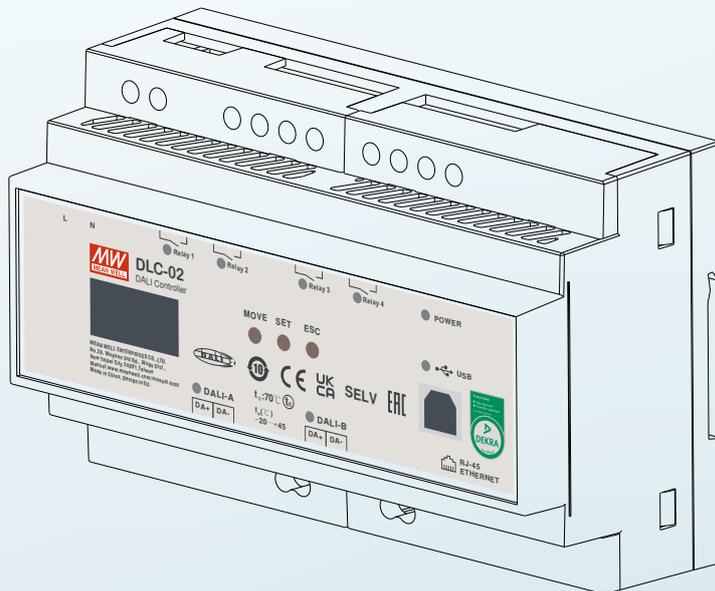




# DLC-02 Installation Manual



## *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 scan, 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.

## 2.Overview

### 2.1 Overview Device

The manual refers to the following devices:

DLC-02:Input: 100~305Vac

Model Encoding:

D L C - 0 2

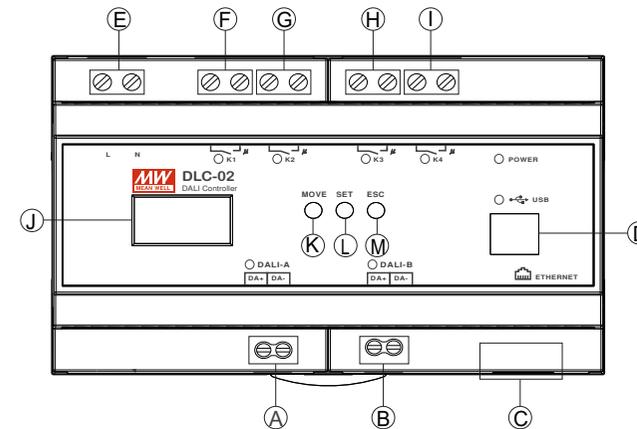
Number of output channels

Series name

### 2.2 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 8 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

### 2.3 Displays and Operating Elements

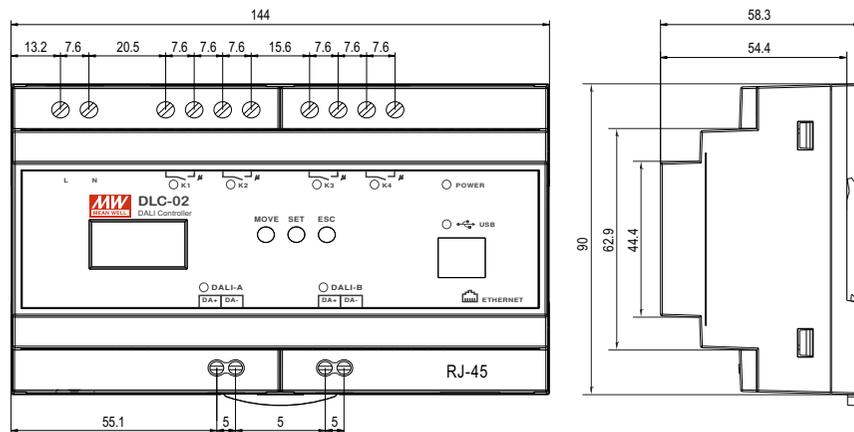


- (A) :DALI bus A terminal
- (B) :DALI bus B terminal
- (C) :RJ45 socket
- (D) :USB connection(Type B)
- (E) :AC connection
- (F) :Connections for the relay output K1
- (G) :Connections for the relay output K2
- (H) :Connections for the relay output K3
- (I) :Connections for the relay output K4
- (J)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

## 2.4 Status LEDs

LED Indicator	Status
POWER	<ul style="list-style-type: none"> <li>● Normal working</li> <li>○ NOT connected to AC</li> </ul>
K1, K2, K3, K4	<ul style="list-style-type: none"> <li>● Relay ON (short)</li> <li>○ Relay OFF (open)</li> </ul>
DALI-A, DALI-B	<ul style="list-style-type: none"> <li>● Bus voltage normal</li> <li>○ NO bus voltage provided</li> </ul>
USB	<ul style="list-style-type: none"> <li>● USB connected</li> <li>○ NO USB detected</li> </ul>

## 2.5 Mechanical Specification



## 3. Installation

### 3.1 Concept of Commissioning

The following steps are required for a new project or a modified project:

Wiring of the DALI-2 devices  
(or devices to the relays)

- Electric power bus configuration
- DALI bus configuration
- Lamp installation
- Basic settings and DALI bus basic test

New initialization and lamp  
parameter setting

- New initialization settings
- Basic settings of lamps  
Rename/Max. level/Min. level/fade time.....

Effect configuration

- Effect connection
- Effect setting  
ON-OFF/Dimming/Timer.....

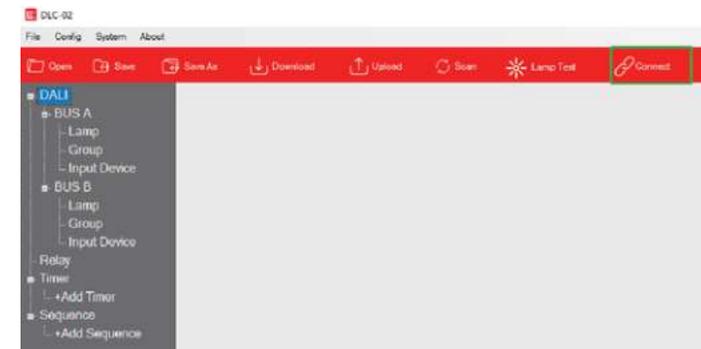
- ① After wiring of lamps and input devices, turn on the all devices and lamps. Please refer to chapter 3.3 and 3.4 for electrical wiring.
- ② After scanning the devices on the bus and assigning short addresses through the DLC software, then set the parameters of the ECGs, such as maximum level, minimum level, fade rate/time, power on level, system failure level, group and scene. Please refer to chapter 4.3.1.2 for the DLC software to set ECG parameters.
- ③ Set the logical relationship between the controlling party (input device, and timing event) and the controlled party (lamp, relay and sequence) on the effect interface, and download it to DLC-02.

For the DLC software to set effect, please refer to chapter 4.4.

The following example shows how to scan the lamps and input devices on the bus to the software interface through the DLC software.

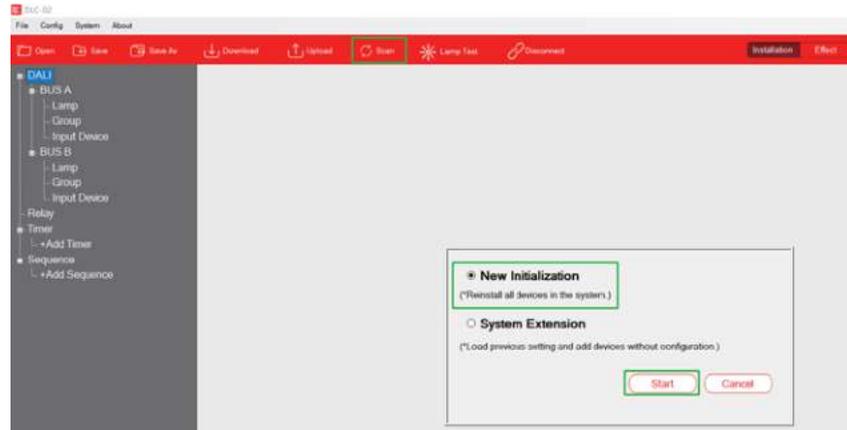
Suppose bus A is connected to two lamps and an input device, and bus B is connected to a lamp.

Step 1: After connecting the computer and DLC-02 with a USB cable, open the DLC software and click "Connect" to ensure the normal communication between the computer and DLC-02.

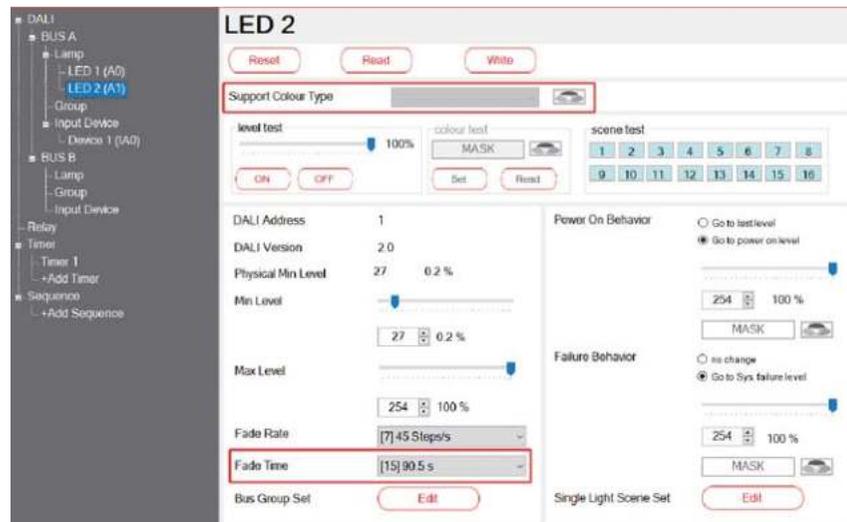


Step 2 : Select "Scan" -> "New Initialization" on the DLC software and click "Start", the DLC software will assign randomly DALI short addresses to all devices on the bus and read back their parameters;

(For the difference between "New Initialization" and "System Extension", please refer to Chapter 4.1.2: Configuration - "Scan".)

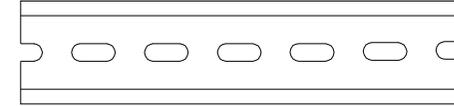


Step 3 : After scanning, there are two lamps (A0 and A1) and one input device (IA0) on bus A and one lamp (B0) on bus B. Click A0, its related parameters are shown on the right window.

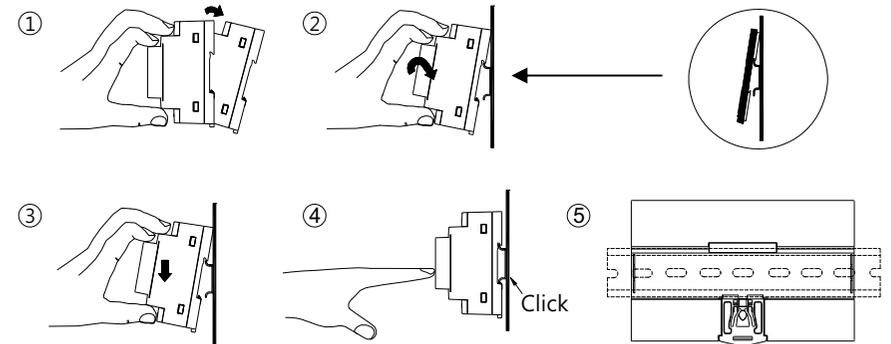


## 3.2 Mounting

- 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 :

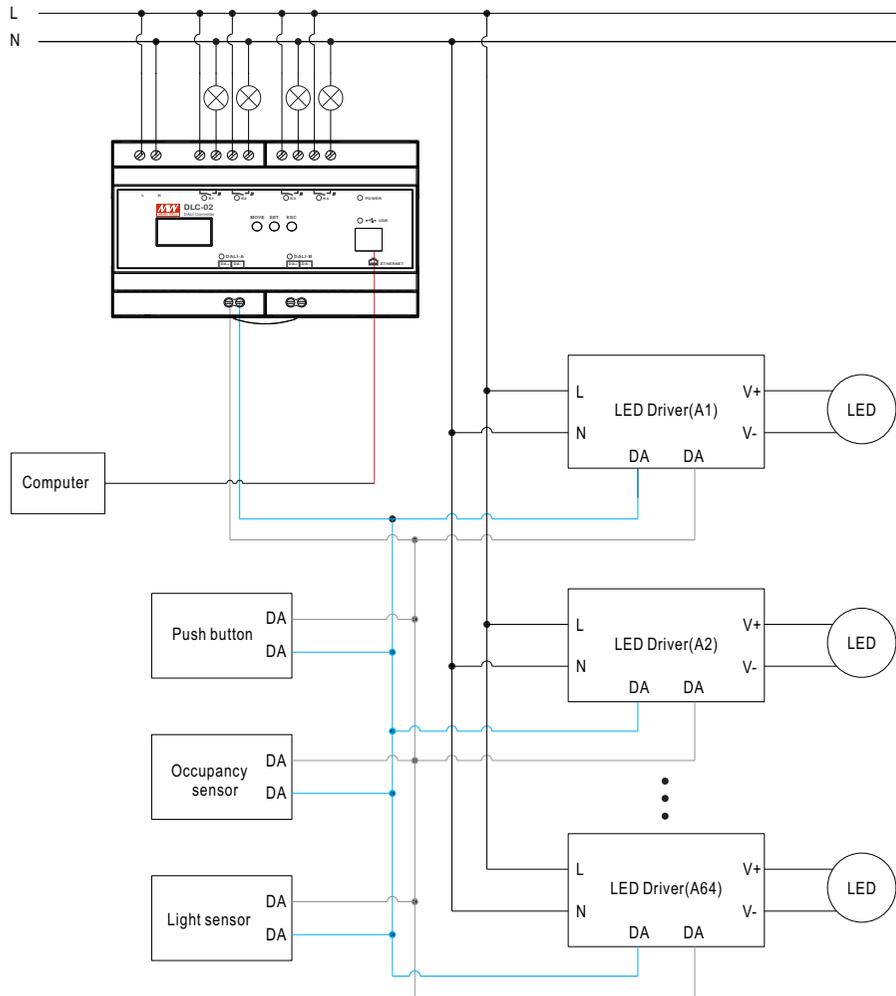


- ① Tilt the unit slightly rearwards
- ② Fit the unit over top hat rail
- ③ Slide it downward until it hits the stop
- ④ Press against the bottom for locking
- ⑤ Shake the unit slightly to check the locking action



### 3.3 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 mm<sup>2</sup>)



### 3.4 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 ~ 2.5mm <sup>2</sup>	0.5 ~ 2.5mm <sup>2</sup>
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)

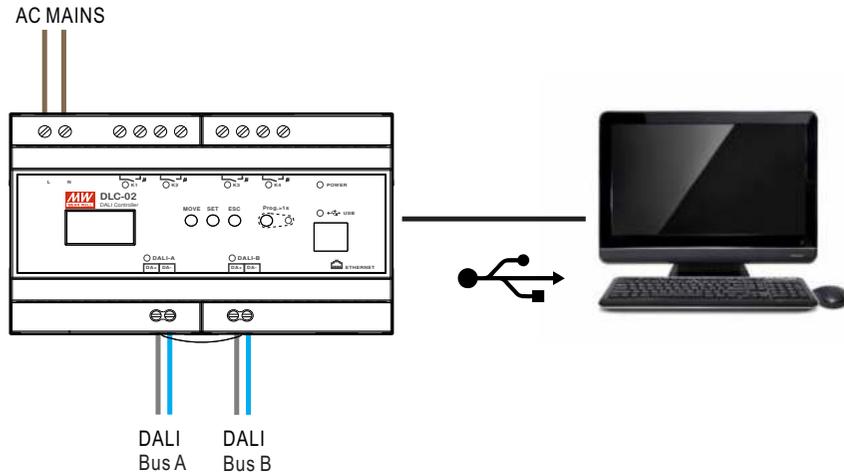
DALI bus wiring requirement:

Lead length	Min. lead diameter
Up to 100m	0.5mm <sup>2</sup>
100-150m	0.75mm <sup>2</sup>
151-300m	1.5mm <sup>2</sup>

## 3.5 Operation Interface

### 3.5.1 DLC software

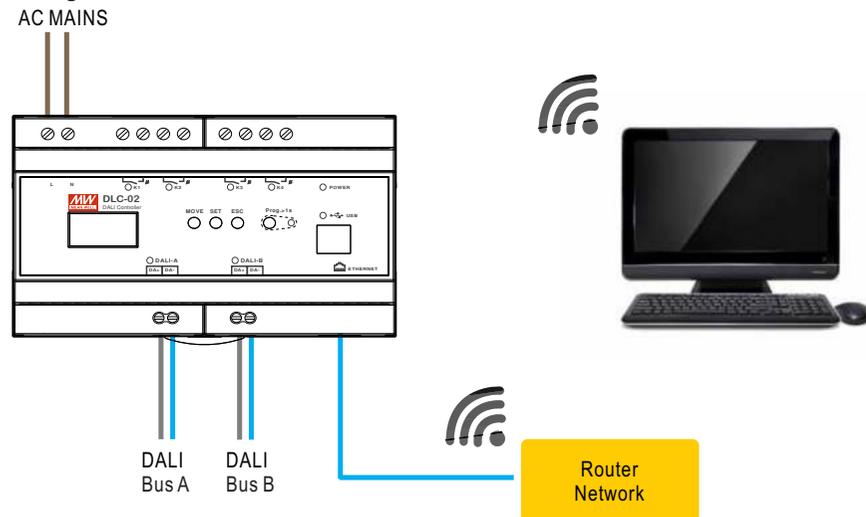
DALI addressing can be implemented through the DLC software. The software also can set maximum level, minimum level, fade rate/time, power on level, system failure level, group, scene, timer, sequence and effect. (For detailed information, please refer to the Chapter 4)



### 3.5.2 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.

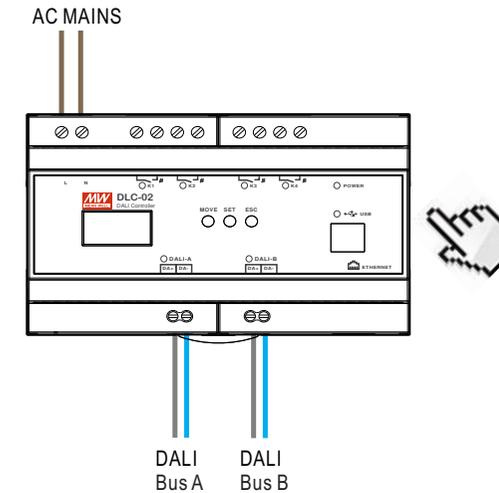
Note: Modbus TCP communication does not support DALI addressing and effect setting.



