HDL®

Manual describes the snapshots taken in the previous version of the module and using older HBST program. In HBST2, the graphic appearance is slightly different but the functions remain the same. The settings describe in this manual are the same for 16Amps series Relays (MR0416.431, MR0816.432, MR1216.433, MR1616.434)

User Manual

10 A Relay Series

MR1610.433

MR1210.433

MR0810.432

MR0410.431

buspro

www.hdlautomation.com

Document updates:

Version	Date	Description
V1.0	2015.01.20	Finish new document

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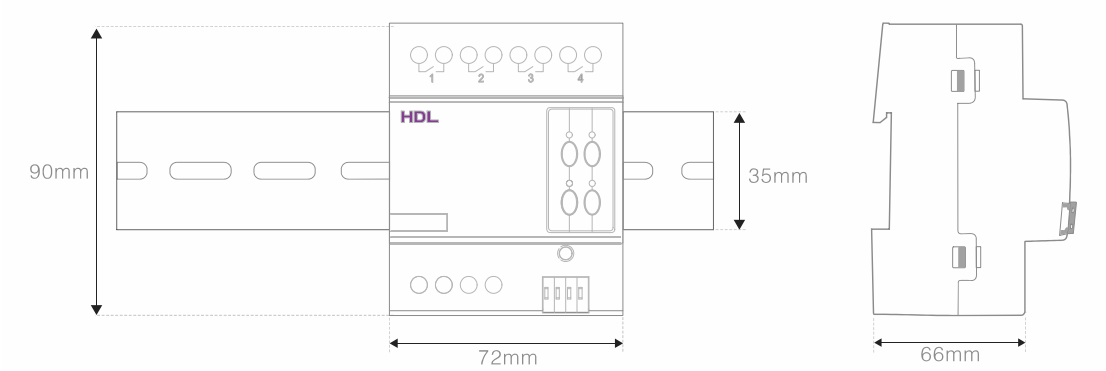
1. Overview

1.1 General Information

1.1.1 Description

This intelligent 10A relay module uses a 16A launching relay, to provide high reliability and ultra-low power consumption. With a HDL Bus Pro interface based on the RS485 protocol, and integrated scene controller.With manual bypass control, the module is the perfect relay solution.

1.1.2 Mounting



- Standard 35mm Din Rail Installation
- Inside Distribution Box(DB)

1.1.3 Serial Numbers

MR0410.431

- 4 Channels
- Max. 10A per channel
- Max. 40A total

MR0810.432

- 8 Channels
- Max. 10A per channel
- Max. 80A total

MR1210.433

- 12 Channels
- Max. 10A per channel
- Max. 120A total

MR1610.433

- 16 Channels
- Max. 10A per channel
- Max. 160A total

1.2 Functions

The universal relay series have a number of programmable features, these features are listed below.

1.2.1 Common Functions

- Ability to control scenes
- Each area has 2 sequences, with each sequence having 12 steps
- Each channel has a light protection delay （0-60 minutes）
- Each channel has a batch turn-on delay（0-25 seconds）

- Each channel has manual control
- Remote programming and management is available
- The possibility of automatically activating a scene when the system is turned on
- LED status indication for each channel
- The management of staircase lamps and Mutual exclusion groups
- Support easy programming
- Support online upgrade

1.2.2 Individual Functionalities

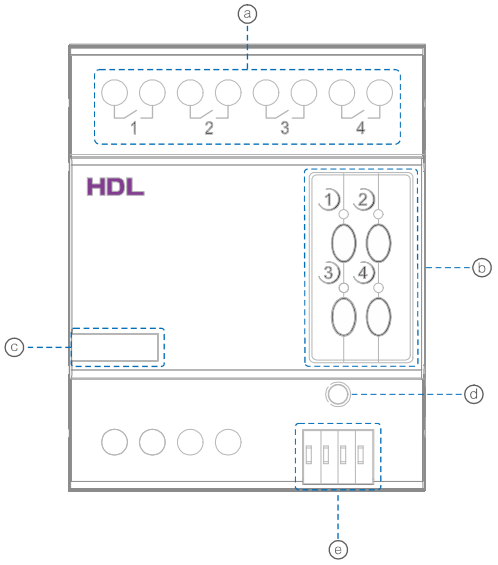
- Areas- When channels are grouped together they can be modified with a single command.

