance

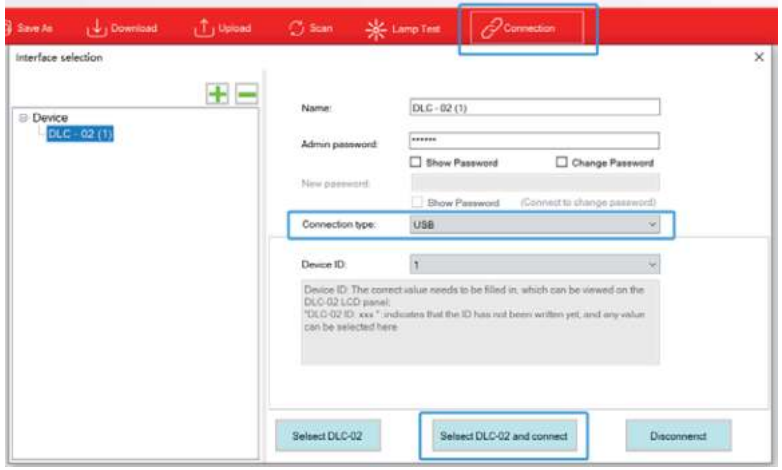
6.1 Firmware update instruction

Firmware updates are infrequent but sometimes may be necessary for older devices due to product compatibility. Please contact our local distributors if you feel the need. You can perform a firmware update by following the instruction below.

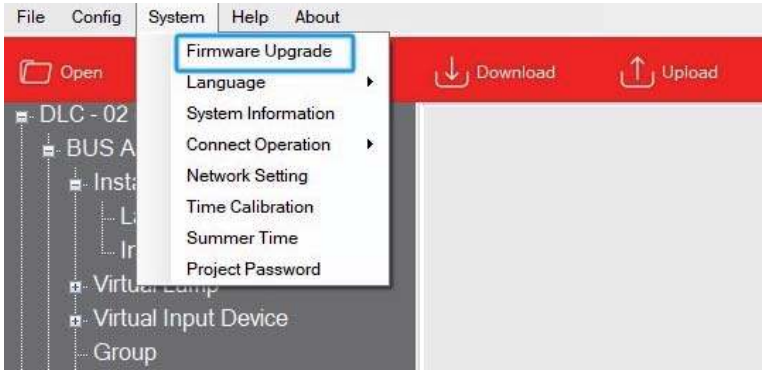
①User may find the latest firmware files and PC software from below link.
https://www.meanwell.com/Upload/PDF/DLC-02/DLC-02-SOP-E.pdf

②Press the "SET" button on the DLC-02 panel, unplug the USB cable, and restart the AC power supply; if you can see that the two LEDs of BUS A and BUS B flash alternately, it means that the upgrade mode is successfully entered; proceed to the next step.

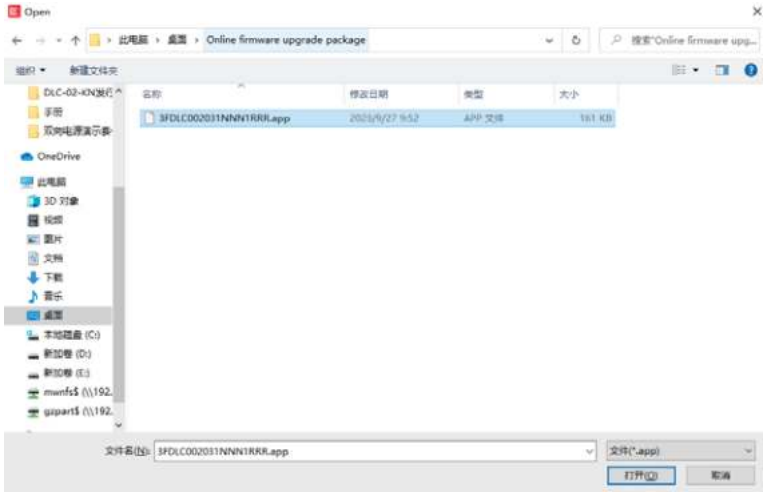
③Connect DLC-02 with computer via USB, open the DLC-02 software to "Connect" DLC-02; after it is connected successfully, proceed to the next step.



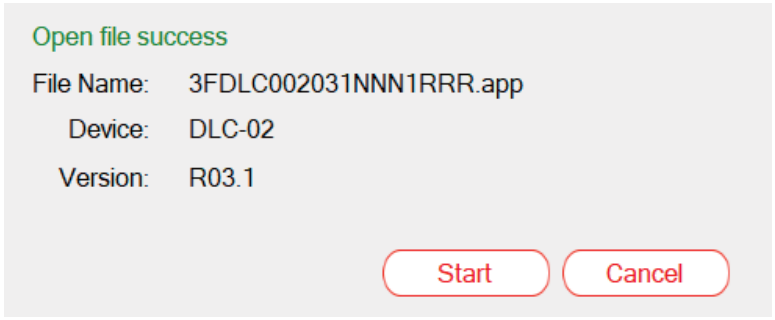
④Go to the DLC-02 PC software main interface and select: System -> Firmware Upgrade.



