



**HDL-MHRCU.433**  
**User Manual**

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## **Legal Statement**

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## Update History

The form below contains the information of every update. The latest version contains all the updates of all former versions.

No.	Version	Update Information	Date
1	V1.0.0	Initial release	May.22 <sup>nd</sup> , 2020

## 1 Introduction

HDL Bus Enable RCU Mix Control Actuator (See Figure 1) has the functions of gateway, mix controller, dry contact, and LED output. Hotel room mix module has 22 channel outputs, 24-channel dry contacts and 12-channel LED outputs.



Figure 1

### 1.1 Functionality

#### Mix control functions

- It supports 12 scenes.
- Channel 1 to 13 are relay outputs, and each channel outputs 5A current. The load types are incandescent lamp, halogen lamp, low voltage halogen lamp.
- Channel 14 to 17 are relay outputs, and each channel outputs 10A current. The load types are incandescent lamp, halogen lamp, low voltage halogen lamp.
- Channel 18 to 21 are dimming outputs, each channel outputs 0.8A current. It has short circuit protection with replaceable fuse. If the channel is short circuit or the fuse is wrong, the fuse indicator will flash.
- Channel 22 is 1A relay output channel.

#### Dry contract

- 24-channel dry contact inputs.

### Door bell function

- 5-channel LED outputs. (It can connect to the third-party door bell panel.)

### LED output function

- 6-channel switch indicator outputs.

## 1.2 Parameters

Electrical Parameters :	
Working voltage	20~30V DC
Working current	300mA/24V DC
Input voltage	AC100-240V(50/60Hz)
Communication interface	HDL Buspro, RJ45
RJ45 interface	UDP/IP network interface
TRIAC	16A TRIAC, minimum load is 30W
Buspro terminal	0.75 - 0.85mm single-core cable
Relay output	5A/10A
External Environment:	
Working temperature	-5°C~45°C
Working relative humidity	≤90%
Storage temperature	-20°C~60°C
Storage relative humidity	≤93%
Specifications:	
Dimensions	216mm×90mm×56mm
Net weight	725g
Housing material	Nylon
Installation	35mm DIN rail installation
Protection rating (Compliant with EN 60529)	IP20

## 1.3 Product Interface

The connection and interface of HDL Bus Enable RCU Mix Control Actuator like the below figure 2.

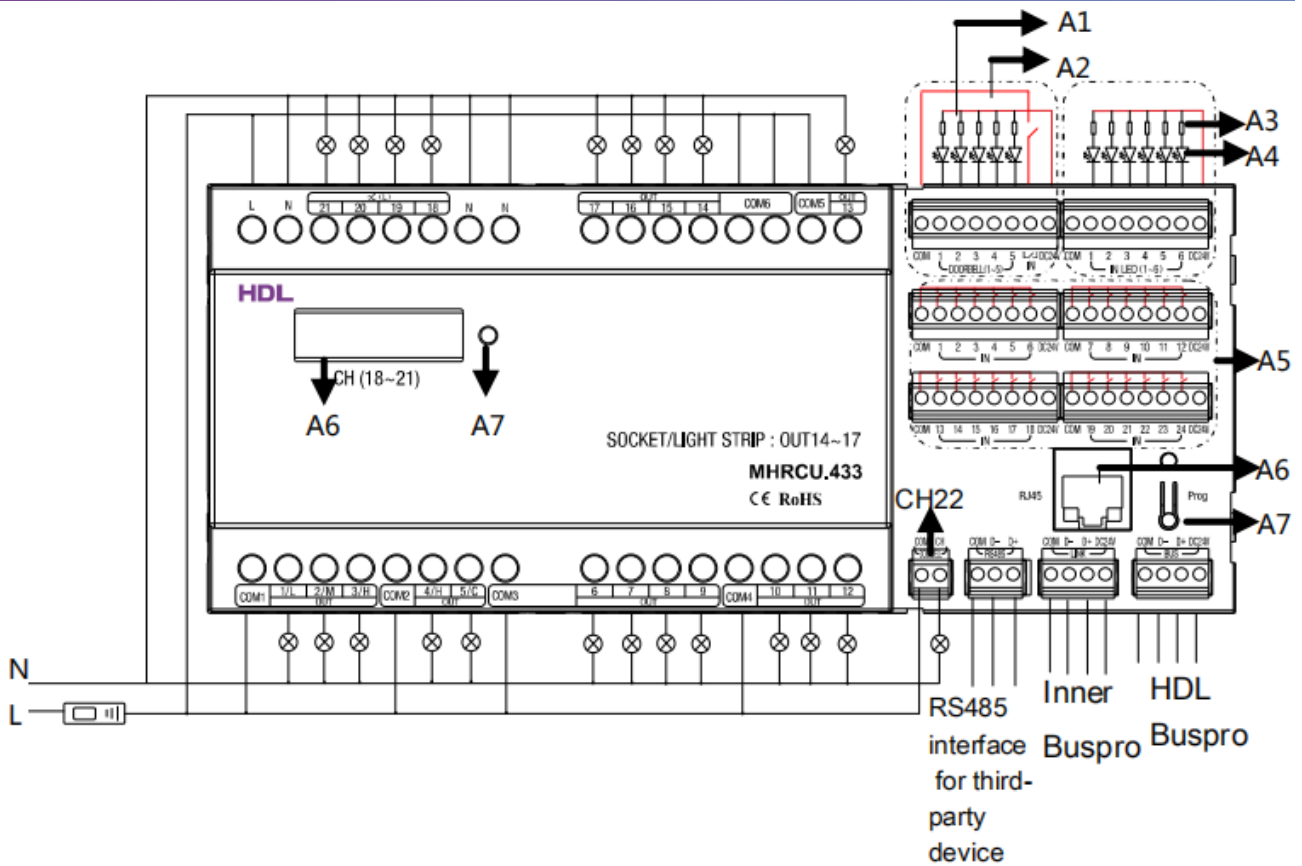


Figure 2

A1: LED indicators of 5CH doorbell

A2: Doorbell control

A3: Resistor of  $1k\Omega$  - $5k\Omega$  recommended, which depends on the working voltage of the LED lamp.

A4: 6CH dry contact LED display. When the dry contact closes, the LED will be on, otherwise, keeps off.

A5: 24CH dry contacts

A6: RJ45 port

A7: Button and Indicator: The indicator flickers in green when the module is working properly. Keep pressing for 2s to read and set the start channel when the indicator turns red. Keep pressing for 10s, it will turn red, the module will be reset to factory setting.

Default setting parameters:

IP: 192.168.10.250

Router IP:192.168.10.1

Port: 6006

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The network segment of the module should be same as the PC.

