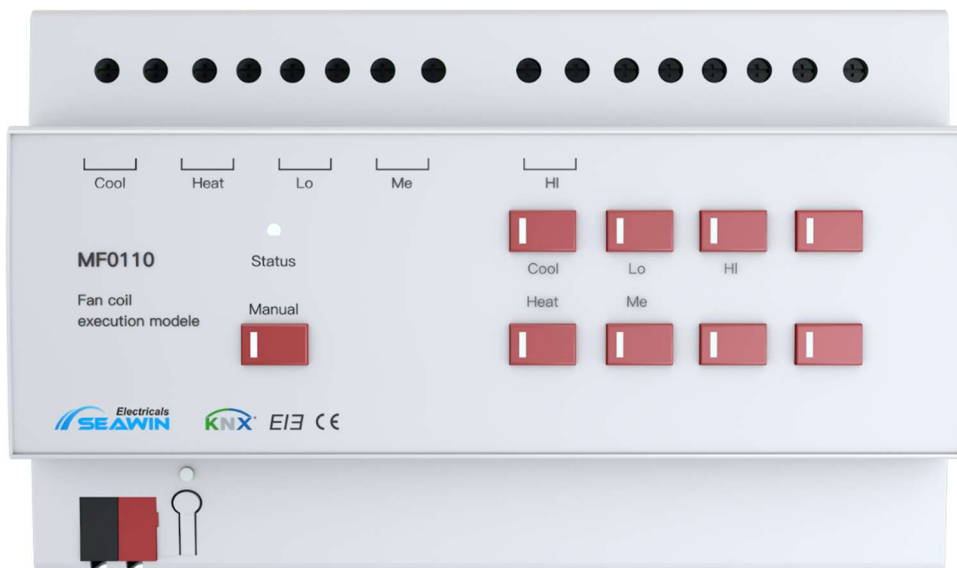


10A Series FCU Actuator

Version: Ver2.1

MF0110

MF0210



Contents

1 Summary	3
2 Product and Feature Overview	3
3 Specification.....	3
4 Dimensional and wiring diagrams	4
5 Product Operating Instructions.....	5
6 Parameter setting and communication object description.....	6
6.1 Switch setting function parameters.....	6
6.2 I/O contact interface parameter setting.....	9
6.2.1 Switch model.....	10
6.2.2 Blind model.....	11
6.2.3 Blind Position model.....	11
6.2.4 Bimming.....	11
6.2.5 Dimming position.....	11
6.2.6 Scene.....	12
6.3 Equipment situation	12
6.4 Communication object description	13
7 Safe use and maintenance.....	15
8 Contact.....	错误!未定义书签。

1. Summary

This manual provides you with detailed technical information on the 10A Series FCU Actuator, including installation and programming details, and explains how to use the 10A Series FCU Actuator based on practical examples. For easy installation into distribution boxes, the 10A Series FCU Actuator Modules are designed as modular mounting devices that can be mounted on 35mm DIN rails.

10A series FCU is used to control fan coil units, such as air conditioners, etc., with magnetic hold function.

Installed as a system with other loads via EIB/KNX bus.

The entire system is set up and operated using the engineering design tool software ETS.

2. Product and Feature Overview

The 10A Series FCU actuator are modular installation devices. Connect to the EIB / KNX system through the EIB bus terminal block, and use the engineering design tool software ETS software (version ETS4.0 or later) to assign physical addresses and set parameters.

The maximum load current output by each 10A series FCU actuator is 10A, especially when multiple fans are connected in parallel, the load that can be carried will be reduced. Although the power remains unchanged, the instantaneous inrush current will increase, which is easy to cause the relay contacts are melted, so it is advisable to use 1/5 or 1/6 of the maximum current.

The fan coil execution module has manual control buttons, and the LED lights on the buttons indicate the on/off status of each circuit; the fan coil execution module has 4 dry contact input interfaces, which can input switches, curtains, dimming, scenes, etc. Control instruction.

Function description:

- (1) Control 4-pipe and 2-pipe fan coil units;
- (2) With manual switch control;
- (3) The relay has a magnetic hold function;
- (4) Delay on/off function;
- (5) Heating and cooling can be output according to automatic or manual control, with heating and cooling interlocking function;
- (6) The wind speed can be controlled automatically or manually in three types of high, medium and low, with the function of wind speed interlocking;
- (7) Selection function of relay switch state after bus power failure and voltage recovery;
- (8) The local wind speed and valve status can be reported;
- (9) The 10A FCU actuator has an I/O contact input interface, which can input control commands such as switches, curtains, dimming, and scenes; it can directly link fire emergency lighting;
- (10) I/O wiring communication distance: less than 10m.

