



HDL-MIRC04.40

User Manual

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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	Jul.22 nd , 2020

1 Introduction

4CH IR Emitter with Current Detection (See Figure 1) can download codes saved in HDL Buspro Setup Tool, or codes uploaded to the IR Code Learner. HDL-MIRC04.40 can then transmit the IR codes to control IR devices, for example, air conditioner, TV, fan, projector, Set-Top Box, DVD etc. It also supports current detection for devices.



Figure 1

1.1 Functionality

- Current detection: Detect if the device is power-on or power-off.
- 4 IR emission channels drive the transmitting tube directly.
- Supports 24 devices and 100 IR codes.
- Built-in IR code library holds IR codes from common appliance manufactures.
- Codes that are not presented in the IR library can be uploaded via the IR learner.

- Supports up to 99 UV switches.
- Supports online update via HDL Buspro Setup Tool.
- Supports easy programming.

1.2 Parameters

Basic Parameters :	
Working voltage	15~30V DC
Working current	30mA/24V DC
Sending carrier wave frequency	38kHz
IR control distance	5m
External Environment:	
Working temperature	-5℃~45℃
Working relative humidity	≤90%
Storage temperature	-20℃~60℃
Storage relative humidity	≤93%
Specifications:	
Dimensions	45mm×45mm×16mm
Net weight	58g
Housing material	Flame retardant ABS
Installation	86×86 wall box, Screw fix installation
Protection rating (Compliant with EN 60529)	IP20

1.3Product Interface

The connection and interface of 4 channels IR emitter like the below figure 2.

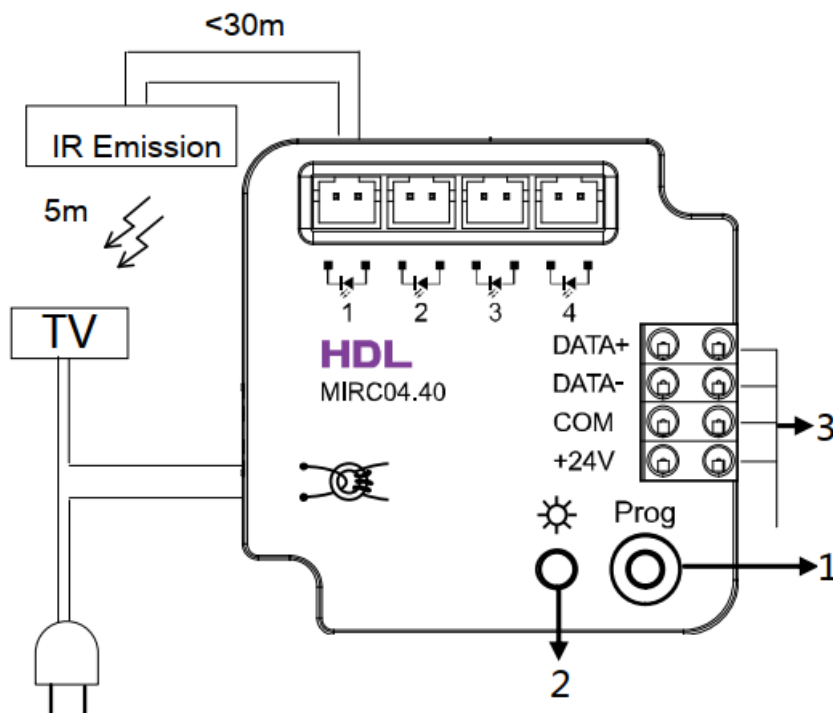


Figure 2

1. Programming button.

Keep pressing the button for two seconds, the LED will keep on red, then the device address can be modified via the HDL Buspro Setup Tool.

2. LED indicator: The LED will flash in red, which indicates the module is working properly.

3. HDL Buspro: from top to bottom, DATA+, DATA-, COM, 24V DC.

Note: The IR emitter is capable of sending an IR beam from the distance up to 5 meters. The standard emission tube is 1.5 meters. An additional cable up to 30 meters can be used in conjunction with the IR emitter.

Note: Take connection with TV as an example (See Figure 4). Connect the power supply cable to the current detection port in series. When the TV is turned on or off, the system will detect the status. And the system will read the current

when turn on or turn off the TV. Use the average current of the two values and write it down in HDL Buspro Setup Tool, "The standby current threshold", after setting, the system can detect the power status of TV, then emit correct IR codes.

2 Configuration

2.1 Basic Information

As shown in the figure 3, from the basic information page, we can modify the remark of each channel.

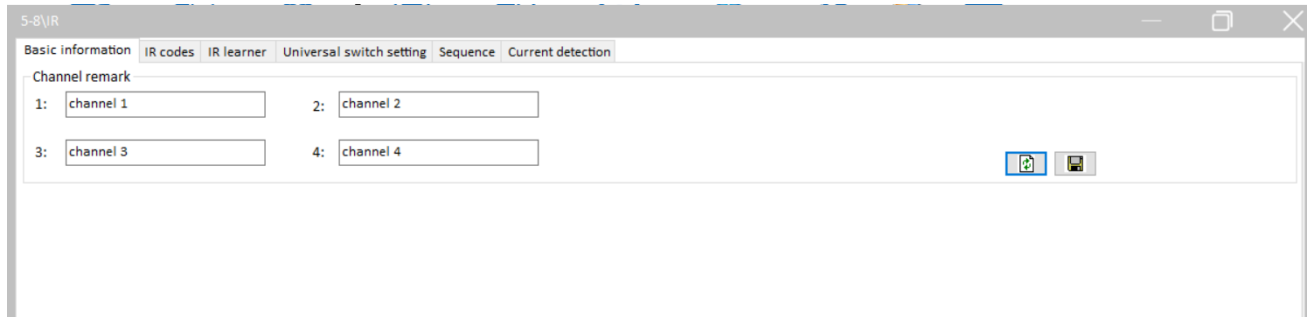


Figure 3

2.2 IR Codes

In the IR codes page, it is used to configure the in-built IR code.

Index: from index 1 to index 4 in orange area, it is used to store AC IR code, index 1 means channel 1, index 2 means channel 2; from index 1 to index 24 in the blue area, it is used to store other IR codes, such as, TV, projector, DVD/EVD /VCD.

Device: it is the device type of AC.

Name: it is the name of of IR code.

Test: we can test IR code from here.