Select the latest firmware file and open it.



A new window appears, displaying information such as file name, device model, and firmware version. Then click "Start" to upgraded firmware.



⑤The two LEDs of BUS A and BUS B will flash alternately again, which means that the upgrade process is successfully initiated; after the firmware upgrade is completed, DLC-02 will automatically restart and the two LEDs of BUS A and BUS B will stop flashing.

Note: Firmware upgrade requires DLC-02 to be connected to the computer via a USB cable, while the RJ45 network port does not support firmware upgrade.

6.2 FAQ

(1) After the old DLC-02 is upgraded to the new firmware, will it affect the original internal parameters?

Ans: Major version modification (Upgraded from R2.x to R3.x) involves the modification of the communication protocol, and the original stored parameters cannot guarantee the correctness of its actions.

(2) How to downgrade to DLC-02 older version?

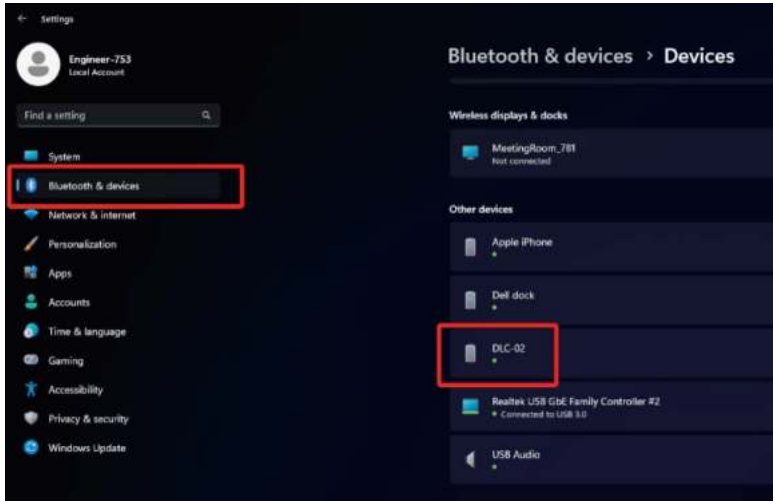
Ans: Step 1- Download the old version upgrade file from below link.
https://www.meanwell.com/Upload/PDF/DLC-02/DLC-02-SOP-E.pdf
Step 2- Connect DLC-02 to DLC-02 software via USB, go to the main interface and select: System -> Firmware Upgrade.

(3) How to check the firmware version of DLC-02?

Ans: Method 1 - View through the DLC-02 panel, press "ESC" -> "System" -> "Other" -> "Firm. VER: xxx"
Method 2 - Read through DLC-02 PC software, go to the main interface and select: System ->System Information.

(4) During the process of connecting DLC-02, if the following "Fail" window appears, how should I troubleshoot it?

Ans: This is due to an abnormality in the USB driver. Please delete the "DLC-02" from the "Settings" ->"Bluetooth & Devices" on the computer.



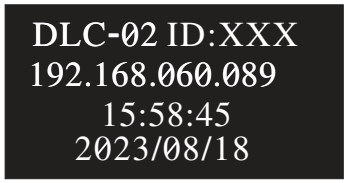
Then connect the DLC-02 to computer via a USB cable. At this point, the computer will reset the "DLC-02" device. After the settings are completed, the DLC-02 software can connect to DLC-02 normally.

7. LCD Display

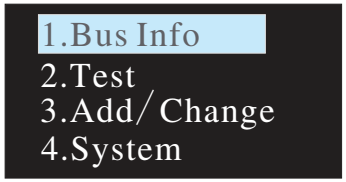
Simple settings can be made through the DLC-02 panel, such as system time and IP address settings, DALI parameter modification, lamp/group/scene testing, relay testing, etc.

■The main page displays IP address, time and date.