### 3.5.3 OLED display

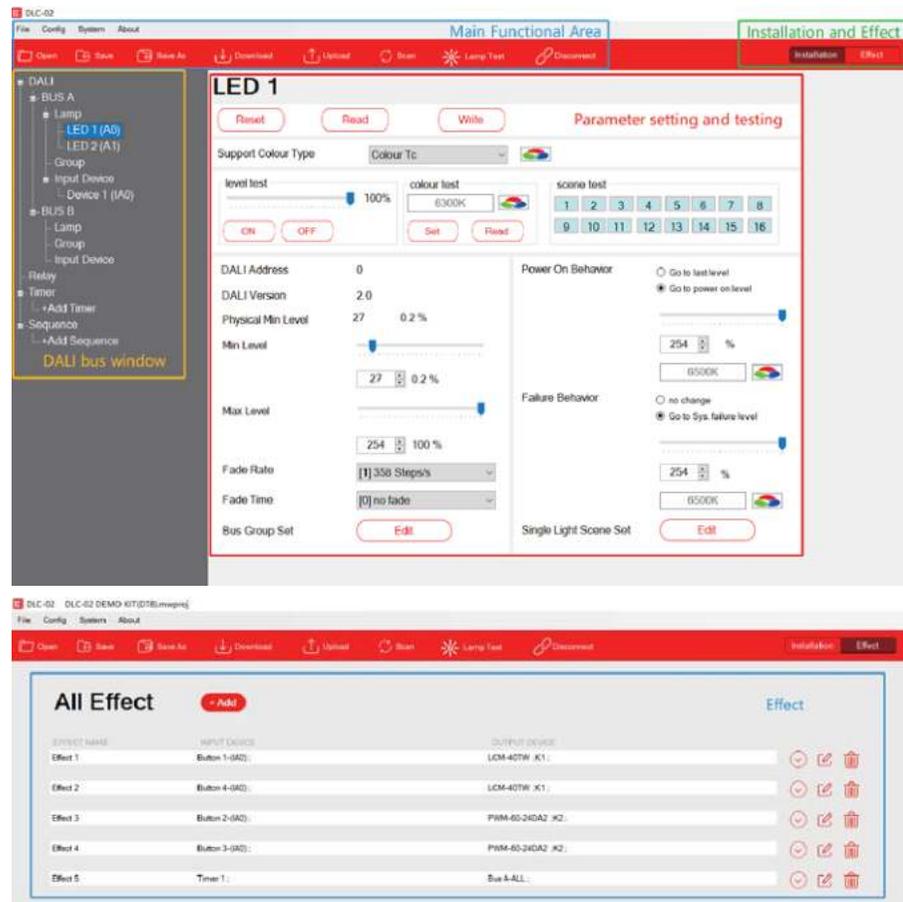
You can set maximum level, minimum level, fade rate, fade time, group and scenes on the OLED display. (For detailed information, please refer to the Chapter 6).

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



## 4. DLC Software Interface

- On the "Installation" interface of the DLC software, you can assign the lamps address, and set the maximum level, minimum level, fade rate, fade time, power on behavior, failure behavior, group, scene, timer and sequence. You can also turn the lights on or off and adjust the brightness or colour of the lights.
- The logical relationship between DALI-2 input devices and lamps is set on the "Effect" interface.

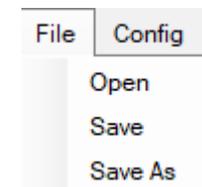


### 4.1 Main Functional Area



### 4.1.1 File

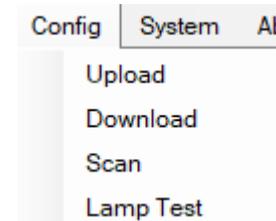
In the file bar, you can open and save the project.



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

### 4.1.2 Configuration

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



#### ● Upload

Assign addresses to devices connected to the DALI bus, and read back device parameters of the lamps and input devices and effect configurations of the DLC-02.

Note: ① For an 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 DLC-02. 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 devices connected to the DALI bus, and read back device parameters of the lamps and input devices. You can choose "New Installation" or "System Extension", as shown below:



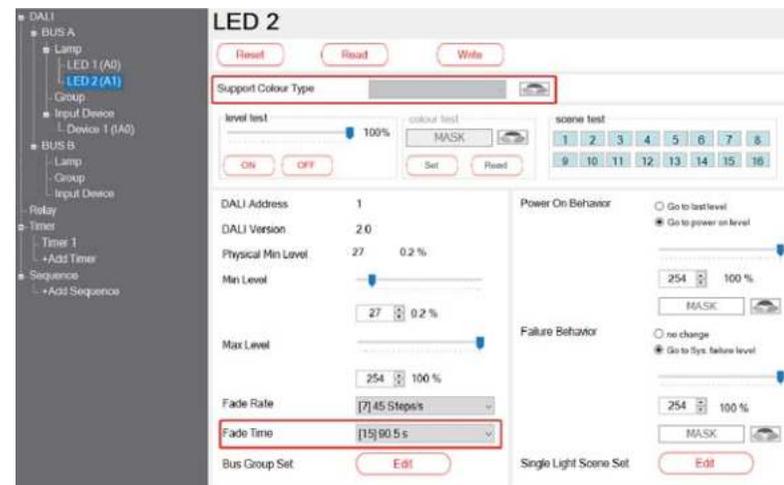
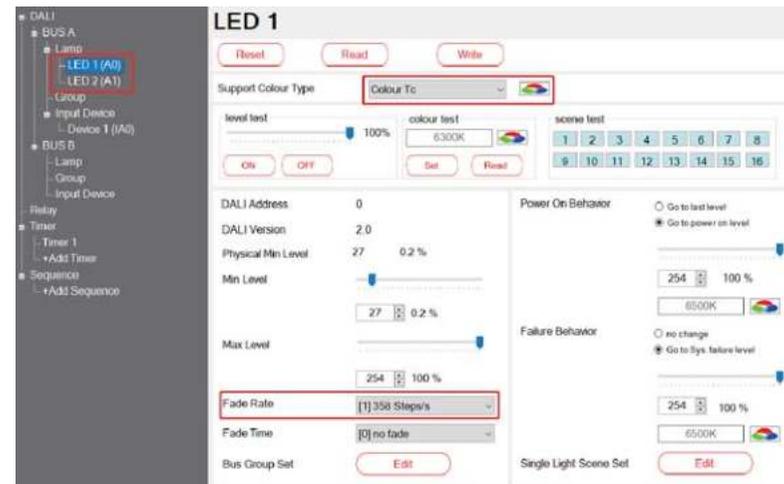
※"Initial Installation": All devices on the DALI bus are re-addressed, but the previous parameters of devices remain unchanged.

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

The following examples illustrate the differences between the "Initial Installation" and "System Extension":

It is known that there are two different types of lamps on bus A: colour temperature control type and no colour control type.

First, use the "Scan — Initial Installation" to randomly assign addresses to these two lamps as follows: colour temperature control type LED 1 (DALI short address: A0) and no colour control type LED 2 (DALI short address: A1), and change the dimming fade rate of LED 1 from the initial value "45 Steps/s" to "358 Steps/s", and change the dimming fade time of LED 2 from the initial value "no fade" to "90.5s", as shown in the figure below:



Then, connect an RGBW control type lamp with no address to bus A. Use respectively the "New Installation" and "System Extension" to assign addresses to the RGBW lamps, and observe the changes of the addresses and parameters of the three lamps on bus A.

① Use "New Installation": After scanning, three lamps appear on bus A: the address of the colour temperature control type lamp changes from the original A0 to A2, the fade rate remains 358Steps/s; the address of the no colour control type lamp remains unchanged (still A1), and the fade time remains 90.5s; RGBW control type lamp is assigned the A0 address.

**New Initialization**  
(\*Reinstall all devices in the system.)

**System Extension**  
(\*Load previous setting and add devices without configuration.)

**LED 3**

Support Colour Type: Colour Tc

level test: 100% colour test: 6300K scene test: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

ON OFF Set Read

DALI Address: 2  
DALI Version: 2.0  
Physical Min Level: 27 0.2 %  
Min Level: 227 47.8 %  
Max Level: 229 50.5 %  
Fade Rate: [1] 358 Steps/s  
Fade Time: [0] no fade  
Bus Group Set: Edit

Power On Behavior:  Go to last level  
 Go to power on level  
245 78.2 %  
MASK

Failure Behavior:  no change  
 Go to Syst. failure level  
245 78.2 %  
MASK

Single Light Scene Set: Edit

**LED 2**

Support Colour Type: MASK

level test: 100% colour test: MASK scene test: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

ON OFF Set Read

DALI Address: 1  
DALI Version: 2.0  
Physical Min Level: 27 0.2 %  
Min Level: 27 0.2 %  
Max Level: 254 100 %  
Fade Rate: [7] 45 Steps/s  
Fade Time: [15] 90.5 s  
Bus Group Set: Edit

Power On Behavior:  Go to last level  
 Go to power on level  
254 100 %  
MASK

Failure Behavior:  no change  
 Go to Syst. failure level  
254 100 %  
MASK

Single Light Scene Set: Edit

**LED 1**

Support Colour Type: RGB

level test: 100% colour test: 254,254,254 scene test: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

ON OFF Set Read

DALI Address: 0  
DALI Version: 2.0  
Physical Min Level: 1 0.1 %  
Min Level: 2 0.1 %  
Max Level: 245 78.2 %  
Fade Rate: [7] 45 Steps/s  
Fade Time: [0] no fade  
Bus Group Set: Edit

Power On Behavior:  Go to last level  
 Go to power on level  
245 78.2 %  
MASK

Failure Behavior:  no change  
 Go to Syst. failure level  
245 78.2 %  
MASK

Single Light Scene Set: Edit

②Use " System Extension": After scanning, three lamps appear on bus A: the address of the colour temperature control type lamp is still A0, and the fade rate remains 358Steps/s; the address of the no colour control type lamp is still A1, and the fade time remains 90.5s; and the RGBW control type lamp is assigned the address of A2.

**New Initialization**  
(\*Reinstall all devices in the system.)

**System Extension**  
(\*Load previous setting and add devices without configuration.)

**LED 1**

Reset Read Write

Support Colour Type: Colour Tc

level test: 100% colour test: 6500K scene test: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

ON OFF Set Read

DALI Address: 0 Power On Behavior:  Go to test level  Go to power on level

DALI Version: 2.0 Physical Min Level: 27 0.2% Min Level: 27 0.2% Max Level: 254 100%

Failure Behavior:  no change  Go to Sys. failure level

Fade Rate: 11358 Steps/s Fade Time: 0 no fade Bus Group Set: Edit Single Light Scene Set: Edit

**LED 2**

Reset Read Write

Support Colour Type: MASK

level test: 100% colour test: MASK scene test: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

ON OFF Set Read

DALI Address: 1 Power On Behavior:  Go to test level  Go to power on level

DALI Version: 2.0 Physical Min Level: 27 0.2% Min Level: 27 0.2% Max Level: 254 100%

Failure Behavior:  no change  Go to Sys. failure level

Fade Rate: 745 Steps/s Fade Time: 11990.5 s Bus Group Set: Edit Single Light Scene Set: Edit

**LED 3**

Reset Read Write

Support Colour Type: RGB

level test: 100% colour test: 254,254,254 scene test: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

ON OFF Set Read

DALI Address: 2 Power On Behavior:  Go to test level  Go to power on level

DALI Version: 2.0 Physical Min Level: 1 0.1% Min Level: 2 0.1% Max Level: 245 78.2%

Failure Behavior:  no change  Go to Sys. failure level

Fade Rate: 245 78.2% Fade Time: 745 Steps/s Bus Group Set: Edit Single Light Scene Set: Edit

● Lamp test  
You can turn on, blink or turn off the lamps, as shown below.

Lamp Test

Bus A Bus B All ON All OFF

ON Blink OFF

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

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

Bus A Bus B

※ Turn on/off all lamps on this bus.

All ON All OFF

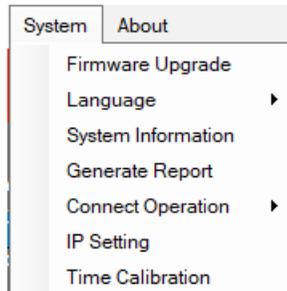
※ You can click the corresponding lamp icon to turn on, blink or turn off the lamp. The number inside the icon represents the lamp address. 3 Indicates that the lamp 3 is offline.

ON Blink OFF

0 1 2 3

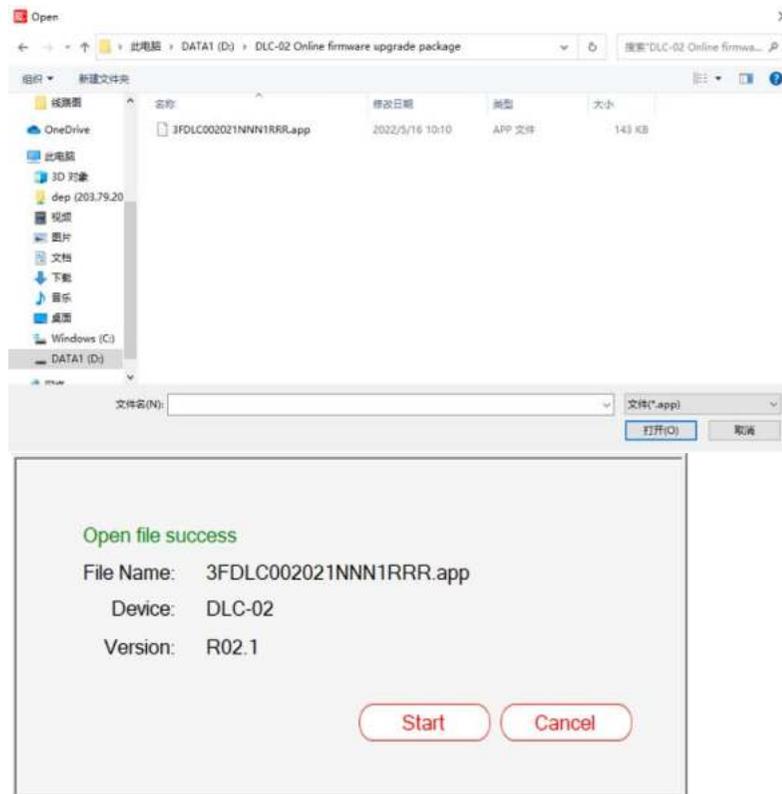
### 4.1.3 System

In the system bar, you can view system information and USB connection status. You can also update firmware, choose language, generate configuration reports, set IP address and calibration time.



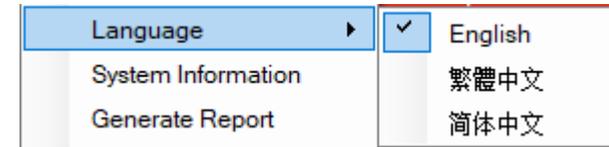
#### ●Firmware upgrade

After opening the upgrade file, a new window will pop up showing the file name, device and firmware version. Click "Start" to upgrade the firmware. During the upgrade process, the DLC-02 will enter a reboot state.



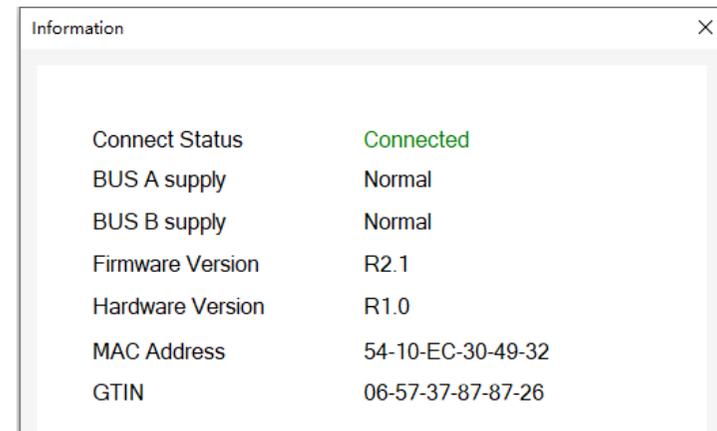
#### ●language

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.