MR0410.431	MR0810.432	MR1210.433	MR1610.433
Up to 4separated areas	Up to 8 separated areas	Up to 12 separated areas	Up to 16 separated areas

- Scenes –Each relay has a different number of scenes

MR0410.431	MR0810.432	MR1210.433	MR1610.433
Up to 8 scenes	Up to 16 scenes	Up to 24 scenes	Up to 32 scenes

1.3 Device Description



a. Outputs for 4 channels
b. Manual control buttons
c. Name plate
d. Programming button
e. HDL-Buspro

1.4 Recommend Load Types

Type	power
Motors:	1HP（1HP=746W）
Incandescent lamp load	1600 W
Inductive transformer	1000 W
Electronic transformer	800 W
Halogen lamp 230 V	1600 W
Mercury-vapor lamp * Uncompensated luminaire * Parallel compensated	 1000 W 800 W
Fluorescent lamp T5 / T8 * Uncompensated luminaire * Parallel compensated * DUO lamp	 1000 W 800 W 800 W
Dulux lamp * Uncompensated luminaire *Parallel compensated	 1000 W 800 W

2. Safety Precautions

Danger

Serious injuries, fire or property damage possible. Please read and follow safety all precautions fully.

Risk of fatal injury from electrical current

All work on the device should only be carried out by trained, and qualified electricians. Before working on the device, or before exchanging light bulbs, disconnect mains voltage and switch off circuit breakers.

Device can be damaged

To protect the relay, connect a breaker or fuse to each channel.

Product tampering

Only operate the device according to the specifications stated in the Technical data. The opening of the products outer housing immediately voids the warranty.

3. Technical Data

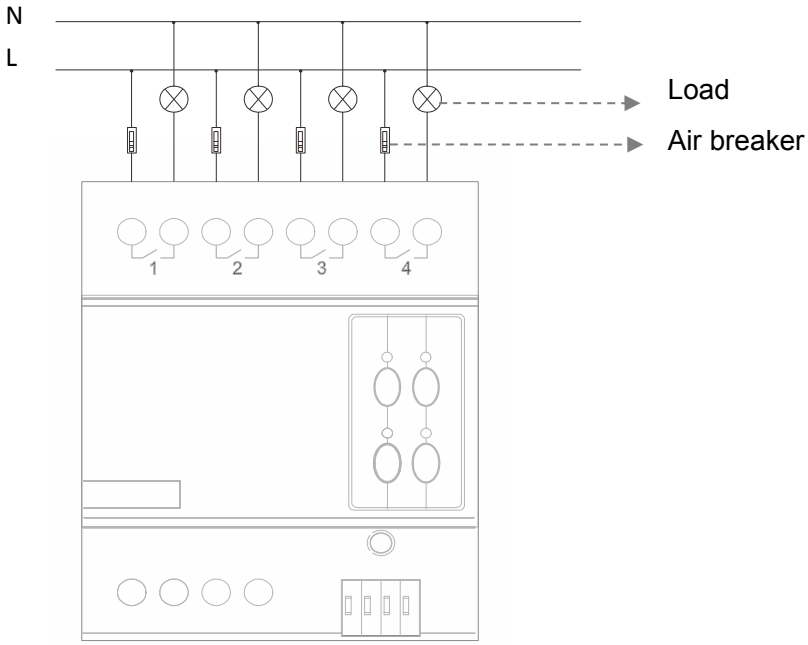
	MR0410.431	MR0810.432	MR1210.433	MR1610.433
Electric Parameter ：				
Working power	DC24~30V			
Static power consumption	15mA/DC24V			
Dynamic power consumption	40mA/DC24V			
Output channel	4CH/10A	8CH/10A	12CH/10A	16CH/10A
Relay	16A Magnetic latching relay			
Max current in each channel	10A			
Electronic life time of relay	>60000 (Resistance Load)			
Protection	Connect a breaker in each channel			
Environmental Conditions：				
Working temperature	0℃~45℃			
Working relative humidity	Up to 90%			
Storage temperature	-20℃~+60℃			
Storage relative humidity	Up to 93%			
Approved				
CE				
RoHS				
Production information：				
Dimensions	72×90×66	144×90×66	216×90×66	216×90×66

Weight	252(g)	361(g)	645.5(g)	605(g)
Housing material	Nylon, PC			
Installation	35mm Din Rail installation			
Protection degree	IP20			

4. Installation

4.1 Wiring

Please strictly follow the wiring diagram shown below.



4.2 HDL Buspro Description

Connector Information

Buspro	
DC24V	Red
COM	Black
DATA-	White
DATA+	Yellow

4.3 Commissioning

Method One:

a) Open the HDL-BUS Pro Setup tool software.

b) Press the programming button for 3 seconds, the LED status indicator will then turn red.

c) Using the software, click the “Address management” tab, and select the “Modify address (when device button is pressed)”, the window shown below will then appear:

d) Click on “Indicate initial address”, the device ID will then be shown. If you wish to change the address, enter your modification and click “Modify initial address”. Clicking on the “+Add” tab will include the device in the online devices list.

