Technical Manual

Room Control Unit

SATION-RM0448.1611

SATION-RM0449.1611

Zhuhai Sation Technology CO., Ltd Tel: 0756-2612730 Fax: 0756-2612730 www.sation.com.cn

Content

1 Overview

1.1 Device Overview

This manual refers to the following devices:

- SATION-RM0448.1611 RCU (standard version).
- SATION-RM0449.1611 RCU (plus background music).

1.2 Usage

This device is suitable for RCU which integrates Switch Actuator, IO, LED Dimming Actuator, Shutter Actuator, Fan Coil Actuator, 485 Gateway, IP Gateway and background music etc.

Function List：

No.	Function Name	Specification
1	Switch Actuator 8-fold	It consists of the first 4-fold (16A) and the last 4-fold (10A).Only the first 4- fold support current detection function. The last 4-fold (10A) can be reused as 2-fold curtains. If the function of 2-fold curtains is activated, only the first 4-fold curtains can be used as the switch.
2	Switch Actuator 7-fold	7 relays (8A) are Shared with 1-fold fan coil. Only one function can be activated at the same time. Current detection is not supported.
3	Shutter Actuator 2-fold	4 relays are Shared with the last 4-fold of the 8-fold switch actuator. Only one function can be activated at a time .When 8-fold switches and 2-fold curtains are activated at the same time, the last 4 relays are preferred to be used as curtains.
4	Fan Coil Actuator 1-fold	Share 7 relays with 7-fold switch actuators. Only one function can be activated at a time. In the case that the switch and the configuration of the fan coil parameters are downloaded at the same time, it is preferred to be used as the fan coil.
5	LED Dimming Actuator 4-fold	0-10V LED Dimming Actuator，use 6-fold LED database.
6	485 Gateway 1	485 Gateway, which currently supports the standard Modbus protocol. This interface feature also includes support for background music. Background music does not have a separate database, so it is Shared with the 485 database.
7	485 Gateway 2	485Gateway，support standard Modbus protocol.
8	IO 12-fold	Support only 12-fold input functions, not output functions.
9	IP Gateway	Support IP Router function.

1.3 Structure Specification

The product needs auxiliary power. The bus consumes less than 5mA.Note that the connection mode of A,B,C and D terminals is different from that of E,F,G and H terminals.