A6: Fuse socket

## 2 Configuration

### 2.1 Connection

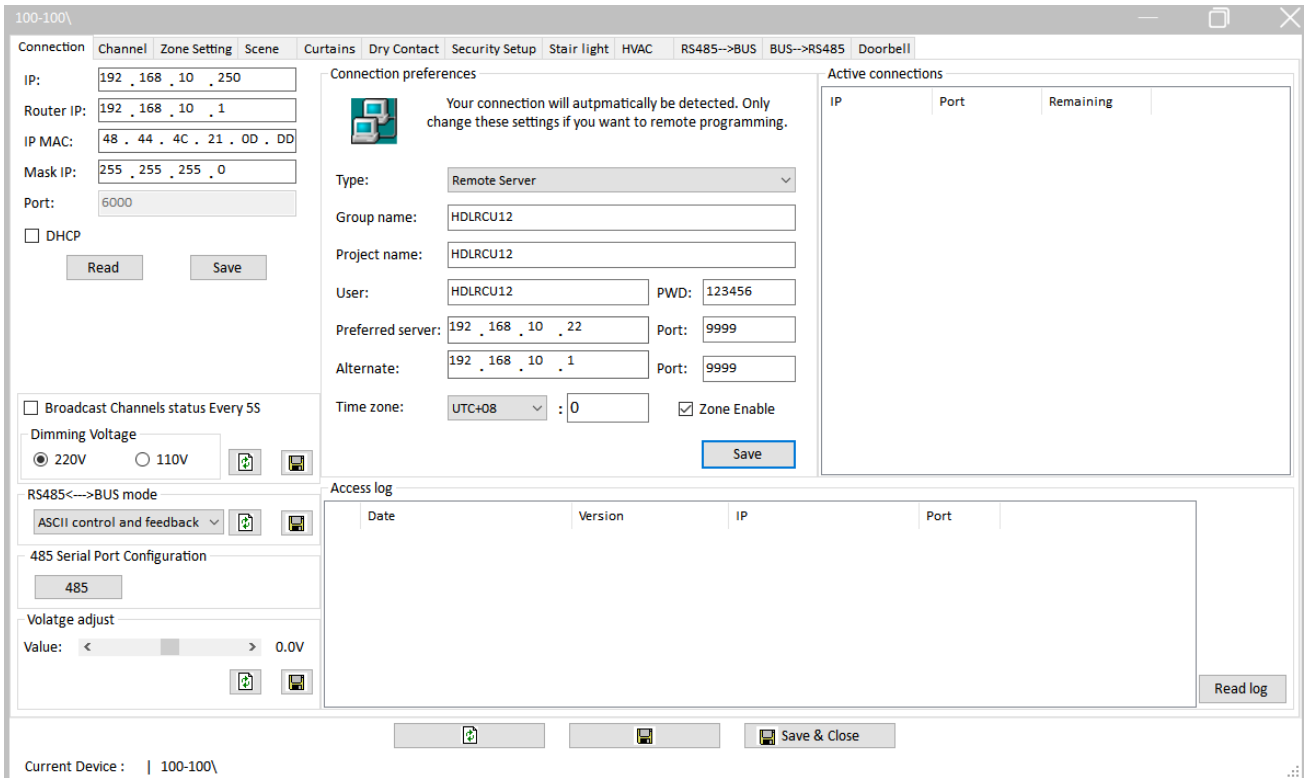


Figure 3

#### 2.1.1 IP Address

IP:

Router IP:

IP MAC:

Mask IP:

Port:

DHCP

Figure 4



Set the IP address for RCU:

**IP:** Set the IP address for RCU.

**Router IP:** Input the IP address of router.

**IP MAC:** Set the MAC IP of RCU.

**Mask IP:** Set the Mask IP.

**DHCP:** If enable this function, the RCU use DHCP IP address.

### 2.1.2 Other Setting

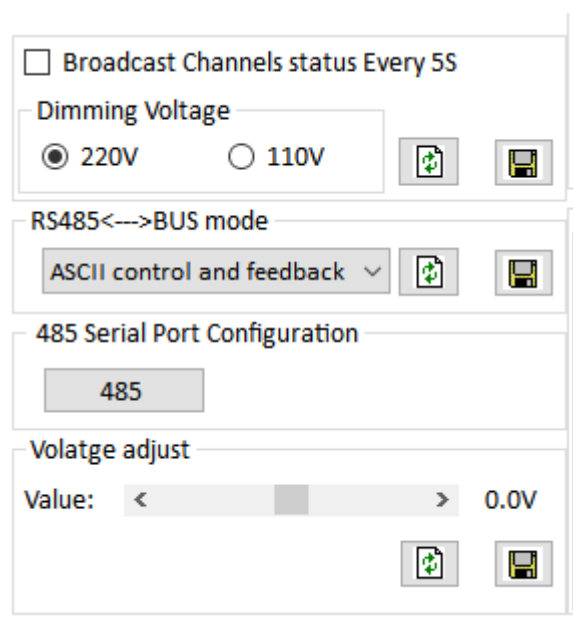


Figure 5

**Broadcast Channels status Every 5S:** We can enable/disable the broadcast function.

**Dimming Voltage:** We can select 220V or 110V.


**RS485<->BUS mode:** We can select five different mode

**485 Serial Port Configuration:** Set the baud rate, stop bit and parity bit.

**Voltage adjust:** adjust the voltage of dimming channels output.

### 2.1.3 Connection Preferences

Connection preferences

 Your connection will automatically be detected. Only change these settings if you want to remote programming.

Type: Remote Server

Group name: HDLRCU12

Project name: HDLRCU12

User: HDLRCU12 PWD: 123456

Preferred server: 192 . 168 . 10 . 22 Port: 9999

Alternate: 192 . 168 . 10 . 1 Port: 9999

Time zone: UTC+08 : 0  Zone Enable

Save

Figure 6

We can select different connection type from here.

## 2.2 Channel

Chn No.	Name	Low Limit	High Limit	Max Level	ON delay(0-25.0S)	Protect delay(0-60M)	ON
1-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
2-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
3-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
4-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
5-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
6-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
7-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
8-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
9-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
10-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
11-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
12-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
13-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
14-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
15-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
16-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
17-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>
18-Dimmer		0	100	100	N/A	N/A	<input type="checkbox"/>
19-Dimmer		0	100	100	N/A	N/A	<input type="checkbox"/>
20-Dimmer		0	100	100	N/A	N/A	<input type="checkbox"/>
21-Dimmer		0	100	100	N/A	N/A	<input type="checkbox"/>
22-Relay		N/A	N/A	N/A	0.0	0	<input type="checkbox"/>

Figure 7

**Channel Number:** There are totally 22 channels, 18 relay channels and 4 dimming channels.

**Name:** We can set the remark for each channel from here.

**Low Limit:** When commanded to a level that lower than the Lower limit, this channel will go to 0%, setting range: 00~Higher limit.

**High Limit:** When commanded to a level that is higher than the High limit, this channel will go to Max level. setting range: Lower limit~Max level.