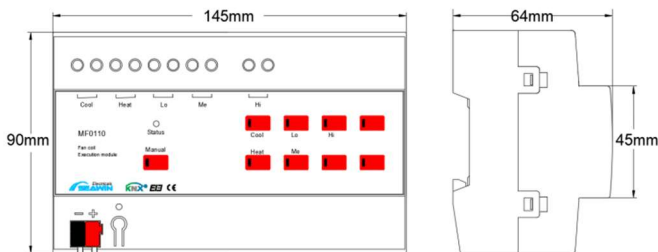
3. Specification

Bus voltage	21-30 VDC via KNX bus
Quiescent Current	≤ 12mA
Recharging current	≤ 20mA
Static power	≤360mW
Charging power consumption	≤ 600mW
Main output	Each circuit 250VAC (50/60Hz), Max 10A (resistive load)
	2-way heating and cooling valve control, 3-way wind speed control
Size(Lx W x H)	145mm x 90mm x 64mm
Weight(approx.)	0.33KG(1way)、0.46KG(2ways)
Shell Material	PA66
Installation method	DIN rail installation
Working temperature	-5°C...+45°C
Storage temperature	-25°C...+55°C
Transportation temperature	-25°C...+70°C
Relative humidity	max 90%

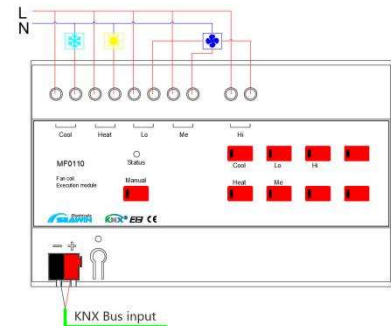
4. Dimensional and wiring diagram

4.1 MF0110

Dimension

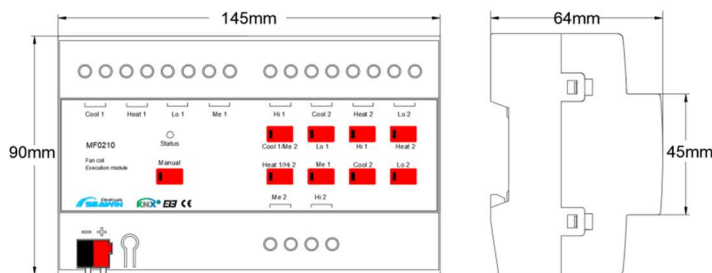


wiring diagrams

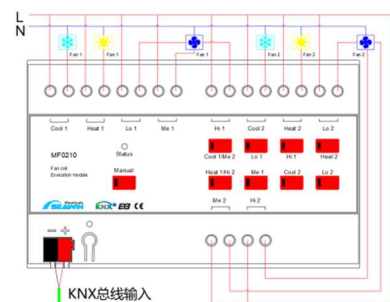


4.1 MF0210

Dimension

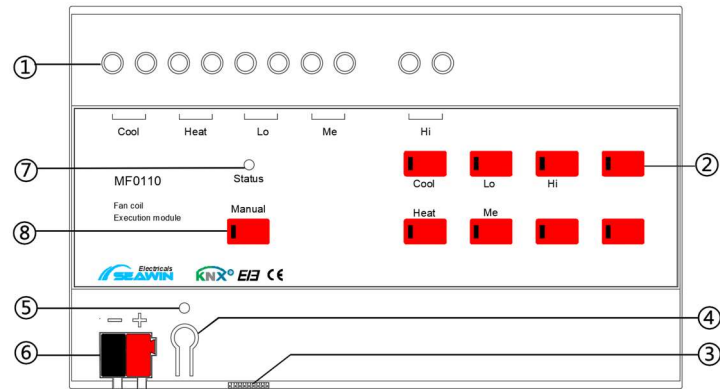


wiring diagrams



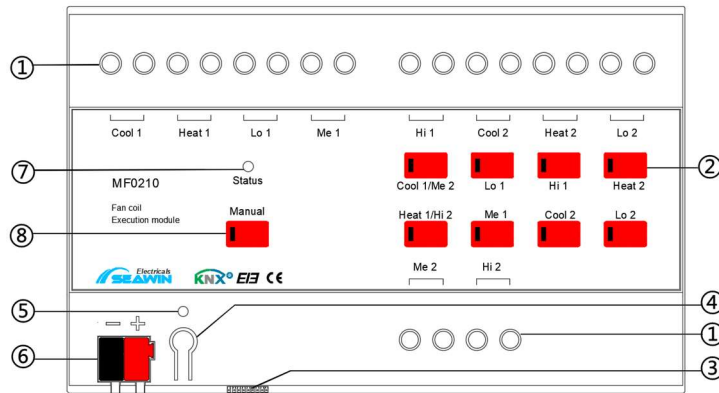
5. Product Operating Instructions

5.1 MF0110



- Description: Heating valves, cooling valves and low (Lo), medium (Me) and high (Hi) terminals for adjusting the wind speed: one in and one out, the aperture can be connected to $\phi 4$ wires;
- Description: Manual operation buttons, namely: cooling, heating, wind speed low, medium and high buttons (when the function button is turned on, the indicator light on the button is on, and when it is off, the indicator light is off);
- Description: Dry contact input terminals;
- Description: programming button, short press the button to enter programming mode;
- Description: Programming indicator light, when the indicator light is red, the device is in the programming state, when the device is programmed or working normally, the indicator light is off;
- Description: KNX terminal block, KNX bus connection, the red wire is connected to "+", and the black wire is connected to "-";
- Note: Status is the status indicator of the device power supply. When the indicator is green, the bus power supply status of the device is normal;
- Note: This button has no effect temporarily;

5.2 MF0210



- Description: Heating valves, cooling valves and low (Lo), medium (Me) and high (Hi) terminals for adjusting the wind speed: one in and one out, the aperture can be connected to $\phi 4$ wires;