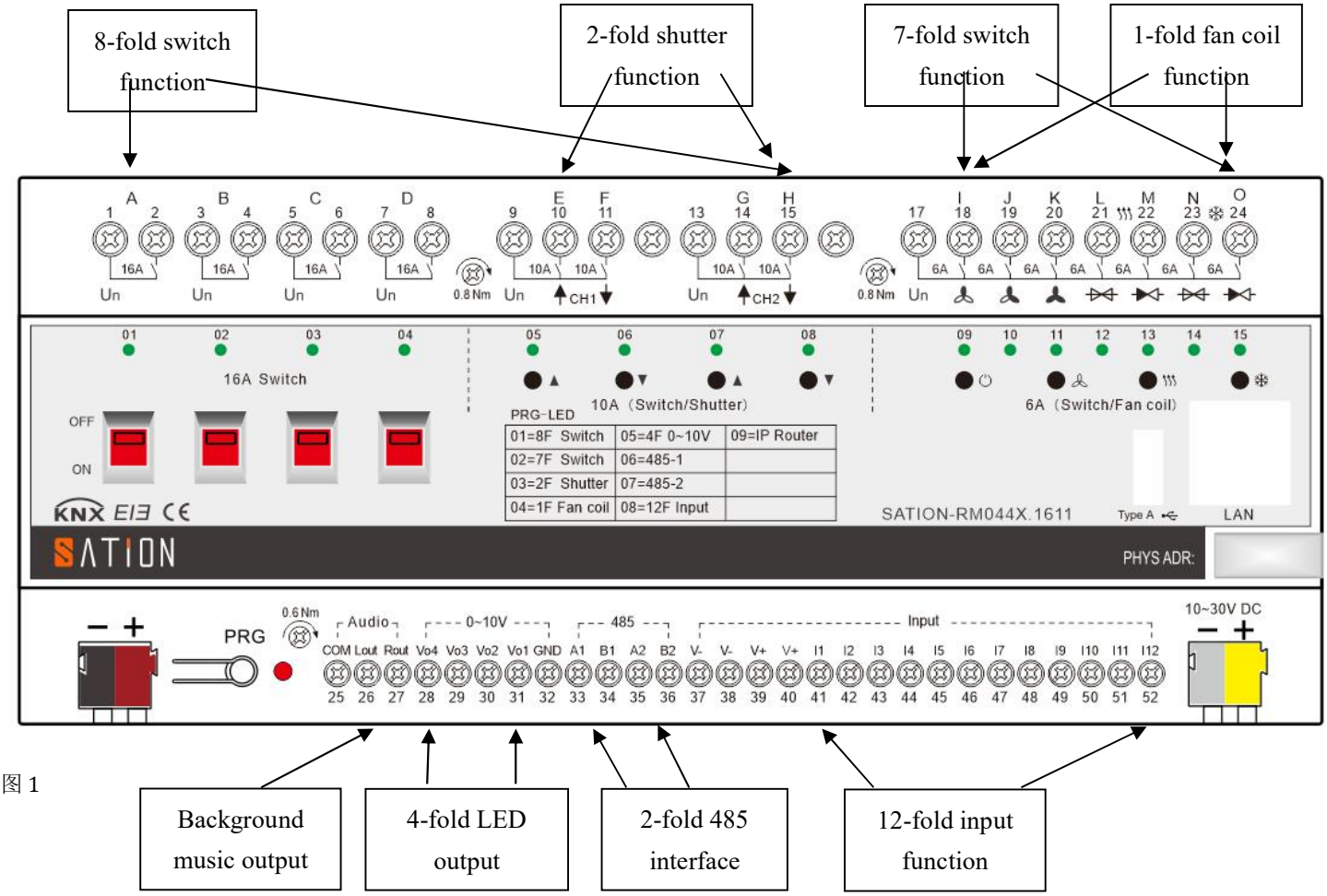

图 1

1.4 Commissioning，Download

Currently, RCU supports ten application functions, each of which requires a separate configuration to download the corresponding parameters (background music and 485 gateway 1 Shared database).LED indicators numbered 1-9 are not only used as status indicator function in normal use, but also used as programming mode indicator of 9 databases together with programming lamp in programming mode.

The following table shows the corresponding relationship between programming mode and programming light：

LED Light Status	State of Programming

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LED PRG	LED1	LED2	LED3	LED4	LED5	LED6	LED7	LED8	LED9	
off	-	-	-	-	-	-	-	-	-	All functions are in normal condition
on	on	off	off	off	off	off	off	off	off	8-fold switch actuator in programming mode
on	off	on	off	off	off	off	off	off	off	7-fold switch actuator in programming mode
on	off	off	on	off	off	off	off	off	off	2-fold shutter actuator in programming mode
on	off	off	off	on	off	off	off	off	off	1-fold fan coil actuator in programming mode
on	off	off	off	off	on	off	off	off	off	4-fold LED Dimming actuator in programming mode
on	off	off	off	off	off	on	off	off	off	485 Gateway 1in programming mode
on	off	off	off	off	off	off	on	off	off	485 Gateway 2 in programming mode
on	off	off	off	off	off	off	off	on	off	12-fold IO in programming mode
on	off	off	off	off	off	off	off	off	on	IP Gateway in programming mode

All functions are in normal working mode when the PRG programming light is off. When the PRG programming light is on and one of the lights from LED1 to LED9 is on at the same time, a function is in programming mode. At this time, the configuration information of the corresponding database can be downloaded through ETS.

Press the "PRG" button every time, switch to the next LED light, the first light LED1, the second light LED2...The ninth light LED9, the tenth time all LED is turned off. Once the cycle ends, the button will repeat the above behavior.

When switching to a new LED indicator light, the new LED will flash for 2 seconds, and then the constant light indicates that the corresponding application will enter programming mode. If press the "PRG" button again within 2 seconds of flickering, it will switch to the next LED light, and the current LED corresponding application will not enter programming mode.