**Max Level:** Max brightness of a channel. Range 00~100%.

**On delay:** When send a on command to this channel, it will turn on after the delay time, the range is from 0-25s.

**Protect delay:** when turn off load, can not turn on it immediately until the protection delay time elapse.

## 2.3 Zone setting

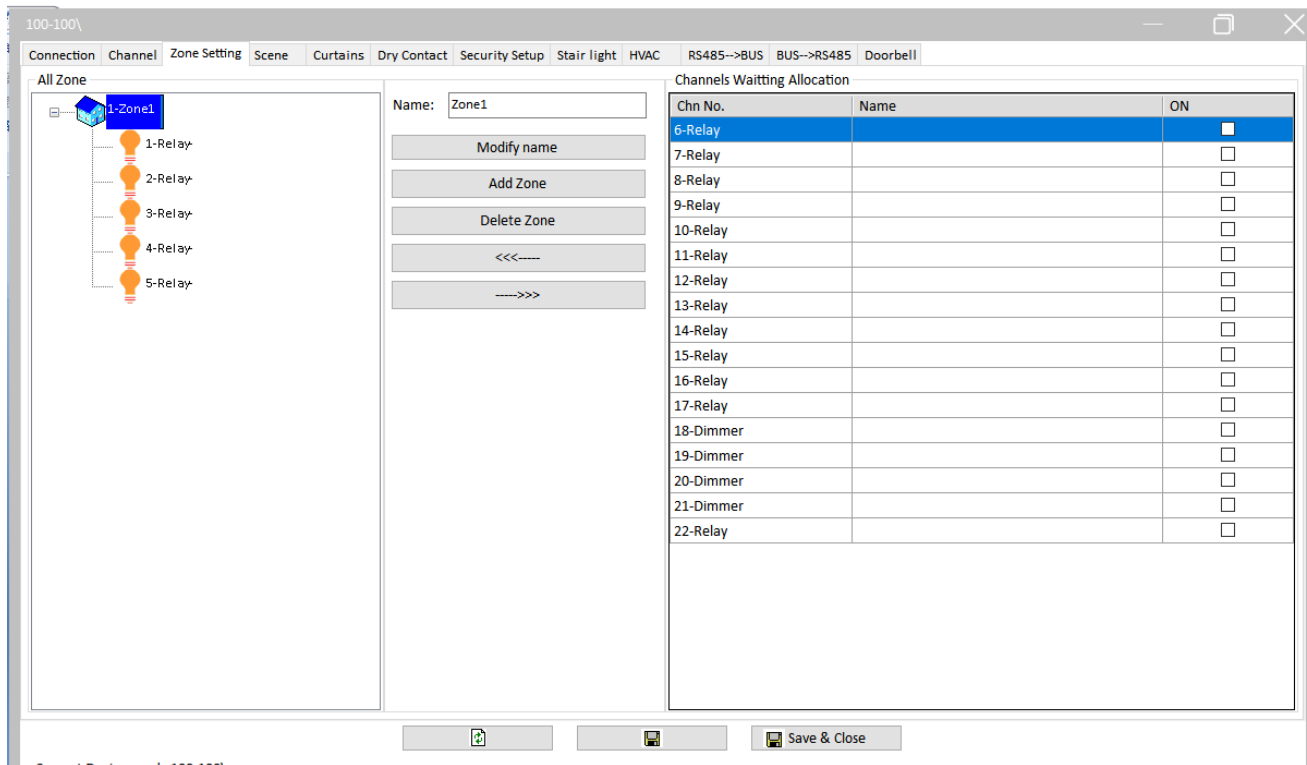


Figure 8

As shown in the figure 8, from the zone setting page, we can modify zone name, add zone, delete zone, shift-in and remove the channel.

**Modify name:** after enter the zone name in blank, click “modify name” to modify the zone name.

**Add zone:** when click the “add zone” button, the page will create a new zone on the left side.

**Delete zone:** select the zone on the left side, click “delete zone” to delete the selected zone.

**The left-hand arrow:** shift-in the channel to the zone.

**The right-hand arrow:** remove the channel from the zone.

## 2.4 Scene

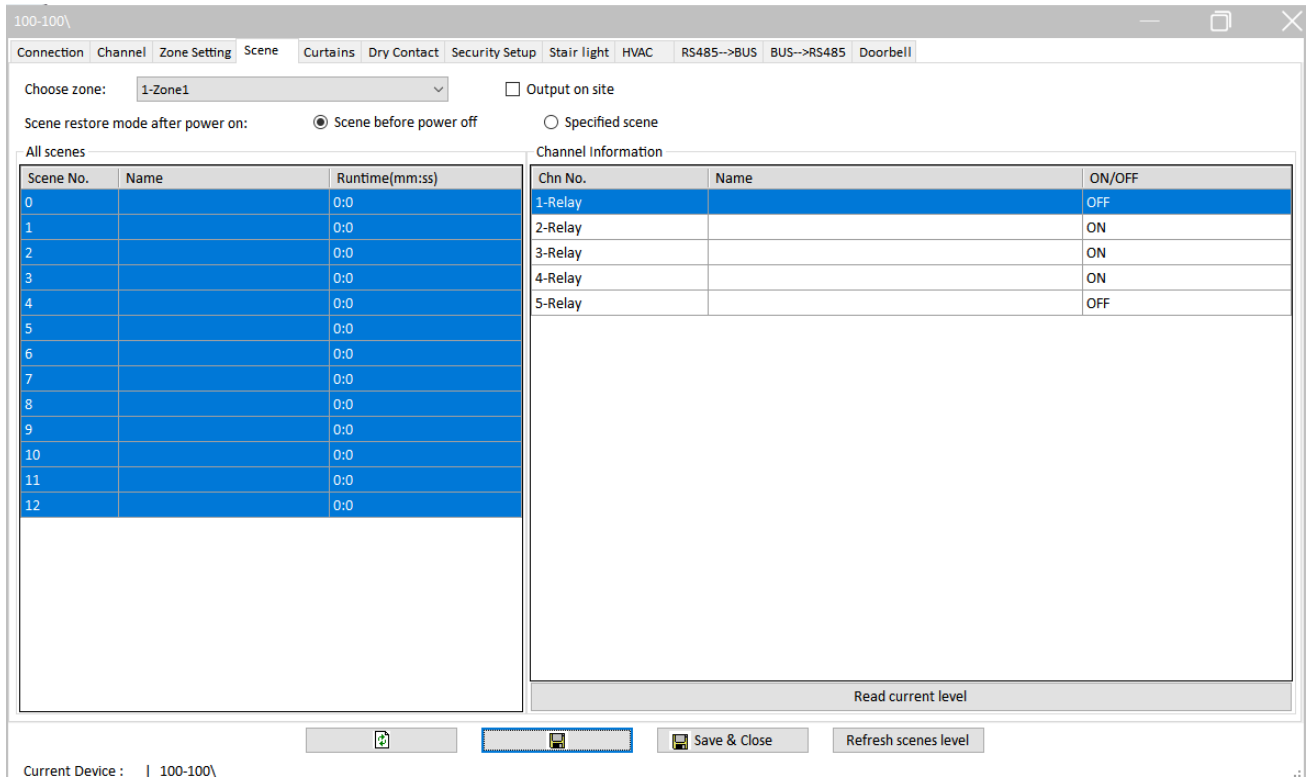


Figure 9

As shown in the figure 5, from the scene setting page, we can select the zone, set the scene restore mode after power on and so on.