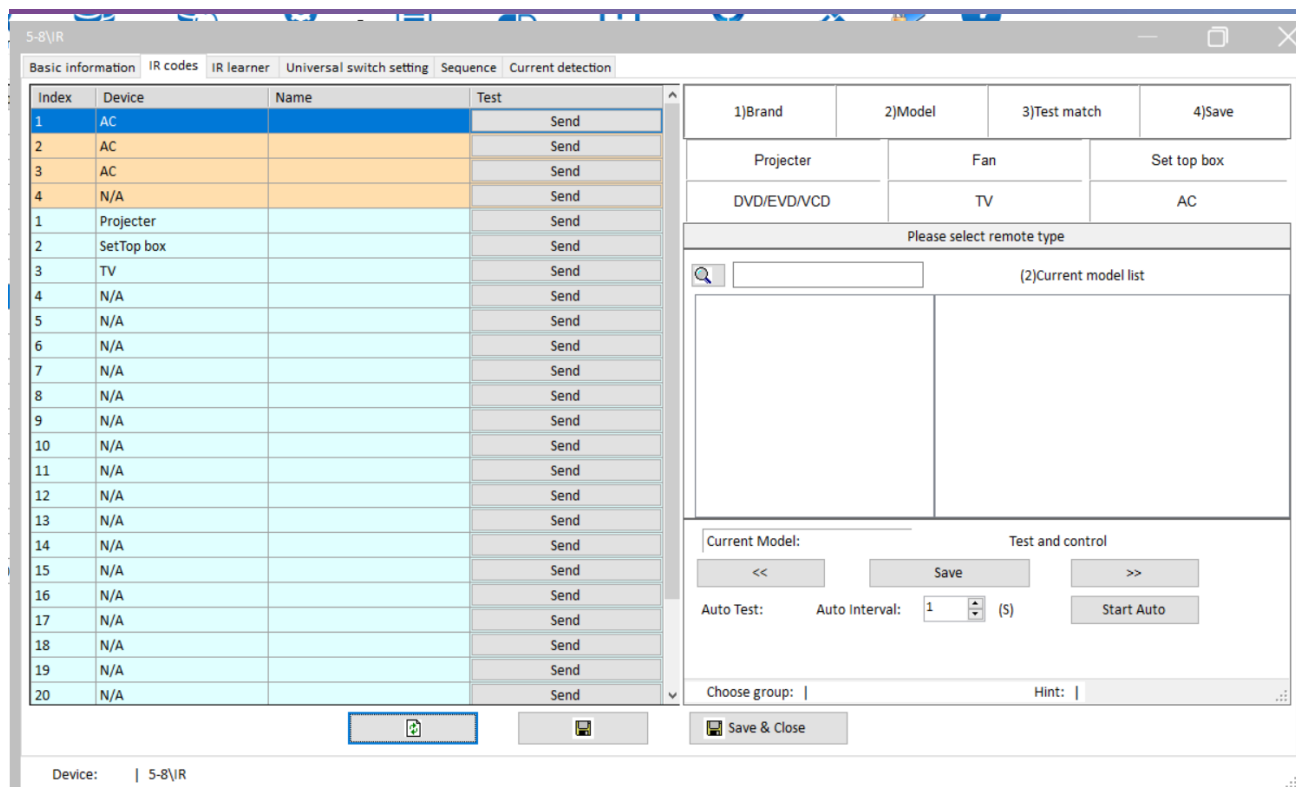


Figure 4

In the below area, we can select and test the in-built IR code.

1)Brand 2)Model 3)Test match 4)Save

Projector Fan Set top box

DVD/EVD/VCD TV AC

Please select remote type

Search: (2)Current model list

Brand	Model
AUCMA	AC--001
AKUMA	AC--002
AMCOR	AC--003
AN CROWN	AC--004
APTON	AC--005

Current Brand: AUCMA Test and control

<< Save >>

Auto Test: Auto Interval: 1 (S) Start Auto

Choose group: AC Hint:

Figure 5

2.3 IR learner

As shown in the figure 6, from the IR learner page, we can configure the learned IR code.

Key: it is a remark number for each learning IR code.

Name: we can give a name for each IR code.

Valid: it shows the key is valid or invalid.

Mode and Temperature: if we learn the IR AC code, and want to control the IR AC like a HVAC module, need to fill in the mode and temperature from here. Only can use channel 4 off IR emitter, and the AC number is 5.

IR learner: if we click IR learner button, it will go to IR learner page.

Upload IR: we can upload the selected IR code by clicking this button.

Stop uploading: we can stop uploading by this button.

Test IR codes: we can test the selected IR code by this button.