2 ETS Parameter

2.1 8-fold Switch Function

The 8-fold switch function is divided into two parts: the first four relays (16A) and the second four relays (10A).Among them, the first four relays are fixed for switch function and have current detection function. The latter 4 relays and 2-fold curtain functions are reused without current detection function. In the case that the switch configuration and the curtain configuration are downloaded at the same time, the latter 4 folds will be used as the curtain function first. If it is to be

used as the switch function, the curtain function must be unloaded. If only the first four relays are used, then two applications can exist at the same time, that is, the first four relays are switch function, and the last four relays are 2-fold curtain function. Please refer to "Sation _ Switch actuator _ Technical manual. PDF" for other parameter instructions.
Note that since the RCU USES auxiliary power, the function of power loss protection is only effective when the bus is power off and the auxiliary power is not power off. If the auxiliary power is power off at the same time, the power loss protection function will be invalid.

2.2 7-fold Switch Function

7-fold switch function and 1-fold fan coil function reuse 7 relays. In the case that both the switch configuration and the air disk configuration are downloaded at the same time, it will be used as the air disk function first. If it is to be used as the switch function, the fan coil application must be unloaded. Each relay has a maximum current of 8A, which is not detectable with current no matter what function it is used for. As a switch function, although there are only 7 folds, the 8-fold switch database is still used for parameter configuration. You can leave it at the end. Please refer to "Sation _ Switch Actuator _ Technical Manual. PDF" for other parameter instructions.
Note that since the RCU USES auxiliary power, the function of power loss protection is only effective when the bus is power off and the auxiliary power is not power off. If the auxiliary power is power off at the same time, the power loss protection function will be invalid.

2.3 2-fold Shutter Function

The back 4 of 2-fold curtain function and 8-fold switch function reuse 4 relays (E,F,G,H).When the curtain configuration information is downloaded, these 4 relays will be used as curtain function regardless of whether or not the download switch configuration is available. If you want to use it as a switch function, you must uninstall the curtain function. Please refer to "Sation _ Curtain Actuator _ Technical Manual. PDF" for parameter instructions.
Note that since the RCU USES auxiliary power, the function of power loss protection is only effective when the bus is power off and the auxiliary power is not power off. If the auxiliary power is power off at the same time, the power loss protection function will be invalid.

2.4 1-fold Fan Coil Function

1-fold functions of fan coil and 7-fold switch reuse 7 relays I,J,K,L,M,N,O. These 7 relays will be used as the fan coil function when downloading the fan coil configuration, whether or not you have downloaded the 7-fold switch configuration. If you want to use it as a switch function, you must uninstall the air disk function. Please refer to "Sation _ Fan Coil Actuator _ Technical Manual. PDF" for parameter instructions.
Note that since the RCU USES auxiliary power, the function of power loss protection is only effective when the bus is power off and the auxiliary power is not power off. If the auxiliary power is power off at the same time, the power loss protection function will be invalid.

2.5 4-fold LED Dimming Function

The 4-fold LED dimming module can output 0-10v dc voltage in each fold. Use the four terminals of vo1-vo4 as output. The embedded LED dimmer does not have a matching relay to control the fire line, which can be achieved by configuring the embedded switch function. The 4-fold LED dimmer function USES the database of 6-fold LED dimmer, and the last two paths of the database can be left alone. Please refer to "Sation _LED Dimming Actuator _ Technical Manual. PDF" for parameter instructions.

2.6 485 Gateway 1

The 485 gateway function runs over the standard Modbus protocol. You can couple non-KNX devices to the KNX network. The current gateway supports up to 64 KNX objects, the last 8 of which are used for control of background music. Please refer to "Sation _ Standard Modbus Interface _ Technical Manual. PDF" for parameter instructions.

2.7 485 Gateway 2

The 485 gateway function runs over the standard Modbus protocol. You can couple non-KNX devices to the KNX network. The current gateway supports up to 64 KNX objects. Please refer to "Sation _ Standard Modbus Interface _ Technical Manual. PDF" for parameter instructions.
Note that the last eight objects in gateway 2 cannot be used to control background music.

2.8 12-fold Universal Interface

12 - fold universal interface function only input function, do not support output function. Use i1-i12 12 terminals as input. Up to 30V input voltage is supported. Please refer to "Sation _ Universal Interface _ Technical Manual. PDF" for parameter instructions.