**Choose Zone:** if you create several zone, you can select different zone in scene setting page.

**Output on site:** if you check this option, it will output current scene.

**Scene before power off:** if you check this option, when power comes again, the dimmer will restore the scene before power off.

**Specified scene:** if you check this option, when the power comes again, the dimmer will restore the specified scene, modify the scene name and so on.

**Scene No.:** Scene number, all channel are 0 by default in scene 0, cannot modify the intensity of channels in scene 0.

**Name:** we can modify the scene name, for example “ALL OFF” , “Morning” .

**Runtime(mm:ss):** it means the channel running times in the scene, take an example as scene 1, if we set the runtime with 2s, it means it will take 2 seconds to reach the setting intensity in the scene.

**Channel information:** we can modify the intensity of each channel in this area.

## 2.5 Curtains

Curtain No.	Enable	Open Delay(MM:SS)	Close Delay(MM:SS)	Runing Time(MM:SS)
1(Channel 1 &...	Disable	0:0.0	0:0.0	0:0.0
2(Channel 4 &...	Disable	0:0.0	0:0.0	0:0.0
3(Channel 6 &...	Disable	0:0.0	0:0.0	0:0.0
4(Channel 8 &...	Disable	0:0.0	0:0.0	0:0.0
5(Channel 10 ...	Disable	0:0.0	0:0.0	0:0.0
6(Channel 12 ...	Disable	0:0.0	0:0.0	0:0.0
7(Channel 14 ...	Disable	0:0.0	0:0.0	0:0.0
8(Channel 16 ...	Disable	0:0.0	0:0.0	0:0.0

Figure 10

**Curtain No.:** From number 1 to number 8.

**Enable:** We can enable and disable the curtain function from this option.

**Open Delay:** When open the curtain, it will open after the delay time.

**Close Delay:** When close the curtain, it will close after the delay time.

**Running Time:** We need to measure the running time for the curtain and input from here.

## 2.6 Dry Contact.

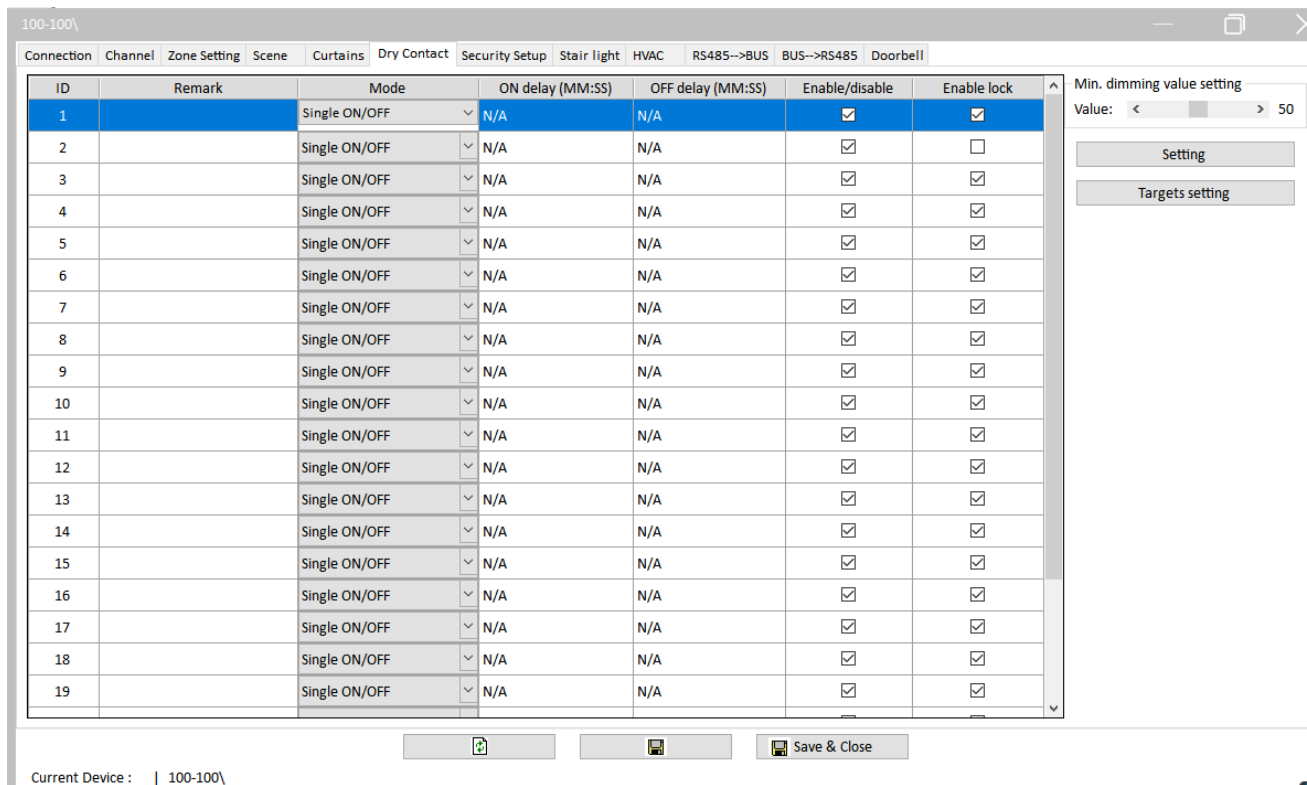


Figure 11

**ID:** The RCU has 24 dry contact channels, from ID1 to ID24.

**Remark:** Set the remark for each channel.

**Mode:** We can set the mode for each channels.

**Mechanic Switch:** Send out a command (generally the on command, e.g., light on.) when Switch is connected, send out another (generally the off command) when the Switch is disconnected.

**Single on:** Assign the Switch can turn on one object only (one channel, or one scene, or one sequence, etc.)

**Single off:** Assign the Switch can turn off one object only (one channel, or one scene, or one sequence, etc.)

**Single on/off:** Assign the Switch can turn on/off one object only (one channel, or one scene, or one sequence, etc.)

**Combination on:** Assign the Switch can turn on multiple objects (channels, scenes, sequence, etc.)

**Combination off:** Assign the Switch can turn off multiple objects (channels, scenes, sequence, etc.)

**Combination on/off:** Assign the Switch can turn on/off multiple objects (channels, scenes, sequence, etc.)

**Multi-function:**

Long press – combination off (or dim, if dimming is enabled in the Dry Contact module.

Dim the first object only, though.)

Short press – single on/off

Double click – Combination on

This mode can be used in, maybe, meeting, by double-click all the lighting can be on, by

long-press, all lighting can be off, this can avoid mishandling and so it is more secure.

**Parallel Switch:**

This key mode is originally designed for retrofit project where the end-users want to implement smart system – HDL-BUS, but they want to reserve the existing toggle buttons, the toggle buttons are to control one public area lighting (e.g., stair lighting) from multiple places.