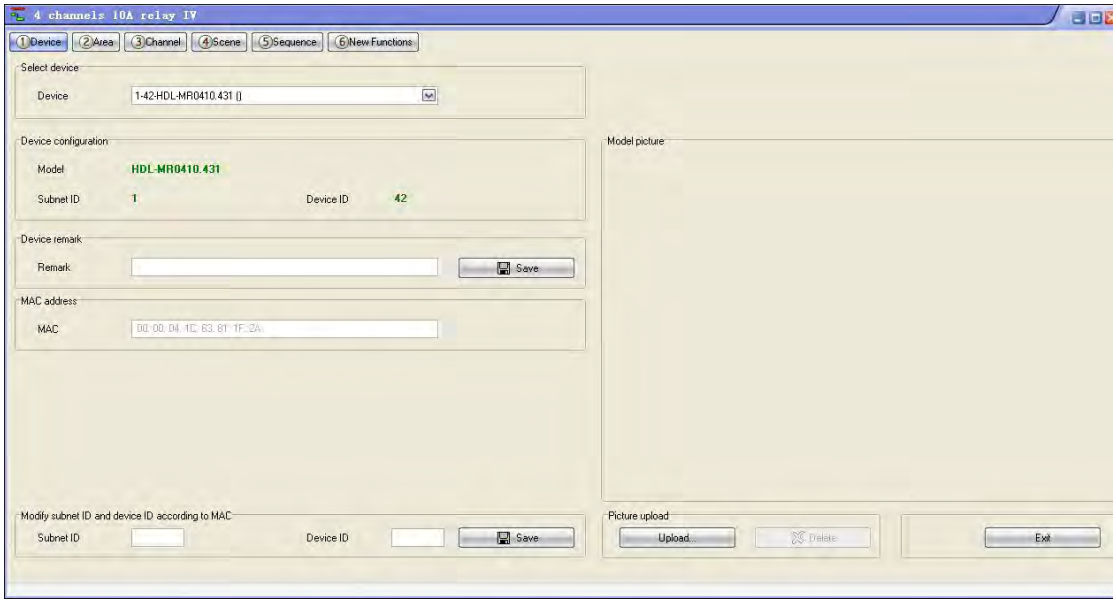
Method Two:

a) Open the HDL-BUS Pro Setup tool software.

b) Click the search button, and a new window will appear. From this window click “Search the online devices”, then click the “Add all” tab. The device will then be included in the online devices list.

5. Software Configuration

5.1 Basic Settings



5.1.1 Changing theDevice ID

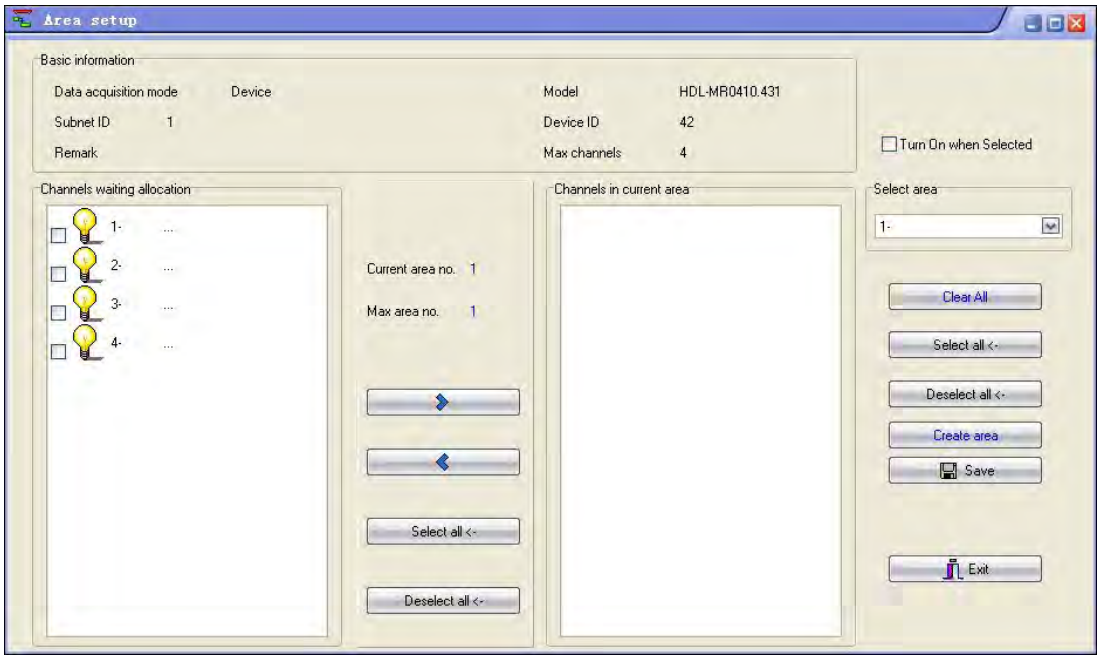
Every HDL BUSpro device has one Subnet ID, and one Device ID. The device ID should be unique in its subnet, and be kept consistent with the Gateway (typically the SB-DN-1IP or HDL-MBUS01IP.431).