2.9 IP Gateway

The built-in IP gateway has some limitations in functionality. It supports up to two ETS or other applications to connect at the same time, and has a maximum message buffer of 160. Therefore, as there are many KNX messages on the network, a filter table must be configured to prevent buffer overflow. Please refer to "Sation _IP Gateway _ Technical Manual" for parameter instructions.

2.10 Background Music Function

Background music features share database with gateway 1 485.The last eight KNX objects of gateway 1 are used for background music control. Using the built-in background music feature requires inserting a USB drive with music into the

RCU's USB port. Support up to 100 songs, and excess songs will not be identified. Only music with a code rate below 320 is supported, and music playback with a rate higher than this may be distorted.

2.10.1 USB Disk

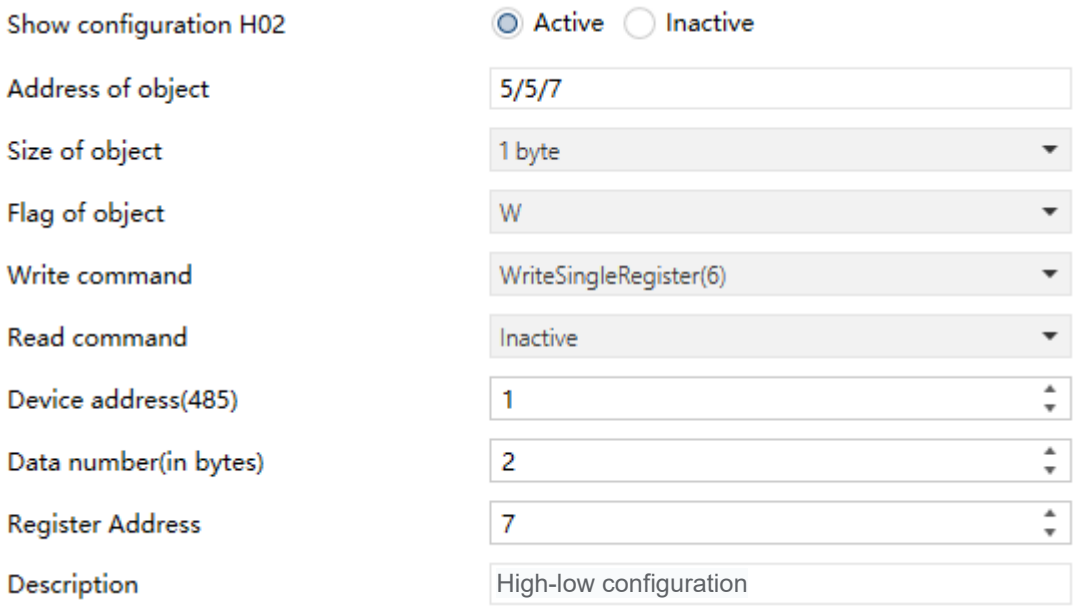
The USB disk must be in FAT file format, and the user must create the specified directory under the USB directory and put all the songs into the folder. The catalogue of songs is "SATION/Music". After plugging the USB drive into the device, the device enumerates the music in the USB drive and records up to 100 songs, and then generates a file called titleorder.txt, which is used to configure the function of playing songs by index. The specific storage path is "Sation/ titleorder.txt".

2.10.2 Parameter Configuration

Music playback supports some basic functional controls such as play, pause, stop, next song, last song, sequence play, random play, single loop, etc.
All configuration of function parameters is completed through ETS. Music controls the last 8 objects using 485 gateway 1, so this function must be configured when configuring 485 gateway 1.