- Description: Manual operation buttons, namely: cooling, heating, wind speed low, medium and high buttons (when the function button is turned on, the indicator light on the button is on, and when it is off, the indicator light is off);
- Description: Dry contact input terminals;
- Description: programming button, short press the button to enter programming mode;
- Description: Programming indicator light, when the indicator light is red, the device is in the programming state, when the device is programmed or working normally, the indicator light is off;
- Description: KNX terminal block, KNX bus connection, the red wire is connected to "+", and the black wire is connected to "-";
- Note: Status is the status indicator of the device power supply. When the indicator is green, the bus power supply status of the device is normal;
- Explanation: Manual is the device switching button, press the button, the indicator light on the button will light up red, and the fan 1 device can be manually controlled, and then press the button, the indicator light on the button will be orange, and the fan 2 device can be manually controlled.

6. Parameter setting and communication object description

6.1 Switch setting function parameters

The following takes ETS5 as an example to set parameters in ETS5 Note: In the following introduction, Channel X or X represents the output of the corresponding channel.

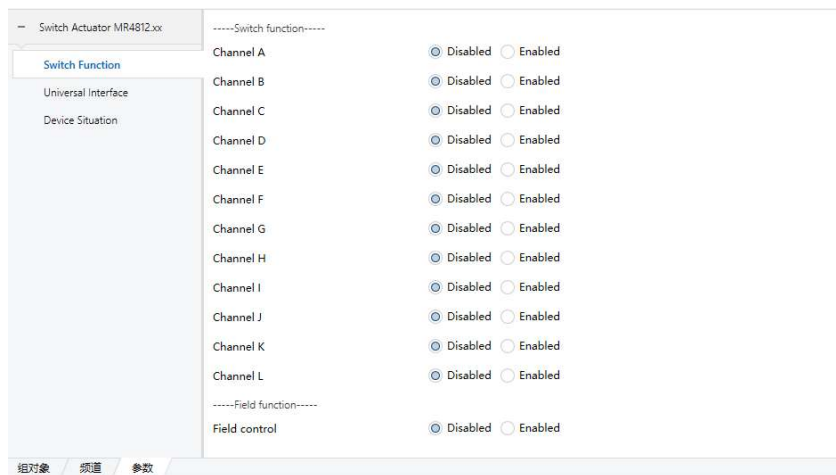
- 1) Open the parameter setting interface of the 10A series FCU actuator in ETS5, as shown in Figure 6.1.1. The parameter "Channel X" represents the output of the corresponding channel. The parameter "Field control"

represents the field control function. When the "off" command is sent, the relay state of each channel is saved and turned off. When the "on" command is sent, the last saved relay state is called. (Note: The "off" command cannot be sent twice in a row, because the current state is saved when the "off" command is sent for the first time, but the first send is saved when the "off" command is sent for the second time" off" command, overwriting the state of the scene saved for the first time).