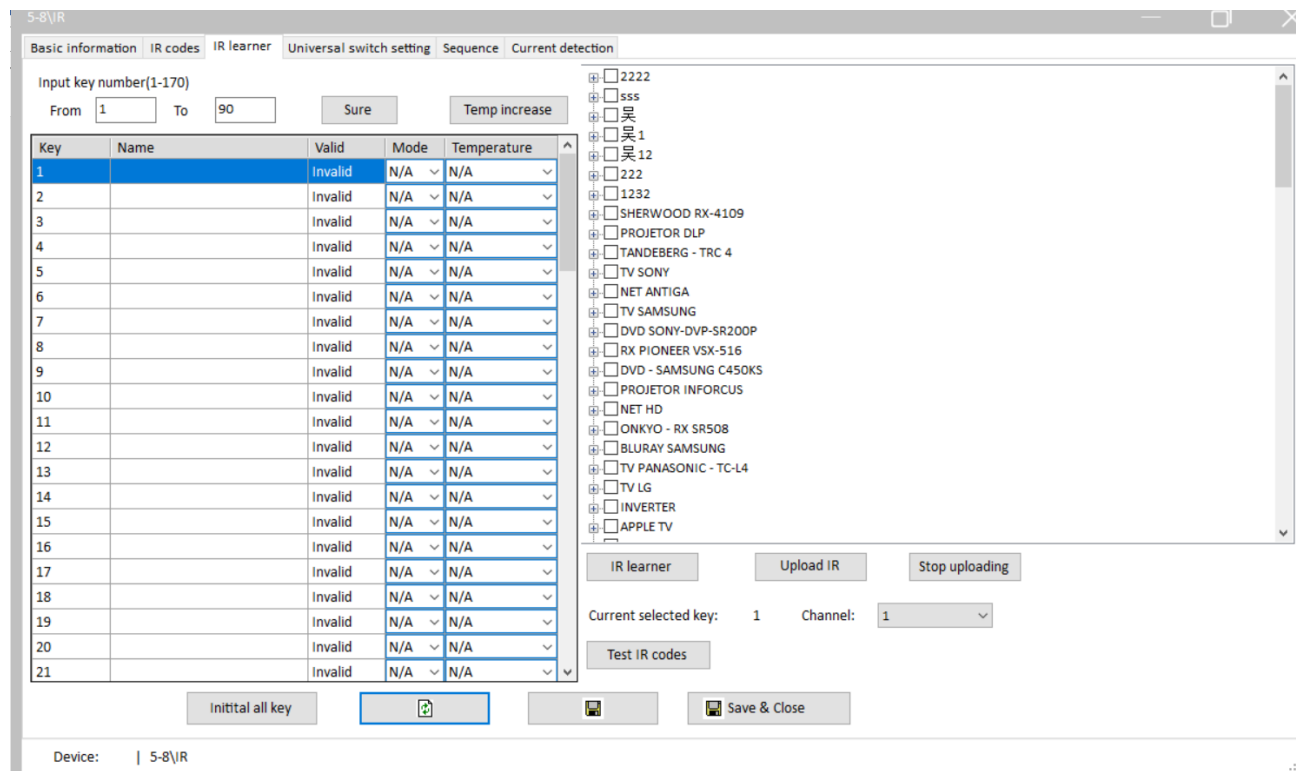


Figure 6

2.4 Universal Switch Setting

As shown in the figure 7, from the universal switch setting page, we can set the relation of universal switch number and the IR code.

ID: it is the universal switch number and the ON/OFF status.

Device: we can select the learning IR code of the in-built IR code from here.

Channel: the channel of sending IR code.

Parameter 1: it is the key number of IR learner page.

Parameter 2: we can set the resend time from here.

5-8\IR

Basic information IR codes IR learner Universal switch setting Sequence Current detection

Input universal switch number(1-99): From To

ID	Device	Channel	Parameter 1	Parameter 2	More parameters	More parameters	More parameters	Temperature
1-ON	29-Choose Key OF Learn	4	1(Key Function)	0(Resend Times)	0.1(Resend Del...	OFF(Current Det...	N/A	N/A
1-OFF	29-Choose Key OF Learn	4	2(Key Function)	0(Resend Times)	0.1(Resend Del...	OFF(Current Det...	N/A	N/A
2-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Device: | 5-8\IR

Figure 7

2.5 Sequence

As shown in the figure 8, from the sequence page, we can set sequence for the IR emitter.

Choose sequence: we can choose sequence from 1 to 8 in this option.

Sequence enable: we can enable and disable the sequence from here.

Index: it is the number of IR code.

Device: we can select in-build or learning IR code from here.

Channel: select the channel of IR emitter.

Delay: set the delay time of sending IR code.

Parameter 1: if select learning IR code, it is the key number of learning IR code.

Parameter 2: we can set the resend times from here.

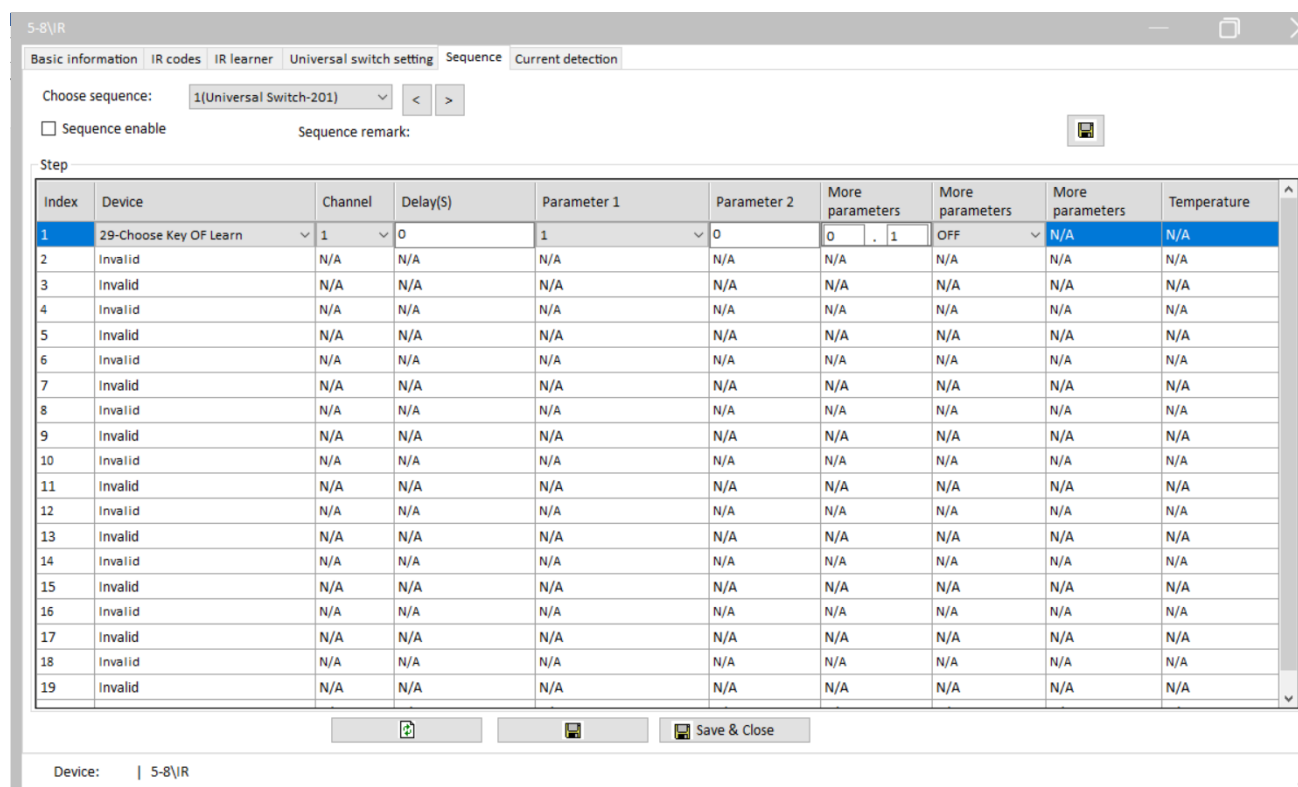


Figure 8

2.6 Current Detection

In the current detection page, we can set the current detection function. After we use the current detection. (when detected current>standby current, HDL-MIRC04.40 will reject to send ON command; when detected current<standby current, HDL-MIRC04.40 will reject to send OFF command.)