#### ●Generate Report

Export the parameters of lamps and input devices as well as the effect configuration of the DLC-02 as a report in a "Word" format.

#### ●Connect Operation

Before communicating with the DLC-02, make sure the USB is "Connected".



#### ● IP Setting

You can set the IP address of the DLC-02. After entering the IP address, click "Write" and the IP address will be displayed on the DLC-02 screen. After the IP address is set, the Modbus TCP communication operation can be started.

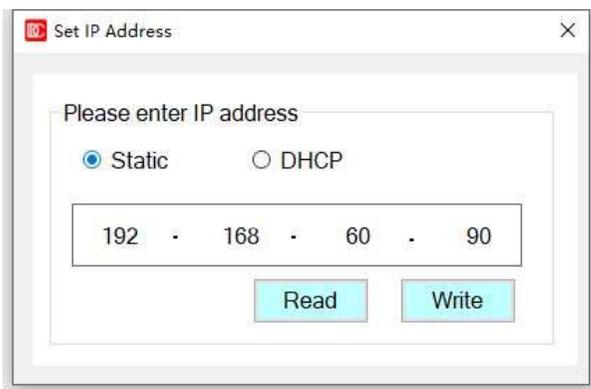
#### ※DHCP

If there is a DHCP server in the network, please first select the "DHCP" mode and click "write", set the IP mode of dlc-02 to DHCP, and then connect the network cable. After the network cable is connected, the dlc-02 will be automatically assigned an IP address and displayed on the screen home page.



#### ※Static

If there is no DHCP server in the network or you want to use a static IP address, please select the "static" mode and enter the IP address.



#### ● Time calibration

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

#### 4.1.4 About

Display information about equipment model and software version.



#### 4.1.5 Shortcut bar

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



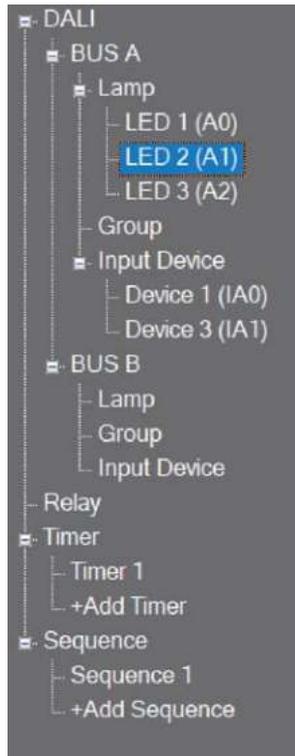
## 4.2 Installation and effect



- Select "Installation" to enter Dali parameter setting and test interface. See chapter 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6
- Select "effect" to enter the effect setting interface. See Chapter 4.3.7 for details

## 4.3 DALI bus window

Displays the lamps and input devices connected to the bus, allowing you to view information about groups, relays, timers, and sequences.



#### 4.3.1 Lamp

##### 4.3.1.1 Lamp rename and address change

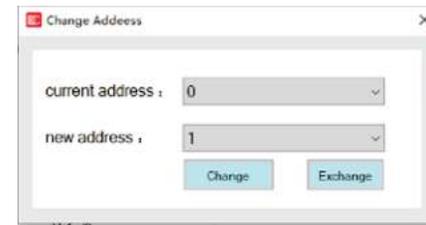
Right click the selected lamp and the options of "Rename" and "change address" will pop up. Users can customize the lamp name and modify the DALI short address of the lamp.



●Rename : Modify the name directly in the following green areas, with a maximum length of 12 characters.



●change address :



※Use the "modify" 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: ※ the address modification function will take effect only when there are less than 64 devices on the bus (A or B) .

※ "modify 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 Parameter setting and testing

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

### LCM-40TW

Reset Read Write

Support Colour Type: Colour Tc 

level test: 100%  ON  OFF

colour test: 6300K  Set Read

scene test: 1 2 3 4 5 6 7 8  
9 10 11 12 13 14 15 16

DALI Address: 0  
DALI Version: 2.0  
Physical Min Level: 27 0.2%  
Min Level: 27 0.2%  
Max Level: 254 100%  
Fade Rate: [1] 358 Steps/s  
Fade Time: [0] no fade  
Bus Group Set: Edit

Power On Behavior:  Go to last level  
 Go to power on level  
254 100%  
6500K 

Failure Behavior:  no change  
 Go to Sys. failure level  
254 100%  
6500K 

Single Light Scene Set: Edit

#### 4.3.1.2.1 Parameter reset / read / write

Reset Read Write

● 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.

#### 4.3.1.2.2 Colour type

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

Support Colour Type: Colour Tc 

● 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 color temperature value, and customized warmest / coldest color temperature value of the lamp.

Configuration

Colour Temperature Tc Step Increment: 1 Mirek

Tc Setting

Colour Temperature Tc Physical Warmest: 2600K 

Colour Temperature Tc Physical Coolest: 6500K 

Colour Temperature Tc Warmest: 2600K 

Colour Temperature Tc Coolest: 6500K 

Accept Cancel

The following table shows a description of the relevant parameters :

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

#### 4.3.1.2.3 Lamp test

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



The following table shows a description of the relevant parameters :

Parameter	Value	Comment
Level test	<ul style="list-style-type: none"> <li>● Minimum brightness</li> <li>● <input type="button" value="ON"/></li> <li>● <input type="button" value="OFF"/></li> </ul>	<ul style="list-style-type: none"> <li>● Slide the slider to the specified brightness. When the slider is released, the brightness of the lamp will change. "Minimum brightness" refers to the user-defined minimum brightness value of the lamp</li> <li>● <input type="button" value="ON"/> : Set the brightness of the light to 100%</li> <li>● <input type="button" value="OFF"/> : Turn off lamps</li> </ul>
If the color type of the device is "Colour Tc", the color adjustment test can be performed		
Colour test	<ul style="list-style-type: none"> <li>● Colour Temperature Tc Warmest~ Colour Temperature Tc Coolest</li> </ul>	<ul style="list-style-type: none"> <li>● The "Colour Temperature Tc Warmest" refers to the user-defined warmest color temperature value of the lamp</li> <li>● The "Colour Temperature Tc Coolest" refers to the user-defined coolest color temperature value of the lamp</li> </ul> <p>For related settings, please refer to Chapter 4.3.1.2.2</p>
If the color type of the device is "RGB(W)", the color adjustment test can be performed		
Colour test	<ul style="list-style-type: none"> <li>● #000000~#FFFFFF</li> <li>● R/G/B : 0~255</li> </ul>	<p>There are two input methods "HEX" and "RGB" in the color picker. If it is "RGBW", you can also set its "white value", the range is 0~100</p>

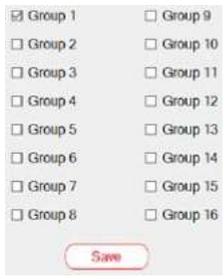
Parameter	Value	Comment
If the color type of the device is "xy coordinate", the color adjustment test can be performed		
Colour test	<ul style="list-style-type: none"> <li>● x : 0~0.8</li> <li>● y : 0~0.9</li> </ul>	<ul style="list-style-type: none"> <li>● There are two input methods "axis" and "xy" in the color picker</li> <li>● "MASK": Indicates that the color does not change, that is, the previous color value is maintained</li> </ul>
Set	● <input type="button" value="SET"/>	Click "Set" to change the lamp color
Read	● <input type="button" value="Read"/>	Click "Read" to read the current color value of the lamp
Scene test	●	Click the scene number to trigger the scene

#### 4.3.1.2.4 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 color information.



The following table shows a description of the relevant parameters :

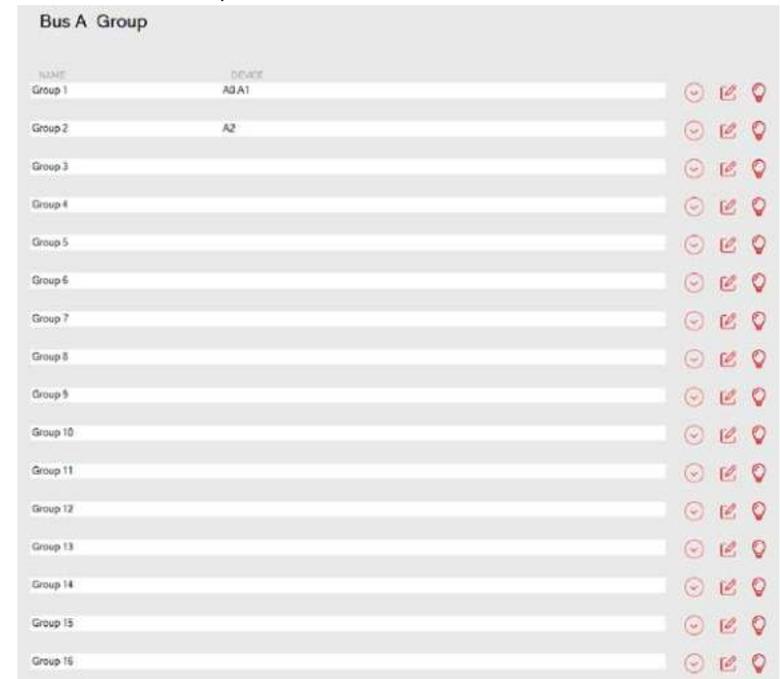
Parameter	Value	Comment
DALI address	● 0~63	Display the address of the lamp in the DALI bus
DALI version	● X.X	Displays the version number of the lamp. "2.0" means DALI version 2.0
Physical min level	● 0~254	Displays the minimum physical dimming gear of the lamp
Min level	● 0~254	Customize the minimum 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. Fade rate refers to the speed at which the brightness changes when the light is dimmed. Such as pressing dimming
Fade time	● no fade ● 0.7s ● 1.0s ..... ● 90.5s	Set the dimming fade time of the lamp. The fade time refers to the time when the dimming action is completed after receiving the dimming command
Bus group set	●  	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 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

Parameter	Value	Comment
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 setting range is limited by the "min. level"
color control	● 	● This option is only available when "Power on behavior" is selected as "go to power on level", click"  " to set the color of the lamp after AC power-on. ● When the lamp type is "Colour Tc", set its color 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 color value; ● "MASK" means that the color of the lamp does not change, that is, the color value before the AC power failure is maintained
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 driver, if the bus fault detection of the DALI driver is earlier than the output of the DLC-02 DALI bus, the DALI driver 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 setting range is limited by the "min. level"

Parameter	Value	Comment
color control	<input type="radio"/> <input type="text" value="MASK"/> 	<ul style="list-style-type: none"> <li>● This option is only available when "Failure behavior" is selected as "go to sys. Failure level", click "  " to set the color of the lamp after the DALI bus is powered off</li> <li>● When the lamp type is "Colour Tc", set its color temperature value;</li> <li>● When the lamp type is "RGB(W)", set its RGB value and white value;</li> <li>● When the lamp type is "xy coordinate", set the xy color value;</li> <li>● "MASK" means that the color of the lamp does not change, that is, the color before the power failure of the DALI bus is maintained</li> </ul>
Single light scene set	<input type="radio"/> <input type="button" value="Edit"/> 	<ul style="list-style-type: none"> <li>● Click the "Edit" button to enter the scene menu. Check and configure the scene information and click "Save" to complete the lighting scene setting.</li> <li>● When the lamp type is "Colour Tc", set its color temperature value;</li> <li>● When the lamp type is "RGB(W)", set its RGB value and white value;</li> <li>● When the lamp type is "xy coordinate", set the xy color value;</li> <li>● "MASK" means that the brightness or color of the lamp does not change, that is, the current brightness and color are maintained</li> </ul>

#### 4.3.2 Group

The group interface shows the grouping information of lamps on the bus. You can modify the grouping of lamps again and perform on/off test of lamps.



- "  " :Drop down the row button, when the number of lamps in the group is large, click this button to display all lamps.
- "  " :Click "Edit" button to pop up the "Group Edit" menu, as shown below. Select lamps to join or quit the group by "move button".



- "  " :Turn off all lamps in this group.
- "  " :Turn on all lamps in this group.

### 4.3.3 Input devices

Displays all DALI input devices connected to the bus (such as switch panels, occupancy sensors, light sensors, etc.). Right-click an input device to rename and change its address.



#### 4.3.3.1 Renaming and modifying address

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

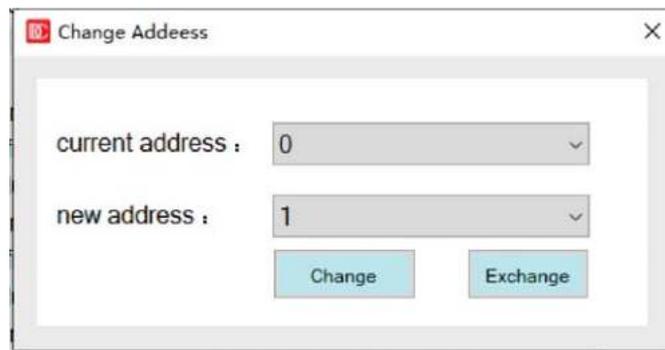


●Modify the address :

※Use the Modify button to change the current address to an address not used by any other input device on the bus.

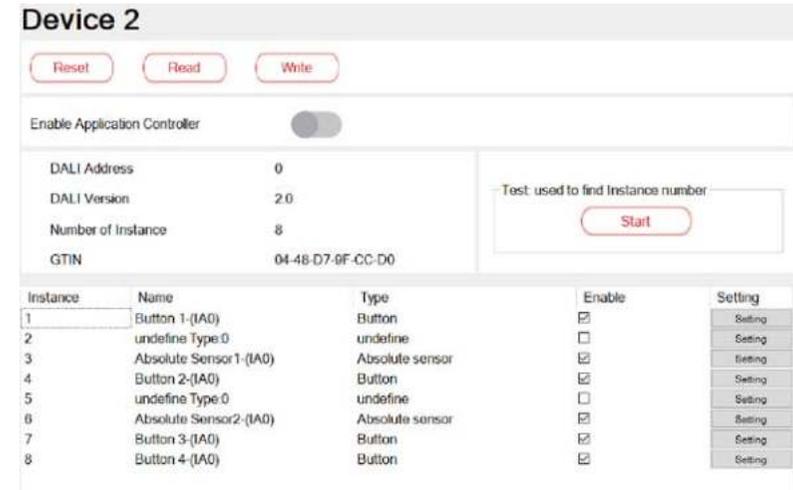
※Use the exchange button to swap the current address with an address already used by other input devices on the bus.

Note : The change address function takes effect only when there are fewer than 64 devices on bus A or B.



#### 4.3.3.2 Entering 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.



The following table shows a description of the relevant parameters :

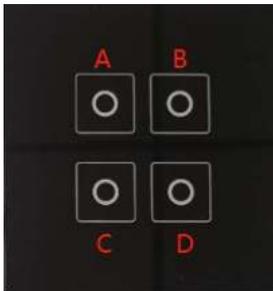
Parameter	Value	Comment
Reset	● <input type="button" value="Reset"/>	Restore the device to "factory defaults"
Read	● <input type="button" value="Read"/>	Read the internal configuration information of the device
Write	● <input type="button" value="Write"/>	Write the configuration information set by the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

Parameter	Value	Comment
Test: used to find instance number	● <input type="radio"/> Start	Help users find target events. See Section 4.3.3.3 for details
Enable	● <input type="radio"/> check ● <input type="radio"/> uncheck	● <input type="radio"/> check : Select the event as the input event ● <input type="radio"/> 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	● <input type="text" value="Setting"/>	Set the relevant parameters of the input device. See chapter 4.3.3.4 for details

#### 4.3.3.3 Test: Query the instance number corresponding to the device

This function helps users quickly find the number of the event that is currently in action.

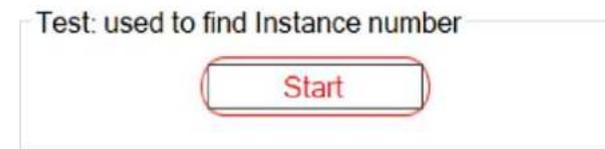
The following uses the switch panel (with four built-in buttons: A/B/C/D) as an example :



Firstly, the input device was obtained through "Scan", with 4 built-in buttons, 2 absolute sensors and 2 undefine types, as shown in the figure below. At this time, users do not know which Button the A/B/C/D buttons on the switch panel correspond to respectively.

Instance	Name	Type	Enable	Setting
1	Button 1-(IA0)	Button	<input checked="" type="checkbox"/>	Setting
2	undefine Type:0	undefine	<input type="checkbox"/>	Setting
3	Absolute Sensor1-(IA0)	Absolute sensor	<input type="checkbox"/>	Setting
4	Button 2-(IA0)	Button	<input checked="" type="checkbox"/>	Setting
5	undefine Type:0	undefine	<input type="checkbox"/>	Setting
6	Absolute Sensor2-(IA0)	Absolute sensor	<input checked="" type="checkbox"/>	Setting
7	Button 3-(IA0)	Button	<input checked="" type="checkbox"/>	Setting
8	Button 4-(IA0)	Button	<input checked="" type="checkbox"/>	Setting

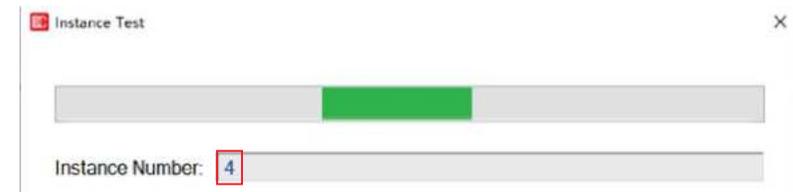
In this case, you can use the "Test: used to find Instance number" and click "  ".