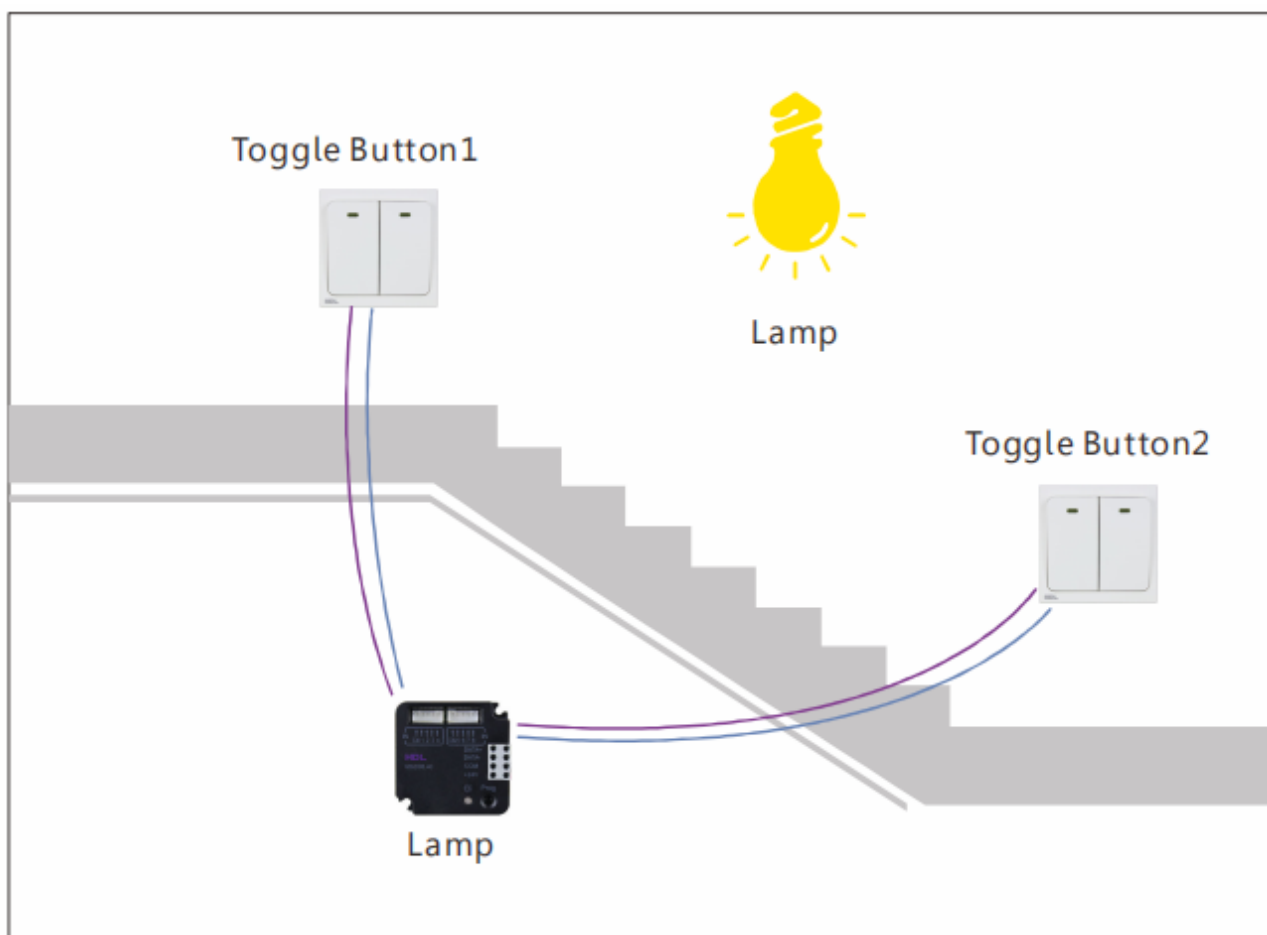


Figure 12

**Wiring**

Connect the two toggle buttons to two different dry contact channels

**Setting**

Select “Parallel switch” for both dry contact channels

**Combination ON & OFF:** Assign the Switch can turn on/off multiple objects (channels, scenes, sequence, etc.), on target and off target can be different.