5.1.2 Remarks

To aid trouble shooting, and to assist in future modifications it is recommended that a general description is included. As an example if it is to be used in a living room set the remark as “For Living Room”, if it is for distribution box 3 set the remark as “For DB3”.

5.2 Area Setup

The below screen shot shows all 4 channels from the relay, these channels have not been assigned to any area.



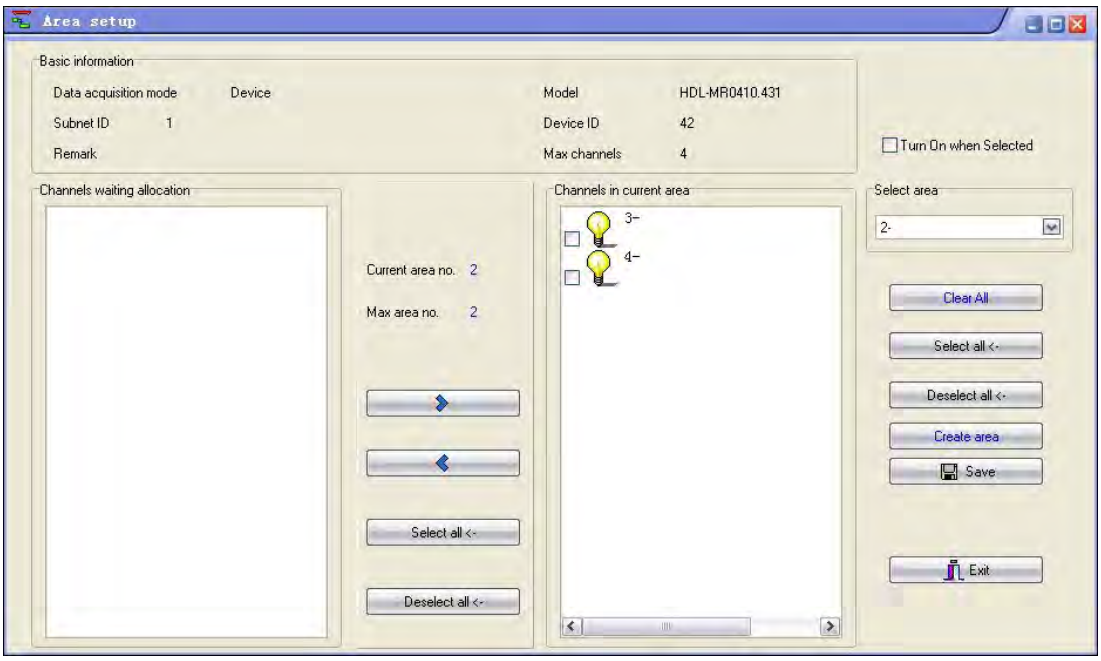
If the wiring required Channels 1 and 2 to be used to control 2 lights in a living room, and channels 3 and 4 to control 2 lights in the kitchen, the configuration process would be as follows:

a) Click “Create area”, area 1 has now been created, we can find and select it in “Select area”.

b) Select channel 1 and 2 then move them from the left column to the right column, and then click save.

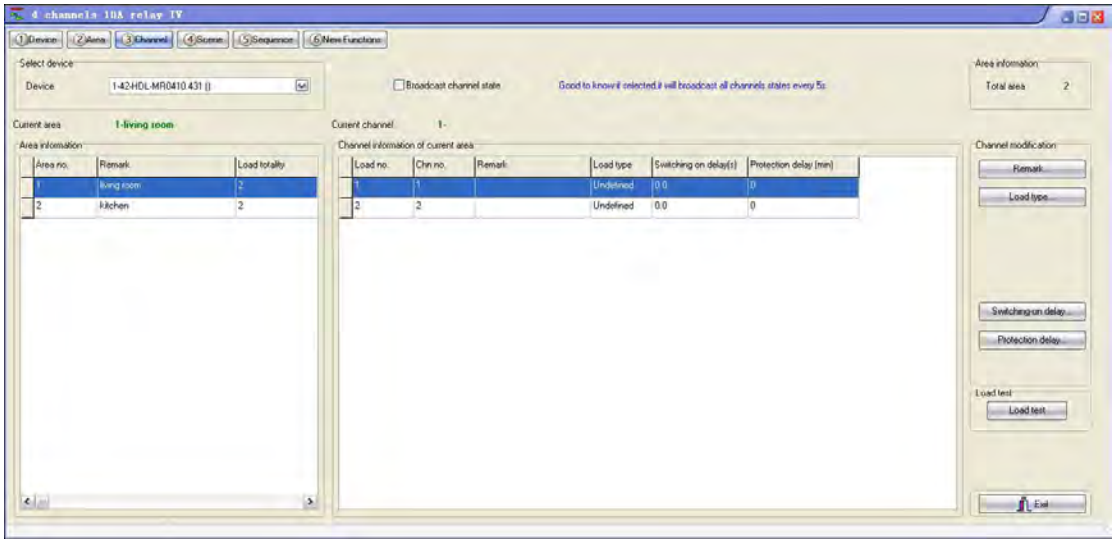
c) Click “Create area”, area 2 has now been created, we can find and select it in “Select area”.