Waiting time for load: it is the waiting time of load.

Device type: we can select the in-built or learning IR code from here.

Standby current: it is the threshold value of judging the device is standby or working./

Power key: the key that turn on/off the device.

Load universal switch No.: when the current value is changed, it will send the universal switch number to other device. For example, it the current value is from on to off, it will send the off code, vice versa.

The screenshot shows the 'Current detection' tab of the HDL-MIRC04.40 software. The interface is divided into three main sections:

- Load of target setup:** Contains input fields for 'Waiting time for load' (12), 'Standby current' (155), 'Device type' (29-Choose Key OF Learn), and 'Power key' (23). The 'Load status' is set to 'OFF'.
- Current detection:** Contains three rows of data: 'Working current value' (0), 'Current value when OFF' (0), and 'Average value' (0). Each row has a 'Read' button next to it.
- Load universal switch No.:** Contains a checkbox for 'Enable' (unchecked) and three input fields for 'Universal switch No.' (255), 'Subnet ID' (255), and 'Device ID' (255).

At the bottom of the window, there are three buttons: a green 'OK' button, a yellow 'Cancel' button, and a grey 'Save & Close' button. The status bar at the bottom left shows 'Device: | 5-8\IR'.

Figure 9

How to use current detection: (if the ON/OFF codes are the same)

Steps:

- Connect the TV to IR Emitter module(see the Current Detection Wiring);
- Fill in the ON/OFF codes UV switch number in 'Set control target' window;
- Turn on the TV by remoter, and click 'Read', it will shows a value (e.g. 26);
- Turn off the TV by remoter, and click 'Read', it will shows a value(e.g. 4);
- Fill in the average value $(26+4)/2=15$ in the Standby current.

Standby current:	255 15	Power key:
Load status:	OFF	
Current detection		
Working current value:	0 26	Read
Current value when OFF:	0 4	Read
Average value:	0 15	

Figure 10

- f) If you want to turn ON TV, send command ‘UV switch number 1, ON’ to IR Emitter module;
- g) If you want to turn OFF TV, send command ‘UV switch number 1, OFF’ to IR Emitter module.

2.7 Control the AC by IR Code

2.7.1 In-built IR code

Let's use the HDL-MPTL4C.48 to take an example.

- 1 In the IR codes page, select the AC channel from orange area, select the IR code and save.

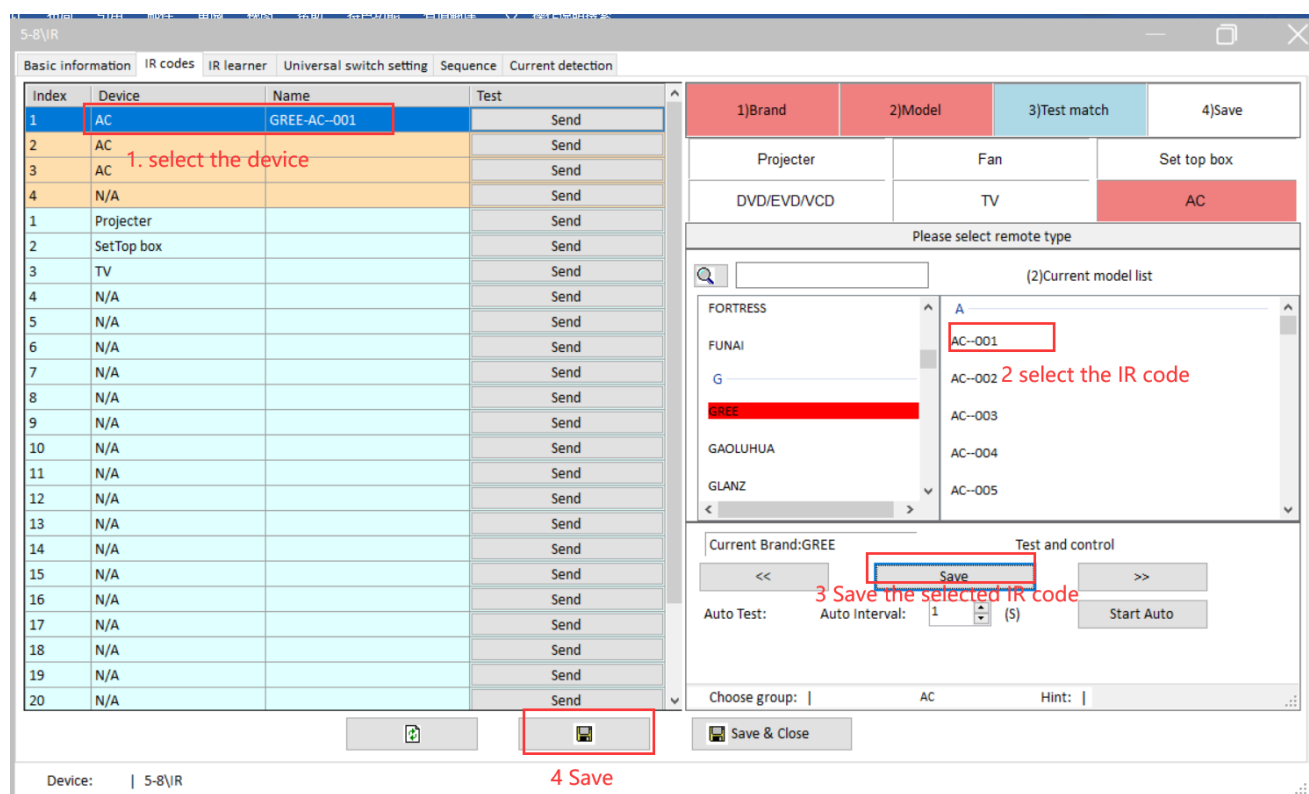


Figure 11

2 From the AC page of granite display panel, enable the AC function, set fan speed and mode, input the subnet ID, device ID, AC number of IR emitter. And set temperature source.