The instance test page is displayed :



When Button A on the switch panel is long pressed, the column of instance number shows "4", marked in the red box as shown below, indicating that Button A corresponds to instance 4 (Button 2).



Instance	Name
1	Button 1-(IA0)
2	undefine Type:0
3	Absolute Sensor1-(IA0)
4	Button 2-(IA0)
5	undefine Type:0
6	Absolute Sensor2-(IA0)
7	Button 3-(IA0)
8	Button 4-(IA0)

Note: The test action is different for different input device types.

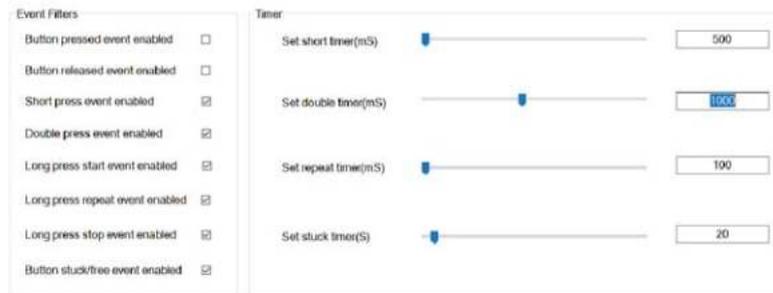
- Button instance test: please keep long pressing the button;
- Light sensor example test: please change the luminance value of the lamp;
- Occupancy sensor instance test: please enter the detection range;
- Sliding bar example test: please slide the slider.

#### 4.3.3.4 Input device parameter setting description

PC software also provides input device parameter setting function, Click on the "Setting", The parameter setting screen is displayed.

The following lists parameter Settings for different input device types :

##### ● Button

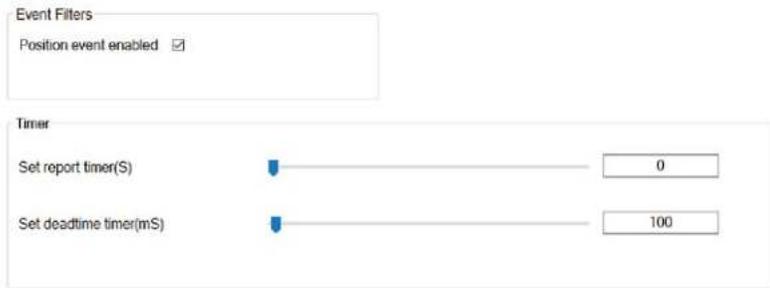


The following table shows a description of the relevant parameters :

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

Parameter	Value	Comment
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.

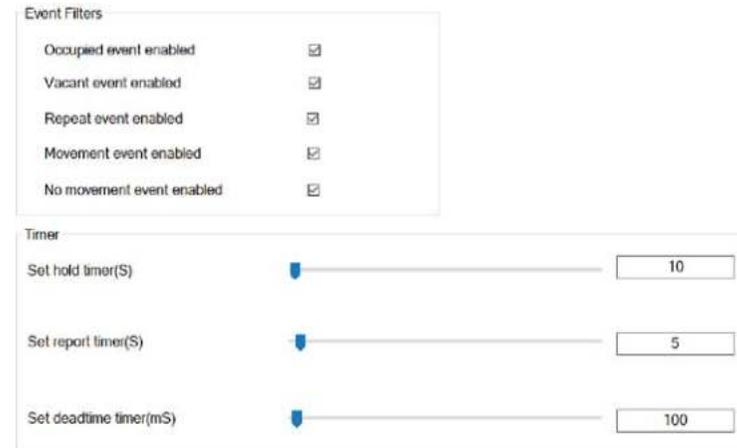
●Absolute sensor



The following table shows a description of the relevant parameters :

Parameter	Value	Comment
Position event enabled	●check ●uncheck	Enable or disable "Position reporting 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

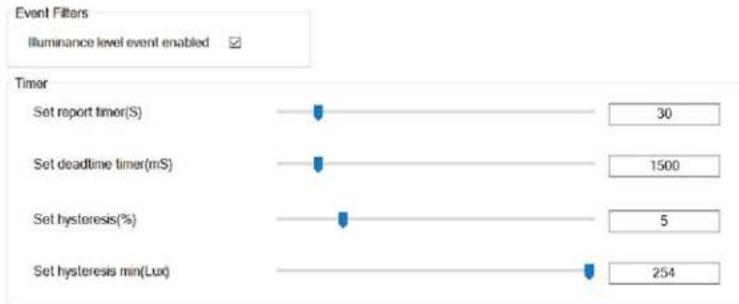
●Presence/movement sensor



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 "Repeat 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 :

Parameter	Value	Comment
Luminance level event enabled	<ul style="list-style-type: none"> <li>●check</li> <li>●uncheck</li> </ul>	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 Relay

In the relay interface, you can control the relay on/off action online

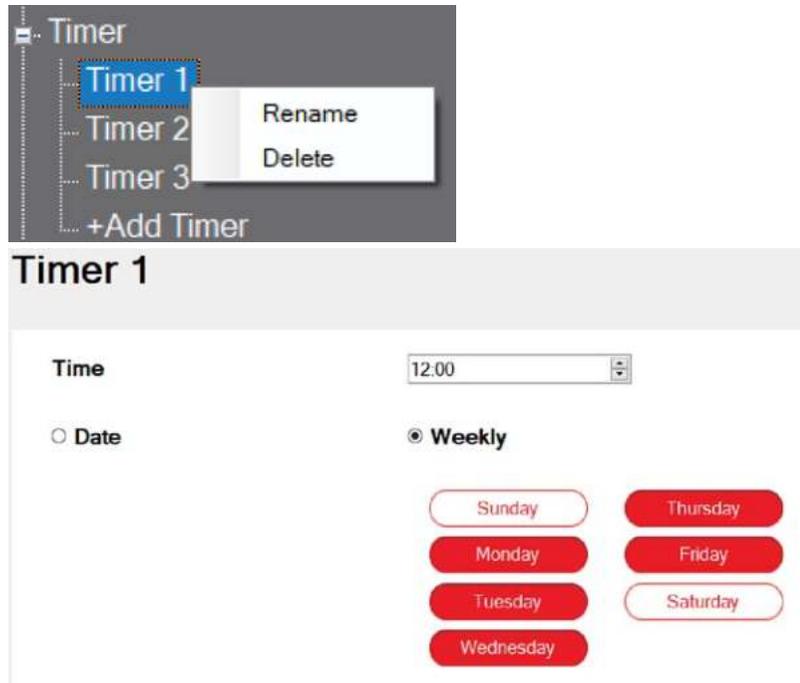


The following table shows a description of the relevant parameters :

Parameter	Value	Comment
Relay 1~4	<ul style="list-style-type: none"> <li>●ON</li> <li>●OFF</li> </ul>	<ul style="list-style-type: none"> <li>●ON: the internal contact of the relay is closed;</li> <li>●OFF: The internal contact of the relay is open.</li> </ul>

#### 4.3.5 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 on DALI bus should be adjusted or switched off. Click The "Add Timer" option to create a new timer event. Up to 256 timer events can be created. Click the right mouse button to "rename" and "delete" it. Note: Up to 12 characters are allowed for renaming.

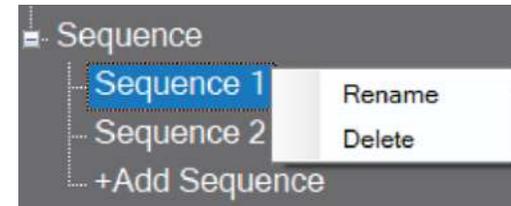


The following table shows a description of the relevant parameters :

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)

#### 4.3.6 Sequence

In the sequence interface, you can set the brightness or color 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 16 steps. Click the right mouse button to "rename" and "delete" it. Note: Up to 12 characters are allowed for renaming.



Step	Bus ID	Lamp	Lamp Type	Colour Value	Light Value(%)	Fade Time	Delay Time(s)
1	Bus A	LED1	Colour Temperature	5000K	100%	no fade	10
2	Bus A	Group1	RGB	254,214,187	100%	no fade	10
3	Disable	-	-	-	-	-	-
4	Disable	-	-	-	-	-	-
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	Bus A	Group1	RGB	254,30,118	100%	no fade	10

The following table shows a description of the relevant parameters :

Parameter	Value	Comment
Step	●1~16	sequence run order
Bus ID	●Disable ●Bus A ●Bus B	Select bus A/B
Lamp	●LED 1~64 ●Group 1~16 ●Broadcast	Select the control object: specify lamp or group or broadcast to the bus

参数	值	说明
Lamp type	<ul style="list-style-type: none"> <li>●Normal Dimming</li> <li>●Colour Temperature</li> <li>●xy coordinate</li> <li>●RGB</li> <li>●RGBW</li> </ul>	Select the color type of the control object, and select it according to the color type of the actually connected lamps. Note: 1. The brightness command is shared; 2. The color commands are not shared. When a color type is selected, other lamps that do not belong to this color type will not respond to the color command
Colour value	<ul style="list-style-type: none"> <li>●RGB Colour</li> <li>●RGBW Colour</li> <li>●Colour temperature</li> <li>●xy Colour</li> </ul>	This option is only available when "Lamp type" is not selected as "Normal Dimming", which is used to set the color of the controlled object
Light value (%)	●0~100%	Set the brightness of the controlled object
Fade time	<ul style="list-style-type: none"> <li>●no change</li> <li>●no fade, 0.7s, 1.0s, ...64.0s, 90.5s</li> </ul>	Set the dimming fade time of the controlled object. ●no change: maintain the last dimming time
Delay time (s)	●0~65535s	Set delay time; Assuming that the delay time set by "Sequence 1" is 10s, after "Sequence 1" is executed, sequence 2 will be execute after a delay of 10s
*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 color, 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

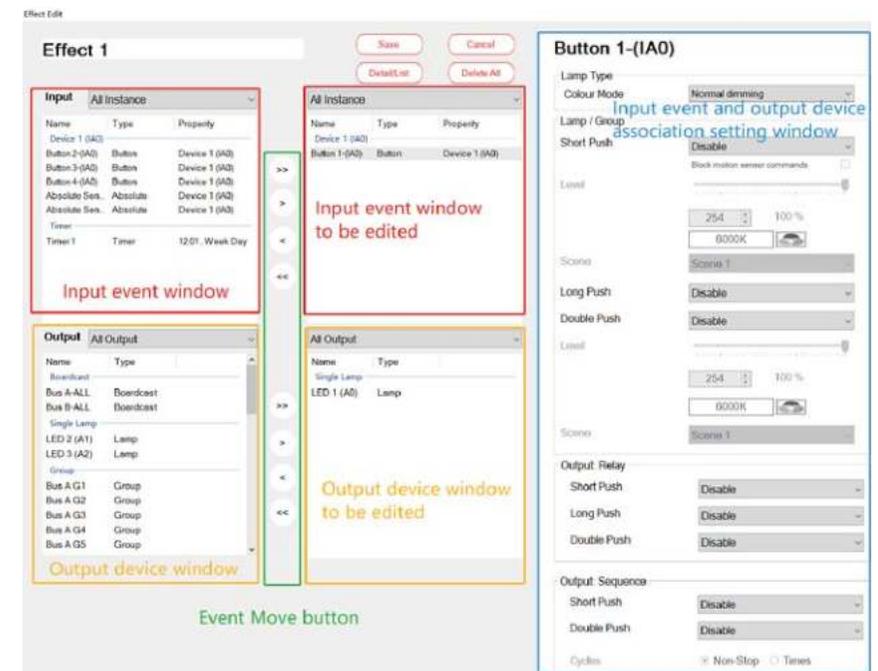
## 4.4 Effect

●Effects are the core function of DLC-02, used to edit the logical relationship between the control device and the controlled device as well as the timing Settings. The entire DALI2 device 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.
- 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.

Input <span>All Instance</span>		
Name	Type	Property
<b>Device 2 (IA0)</b>		
Button 2-(IA0)	Button	Device 2 (IA0)
Button 3-(IA0)	Button	Device 2 (IA0)
Button 4-(IA0)	Button	Device 2 (IA0)
Absolute Sen...	Absolute	Device 2 (IA0)
Absolute Sen...	Absolute	Device 2 (IA0)
<b>Timer</b>		
Timer 1	Timer	12:00 , Week Day

##### 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.

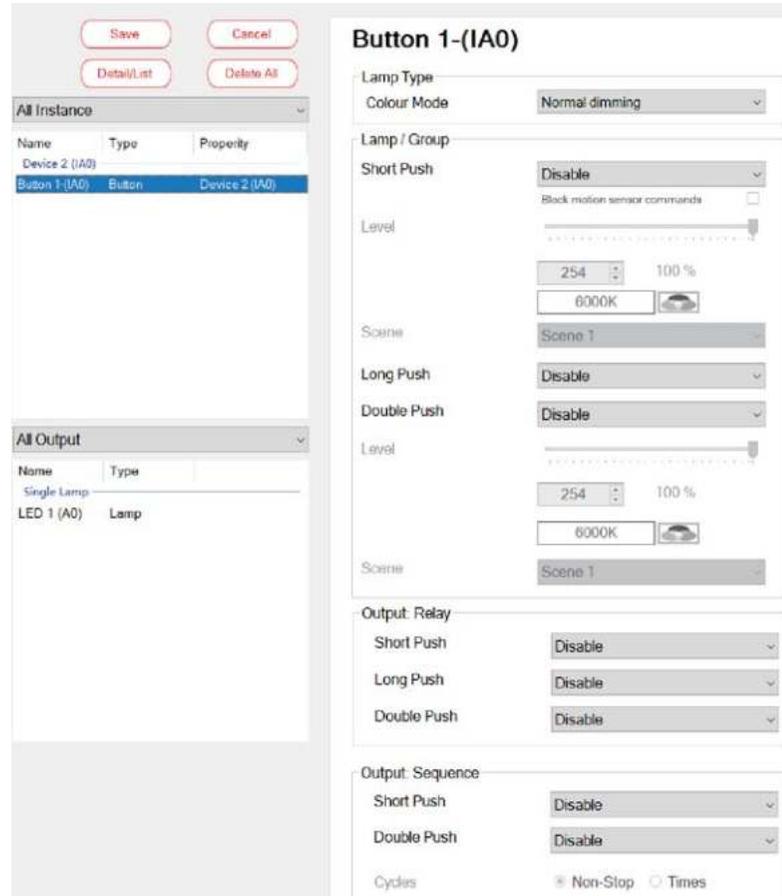
Output <span>All Output</span>	
Name	Type
<b>Boardcast</b>	
Bus A-ALL	Boardcast
Bus B-ALL	Boardcast
<b>Single Lamp</b>	
LED1 (A0)	Lamp
LED 2 (A1)	Lamp
LED 3 (A2)	Lamp
<b>Group</b>	
Bus A G1	Group
Bus A G2	Group
Bus A G3	Group
Bus A G4	Group

##### 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	<ul style="list-style-type: none"> <li>● Normal Dimming</li> <li>● Colour temperature</li> <li>● xy coordinate</li> <li>● Colour RGB</li> <li>● Colour RGBW</li> </ul>	Choose a color type

Parameter	Value	Comment
Lamp/Group: Short push	<ul style="list-style-type: none"> <li>● Disable</li> <li>● Off</li> <li>● Go to level</li> <li>● Go to scene</li> <li>● Toggle (level and off)</li> <li>● Toggle (scene and off)</li> <li>● Lock motion detection</li> <li>● Unlock motion detection</li> </ul>	<ul style="list-style-type: none"> <li>● Disable: Disable short push function to control lamps.</li> <li>● Off: The associated lamp is turned off.</li> <li>● Go to level: The brightness of the associated fixture is adjusted to the custom dimming value.</li> <li>● Go to scene: Trigger a custom scene.</li> <li>● 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.</li> </ul>
	<p>When the colour type of the lamp is Colour temperature, the following parameters will be added</p> <ul style="list-style-type: none"> <li>● Go to level and Tc</li> <li>● Go to Tc</li> <li>● Toggle (level/Tc and off)</li> </ul>	<p>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.</p>
	<p>When the colour type of the lamp is "xy coordinate" or "Colour RGB" or "Colour RGBW" , the following parameters will be added</p> <ul style="list-style-type: none"> <li>● Go to level and Colour</li> <li>● Go to Colour</li> <li>● Toggle (level/ Colour and Off)</li> </ul>	<p>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.</p> <ul style="list-style-type: none"> <li>● 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.</li> <li>● Lock motion detection: Short push, this lamp does not respond to the command of the motion sensor.</li> <li>● Unlock motion detection: Short push, this lamp responds to the command of the motion sensor.</li> </ul>