d) Select channel 3 and 4 then move them from the left column to the right column, and then click save.



e) As all channels have been assigned areas, there should be no channels present in the left hand column. Exit the “Area setup” window, and the two areas, (living room and kitchen) will be created.

5.3 Channel Parameters



5.3.1 Default Settings

Delays- Both a power on and a switching delay are included

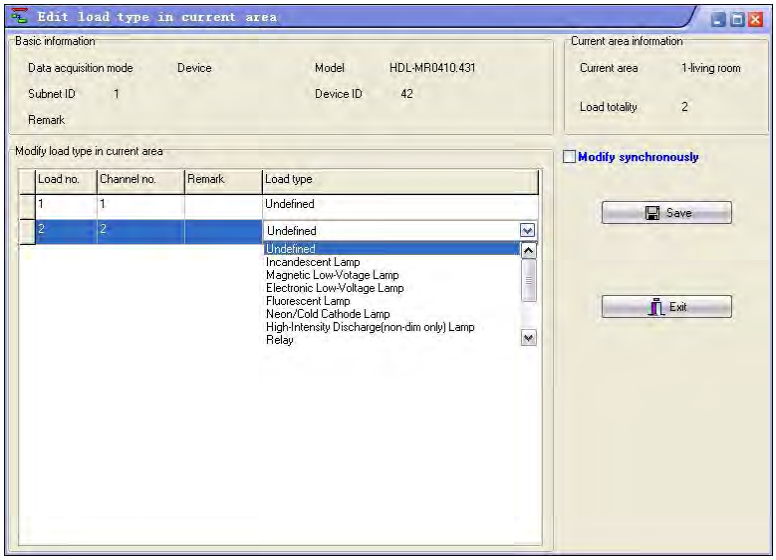
The switching delay is triggered when the channel is activated, the delay time has a range of 0~25s.

The protection delay is also triggered when the channel is activated, but has a delay time of 0~60minutes.

(See the RelayFAQ006_HDL-BUSpro)

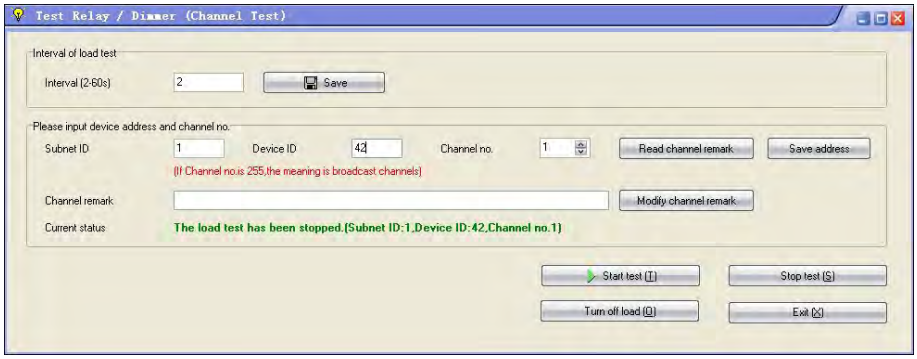
5.3.2 Load Type

The “Load type” has nothing to do with either the control method, or output behavior of the relay. If the “Load type” is left unselected it has no overall effect, by default it is left as undefined.



5.3.3 Load Testing

Before configuring the end user panel, the below window can be used to trigger the Dimmer/Relay and to check the wiring. If the “Start test” tab is clicked, Channel 1 with the device ID of 42, will begin to flash every 2 seconds. After the channel test has been confirmed click “Stop test” and then “Turn off load”.