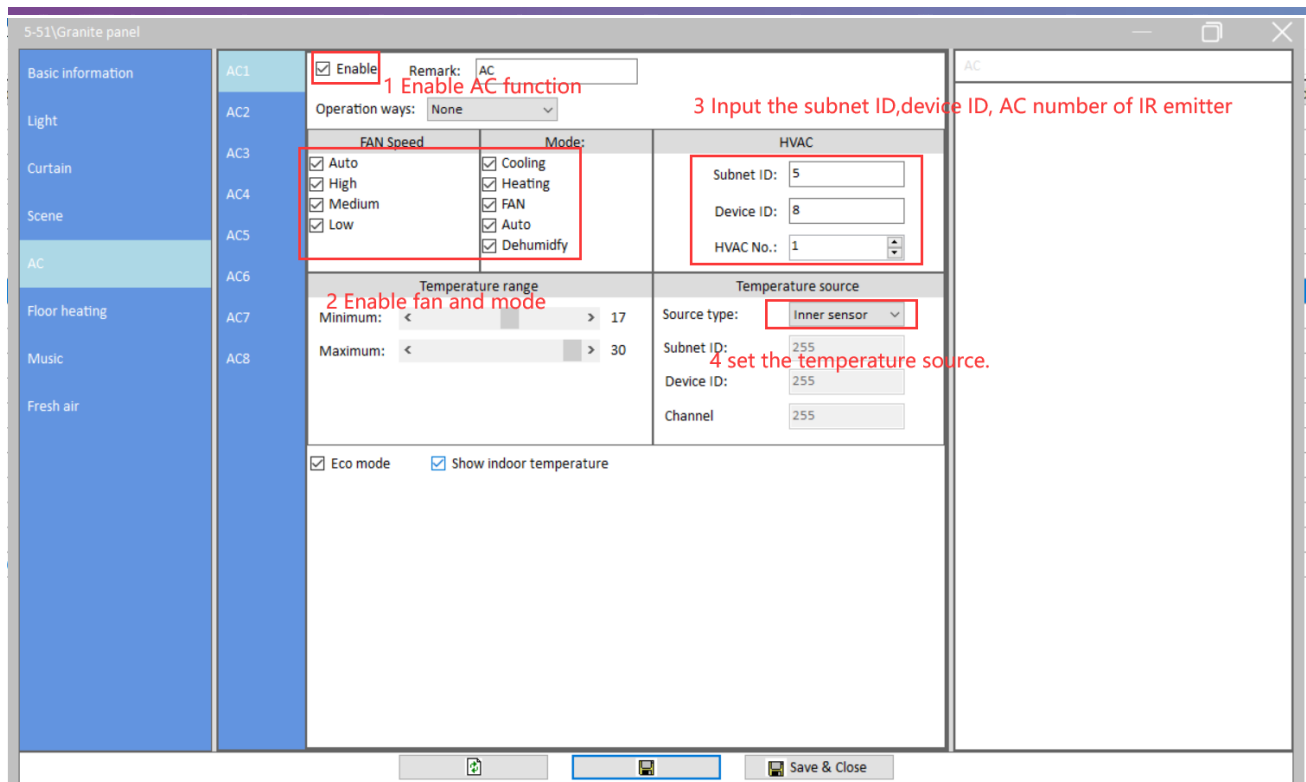


Figure 12

2.7.2 Control learning IR AC Code by Granite Display

1 In the IR learner page, select the key number, select the learning IR code, upload IR code and save. And the IR probe should connect channel 4 of IR emitter.