Optional: Disable & Enable

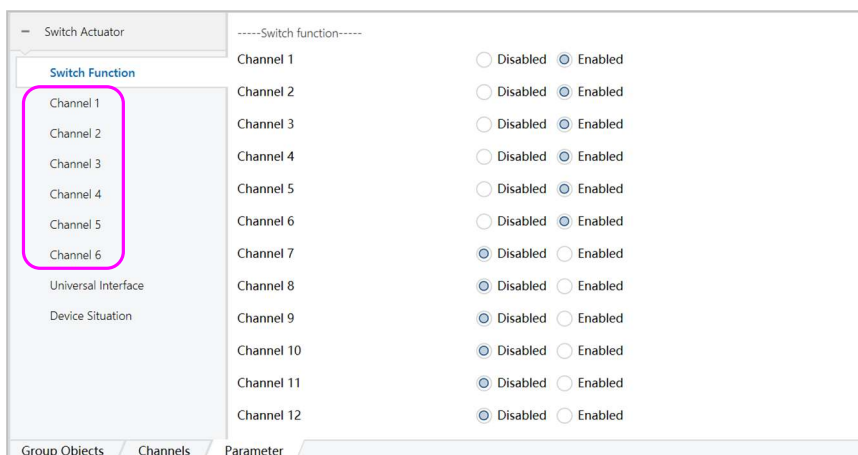
When selecting the first fan, select "Enabled" in Channel 1—Channel 5, and select "Disabled" for other items; when selecting the second fan, select "Enabled" in Channel 6—Channel 10, and select "Disabled" for other items.

"Disabled"; if you select 2 channels of fans at the same time, select "Enabled" in Channel 1—Channel 10, and select "Disabled" in other items. In addition, the 10A fan coil execution module has 4 dry contact input interfaces. (Here, take the selection of the fan coil execution module with 1 fan as an example)



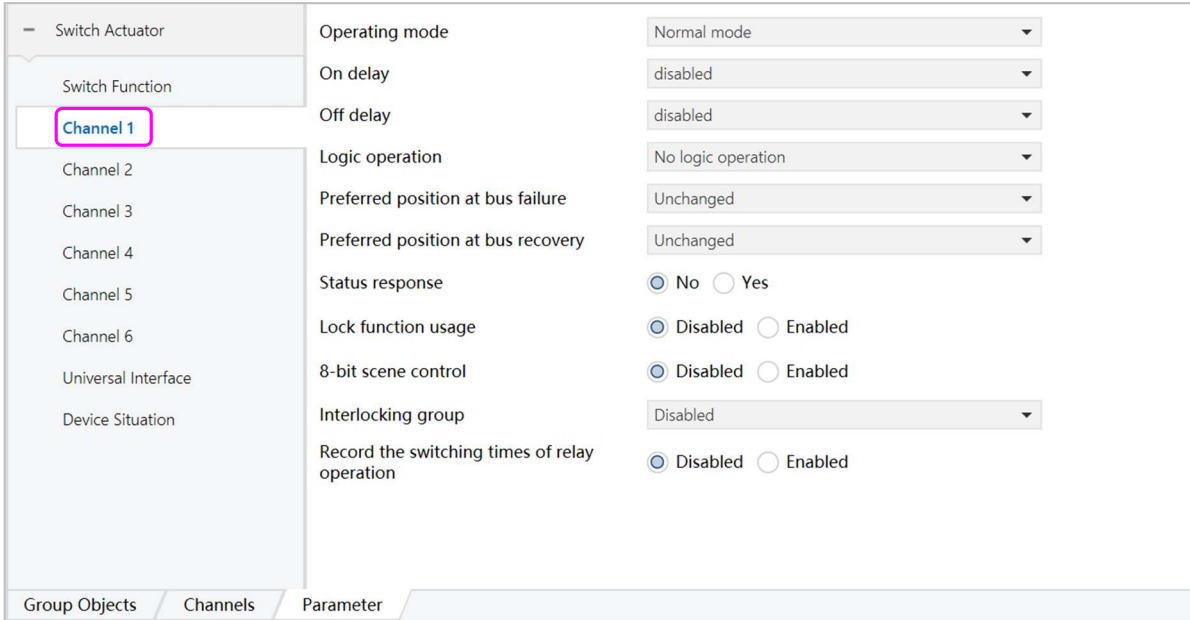
Pic 6.1.1

2) After the setting is completed, the interface is shown in Figure 6.1.2, and there are 6 options in the red box as shown.