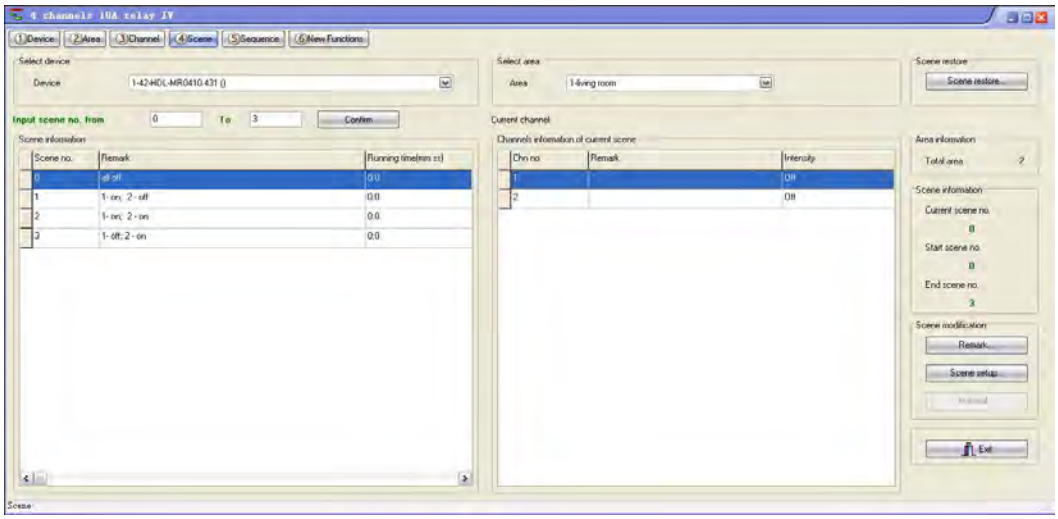
5.4 Scene Setup

5.4.1 Scene Settings

Different relays have different numbers of scenes. Scene 0 is always reserved by the relay, to provide an “all off” function, as such it cannot be edited. The remaining scenes are editable however, to modify them follow the steps below:

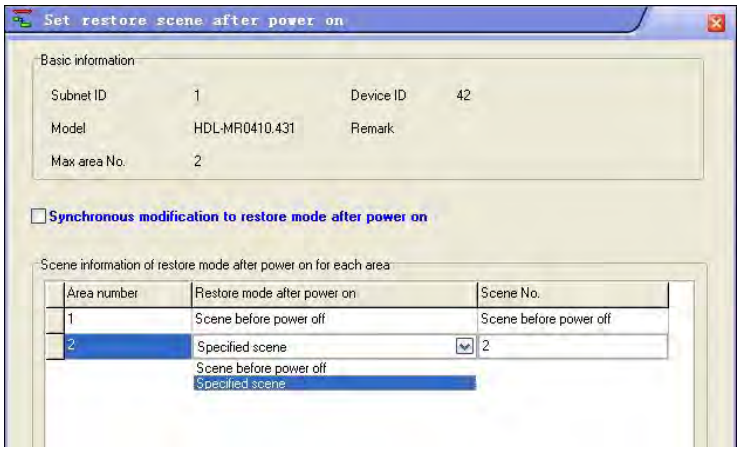
a) Select the “Area”, in the screen shot area “1- living room” has been selected.

b) Click “Scene setup”, you can edit the “Remark”, “Running time”and “Intensity”. See the RelayFAQ002_HDL BUSpro.



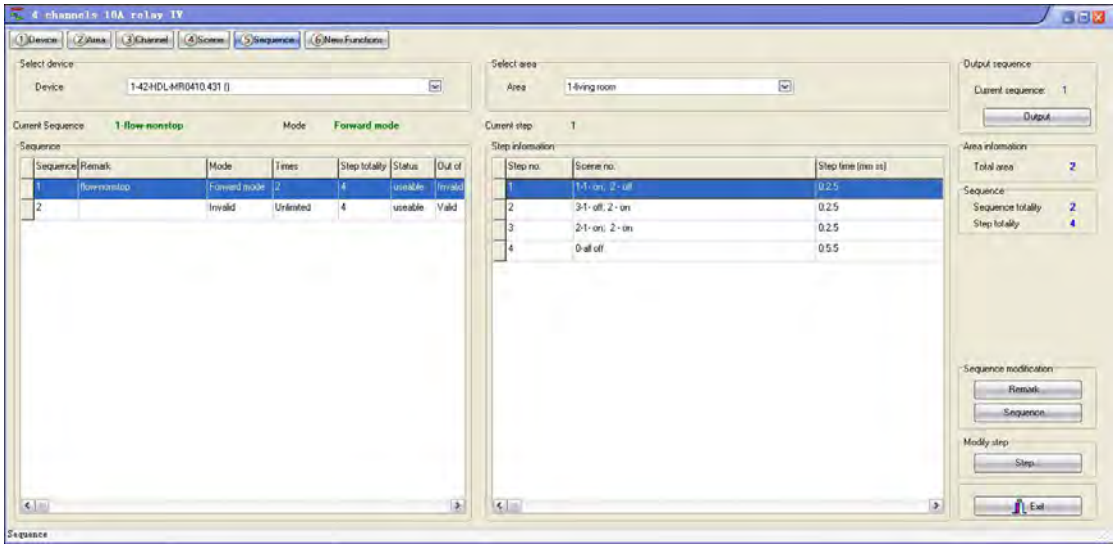
5.4.2 Scene Restore

When the scene restore tab is clicked, two options are available, “Scene before power off” and “Specified scene”. If you wish to recall a scene when the relay is powered on, please refer to RelayFAQ003_HDL BUSpro.