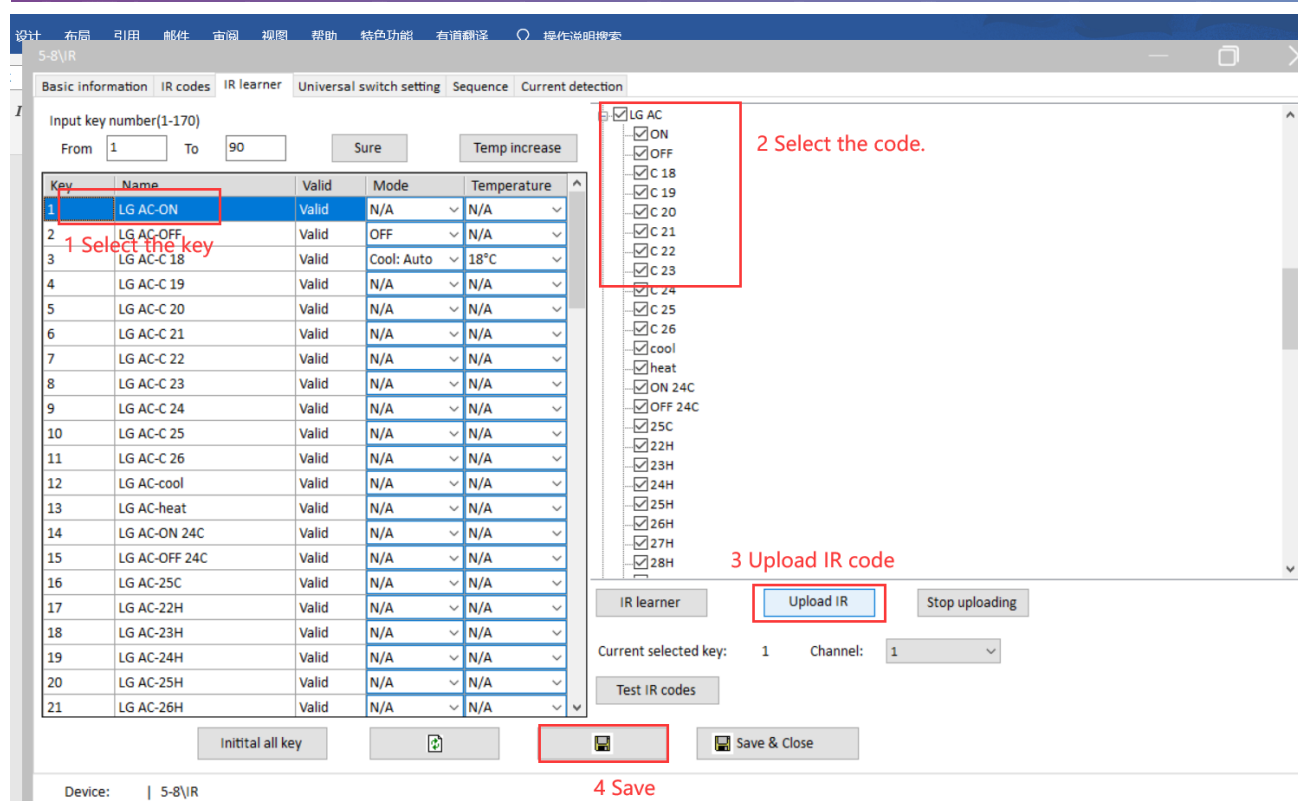


Figure 13

2 Input the mode and temperature for each code

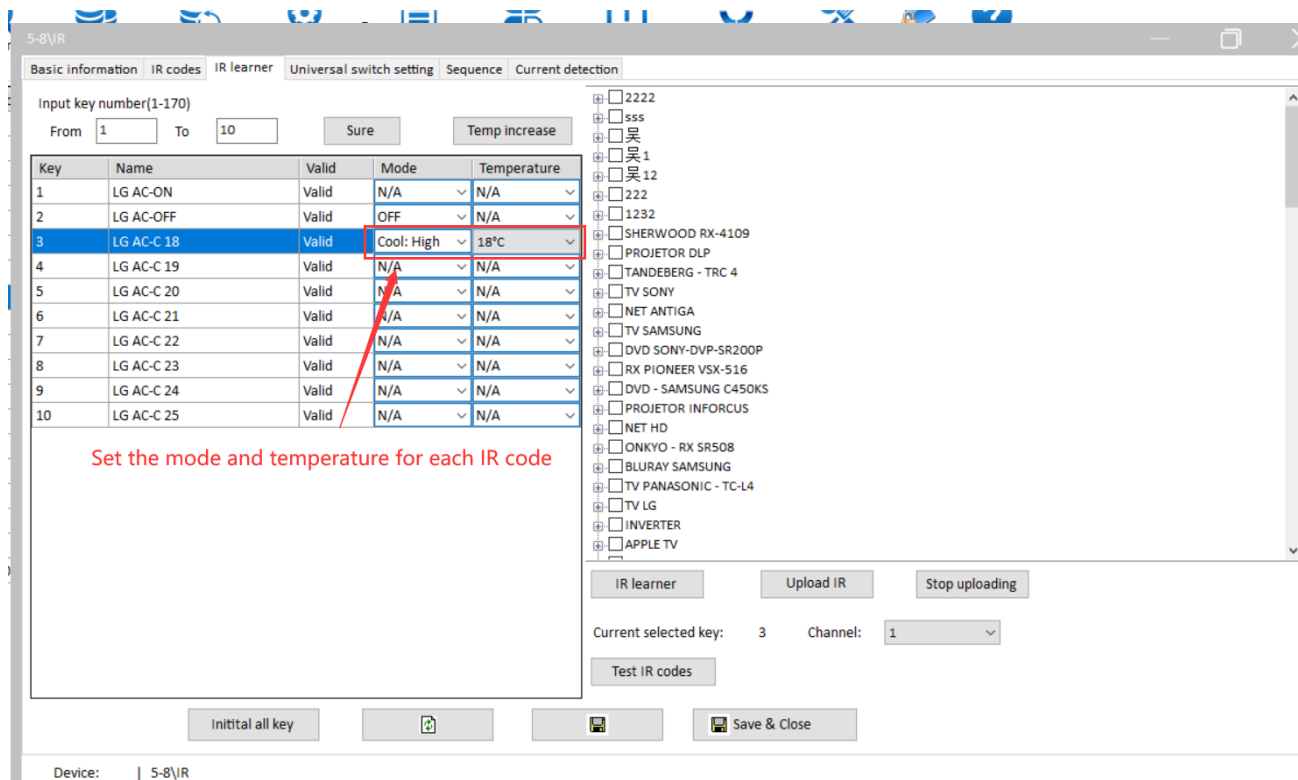


Figure 14

3 From the AC page of granite display panel, enable the AC function, set fan speed and mode, input the subnet ID, device ID, AC number of IR emitter, the AC number should be 5.