2.10.2.1 High-low Setting

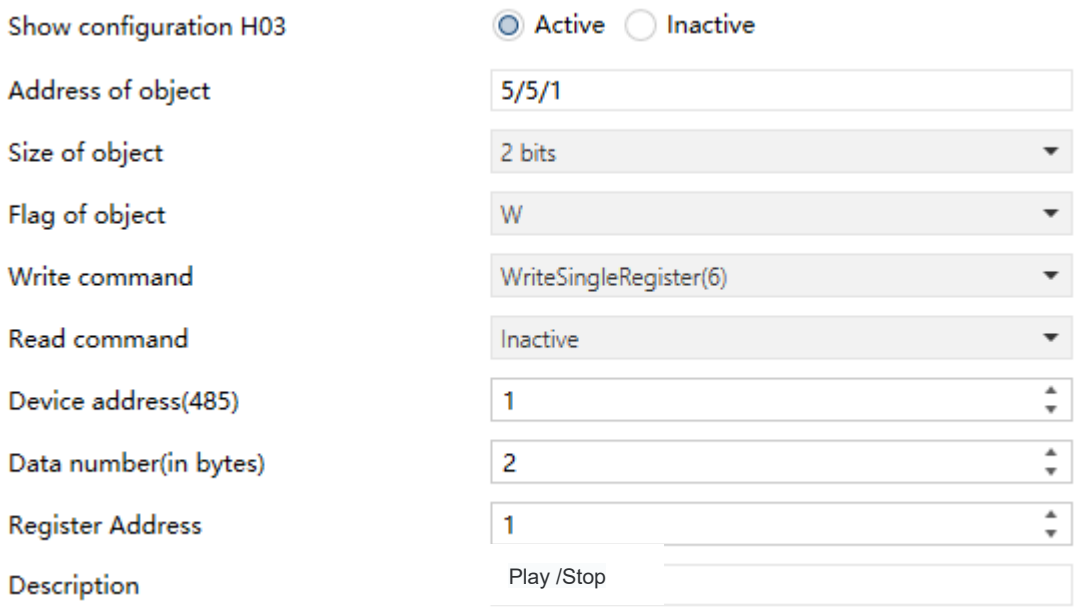
Object H02 is used for high-bass control of background music. Object size is one byte. It is divided into high four and low four. The following figure shows the parameter configuration schematic, where the group address can be configured arbitrarily.



Byte (hhhhllll)	Function
High 4(hhhh)	0：Set bass decibels，1：decibels，2：Set the bass frequency，3：Set the treble frequency
Low 4(llll)	It has different meanings depending on the value of the high four bits. The high 4 bit is 0: this value represents the setting of the bass decibel value, range 0-15, step length 1dB, where 0 means to stop the function. The value of the high four bits is 1: this value represents the decibel value of setting the high pitch, ranging from -8 to 7, and the step length is 1.5db, in which 0 means stopping the function. The high 4 bit is 2: this value indicates that the bass frequency threshold is set, with a range of 0-15 and a step length of 10Hz. The high 4 digit is 3: this value indicates setting the treble frequency threshold, range 0-15, and step length of 1000Hz.

2.10.2.2 Play/Stop

Object H03 is used for starting and stopping control of background music. The following figure shows the parameter configuration schematic, where the group address can be configured arbitrarily.