Parameter	Value	Comment
Lamp/Group: Short push		<ul style="list-style-type: none"> <li>●Go to level and Tc: Short push to adjust the lamp to custom brightness and color temperature.</li> <li>●Go to Tc: Short push to adjust the lamp to custom color temperature.</li> <li>●Toggle (level/Tc and off): Short push to adjust the lamp to custom brightness and color temperature, short push again to turn off the lamp.</li> <li>●Go to level and Colour: Short push to adjust the lamp to custom brightness and color.</li> <li>●Go to Colour: Short push to adjust the lamp to color.</li> <li>●Toggle (level/Colour and Off): Short push to adjust the lamp to custom brightness and color, short push again to turn off the lamp.</li> </ul> <p>Note: Before using the short push function, you need to enable the short press event. For details, please refer to Chapter 4.3.3.4 "button"</p>
Block motion sensor commands	●Enable/Disable	It is valid when "Short press" selects ""Toggle xxx". "Enable", the DLC-02 does not respond to commands from the occupancy sensor; "Disable", the DLC-02 responds to commands from the occupancy sensor
Level	<ul style="list-style-type: none"> <li>●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</li> </ul> 	This option is only available when the "short push" selects "Go to level" or "Toggle Scene and Off"
Scene	●Scene 1~ scene 16	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	<ul style="list-style-type: none"> <li>●disable</li> <li>●dimming</li> <li>●dimming up</li> <li>●dimming down</li> <li>●dimming (enable on/off)</li> <li>●dimming up (off to on)</li> <li>●dimming down (dim to off)</li> </ul>	<ul style="list-style-type: none"> <li>●disable: Disable long press to control lamps.</li> <li>●dimming: Long press, dim up or down alternately, you cannot turn on or off the lamp through this command.</li> <li>●dimming up: Long push to dim up, the lamp cannot be turned on by this command.</li> <li>●dimming down: Long push to dim down, the lamp cannot be turned off by this command.</li> <li>●dimming (enable on/off) : Long press, dim up or down alternately, you can turn on or off the lamp through this command.</li> <li>●dimming up (off to on): Long push to dim up, the lamp can be turned on by this command.</li> <li>●dimming down (dim to off) : Long push to dim down, the lamp can be turned off by this command.</li> </ul>
	<p>When the colour type of the lamp is Colour temperature, the following parameters will be added.</p> <ul style="list-style-type: none"> <li>●change Tc</li> <li>●colder</li> <li>●warmer</li> <li>●dim to warm</li> </ul>	<ul style="list-style-type: none"> <li>●dimming (enable on/off) : Long press, dim up or down alternately, you can turn on or off the lamp through this command.</li> <li>●dimming up (off to on): Long push to dim up, the lamp can be turned on by this command.</li> <li>●dimming down (dim to off) : Long push to dim down, the lamp can be turned off by this command.</li> </ul>
	<p>When the colour type of the lamp is "xy coordinate", the following parameters will be added.</p> <ul style="list-style-type: none"> <li>●Diming x</li> <li>●Diming y</li> </ul>	<ul style="list-style-type: none"> <li>●change Tc: Long push to adjust cool or warm color temperature.</li> <li>●colder: Long push to cool the color temperature.</li> <li>●warmer: Long push to warm up the color temperature.</li> <li>●dim to warm: Long press to adjust cool or warm color temperature. However, the warmer the color temperature, the lower the brightness; the cooler the color temperature, the higher the brightness.</li> <li>●Diming x: Increase or decrease the x value</li> <li>●Diming y: Increase or decrease the y value</li> </ul>

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. <ul style="list-style-type: none"> <li>●change red</li> <li>●red increase</li> <li>●red decrease</li> <li>●change green</li> <li>●green increase</li> <li>●green decrease</li> <li>●change blue</li> <li>●blue increase</li> <li>●blue decrease</li> <li>●change white</li> <li>●white increase</li> <li>●white decrease</li> <li>●RGB circle</li> </ul>	<ul style="list-style-type: none"> <li>●change red: Long push to increase or decrease the brightness of red.</li> <li>●red increase: Long push to increase the brightness of red.</li> <li>●red decrease: Long push to decrease the brightness of red.</li> <li>●change green: Long push to increase or decrease the brightness of green.</li> <li>●green increase: Long push to increase the brightness of green.</li> <li>●green decrease: Long push to decrease the brightness of green.</li> <li>●change blue: Long push to increase or decrease the brightness of blue.</li> <li>●blue increase: Long push to increase the brightness of blue.</li> <li>●blue decrease: Long push to decrease the brightness of blue.</li> <li>●change white: Long push to increase or decrease the brightness of white.</li> <li>●white increase: Long push to increase the brightness of white.</li> <li>●white decrease: Long push to decrease the brightness of white.</li> <li>●RGB circle: Long press to cycle through RGB colors.</li> </ul> <p>Note: Before using the long push function, you need to enable the long press event. For details, please refer to Chapter 4.3.3.4 "button".</p>

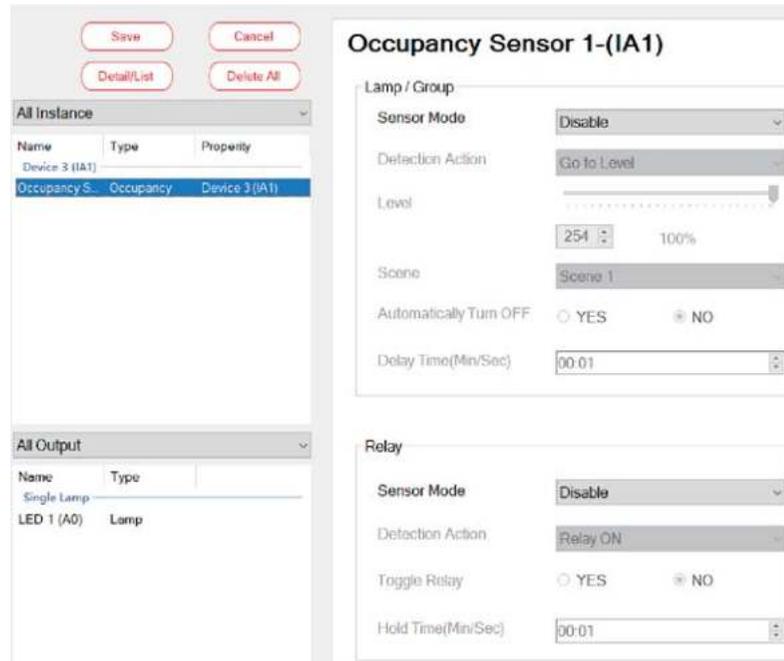
Parameter	Value	Comment
Lamp/Group: Double push	<ul style="list-style-type: none"> <li>●Disable</li> <li>●Off</li> <li>●Go to level</li> <li>●Go to scene</li> <li>●Lock motion detection</li> <li>●Unlock motion detection</li> </ul>	<ul style="list-style-type: none"> <li>●Disable: Disable short push function to control lamps.</li> <li>●Off: The associated lamp is turned off.</li> <li>●Go to level: The brightness of the associated fixture is adjusted to the custom dimming value.</li> <li>●Go to scene: Trigger a custom scene.</li> <li>●Lock motion detection: Short push, this lamp does not respond to the command of the motion sensor.</li> <li>●Unlock motion detection: Short push, this lamp responds to the command of the motion sensor.</li> <li>●Go to level and Tc: Short push to adjust the lamp to custom brightness and color temperature.</li> <li>●Go to level and Colour: Short push to adjust the lamp to custom brightness and color.</li> </ul>
	When the colour type of the lamp is Colour temperature, the following parameters will be added. <ul style="list-style-type: none"> <li>●Go to level and Tc</li> </ul>	
	When the colour type of the lamp is "xy coordinate" or "Colour RGB" or "Colour RGBW", the following parameters will be added. <ul style="list-style-type: none"> <li>●Go to level and Colour</li> </ul>	
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	<ul style="list-style-type: none"> <li>●Scene 1~ scene 16</li> </ul>	This option is only available when "Double push" is selected as "Go to scene".

Parameter	Value	Comment
Relay: Short push	<ul style="list-style-type: none"> <li>● disable</li> <li>● relay on</li> <li>● relay off</li> <li>● relay toggle</li> </ul>	<ul style="list-style-type: none"> <li>● disable: Disable short push to control relay.</li> <li>● relay on: Short push to open the relay.</li> <li>● relay off: Short push to close the relay.</li> <li>● 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.</li> </ul>
Relay: Long push	<ul style="list-style-type: none"> <li>● disable</li> <li>● relay on</li> <li>● relay off</li> <li>● relay toggle</li> </ul>	<ul style="list-style-type: none"> <li>● disable: Disable long push to control relay.</li> <li>● relay on: Long push to open the relay.</li> <li>● relay off: Long push to close the relay.</li> <li>● 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.</li> </ul>
Relay: Double push	<ul style="list-style-type: none"> <li>● disable</li> <li>● relay on</li> <li>● relay off</li> <li>● relay toggle</li> </ul>	<ul style="list-style-type: none"> <li>● disable: Disable double push to control relay.</li> <li>● relay on: Double push to open the relay.</li> <li>● relay off: Double push to close the relay.</li> <li>● 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.</li> </ul>
Sequence: Short push	<ul style="list-style-type: none"> <li>● disable</li> <li>● Sequence start</li> <li>● Sequence stop</li> <li>● Sequence toggle</li> </ul>	<ul style="list-style-type: none"> <li>● disable: Disable short push to control sequence.</li> <li>● Sequence start: Short push to start sequence.</li> <li>● Sequence stop: Short push to stop sequence</li> <li>● 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.</li> </ul>

Parameter	Value	Comment
Sequence: Double push	<ul style="list-style-type: none"> <li>● disable</li> <li>● Sequence start</li> <li>● Sequence stop</li> <li>● Sequence toggle</li> </ul>	<ul style="list-style-type: none"> <li>● disable: Disable double push to control sequence.</li> <li>● Sequence start: Double push to start sequence.</li> <li>● Sequence stop: Double push to stop sequence</li> <li>● 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.</li> </ul>
Cycles	<ul style="list-style-type: none"> <li>● Non-stop</li> <li>● times</li> </ul>	<ul style="list-style-type: none"> <li>● Non-stop: Repeating the sequence all the time.</li> <li>● times: Limit the number of sequence loops, which can be limited to 1-255 times.</li> </ul>
Reaction on stop	<ul style="list-style-type: none"> <li>● stop immediately</li> <li>● complete the cycle</li> </ul>	<ul style="list-style-type: none"> <li>● stop immediately: Immediately stop the current operation after receiving the command "Sequence stop";</li> <li>● complete the cycle: After receiving the command "Sequence stop", it will stop after completing the current cycle.</li> </ul>

#### 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 :



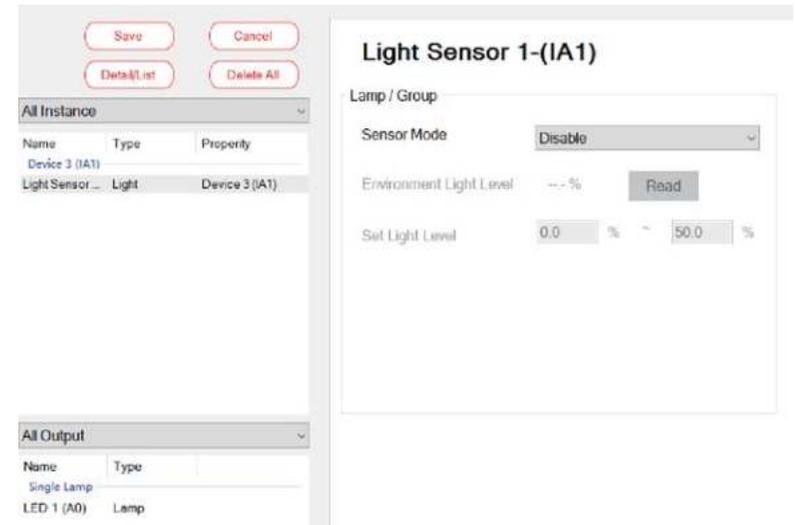
The following table shows a description of the relevant parameters :

Parameter	Value	Comment
Lamp/group: Sensor mode	<ul style="list-style-type: none"> <li>● disable</li> <li>● occupancy sensor mode</li> <li>● motion sensor mode</li> </ul>	<ul style="list-style-type: none"> <li>● disable: Disable occupancy / motion sensors to control lamps.</li> <li>● occupancy sensor mode: The sensor acts as an occupancy sensor to control the lamps.</li> <li>● motion sensor mode: The sensor acts as a motion sensor to control the lamps.</li> </ul> <p>Note: ※occupancy sensor: Corresponding to the "occupancy event" of DALI Part 303, when the DLC-02 detects the occupancy event reported by the sensor, it will execute the specified action. Before using the occupancy sensor, it is necessary to enable the "occupancy event" and "idle event".</p> <p>※Motion sensor: Corresponding to the "Motion Event" of DALI Part 303, when the DLC-02 detects the motion event reported by the sensor, it will execute the specified action. Before using the motion sensor, "movement Event" and "No movement Event" must be enabled";</p> <p>For event enable instructions, please see chapter 4.3.3.4 "Occupancy/Motion Sensor"</p>
Lamp/group: Detection Action	<ul style="list-style-type: none"> <li>● go to level</li> <li>● go to scene</li> </ul>	<ul style="list-style-type: none"> <li>● go to level: After the sensor detects the action, the brightness of the associated lamps is adjusted to the custom dimming value.</li> <li>● go to scene: After the sensor detects motion, trigger a custom scene</li> </ul>
Lamp/group: level	● 0~254	Set brightness
Lamp/group: scene	● scene 1~ scene 16	Choose a scene

Parameter	Value	Comment
Lamp/group: Automatically turn off	<ul style="list-style-type: none"> <li>● YES</li> <li>● NO</li> </ul>	<ul style="list-style-type: none"> <li>● YES: Enable the function of automatically turning off lamps;</li> <li>● NO: Disable the function of automatically turning off lamps.</li> </ul>
Lamp/group: Delay time (min/sec)	● 00:00~59:59 (min/sec)	This option is only available when "Automatically turn off" is selected as "YES". This parameter means that when motion is detected, turn on the lamp, and when no motion is detected, the lamp will keep the "Delay time", and then automatically turn off.
Relay: Sensor mode	<ul style="list-style-type: none"> <li>● disable</li> <li>● occupancy sensor mode</li> <li>● motion sensor mode</li> </ul>	<ul style="list-style-type: none"> <li>● disable: Disable occupancy / motion sensors to control relay.</li> <li>● occupancy sensor mode: The sensor acts as a occupancy sensor to control the relay.</li> <li>● motion sensor mode: The sensor acts as a motion sensor to control the relay.</li> </ul>
Relay: Detection action	<ul style="list-style-type: none"> <li>● relay on</li> <li>● relay off</li> </ul>	<ul style="list-style-type: none"> <li>● relay on: When motion is detected, open associated relay.</li> <li>● relay off: When motion is detected, close associated relay.</li> </ul>
Toggle relay	<ul style="list-style-type: none"> <li>● YES</li> <li>● NO</li> </ul>	<ul style="list-style-type: none"> <li>● YES: Within the set time, the relay returns to its original state.</li> <li>● NO: After the sensor detects the action, the relay will be turned on or off and then keep this state.</li> </ul>
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. When the Light Sensor event is selected, the following parameters will appear:

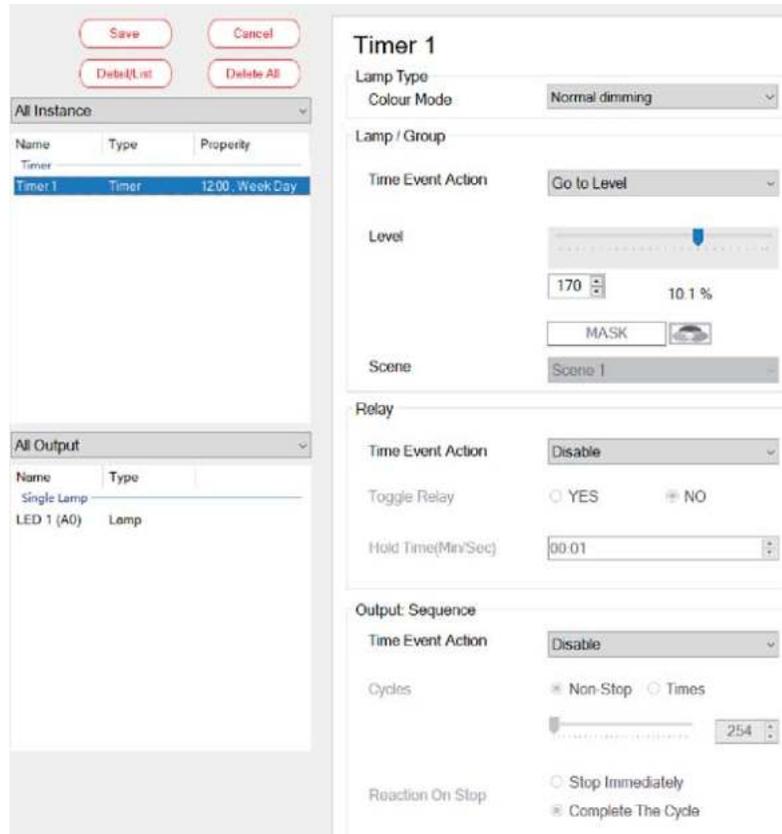


The following table shows a description of the relevant parameters :

Parameter	Value	Comment
Sensor mode	<ul style="list-style-type: none"> <li>● disable</li> <li>● enable</li> </ul>	<ul style="list-style-type: none"> <li>● disable: Disable light sensor.</li> <li>● enable: Calibrating the Light Sensor.</li> </ul> <p>Note: Before using the light sensor, you need to enable "Luminance Value Event", see Chapter 4.3.3.4 "Light Sensor" for details.</p>
Environment light level	● 0~100%	The percentage of brightness collected by the light sensor.
Set light level	● range	When the brightness value collected by the light sensor is within this range, the brightness of the lamp remains unchanged, otherwise, the lamp will be brightened or dimmed.