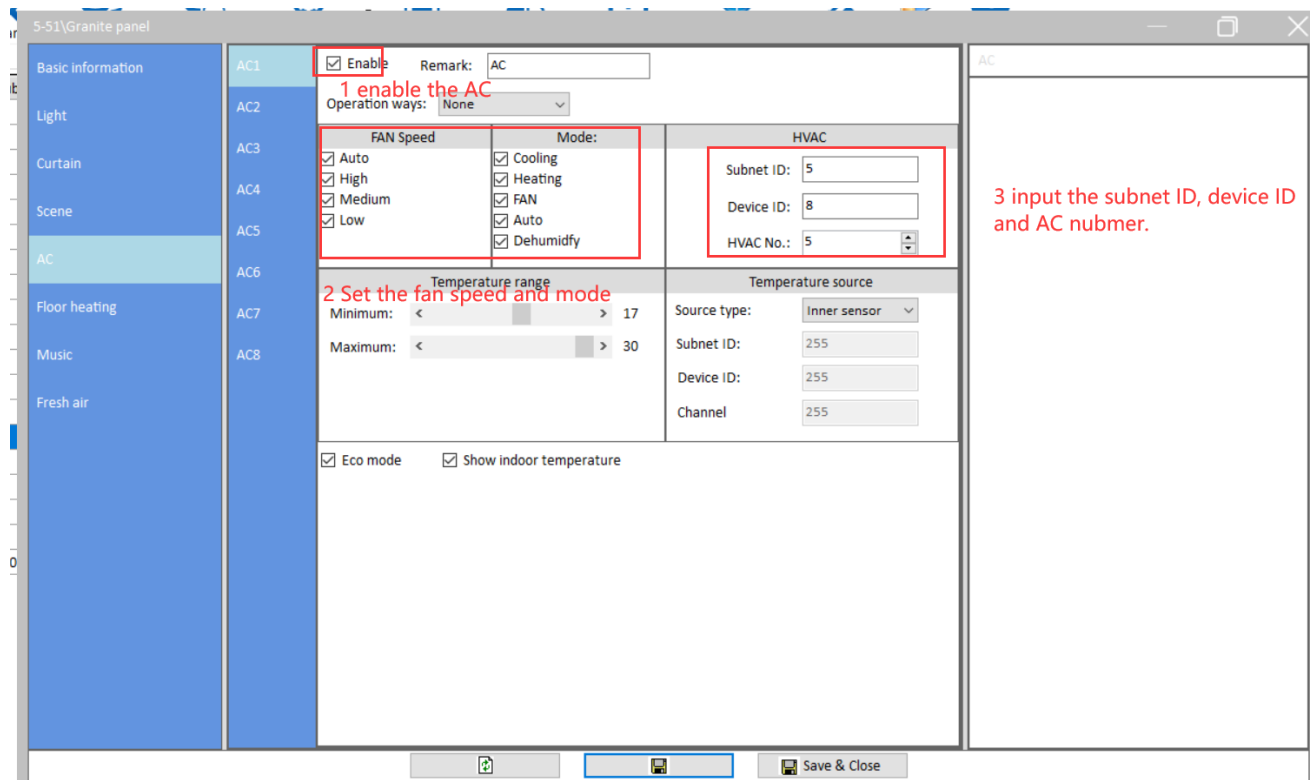


Figure 15

2.7.3 Control learning IR AC Code by DLP

1. Select the learning IR code and upload IR code to IR emitter.

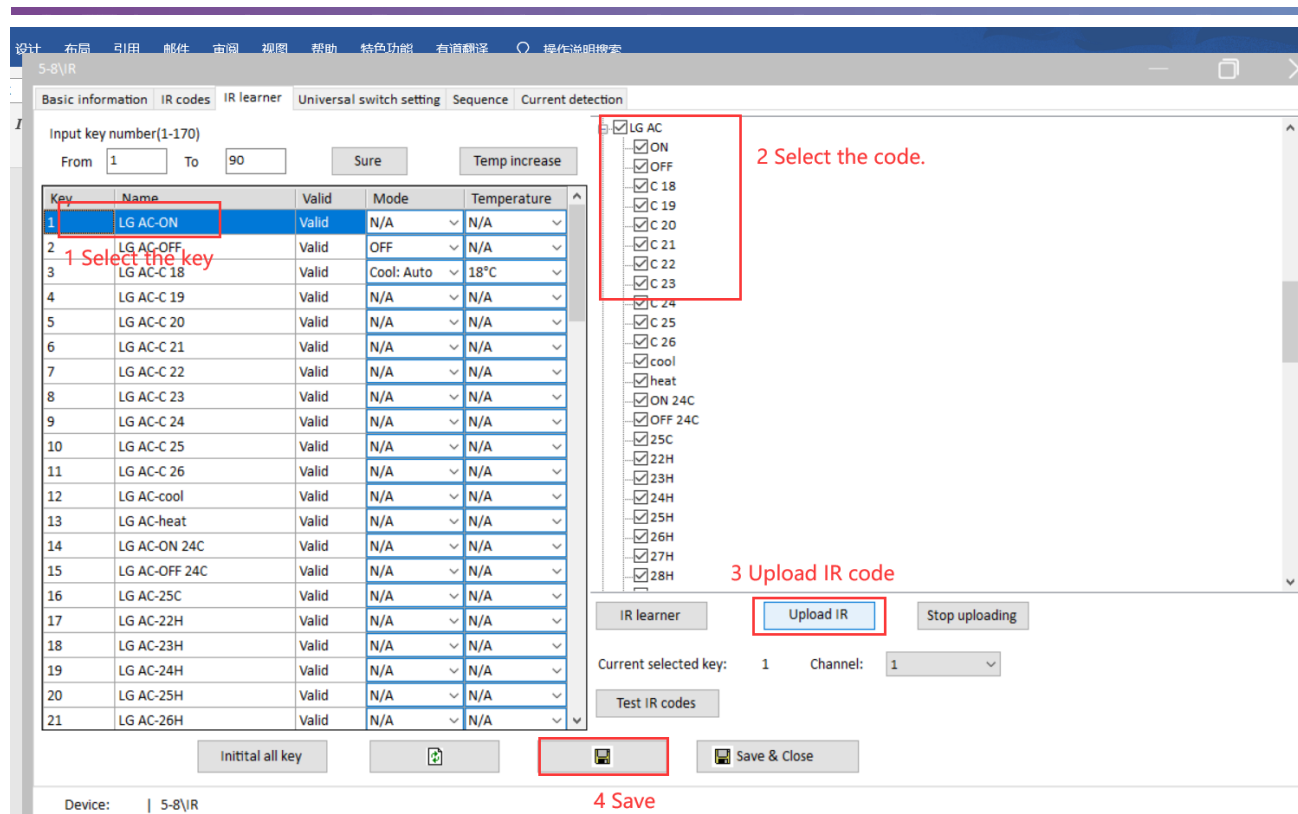


Figure 16

2. In the universal switch page, set the universal code for each IR code.

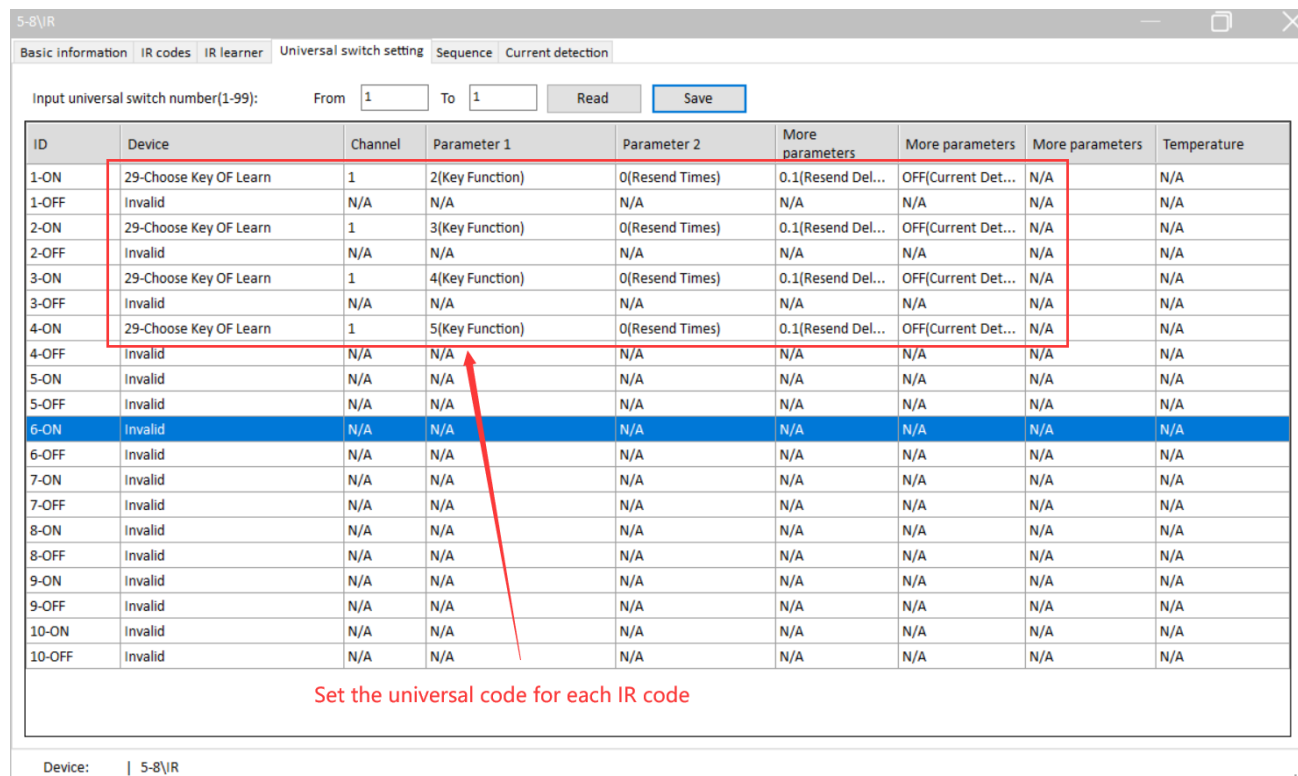


Figure 17

3. In the AC page off DLP, enable IR AC function, and set the IR code by universal switch.

Basic information of AC

☒ **Enable** 1 Enable AC Status when power on: Last status

Subnet ID: 5 Device ID: 8

HVAC No.: 1

Type: Version 2(support HVAC no.)

Adjust: 0

Other function setting

☐ Control AC running

☒ **Enable/disable IR** 2 Enable IR

☐ Send IR code when power ON

☐ IR automatic control

Test

ON/OFF: ☒ ON

Fan speed: High

Mode: Cooling

Cooling: 19C

Heating: 15C

Auto: 15C

Dry: 2C

Now: 26C Auto,Auto,

☒ unlock ☐ Swing

IR Targets

Function: Cool: High

Read Save

Targets setting 4 Set IR code by universal switch number

Index	Subnet ID	Device ID	Type	Param1	Param2	Param3	Param4
Cool: High-18C	5	8	Universal Switch	3(Switch no.)	ON(Switch Status)	N/A	N/A
Cool: High-19C	5	8	Universal Switch	4(Switch no.)	ON(Switch Status)	N/A	N/A
Cool: High-20C	5	8	Universal Switch	5(Switch no.)	ON(Switch Status)	N/A	N/A
Cool: High-21C	255	255	Invalid	N/A	N/A	N/A	N/A
Cool: High-22C	255	255	Invalid	N/A	N/A	N/A	N/A
Cool: High-23C	255	255	Invalid	N/A	N/A	N/A	N/A

Figure 18

2.8 Control the IR Code by Normal button

1. Select the learning IR code and upload IR code to IR emitter.

IR learner

Input key number(1-170)

From 1 To 90 Sure Temp increase

Key	Name	Valid	Mode	Temperature
1	LG AC-ON	Valid	N/A	N/A
2	LG AC-OFF	Valid	OFF	N/A
3	LG AC-C 18	Valid	Cool: Auto	18°C
4	LG AC-C 19	Valid	N/A	N/A
5	LG AC-C 20	Valid	N/A	N/A
6	LG AC-C 21	Valid	N/A	N/A
7	LG AC-C 22	Valid	N/A	N/A
8	LG AC-C 23	Valid	N/A	N/A
9	LG AC-C 24	Valid	N/A	N/A
10	LG AC-C 25	Valid	N/A	N/A
11	LG AC-C 26	Valid	N/A	N/A
12	LG AC-cool	Valid	N/A	N/A
13	LG AC-heat	Valid	N/A	N/A
14	LG AC-ON 24C	Valid	N/A	N/A
15	LG AC-OFF 24C	Valid	N/A	N/A
16	LG AC-25C	Valid	N/A	N/A
17	LG AC-22H	Valid	N/A	N/A
18	LG AC-23H	Valid	N/A	N/A
19	LG AC-24H	Valid	N/A	N/A
20	LG AC-25H	Valid	N/A	N/A
21	LG AC-26H	Valid	N/A	N/A

2 Select the code.

3 Upload IR code

IR learner Upload IR Stop uploading