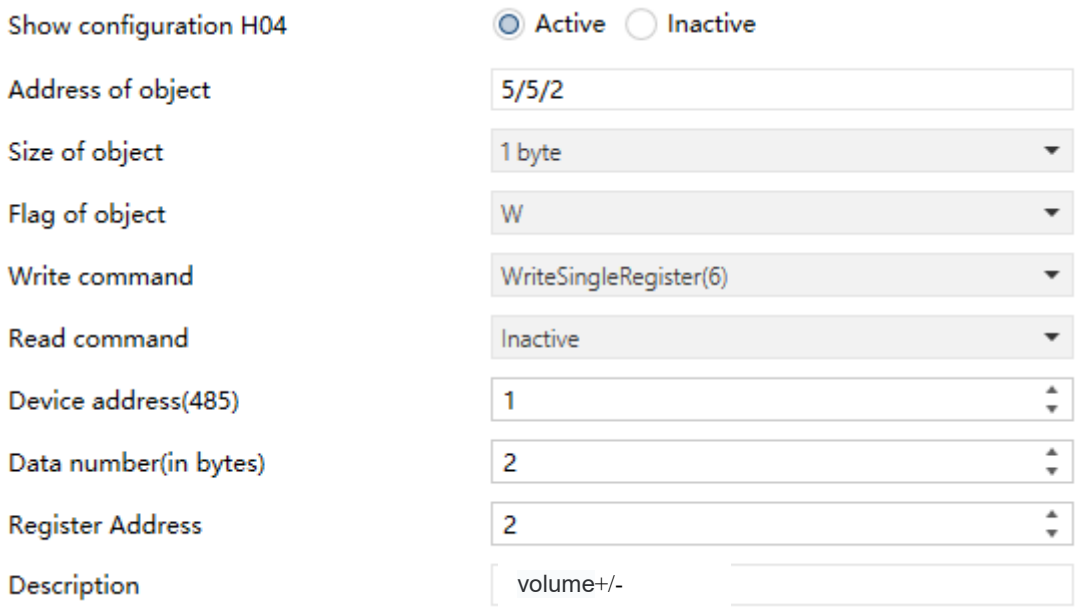


2 Bytes	Function
0	Stop
1	Play
3	Pause

Note that the playback function object has a default size of 2bits, but you can still receive an object value of 1bit size. If you don't need to use pause playback, you can use the common 1bit object to control playback and stop.

2.10.2.3 Volume + -

Object H04 is used for volume control of background music. Object size is 1 byte. The following figure shows the parameter configuration schematic, where the group address can be configured arbitrarily.



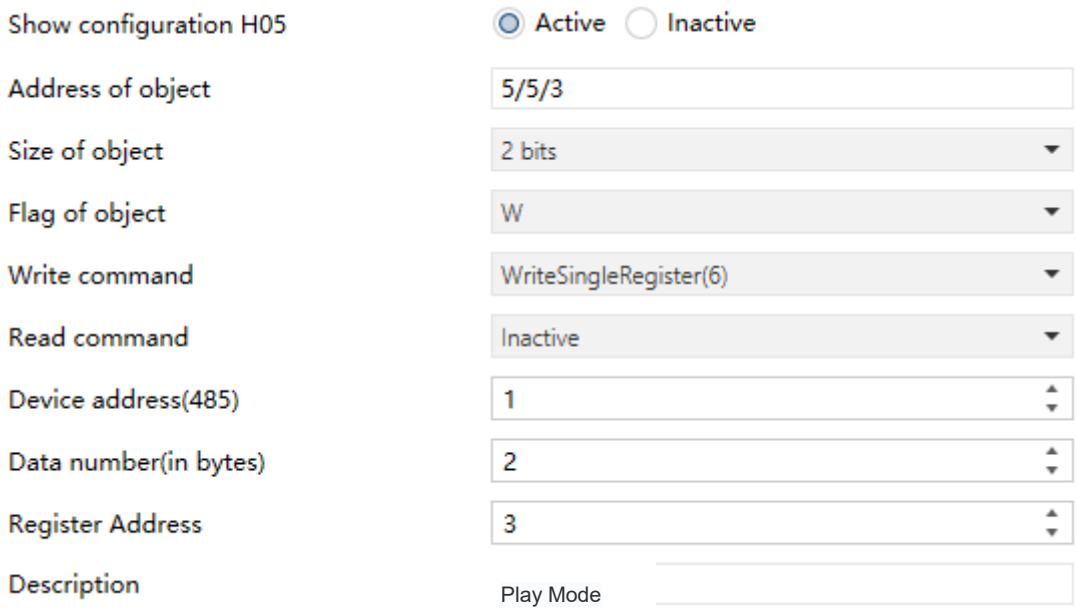
Picture 4 volume+/-

Byte	Function
0	Each time you receive a 0, turn the volume down by one step, with a step length of 2 and a minimum of 0.
1	Each time receiving 1, turn up the volume one step, step size 2, maximum value 254.
2...254	If you receive a value between 2 and 254, the volume is set directly to set.

Note that the default volume control object size is 1 byte, but you can still receive an object value of 1bit.If you don't need to set an absolute volume value, you can use the common 1bit object to control the volume.