#### 4.4.6 Input event:timer

Set the Timer to control lamps, relays, and sequence events. When the timer event is selected, the following parameters will appear :



Parameter	Value	Comment
Lamp/group: Timer event action	<ul style="list-style-type: none"> <li>● disable</li> <li>● OFF</li> <li>● go to level (only normal dimming type)</li> <li>● go to scene</li> <li>● go to level and Tc (only Colour temperature)</li> <li>● go to level and colour (except normal dimming type)</li> </ul>	<ul style="list-style-type: none"> <li>● disable: Disable timed events to control lamps.</li> <li>● OFF: After the timed event is triggered, the associated lamp is turned off.</li> <li>● go to level: After the timing event is triggered, the brightness of the associated lamp is adjusted to the custom dimming value.</li> <li>● go to scene: After the timed event is triggered, the custom scene is triggered.</li> <li>● go to level and Tc</li> <li>● go to level and colour: After the timing event is triggered, the brightness and color temperature of the associated lamp are adjusted to custom values.</li> </ul>
Lamp/group: level	<ul style="list-style-type: none"> <li>● 0~254</li> </ul> <p>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.</p> 	<p>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 color.</p>

The following table shows a description of the relevant parameters :

Parameter	Value	Comment
Colour Temperature Tc Step Increment	<ul style="list-style-type: none"> <li>● Normal Dimming</li> <li>● Colour temperature</li> <li>● xy coordinate</li> <li>● Colour RGB</li> <li>● Colour RGBW</li> </ul>	Choose a color type.

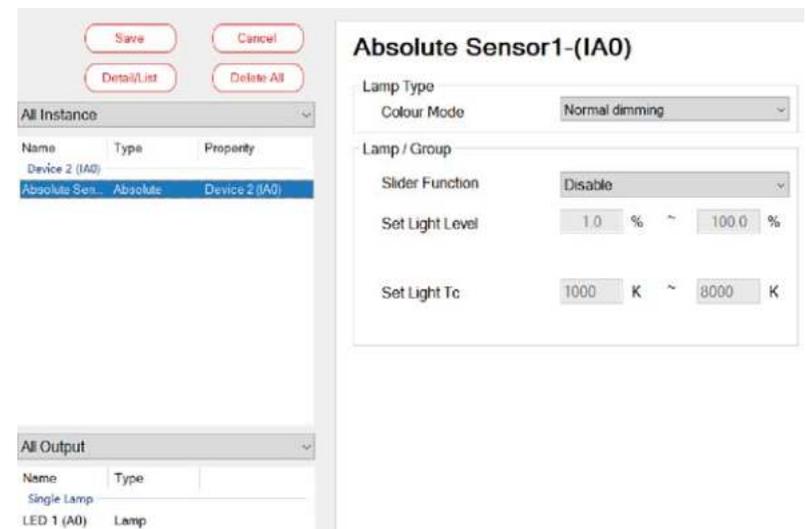
Parameter	Value	Comment
Lamp/group: scene	●Scene 1 ~ scene 16	This option is only available when "Time Event Action" is selected as "go to scene". After the timing event is triggered, the lamp is set to a certain scene.
Relay: Time event action	<ul style="list-style-type: none"> <li>●disable</li> <li>●relay on</li> <li>●relay off</li> <li>●relay toggle</li> </ul>	<ul style="list-style-type: none"> <li>●disable: Disable timed event to control relays.</li> <li>●relay on: When the timed event is triggered, the relay is turned on.</li> <li>●relay off: After the timed event is triggered, the relay is turned off.</li> <li>●relay toggle: Change the state of the relay after a timed event is triggered.</li> </ul>
Relay: toggle relay	<ul style="list-style-type: none"> <li>●是</li> <li>●否</li> </ul>	<ul style="list-style-type: none"> <li>●YES: Within the set time, the relay returns to its original state.</li> <li>●NO: After the timed event is triggered, the relay will be turned on or off and then keep this state.</li> </ul>
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".

参数	值	说明
Sequence: time event action	<ul style="list-style-type: none"> <li>●disable</li> <li>●Sequence start</li> <li>●Sequence stop</li> </ul>	<ul style="list-style-type: none"> <li>●disable: Disable timed events to control the sequence.</li> <li>●Sequence start: After the timed event fires, run the sequence.</li> <li>●Sequence stop: After the timed event fires, stop the sequence.</li> </ul>
Cycles	<ul style="list-style-type: none"> <li>●Non-stop</li> <li>●times</li> </ul>	<ul style="list-style-type: none"> <li>●Non-stop: Repeating the sequence all the time</li> <li>●times: Limit the number of sequence loops, which can be limited to 1-255 times.</li> </ul>
Reaction on stop	<ul style="list-style-type: none"> <li>●stop immediately</li> <li>●complete the cycle</li> </ul>	<ul style="list-style-type: none"> <li>●stop immediately: Immediately stop the current operation after receiving the command "Sequence stop" ;</li> <li>●complete the cycle: After receiving the command "Sequence stop" , it will stop after completing the current cycle.</li> </ul>

#### 4.4.7 Input event:absolute instance

Set the absolute instance to control the brightness and color 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	<ul style="list-style-type: none"> <li>● Normal Dimming</li> <li>● Colour temperature</li> <li>● xy coordinate</li> <li>● Colour RGB</li> <li>● Colour RGBW</li> </ul>	Choose a color type.
Slider function	<ul style="list-style-type: none"> <li>● disable</li> <li>● slider level</li> <li>● slider Tc (only colour temperature)</li> <li>● slider x (only xy coordinate)</li> <li>● slider y (only xy coordinate)</li> <li>● slider red (only Colour RGB\Colour RGBW)</li> <li>● slider green (only Colour RGB\Colour RGBW)</li> <li>● slider blue (only Colour RGB\Colour RGBW)</li> <li>● slider RGB (only Colour RGB\Colour RGBW)</li> <li>● slider white (Colour RGBW)</li> </ul>	<ul style="list-style-type: none"> <li>● disable: Disable sliders to control lamp.</li> <li>● slider level: Used to set brightness.</li> <li>● slider Tc: Used to set color temperature.</li> <li>● slider x: Used to set the x color, .</li> <li>● slider y: Used to set the y color.</li> <li>● slider red: Used to set the red.</li> <li>● slider green: Used to set the green.</li> <li>● slider blue: Used to set the blue.</li> <li>● slider RGB: Used to set RGB.</li> <li>● slider white: Used to set the white.</li> </ul> <p>Note: Before using the Slider function, you need to enable "Position event", please see Chapter 4.3.3.4 "Absolute Sensor" for details.</p>
Set light level	● 0.1%-100.0%	Set Limited dimming sliding range.
Set light Tc	● 1000-10000K	Set Limited color temperature sliding range.

## 4.5 Application Example

### 4.5.1 "Scene" example

Taking hotel lighting as an example, there are four color temperature lamps in the room. By setting the three buttons on the switch panel to correspond to the three scene modes "talk mode, reading mode and rest mode", guests can quickly switch to different lighting environments according to different time periods or work needs. The effect is as follows:

- ① Short push button 1 to switch to "talk mode", set the brightness to 100% and the color temperature to 6500K;
- ② Short push button 2 to switch to "reading mode": set the brightness to 80% and the color temperature to 4500K;
- ③ Short push button 3 to switch to "rest mode", set the brightness to 30% and the color temperature to 3000K.

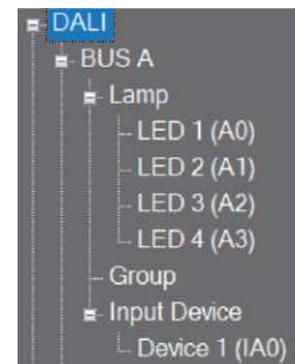
Implementation steps:

Step 1 : Switch panel and lamp addressing

Connect the switch panel equipment and four lamps in the room to bus A, and use the "Scan - New Initialization" function of the DLC software to assign addresses to them, as shown in the figure below:



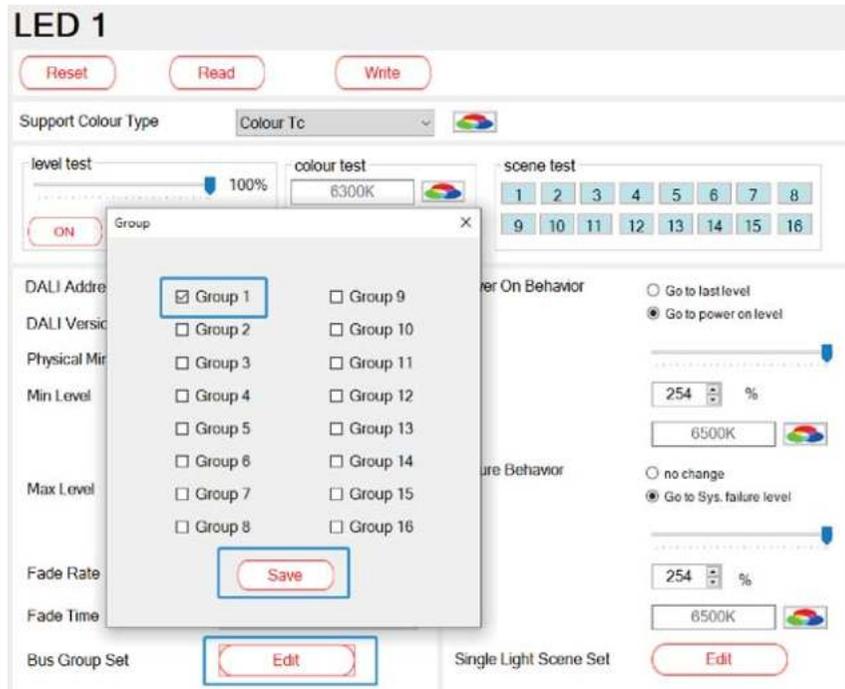
After scanning, four lamps (A0~A3) and one input device (IA0) appear on bus A.



## Step 2: Group and scene settings

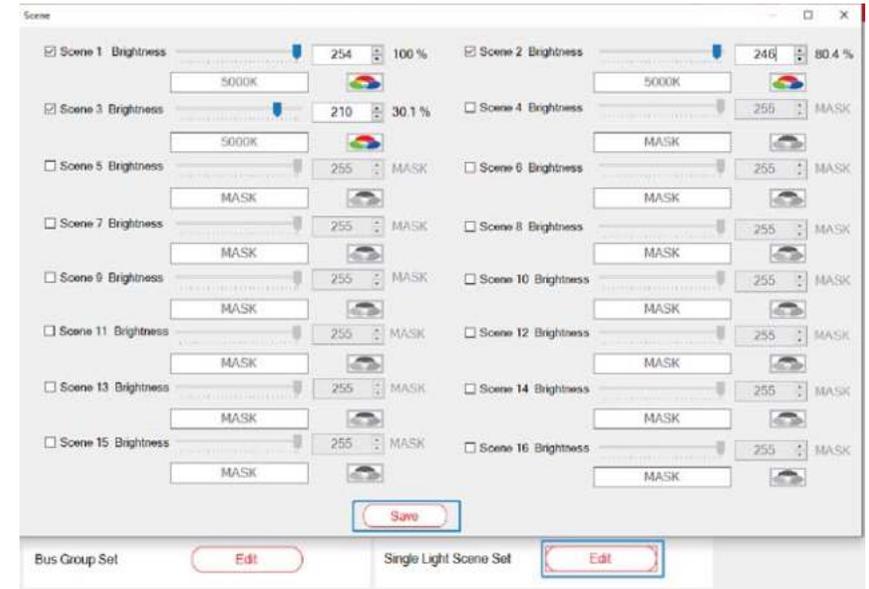
### ※Group setting

Select one of the lamps LED 1, click "Bus Group Setting - Edit" to open the group editing interface, check "Group 1" to add LED 1 to the group, and click "Save" to complete the setting. Use the same method to add LED 2, LED 3 and LED 4 to group



### ※Scene setting

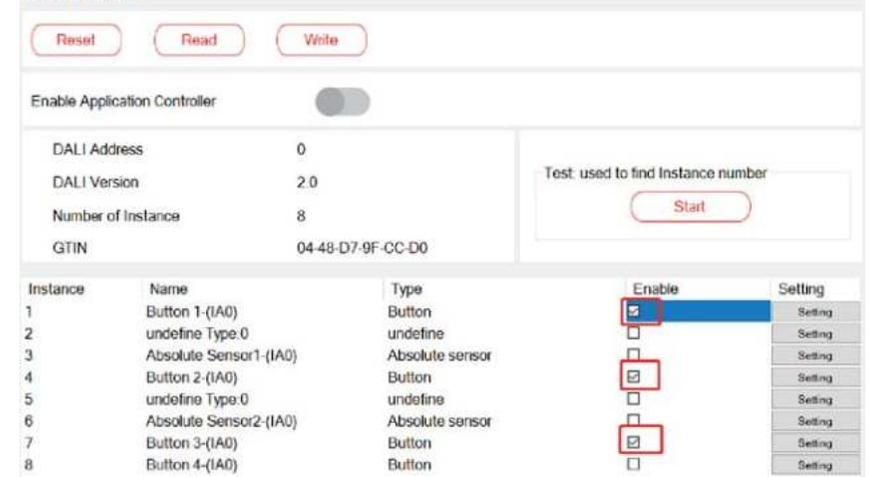
Select LED 1, click "Single Lamp Scene Setting - Edit" to open the scene editing interface, check "Scene 1", "Scene 2" and "Scene 3";  
 "Scene 1" corresponds to "Conversation Mode", set the brightness to 100% and the color temperature to 6500K;  
 "Scene 2" corresponds to "Reading Mode", set the brightness to 80% and the color temperature to 4500K;  
 "Scene 3" corresponds to "Rest Mode", set the brightness to 30% and the color temperature to 3000K, click Save to complete the setting.  
 Use the same method and the same parameters to set the scene information of LED2~LED4.



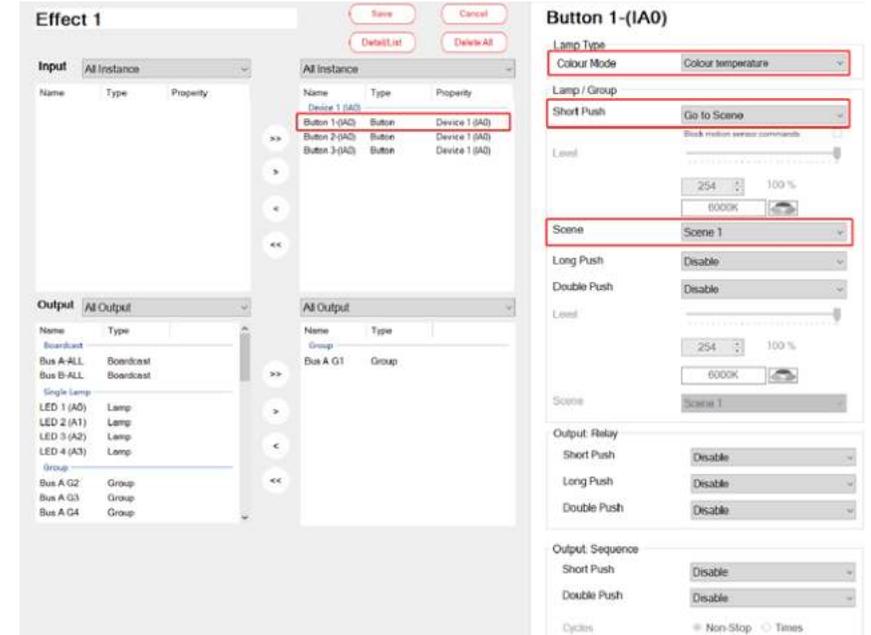
## Step 3: Enable input events

Use "Button 1", "Button 2" and "Button 3" in the switch panel as input events and check "Enable" to start;

## Device 1



Click the "Settings" button, check the "Enable button short press event", and set the "short press time" to 500ms, please refer to Chapter 4.3.3.4 "Button" for the relevant parameter description, and click "Confirm" to complete the setting. Use the same method and the same parameters to set Button 2 and Button 3.