Current selected key: 1 Channel: 1

Test IR codes

Initial all key Save Save & Close

4 Save

Figure 19

2 In the universal switch page, set the universal code for each IR code.

Input universal switch number(1-99): From 1 To 1 Read Save

ID	Device	Channel	Parameter 1	Parameter 2	More parameters	More parameters	More parameters	Temperature
1-ON	29-Choose Key OF Learn	1	2(Key Function)	0(Resend Times)	0.1(Resend Del...	OFF(Current Det...	N/A	N/A
1-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-ON	29-Choose Key OF Learn	1	3(Key Function)	0(Resend Times)	0.1(Resend Del...	OFF(Current Det...	N/A	N/A
2-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3-ON	29-Choose Key OF Learn	1	4(Key Function)	0(Resend Times)	0.1(Resend Del...	OFF(Current Det...	N/A	N/A
3-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4-ON	29-Choose Key OF Learn	1	5(Key Function)	0(Resend Times)	0.1(Resend Del...	OFF(Current Det...	N/A	N/A
4-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10-ON	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10-OFF	Invalid	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Set the universal code for each IR code

Device: | 5-8\IR

Figure 20

3 In the normal button page of DLP, input the corresponding universal switch number.

Settings 1 to 4 Pages AC Floor heating Music LED color & shortcuts LED white balance adjust Sleep group setting

Page-1 Page-2 Page-3 Page-4

Current selected page: Page-1 Current selected button: 1 Mode: Single ON

Hint: 1.Double click button id to test it;
2. Click the button id to read its commands, would stop reading if there are three continuous commands are invalid.

Button ID	Name	Mode	Index	Subnet ID	Device ID	Type	Param1	Param2	Param3	Param4
1		Single ON								
2		Single ON/OFF								
3		Invalid								
4		Invalid								

1 Select mode for the button

Targets Configuration

Basic Information

Subnet ID: 5 Device ID: 50 Name:

Current selected page: 1

Current selected button: 1

Button type: Single ON Button name:

Targets

Input target number:(1-1) From 1 To 1 Read Save Targets create

Index	Subnet ID	Device ID	Type	Param1	Param2	Param3	Param4
1	5	8	Universal Switch	1(Switch no.)	ON(Switch Status)	N/A	N/A

2 Click targets setting

3 Input the corresponding universal switch number in the target setting page

Figure 21