**Min dimming value setting:** We can set minimum dimming value from here.



**Setting:** We can select switch mode, dimming two-way, dimming up and dimming down from this page.

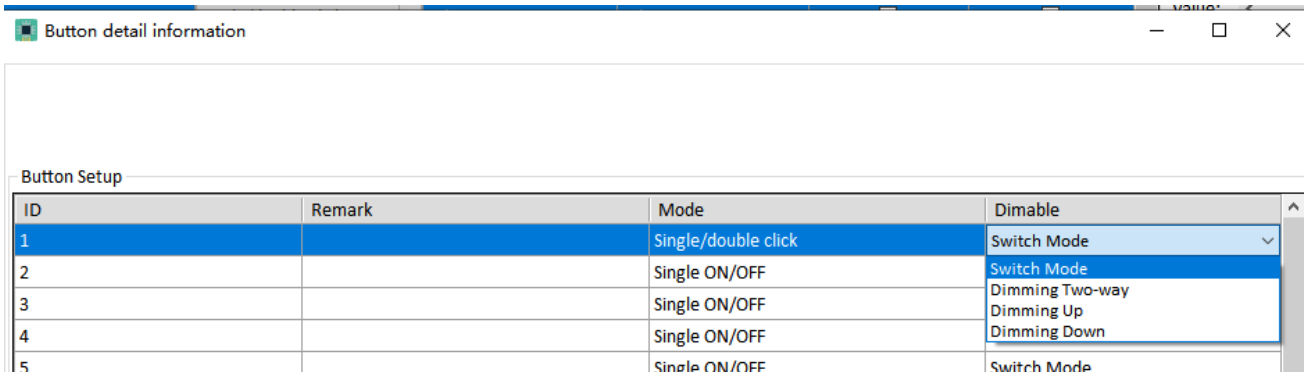


Figure 13

## 2.7 Security Setup

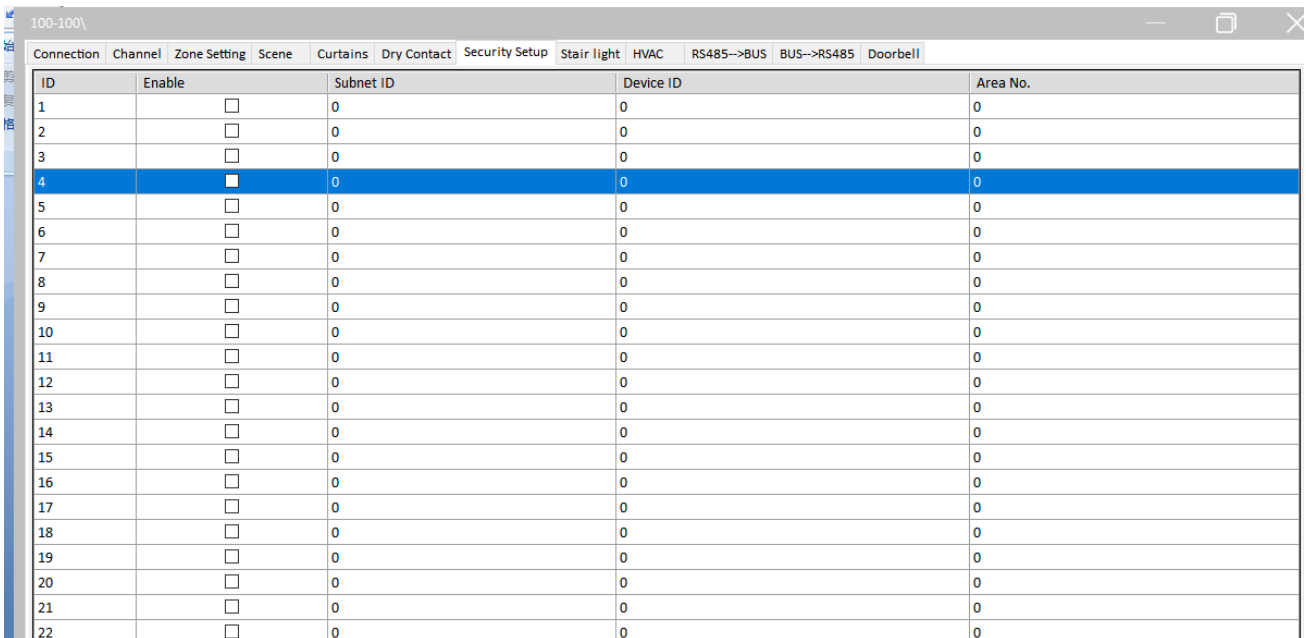


Figure 14

We can enable and disable the security function of dry contact from this page.

**ID:** It is the channel number of dry contact.

**Enable:** Enable and disable the channel.

**Subnet ID, Device ID and Area No.:** The subnet ID, device ID and area number of security module.

## 2.8 Stair light

Chn No.	Name	Stair light	Auto Close(S)	Test
1-Relay		<input type="checkbox"/>	3	<input type="checkbox"/>
2-Relay		<input type="checkbox"/>	3	<input type="checkbox"/>
3-Relay		<input type="checkbox"/>	3	<input type="checkbox"/>
4-Relay		<input type="checkbox"/>	3	<input type="checkbox"/>
5-Relay		<input type="checkbox"/>	3	<input type="checkbox"/>
6-Relay		<input type="checkbox"/>	3	<input type="checkbox"/>
7-Relay		<input checked="" type="checkbox"/>	3	<input checked="" type="checkbox"/>
8-Relay		<input type="checkbox"/>	3	<input type="checkbox"/>
9-Relay		<input type="checkbox"/>	3	<input type="checkbox"/>
10-Relay		<input type="checkbox"/>	3	<input type="checkbox"/>
11-Relay		<input type="checkbox"/>	3	<input type="checkbox"/>
12-Relay		<input type="checkbox"/>	3	<input type="checkbox"/>

Figure 15

From this page, we can set the stair light function for each relay channel.

**Stair light:** enable and disable the relay channel.

**Auto Close:** Set the auto close time for relay channel.

**Test:** Test the stair light function for the relay channel.

## 2.9 HVAC

The screenshot shows the HVAC configuration page with the following sections:

- AC Configuration:** Includes a checkbox for "HVAC enable" and buttons for "AC Setup" and "More...".
- Sensor Setting:** Features a "Temperature Adjust" slider set to -5, an "Oper Type" dropdown, and a "Read Temperature Interval" set to 5 S. Below is a table for sensor configuration:
 

Sensor	Subnet ID	Device ID	Channel
Sensor1	0	0	1
Sensor2	0	250	1
Sensor3	0	0	1
Sensor4	0	0	1
- Air-Condition Delay:** Includes radio buttons for "Minute" and "Second" (selected), and dropdowns for "Compressor Startup Delay" (5 S), "Compressor Switch OFF Delay" (3 S), "FAN Startup Protect Delay" (5 S), and "FAN Switch OFF Delay" (2 S).
- Mode of Test Relay Enable:** Includes checkboxes for "Mode I", "Mode II", and "Mode III", and "FAN Speed" settings for High, Medium, and Low.
- Host Enable:** Includes a "Slave No." dropdown (set to 1), an "Enable" checkbox, and fields for "Subnet ID" (100) and "Device ID" (100).
- Heating Protect Enable:** Includes a "Protect Check Temperature Norm Protect Status" dropdown (set to C), "Protect Ways" (set to Close FAN Re), and fields for "Subnet ID" (250), "Device ID" (250), and "Channel No." (250) with a "Trigger range" of 10 to 50.

Figure 16

The default channel for HAVC is from channel 1 to channel 5.