#### Step 4: Effect configuration

Click "+Add" to create the effect, and set as shown below:

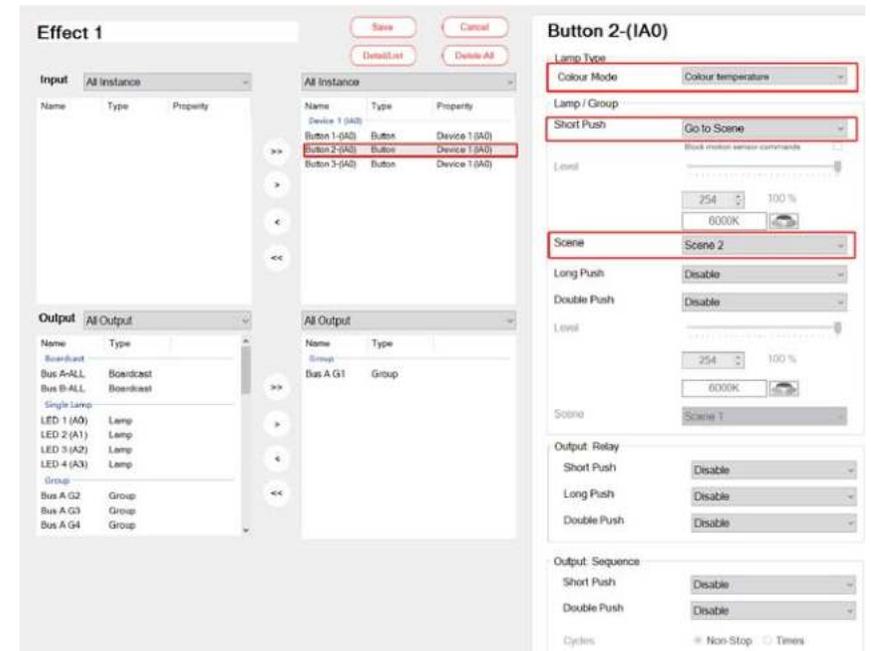
※ Move the input events "Button 1", "Button 2", "Button 3" and "Bus A G1" in the output device to the right selection;

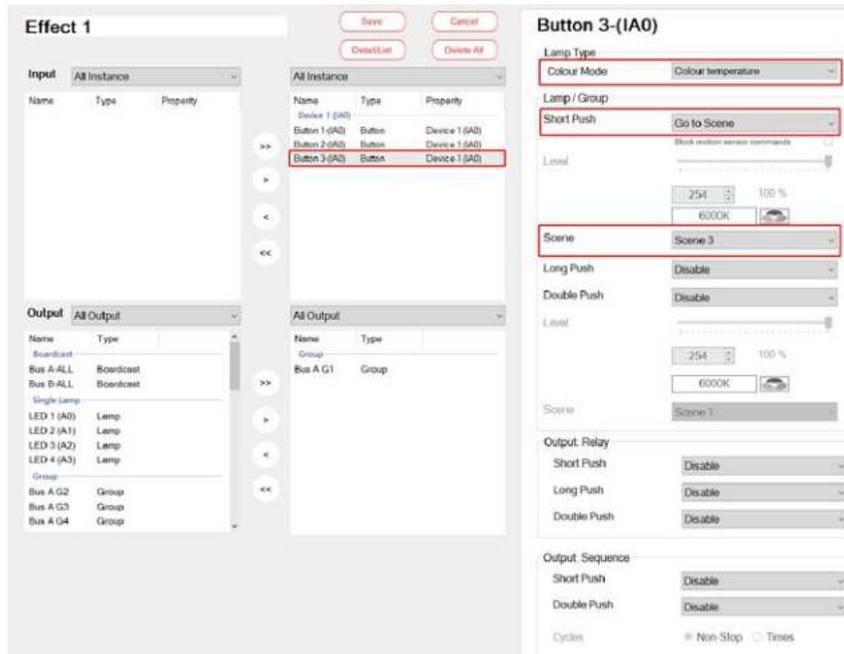
※ Select Button 1, select "Colour Temperature" for "Color Mode", select "go to Scene" for "Lamp/Group - Short Press", and select "Scene 1";

※ Select Button 2, select "Colour Temperature" for "Color Mode", select "go to Scene" for "Lamp/Group - Short Press", and select "Scene 2";

※ Select Button 3, select "Colour Temperature" for "Color Mode", select "go to Scene" for "Lamp/Group - Short Press", and select "Scene 3";

※ Click Save after setting.





#### 4.5.2 "Sequence" example

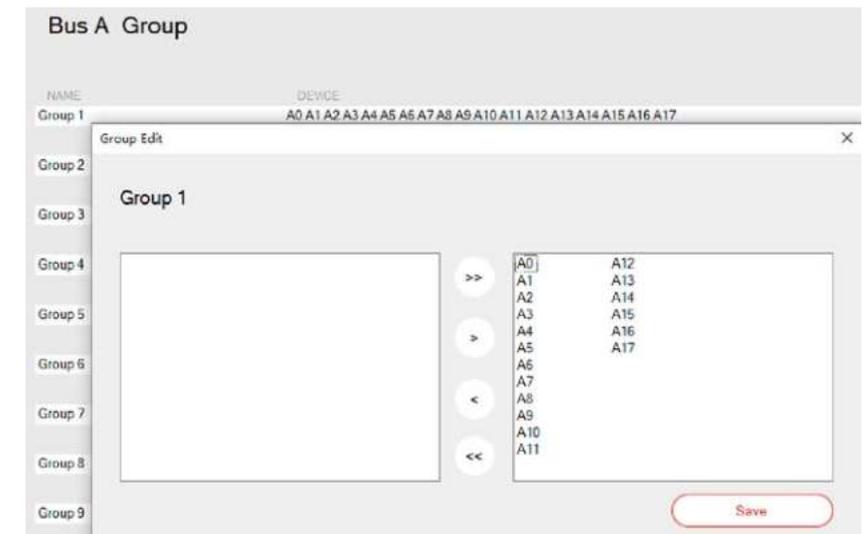
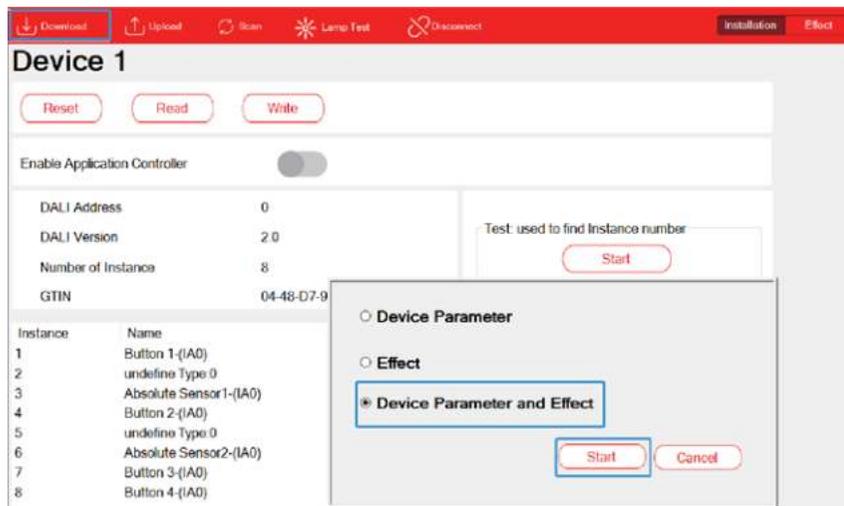
Taking office lighting as an example, the following effects can be achieved through "timing event" and "sequence" functions:

- ① 8:00 am · turn on all lamps in the office in advance and set brightness to 60% and color temperature to 4000K ;
- ② 8:30 am · start work, lamp brightness set to 100%, color temperature set to 6500K ;
- ③ 11:55 am · it's almost lunch break, lamp brightness set to 80%, color temperature unchanged ;
- ④ 12:00 am · lunch break, lamp brightness set to 0 ;
- ⑤ 12:55 pm · soon to work time, lamp brightness set to 50%, color temperature set to 3200K ;
- ⑥ 13:00 pm · start work, lamp brightness is set to 100%, color temperature is set to 6500K ;
- ⑦ 17:30 pm · off-duty time, lamp brightness set to 80%, color temperature unchanged;
- ⑧ 18:00 pm · turn off all lights.

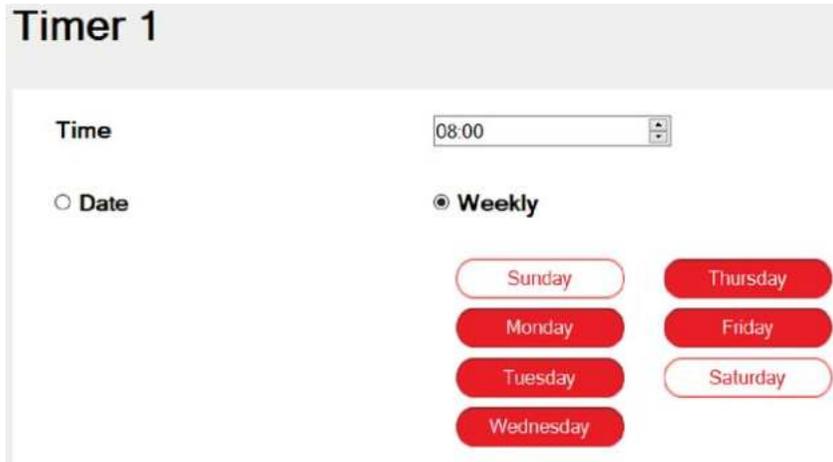
Implementation steps :

Step 1 : Add all lamps in the office to "group 1" of bus A, as shown below:

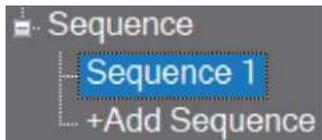
Step 5: Finally, click "download" to download the device parameters and effect configuration to the input devices, lamps and DLC-02.



Step 2 : In PC software, create timer event "Timer 1" and set 8 am on weekdays as a "timed event" :



Step 3 : Create Sequence 1 and configure it as follows :

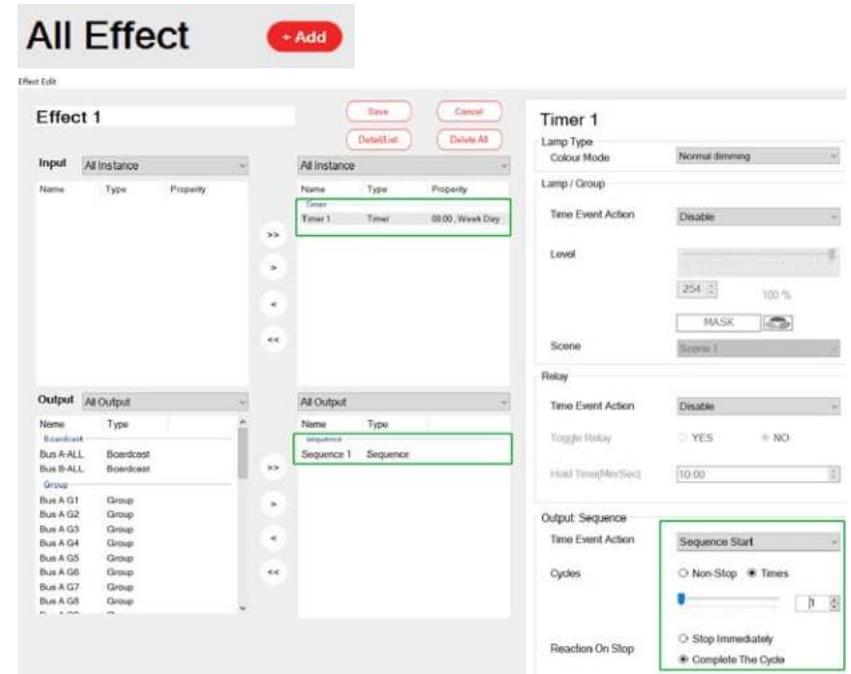


Step	Bus ID	Lamp	Lamp Type	Colour Value	Light Value(%)	Fade Time	Delay Time(s)
1	Bus A	Group1	Colour Temperature	4000K	60%	4.0 s	1800
2	Bus A	Group1	Colour Temperature	6500K	100%	4.0 s	12300
3	Bus A	Group1	Colour Temperature	6500K	80%	4.0 s	300
4	Bus A	Group1	Colour Temperature	6500K	0%	4.0 s	3300
5	Bus A	Group1	Colour Temperature	3200K	50%	4.0 s	300
6	Bus A	Group1	Colour Temperature	6500K	100%	4.0 s	16200
7	Bus A	Group1	Colour Temperature	6500K	80%	4.0 s	1800
8	Bus A	Group1	Colour Temperature	6500K	0%	4.0 s	1
9	Disable	-	-	-	-	-	-
10	Disable	-	-	-	-	-	-
11	Disable	-	-	-	-	-	-
12	Disable	-	-	-	-	-	-
13	Disable	-	-	-	-	-	-
14	Disable	-	-	-	-	-	-
15	Disable	-	-	-	-	-	-
16	Disable	-	-	-	-	-	-
*End	Disable	-	-	-	-	-	-

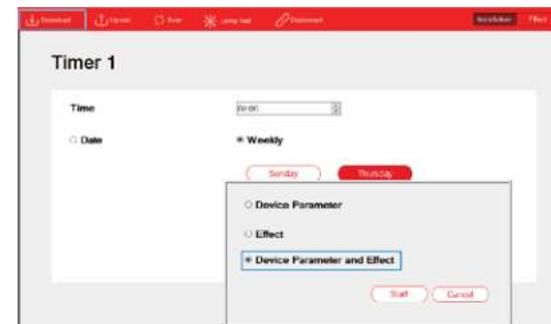
Step 4 : Click "+ Add" to create effect "Effect 1" and set as follows:

- ※ Move input device "Timer 1" and output device "Sequence 1" to the right selection;
- ※ "Time event Action" is set to "Start Sequence", and "Cycle times" is set to 1, that is, when the "Timer 1" time arrives, "Sequence 1" will start.
- ※ Click Save after setting.

Note: When using the "Sequence" function, the lamp color mode should be set in the "Sequence" interface. The lamp color mode parameter in the "Effect" interface is invalid for "sequence"



Step 5 : Finally, click "Download" to download the current device parameter and effect configuration to the input device, lamp and DLC-02.



#### 4.5.3 "Color Cycle" example

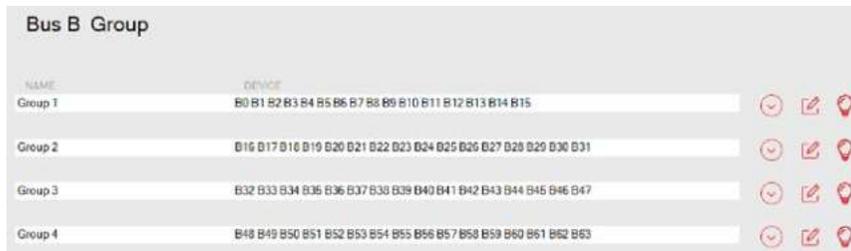
Taking the exterior wall lighting application as an example, suppose a building has four floors, and 16 RGBW lamps are installed on the exterior wall of each floor. The following effects can be achieved through the functions of "button events" and "sequence" :

- ① Press the button switch to set the brightness of all lamps on the outer wall to 100%, and set the color 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;
- ② 10s later, set the color 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;
- ③ 10s later, set the color 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;
- ④ 10s later, set the color of the lamps on the first floor to green, the second floor to blue, the third floor to yellow, and the fourth floor to red ;
- ⑤ 10s later, set the color 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;
- ⑥ Follow steps ②~⑤ to continue the cycle until the execution of the double click the button, immediately stop the cycle, and turn off all lamps.

Implementation steps :

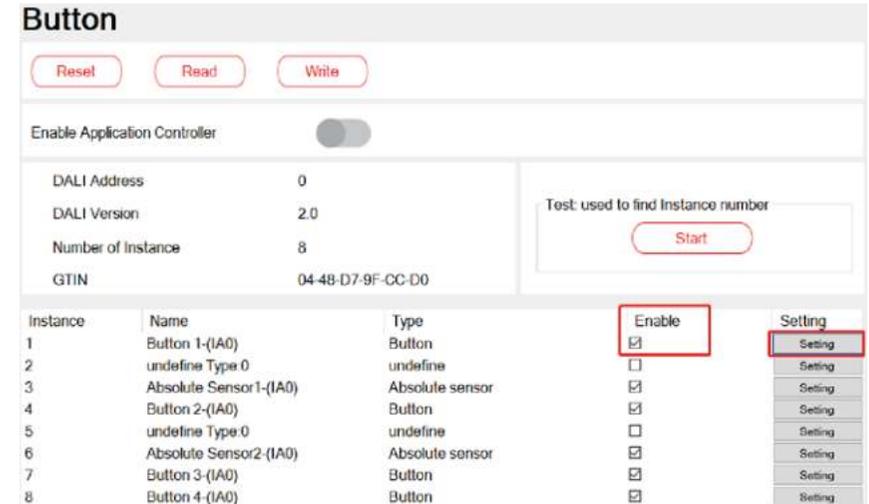
Step 1 : Group

Add the lamps on the first floor to Group 1; add the lamps on the second floor to Group 2; add the lamps on the third floor to Group 3; and add the lamps on the fourth floor to Group 4.

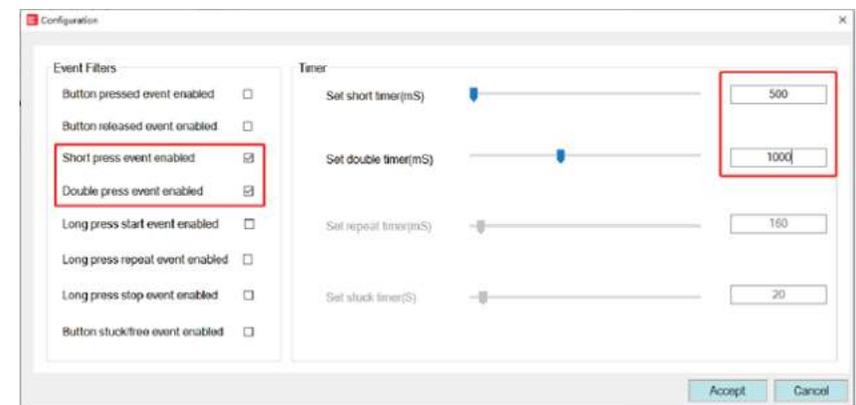


Step 2 : Enable input events

Use Button 1 in the switch panel as the input event and check enable to start ;

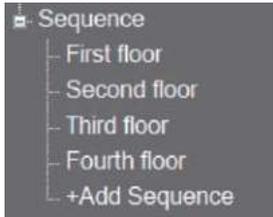


Click "Set" button to enable "short press event" and "double push event", and set "short time" to 500ms and "double time" to 1s. For related parameter description, see section 4.3.3.4 "Button". After setting, click "OK".