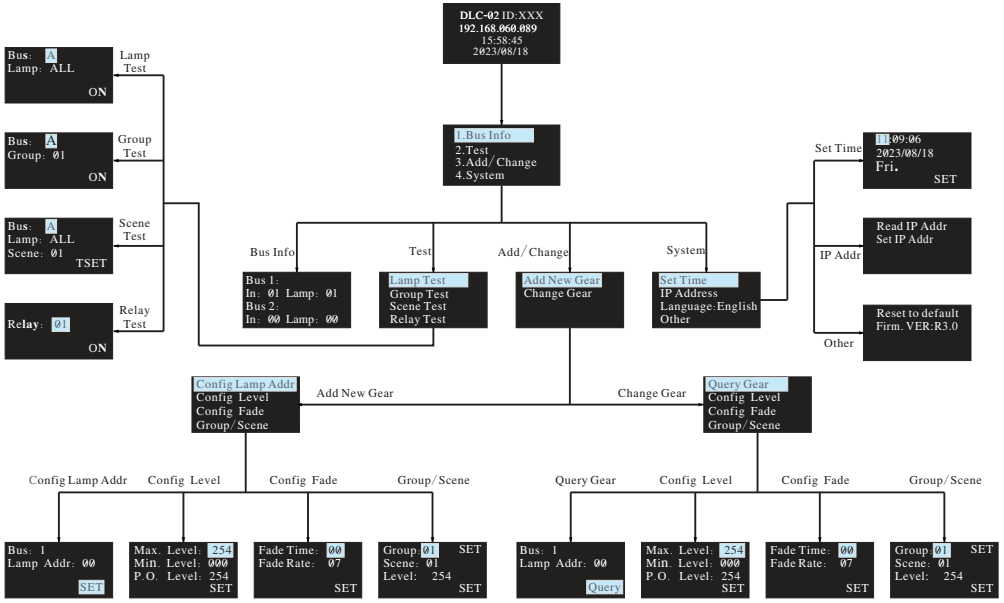
■If no network connected displays ETH not Linked; If a network connected displays current IP address.



■A new menu appears when one of the MOVE/SET/ESC buttons is pressed, as shown in the picture below.

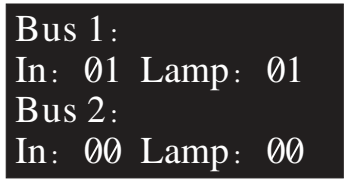


Menu Structure



7.1 Bus Info

The menu is used to scan total quantity of input and output devices connected to the controller. The example below shows there is one input device and one output device in Bus A and no any device found in Bus B.



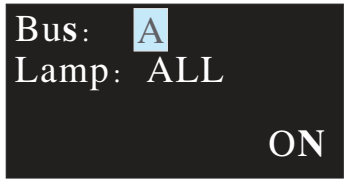
7.2 Test

●Press MOVE button to move the indicator onto Test, then press SET button to enter the menu, shown as below.

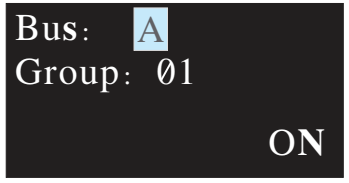
●The menu includes Lamp test, Group test, Scene test and Relay test.

The operation instructions are shown as follows:

7.2.1 Lamp test: used to turn ON/OFF/Blink a single lamp or all of the lamps on Bus A and B. Bus: 1 represents DALI-A, 2 represents DALI-B; Lamp: 00 – 63 represents name of a single lamps, ALL represents all of the lamps.

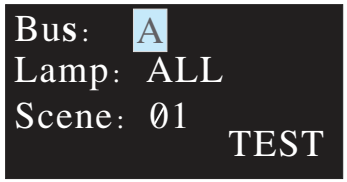


7.2.2 Group test: used to turn ON/OFF/Blink a group of lights on Bus A and B. Bus: 1 represents DALI-A, 2 represents DALI-B; Group: 01 – 16 represents name of groups.



7.2.3 Scene Test

- Set a single lamp or all of the lamps on the DALI A/B to a specific scene.
- Bus: 1 represents DALI-A, 2 represents DALI-B.
- Lamp: 00 – 63 represents name of a single lamps, ALL represents all of the lamps; Scene: 01 – 16 represents name of scenes.



7.2.4 Relay test

- Test ON/OFF functions of the 4 relays
- Relay: 01 – 04 represents name of the relays; ON/OFF: ON makes relay short and the corresponding indicator lights up, OFF make relay open and the corresponding indicator switches off.

7.3 Add/Change

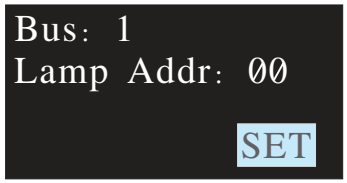
7.3.1 Add New Gear:

It is used to add new devices to the DALI system and parameterize maximum level, minimum level, power on level, fade time, fade rate, group and scene of the new devices

The operation instructions are shown as follows:

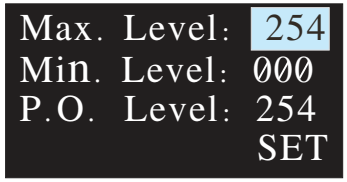
①Config Lamp Addr

Set short address 0-63, select "SET" to complete the setting. The set lamp must be a device that has not been assigned any address, otherwise it will display fail. Bus: 1 represents DALI-A, 2 represents DALI-B; Lamp addr: 00 – 63 represents a short address for the new device.