2.10.2.4 Play

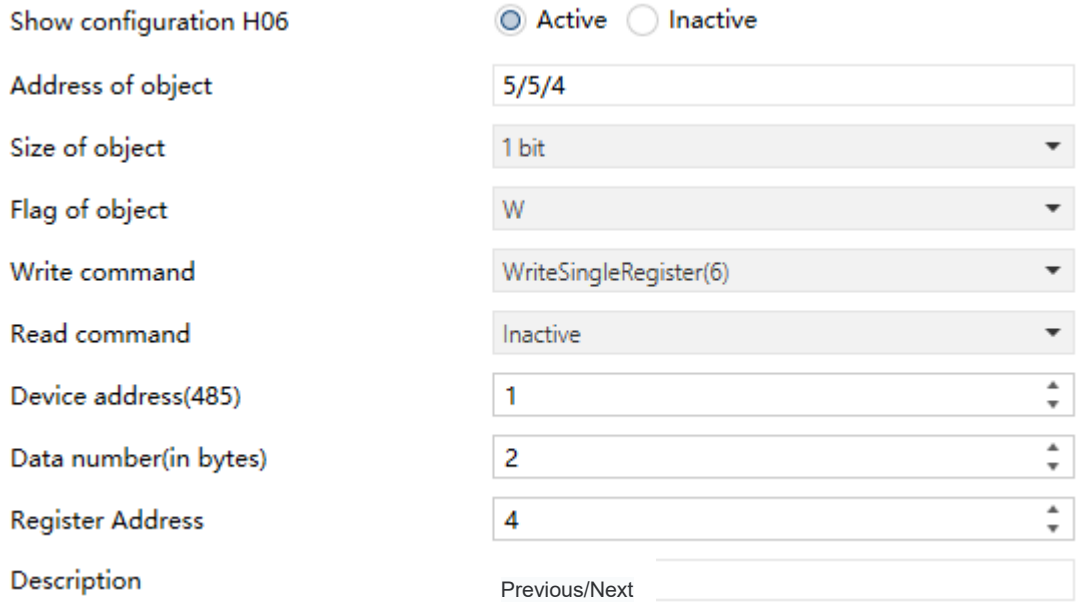
Object H05 is used for background music playback mode control. he object size is 2bits.The following figure shows the parameter configuration schematic, where the group address can be configured arbitrarily.



Byte	Function
0	Sequential playback mode.
1	Random play mode
2	Single cycle mode
3	Pause play. This function is consistent with the stop play function of the object H03.

2.10.2.5 Previous/Next track

Object H06 is used for upper/next control of background music. The object size is 1bit.The following figure shows the parameter configuration schematic, where the group address can be configured arbitrarily.

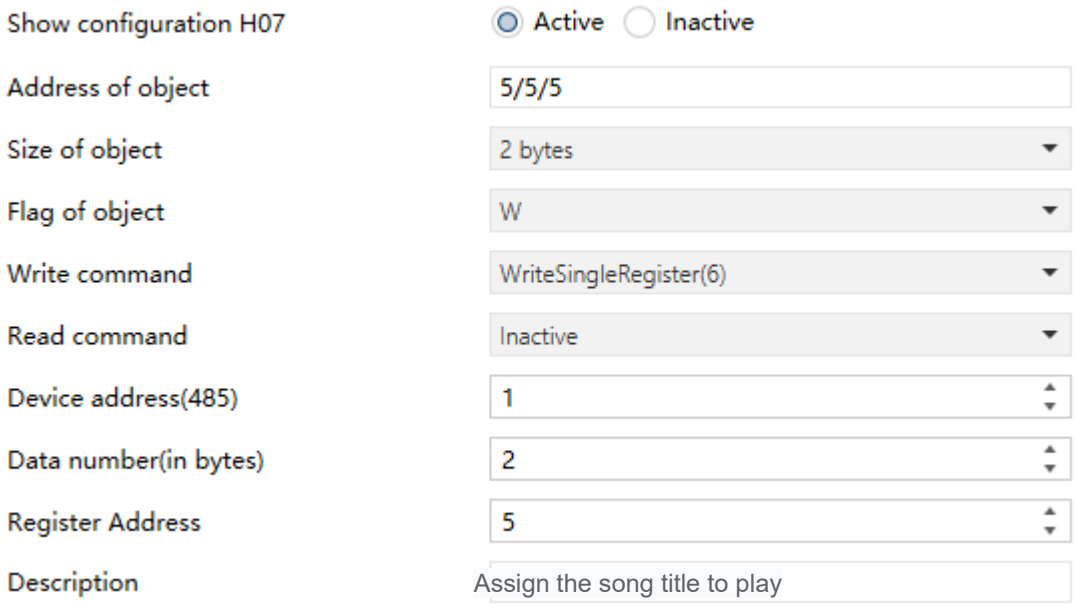


1 Byte	Function
0	Each time you receive a 0, you switch to the previous song.
1	Each time you receive a 1, you switch to the next song.