### Step 3 : Create sequence

Four new sequences are added and named as the first, second, third and fourth floor respectively, which are used to set the color change effect of lamps on each floor. The color change configuration of lamps on each floor is as follows:



#### First floor

Step	Bus ID	Lamp	Lamp Type	Colour Value	Light Value(%)	Fade Time	Delay Time(s)
1	Bus B	Group1	RGBW	0,254,0,0	100%	2.0 s	10
2	Bus B	Group1	RGBW	0,0,254,0	100%	2.0 s	10
3	Bus B	Group1	RGBW	0,0,0,254	100%	2.0 s	10
4	Bus B	Group1	RGBW	0,254,254,0	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

Step	Bus ID	Lamp	Lamp Type	Colour Value	Light Value(%)	Fade Time	Delay Time(s)
1	Bus B	Group2	RGBW	0,254,254,0	100%	2.0 s	10
2	Bus B	Group2	RGBW	0,254,0,0	100%	2.0 s	10
3	Bus B	Group2	RGBW	0,0,254,0	100%	2.0 s	10
4	Bus B	Group2	RGBW	0,0,0,254	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

Step	Bus ID	Lamp	Lamp Type	Colour Value	Light Value(%)	Fade Time	Delay Time(s)
1	Bus B	Group3	RGBW	0,0,0,254	100%	2.0 s	10
2	Bus B	Group3	RGBW	0,254,254,0	100%	2.0 s	10
3	Bus B	Group3	RGBW	0,254,0,0	100%	2.0 s	10
4	Bus B	Group3	RGBW	0,0,254,0	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

Step	Bus ID	Lamp	Lamp Type	Colour Value	Light Value(%)	Fade Time	Delay Time(s)
1	Bus B	Group4	RGBW	0,0,254,0	100%	2.0 s	10
2	Bus B	Group4	RGBW	0,0,0,254	100%	2.0 s	10
3	Bus B	Group4	RGBW	0,254,254,0	100%	2.0 s	10
4	Bus B	Group4	RGBW	0,254,0,0	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 : Effect of the configuration

Click "+ Add" to create the effect, and set it as shown below:

※ Move the input event "Button 1", the sequence "first floor~fourth floor" in the output device and "Group 1~Group 4" of bus B to the right selection;

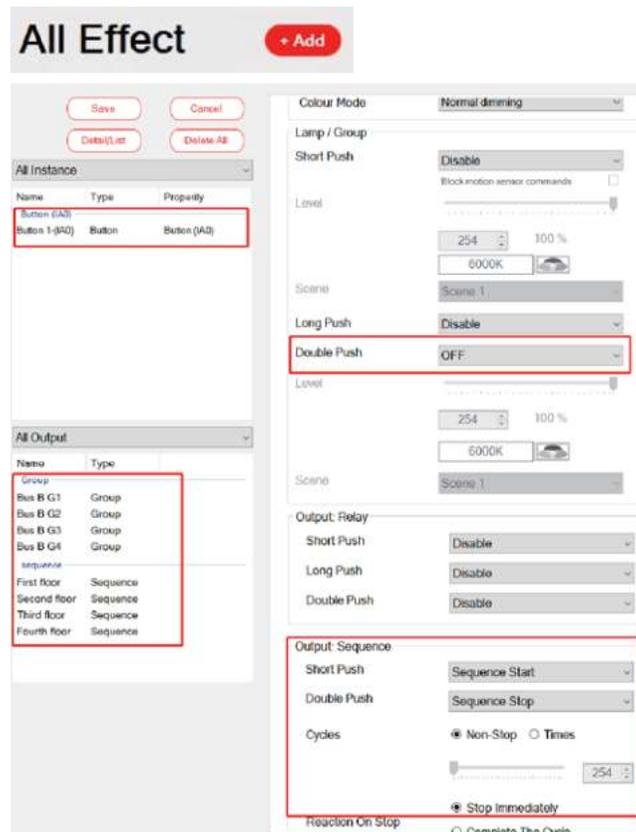
"sequence - short push" choose "start sequence", "sequence - double push" select "stop sequence", "lamps and group - double push" select "off";

※ "cycle" choose "not stop", it indicates that the sequence has been cyclic operation;

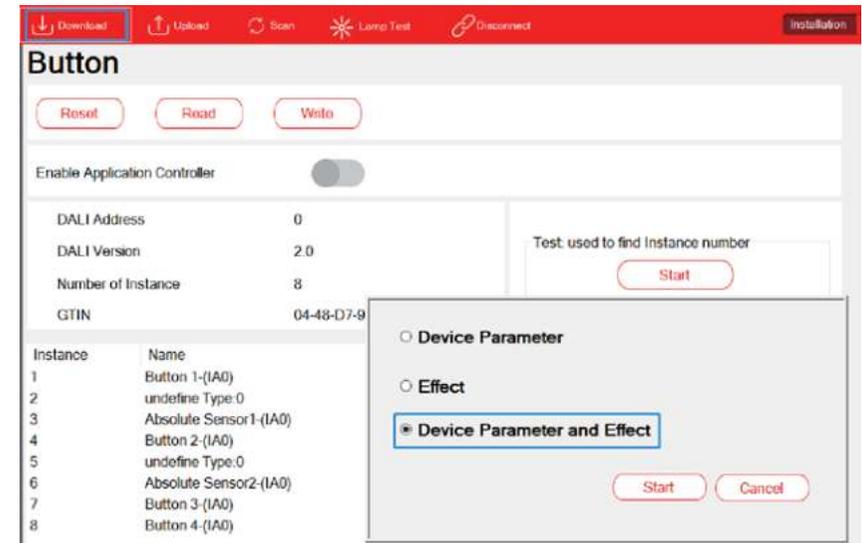
※ "reaction on stop" select "stop immediately" : it means that the current operation will be stopped immediately when receiving double-clicking Button 1;

※ Click Save after setting.

Note: When using the "Sequence" function, the lamp color mode should be set in the "Sequence" interface. The lamp color mode parameter in the "Effect" interface is invalid for "sequence".

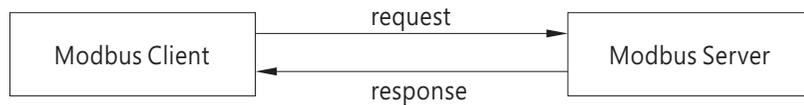


Step 5 : Finally, click "download" to download the current device parameter and effect configuration to the input device, lamp and DLC-02



## 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.



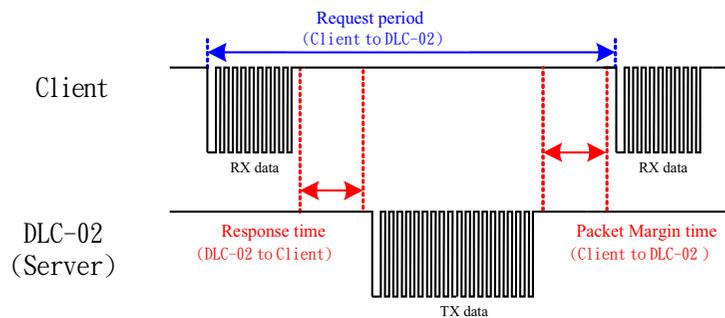
IP address: Refer to section 4.1.3 or 6.4.2, communication port: 502

### 5.1 Communication Timing

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

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

- The maximum response time between registers 40001 and 40006 and registers 30001 to 30004 shall be determined according to DALI instruction sending time.
  - The maximum response time of registers 41001 to 41004 shall be determined according to DALI instruction sending time.
  - The maximum response time of registers 42001 to 42002 and registers 32001 to 32004 shall be determined according to DALI instruction sending time.
  - 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		define
Read Holding Register	0x03	It's used to read Holding register.
Write Multiple Register	0x10	It's used to write multipleregister.
Read /Write Multiple Register	0x17	It's used to read or write MultipleRegister.

## 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 color. Trigger scenes and lock/unlock motion sensors.	0x10
42001-42002	Query control gear ※	2	W	Query the brightness, status, color type and color 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 recorded by DALI A.★	1	R	Returns the number of input device events recorded by the DALI A bus, up to a maximum of 128.	0x03
34002-34257	Read the number of input device events recorded by DALI A.★	256	R	Returns the number of input device events recorded by the DALI A bus, up to a maximum of 128.	0x03
35001	Read the number of input device events recorded by DALI B.★	1	R	Returns the number of input device events recorded by the DALI B bus, up to 128.	0x03
35002-35257	Read the number of input device events recorded by DALI B.★	256	R	Returns the number of input device events recorded by the DALI B bus, up to 128.	0x03

※40001-40006 needs 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: <table border="1" style="margin-left: 20px;"> <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> (2)Group device address: <table border="1" style="margin-left: 20px;"> <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>1</td><td>0</td><td>0</td><td>0</td><td colspan="4">0-15 group address</td> </tr> </table> (3)Broadcast: No address broadcast: 253(0xFD) roadcast with address: 255(0xFF)	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	0	0	0-63 short address						Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	1	0	0	0	0-15 group address			
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0																											
0	0	0-63 short address																																
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0																											
1	0	0	0	0-15 group address																														
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 color 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 color type	Set the current color type of the corresponding control gear: 1: colour temperature TC; 2: RGB(W); 3-255: Reserved																																

Byte	Name	Description																
4-7	set color value	<p>Set the current color value, divided into the following two cases:</p> <p>(1)If the color type is colour temperature TC:</p> <table border="1"> <tr> <td>Byte 4</td> <td>Byte 5</td> <td>Byte 6</td> <td>Byte 7</td> </tr> <tr> <td colspan="3">Color temperature value (high/low)</td> <td>0</td> </tr> </table> <p>Note: The color temperature value range is 1000-10000K</p> <p>(2)If the color type is RGB(W):</p> <table border="1"> <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> <p>Note: R/G/B/W value range is 0-254, 255(MASK)</p>	Byte 4	Byte 5	Byte 6	Byte 7	Color temperature value (high/low)			0	Byte 4	Byte 5	Byte 6	Byte 7	Red	Green	Blue	White
Byte 4	Byte 5	Byte 6	Byte 7															
Color temperature value (high/low)			0															
Byte 4	Byte 5	Byte 6	Byte 7															
Red	Green	Blue	White															

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

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

Read data format 32001 to 32004 in control Gear registers :

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

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

### 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.

0x12020100000001a200000000: 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 color temperature of the A3 device controlling the Dali-a bus is 3000K  
request :

0x000100000000FFF	0x10	0xA029	0x0004	0x08	0x010305010BB80000
-------------------	------	--------	--------	------	--------------------

0x000100000000FFF : 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 :

0x0001000000006FF	0x10	0xA029	0x0004
-------------------	------	--------	--------

0x0001000000006FF : 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.

0x000100000000FFF	0x17	0x7D01	0x0004	0xA411	0x0002	0x04	0x01010001
-------------------	------	--------	--------	--------	--------	------	------------

0x000100000000FFF : 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 :

0x000100000000BFF	0x17	0x08	0x01010001E5000000
-------------------	------	------	--------------------

0x000100000000BFF : 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 :

0x0001000000006FF	0x03	0x80E9	0x0004
-------------------	------	--------	--------

0x0001000000006FF : Header  
 0x03 : Function code 3  
 0x0001000000006FF : 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:

0x0000100000000BFF	0x03	0x08	0x0100000000000000
--------------------	------	------	--------------------

0x0000100000000BFF : 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

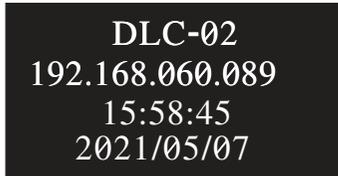
0x83: the highest position of the Function Code that sends data

1 0x03: Exception Code, which indicates that the data sent is invalid

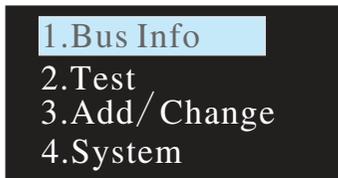
## 6. LCD Display

The display on the DLC-02 can parameterize maximum level, minimum level, fade rate/time, group and scenes.

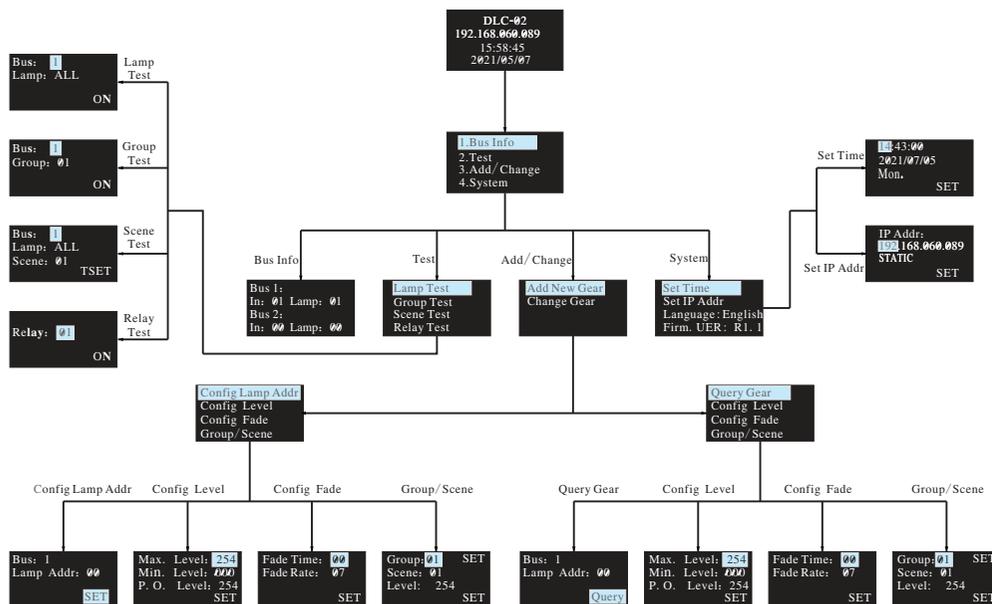
- The main page displays IP address, time and date.
- If no network connected displays ETH not Linked; If a network connected displays current IP address.



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

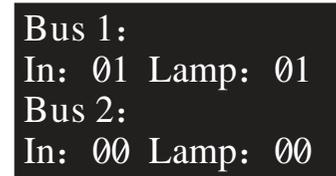


### Menu Structure



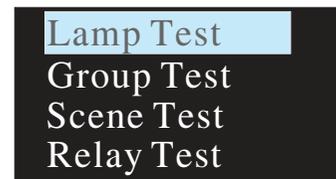
## 6.1 Bus Info

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.



## 6.2 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:

6.2.1 Lamp test: used to turn ON/OFF 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.



6.2.2 Group test: used to turn ON/OFF 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.



6.2.3 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.

```
Bus: 1
Lamp: ALL
Scene: 01 TSET
```

6.2.4 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.

```
Relay: 01
ON
```

6.3 Add/Change

```
Add New Gear
Change Gear
```

6.3.1 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

```
Config Lamp Addr
Config Level
Config Fade
Group/Scene
```

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.

```
Bus: 1
Lamp Addr: 00
SET
```

②Config Lamp Level

Parameterize 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)

```
Max. Level: 254
Min. Level: 000
P. O. Level: 254
SET
```

③Config Fade

- Parameterize fade time and fade rate for the new device.
- Fade time defines the time needed to achieve the required setting after received a command.

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.

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

#### ④ Group/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.

```

Group: 01  SET
Scene: 01
Level: 254
          SET
  
```

#### 6.3.2 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 6.3.1 for detailed instructions.

## 6.4 System

Functions include time calibration, IP address setting, language change and firmware version display.

```

Set Time
Set IP Addr
Language: English
Firm. UER: R1. 1
  
```

#### 6.4.1 Set Time:

- ① Press MOVE button to move the indicator on HH/MM/SS/yyyy/mm/dd.
- ② Press SET button to adjust values.
- ③ Select "SET" when finishing setting or use DLC software to quickly calibrate time (please refer to 4.1.3.3).

```

14:43:00
2021/07/05
Mon.
          SET
  
```

#### 6.4.2 Set IP Addr:

- ① Press MOVE button to move the indicator on IP address.
- ② Press SET button to assign address and set DHCP or static IP.
- ③ Select "SET" when finishing setting. The DLC-02 will reboot automatically to implement the new setting.

```

IP Addr:
192.168.060.089
STATIC
          SET
  
```

#### NOTE:

- ① 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.
- ② 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.

#### 6.4.3 Language:

There are two language options available: English and Simplified Chinese.

Set Time  
Set IP Addr  
Language: English  
Firm. UER: R1. 1

#### 6.4.4 Firm:

It displays firmware version of the DLC-02.

Firm. UER: R1. 1

## 7.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>



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