### 2.9.1 AC Configuration

**HVAC enable:** enable and disable HAVC function.

**AC Setup:** We can set the temperature type, fan speed option, mode option, power saving, wind sweeper and temp range.

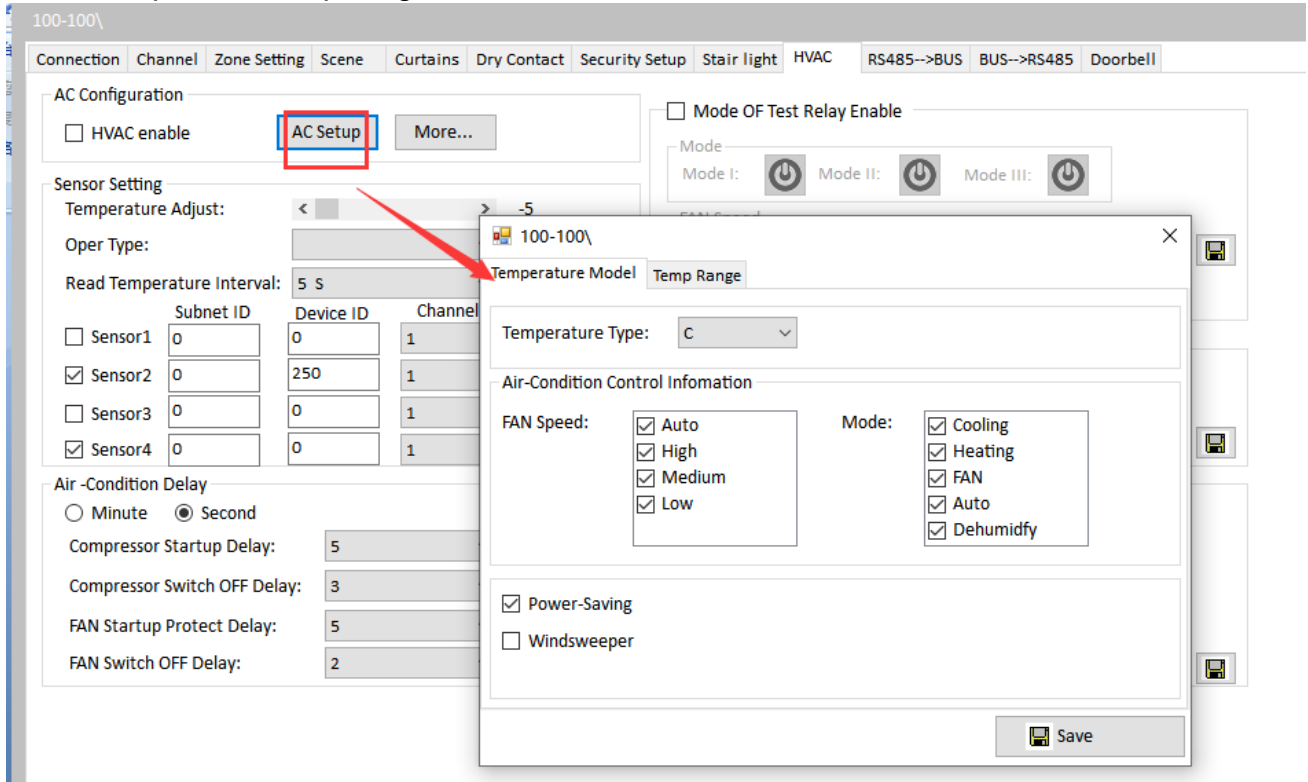


Figure 17

### 2.9.2 Sensor Setting

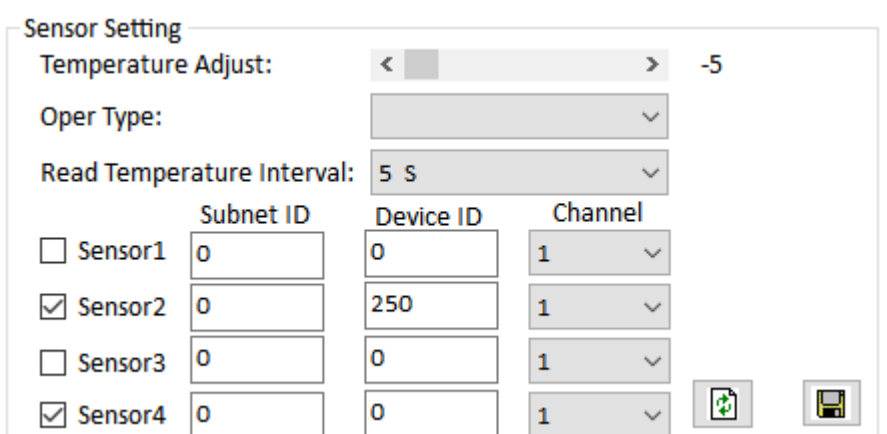


Figure 18

**Temperature Adjust:** Adjust the temperature of sensor.

**Read Temperature interval:** Set the read temperature interval time of sensor.

**Sensor1:** Set the ID and channel of the other device that contain the temperature sensor.

### 2.9.3 Air-Condition Delay

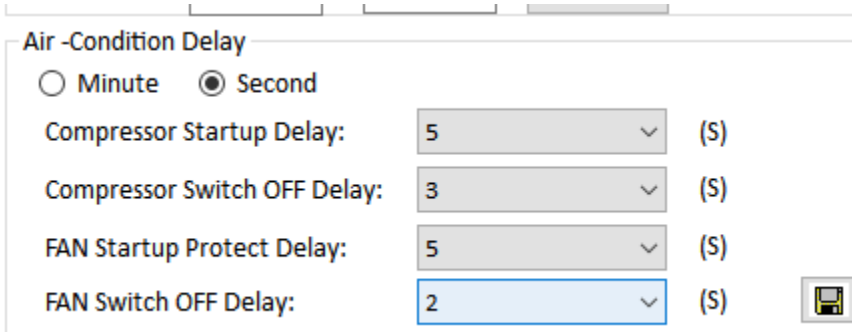


Figure 19

We can set the AC delay time from here.

### 2.9.4 Air-Condition Delay

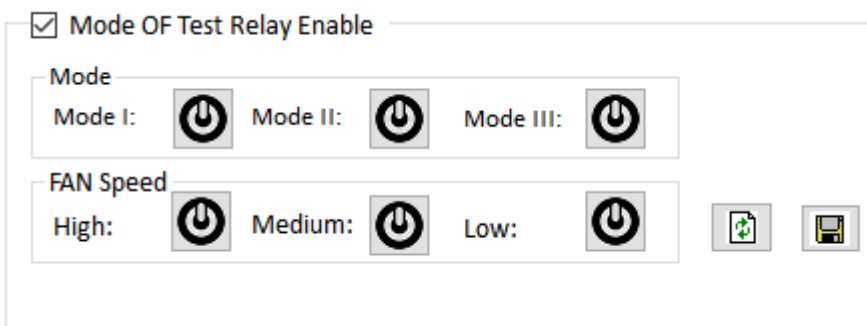


Figure 20

After check this option, we can test the relay function of AC.

### 2.9.5 Host enable

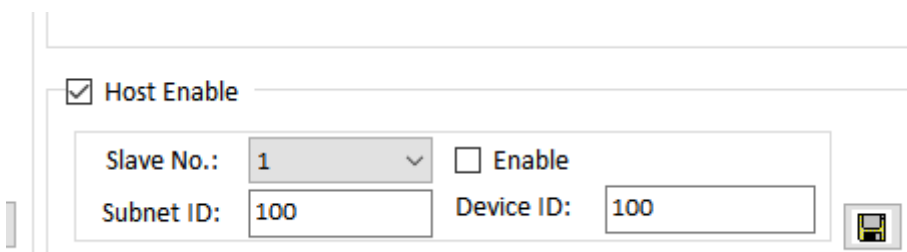


Figure 21

We can enable/disable the slave AC from here, slave number can be from 1 to 8.

## 2.9.6 Heating Protect Enable

Heating Protect Enable

Protect Check Temperature Norm Protect Status: C

Protect Ways: Close FAN Re

Subnet ID: 250 Device ID: 250

Channel No.: 250 Trigger range 10 - 50

Figure 22

We can enable/disable heating protect from here.

**Protect Ways:** There are 3 protect ways, close fan relay, close mode relay and all close.

## 2.10 RS485→BUS

100-100\

Connection Channel Zone Setting Scene Curtains Dry Contact Security Setup Stair light HVAC RS485→BUS BUS→RS485 Doorbell

Command Information

Input Command Number(1-49): From 1 To 10 Read

ID	Remark	Enable	Format	Character string	End String
1		Invalid	ASCII		NONE
2		Invalid	ASCII		NONE
3		Invalid	ASCII		NONE
4		Invalid	ASCII		NONE
5		Invalid	Invalid		NONE
6		Invalid	Invalid		NONE
7		Invalid	Invalid		NONE
8		Invalid	Invalid		NONE
9		Invalid	Invalid		NONE
10		Invalid	Invalid		NONE

Targets Information of Current Command

ID	Subnet ID	Device ID	Type	Param1	Param2	Param3
1	0	0	Invalid	N/A	N/A	N/A
2	0	0	Invalid	N/A	N/A	N/A
3	255	255	Invalid	N/A	N/A	N/A

Current Device : | 100-100\

Save & Close

Figure 23

In the RS485->BUS page, it is configured to control HDL devices from the third party device.