5.5 Sequence Setup

Each area supports 2 sequences, with each sequence having 12 steps.



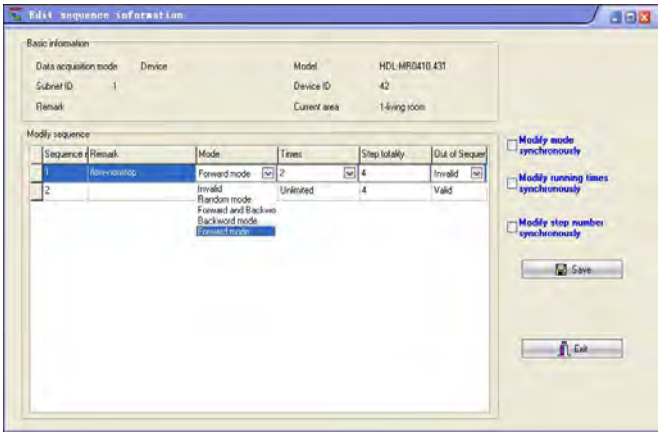
If we wish to create an area that that has an endless sequence, we would follow the below steps.

step1 (channel 1 on) -> step2 (channel 2 on) -> step 3 (channel 1 on; channel 2 on) -> step4 (channel 1 off; channel 2 off)-> step1 -> step2 -> step3……

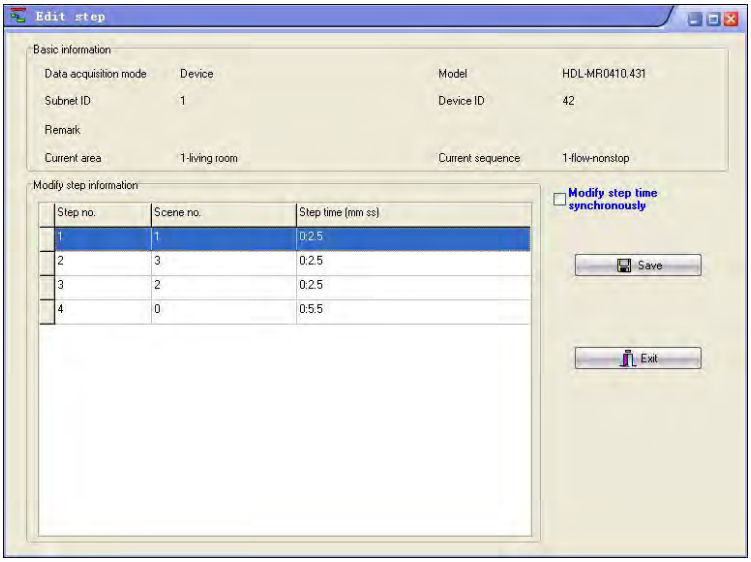
a) Select the “Area”, in the screen shot below the selected area is “1- living room”.

b) Click “Remark”, we can name the sequence “flow-nonstop”.

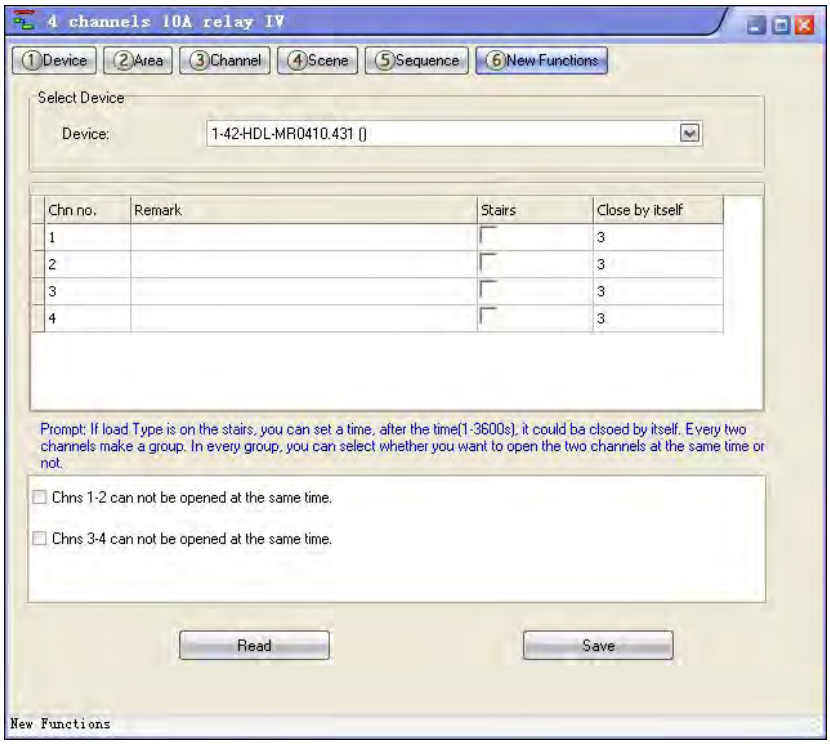
c) Click “Sequence”, as 4 scenes are required, one for each step,and we want to create an endless sequence, the below settings should be followed. There are four modes available, they are Forwards, Backwards, Forwards and Backwards, and Random. (The sequence described above is the forwards mode.)