②Config Lamp Level

Paramterize maximum level, minimum level for the new device, select "SET" to complete the setting.
(All levels should be larger or equal to physical min level, otherwise setting will fail)



③Config Fade

- Paramterize fade time and fade rate for the new device.
- Fade time defines the time needed to achieve the required setting after receiving a DAPC command. It is mainly used for absolute dimming, such as go to scene or go to last active level.

Fade times in seconds:

Index	00	01	02	03	04	05	06	07
Fade Time(s)	0	0.7	1.0	1.4	2.0	2.8	4.0	5.7

Index	08	09	10	11	12	13	14	15
Fade Time(s)	8.0	11.3	16.0	22.6	32.0	45.3	64.0	90.5

●Fade rate defines the rate at which changes are made (in steps per second) in the value of the lamp's power. It is mainly used for relative dimming, such as up or down.

Fade rates in steps/second:

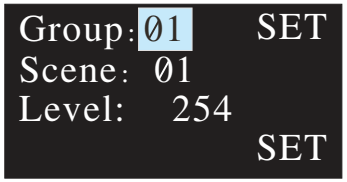
Index	01	02	03	04	05	06	07	08
Fade rate (step/s)	358	253	179	127	89	63	45	32

Index	09	10	11	12	13	14	15
Fade rate (step/s)	22	16	11.2	7.9	5.6	4.0	2.8

④Group/Scene

Assign a group and set a scene for the new device.

Group: 01 -16 represents name of groups; Scene: 01 -16 represents name of scene; Level: 0 – 254 represents light levels.



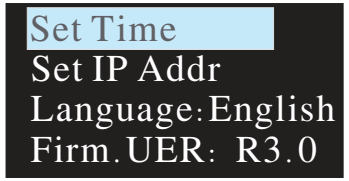
7.3.2 Change Gear

●It is used to change maximum level, minimum level, power on level, fade time, fade rate, group and scene of the new devices for existed devices on the buses.

●The operation method is the same as Add New Gear, please refer to 7.3.1 for detailed instructions.

7.4 System

Functions include time setting, IP address setting, language change and other.



7.4.1 Set Time:

①Press MOVE button to move the indicator on HH/MM/SS/yyyy/mm/dd.

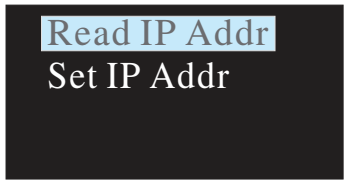
②Press SET button to adjust values.

③Select "SET" when finishing setting or use DLC software to quickly calibrate time (please refer to 4.1.3.3).

7.4.2 Set IP Addr:

●Read IP Addr: displays the current IP address information.

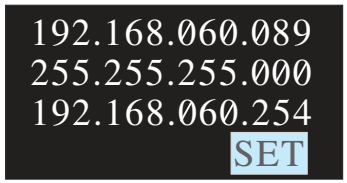
●Set IP Addr: set information related to the IP address.



●When static IP is selected, the DLC-02 utilizes a fixed IP address and the address does not change over time. The DLC-02 and the PC must be set at the same network in order to work normally.

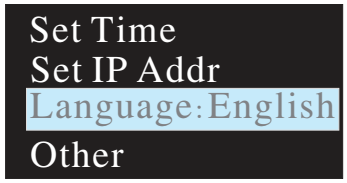
●When DHCP is selected, the DLC-02 will be assigned IP address automatically. It does not need to do any manual configuration to connect the controller to local devices or gain access to the Web.

The "Static IP Address" setting page is as follows:
The first line is the IP address, the second line is the subnet mask, and the third line is the gateway



7.4.3 Language:

There are two language options available: English and Chinese.



7.4.4 Firm:

It displays firmware version of the DLC-02.

8.Warranty

This product provides five years warranty under normal usage. Do not replace parts or any form of modification to the product in order to keep the warranty effectively.

※MEAN WELL possesses the right to adjust the content of this manual. Please refer to the latest version of our manual on our website.
https://www.meanwell.com

MEAN WELL WEB

9.Environmental declaration information

https://www.meanwell.com//Upload/PDF/RoHS_PFOS.pdf
https://www.meanwell.com//Upload/PDF/REACH_SVHC.pdf
https://www.meanwell.com//Upload/PDF/Declaration_RoHS-E.pdf

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