## 2. 11 BUS -> RS485

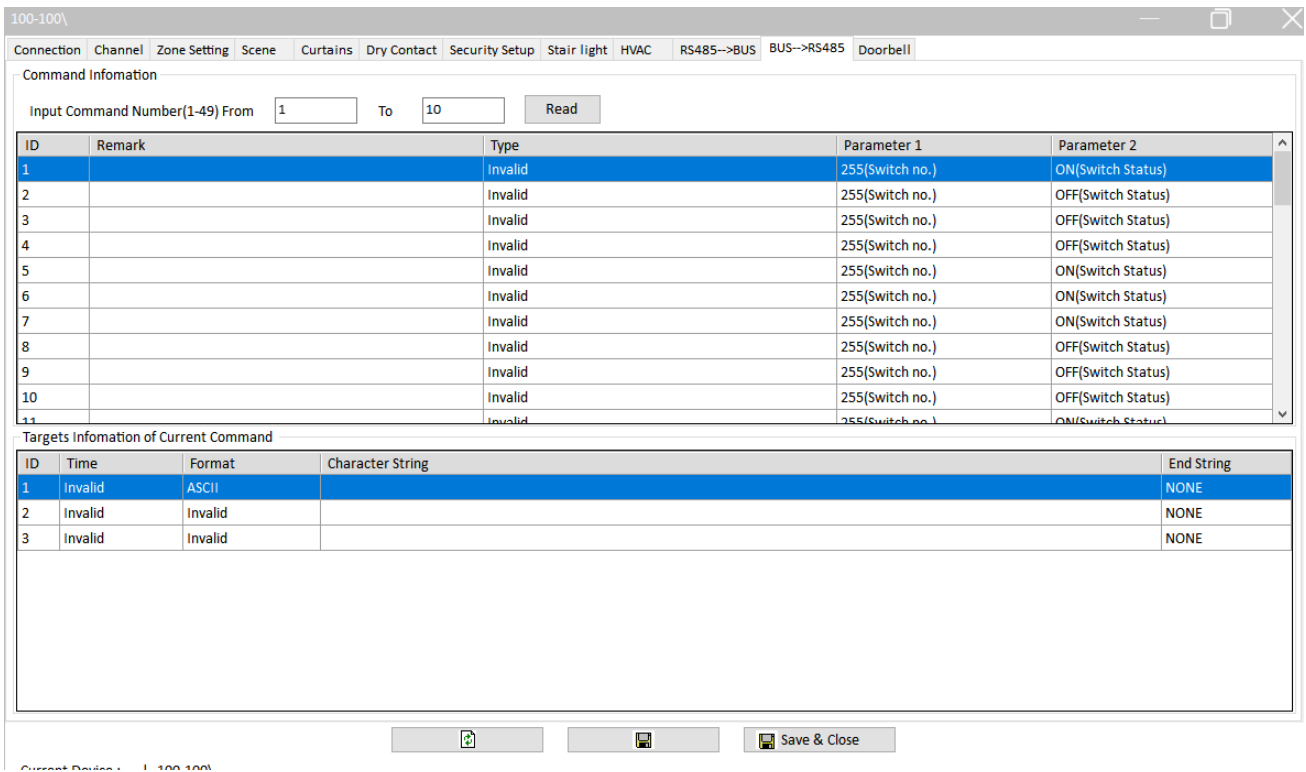
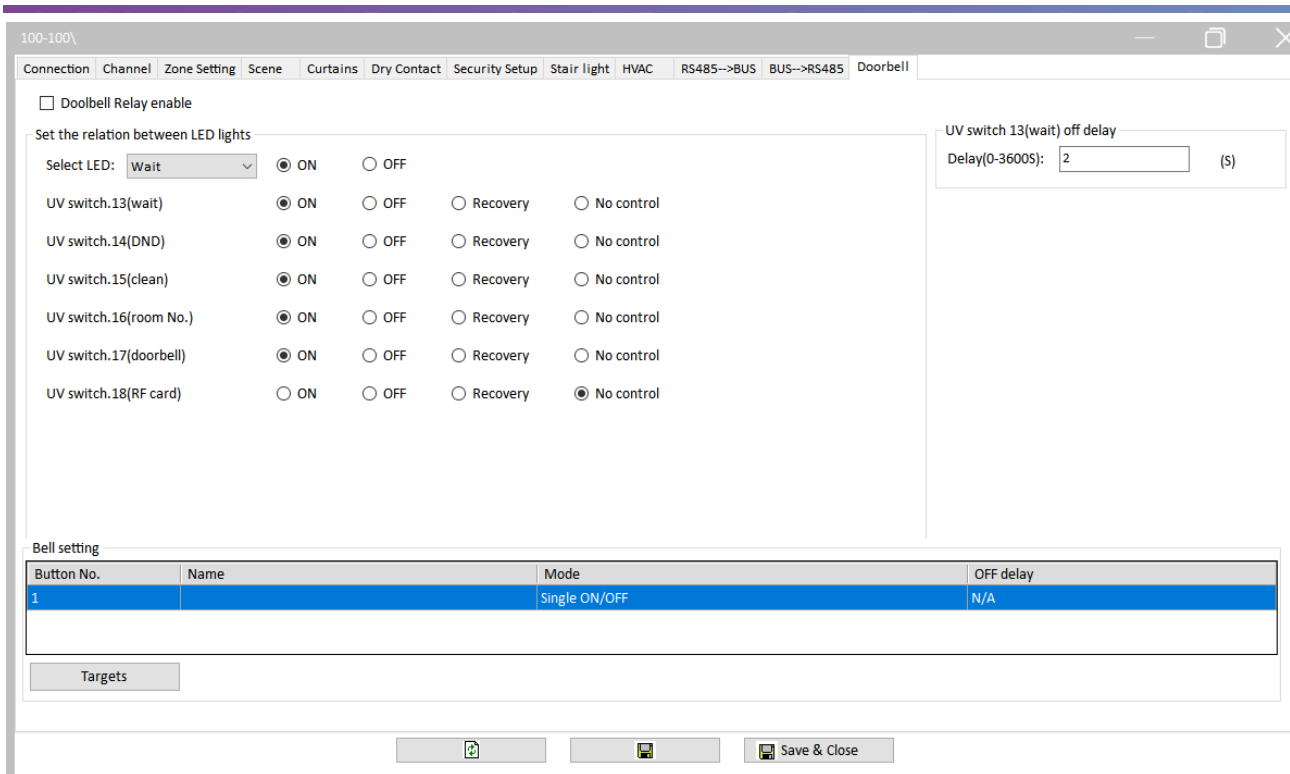


Figure 24

In the BUS -> RS485 page, it is configured to control the third party device from the HDL devices.

## 2. 12 Doorbell



**Doorbell Relay enable:** Enable and disable the doorbell relay.

**Set the relation between LED lights:** It is used to set relation of the indicator status.

**Targets:** The targets of doorbell.