d) Double clickon the “Step” tab, and the below window will appear. According to the effects, the 4 scenes we need for each step are scene1, scene3, scene2, and scene0. The “Step time” is the delay time taken between the activation of different steps or scenes. Typically the step time is higher than the running time of the scene, below the time is set at 0.5s longer than the running time of each scene.



6. New Functions



Two functions are available:

a) Stair lighting: The channel can deactivate automatically when the set time has elapsed.

b) Mutual exclusion groups: Channels 1-2, or 3-4 can not be opened or closed at the same time.

7. FAQ

7.1 RelayFAQ001_HDL BUSpro

Q:

What does the “load type” tab in the HDL-BUS Pro Setup Tool refer to? Can it affect the behavior of the relay?

A:

The “load type” tab in no way affects the operation of the relay, it is simply a remark.

7.2 RelayFAQ002_HDL BUSpro

Q:

If the running time is modified in the scene setting menu to 3 seconds, and then a panel is activated by a user what will be the outcome?

A:

The load will be turned on 3 seconds after the user requests it, this feature is known as the “ON-delay time”.

7.3 RelayFAQ003_HDL BUSpro

Q:

What conditions need to be met to trigger the scene restore function?

A:

Triggering the scene restore function can be achieved by selecting “Scene before power off” or “Specific scene”. If “Specific scene” is selected the scene will be activated automatically when powered on. If “Scene before power off” is selected then the channel must have been active for at least 20 seconds before the power was turned off, if the scene used by the relay is to be restored.

Additionally, if the Relay was playing a sequence, the relay will play the sequence when it is powered on again.

7.4 RelayFAQ004_HDL BUSpro

Q:

If a button is pressed on the user panel, but the indicator LEDs on the Relay module and user panel do not change, or the load stays on, what could the problem be?

A:

If the unit fails to respond to commands, and the status indicators do not change, it is likely that a component has malfunctioned. To remedy this if the module is under warranty contact our sales team for an exchange, or if you wish to fix the module yourself we will ship the relevant components.

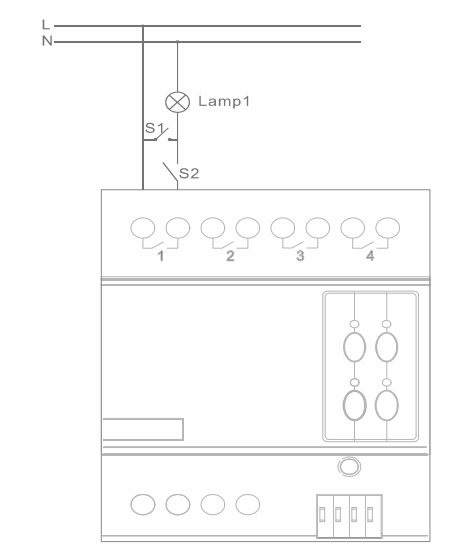
7.5 RelayFAQ005_HDL BUSpro

Q:

If a relay channel is broken, and cannot be turned on or off, can the module be temporarily used?

A:

Yes if you have pre-wired two manual switches to the relay channel as the below diagram shows.



Turn on Lamp 1: Turn on S1, it does not matter if S2 is on or off.

Turn off Lamp 1: Turn off S1 and S2

7.6 RelayFAQ006_HDL BUSpro

Q:

What is the practical application of the protection delay feature?

A:

The protection delay is very simple to use, below a simple example is given:

If a protection delay of 1 minute is set, and the relay channel is turned off, it cannot be turned back on for 1 minute. This is useful for loads which are not suitable to be rapidly turned on and off.

7.7 RelayFAQ007_HDL BUSpro

Q:

In a sequence a bright scene was assigned as the last step, instead of staying ‘bright’ when the sequence is over it turned ‘full dark’. What is the possible reason for this?

A:

When the sequence was triggered, the dimmer module saves the current status and then plays the sequence. When the sequence is over the dimmer reverts to its previous status, thus it is likely that the status was ‘full dark’ before the sequence was triggered.

8. NOTES