Note that the switch between the last song and the next one is based on the sequence of songs in the file "Sation/titleorder.txt", which is automatically generated when the USB flash disk is inserted into the device.

2.10.2.6 Play by song

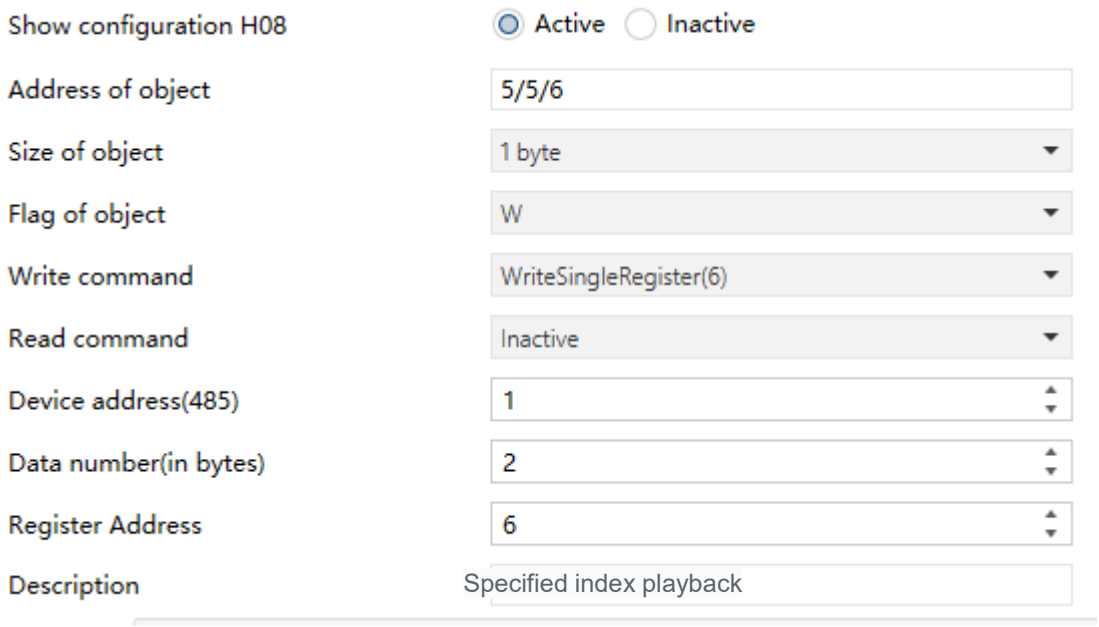
Object H07 is used for background music's designated song name play control. The object size is 2bytes.The following figure shows the parameter configuration schematic, where the group address can be configured arbitrarily.



Note that the specified song is played according to the song name. Although the configured object size is 2bytes, you can actually receive the song name length of up to 12 characters or 6 characters. Since the maximum song name is only supported to be 12 characters long, if the song is to be played according to the song name, the length of the song must be reduced to no more than 12 characters in advance.

3.10.2.7 Play by index

Object H08 is used for indexed playback control of background music. The object size is 1byte.The following figure shows the parameter configuration schematic, where the group address can be configured arbitrarily.



The nice thing about indexing a song is that you only need to know the song's number, and there is no limit to the length (12 characters) of the song's title. The index number corresponds to the number in front of the song in the file, "Sation/titleorder.txt". The index may change when a song is deleted or added, so the index number used should be reconfirmed after each song update.

3 Contact

Zhuhai Sation Technology CO., Ltd

3F-2 Blog B1,No.1 Software Road, Hi-tech Zone, Zhuhai, Guangdong, China 519000

TEL：+86-756-3628187/3628287/3628387

FAX：+86-756-2612730

www. Sation.com.cn