Pic 6.1.2

3) Click the options in the red box above to set the parameters of each loop respectively. Take Channel A as an example below, as shown in pic 6.13



Pic 6.1.3

4) The parameter "Operating mode" is divided into three modes: Normal mode, Time mode and Cycle mode. The 10A FCU actuator only uses one normal mode.

5) Channel 1 is cooling (Cool), Channel 2 is heating (Heat), Channel 1 and Channel 2 are set to interlock group 1; Channel 3 is strong wind (Lo), and Channel 4 is medium wind (ME), Channel 5 is low wind (HI), Channel 3, Channel 4 and Channel 5 are set to interlock group 2.

Normal model

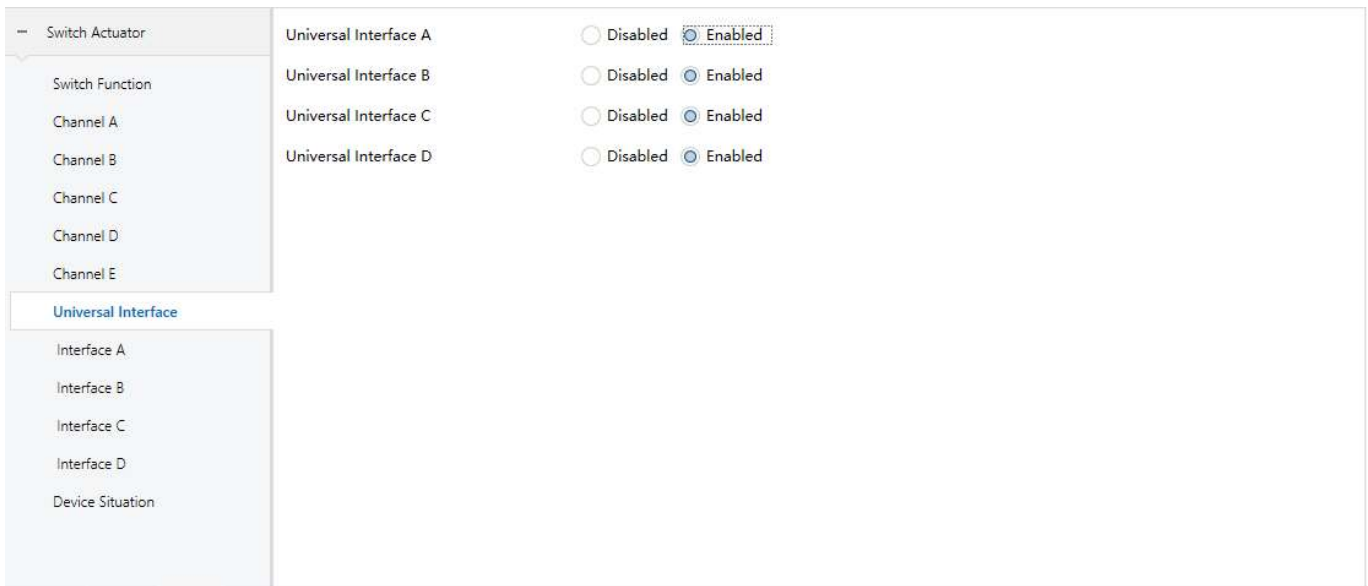
Channel 1	Describe
On delay	Delay opening of the relay (optional: disable, 1, 2...15 seconds); for example: select "5 seconds", when sending the "ON" command, the corresponding circuit will execute the relay opening after 5s.
Off delay	Delay off of the relay (optional: disable, 1, 2...15 seconds); for example: select "5 seconds", when sending the "OFF" command, the corresponding circuit will execute the relay off after 5s.
preferred position at bus failure	Indicates the state of the corresponding circuit of the relay after power failure, options are: on, off, unchanged;
preferred position at bus recovery	Indicates the state of the corresponding circuit of the relay after the voltage is restored, the options are: on, off, unchanged;

Status response	Status feedback, options: No (no feedback), Yes (with feedback), when "Yes" is selected, the "Transmission of status" parameter will appear, options: using read request only (state feedback is available when a request is issued), on change in status (the status change will have status feedback immediately), always on operation (as long as there is a control command issued, there will be status feedback); "Invert status feedback" indicates the function of feedback inversion. The options are: No, Yes. When "Yes" is selected, the feedback will be off when the relay is on, and the feedback will be on when the relay is off.
8-bit scene control	Scene control function, not enabled yet, select: Disable
Interlocking group	Execute the switch interlock function. Options: none (not enabled), group 1 (group 1), group 2 (group 2), group 3 (group 3), group 4 (group 4), group 12 (group 12)

Pic 6.1.4

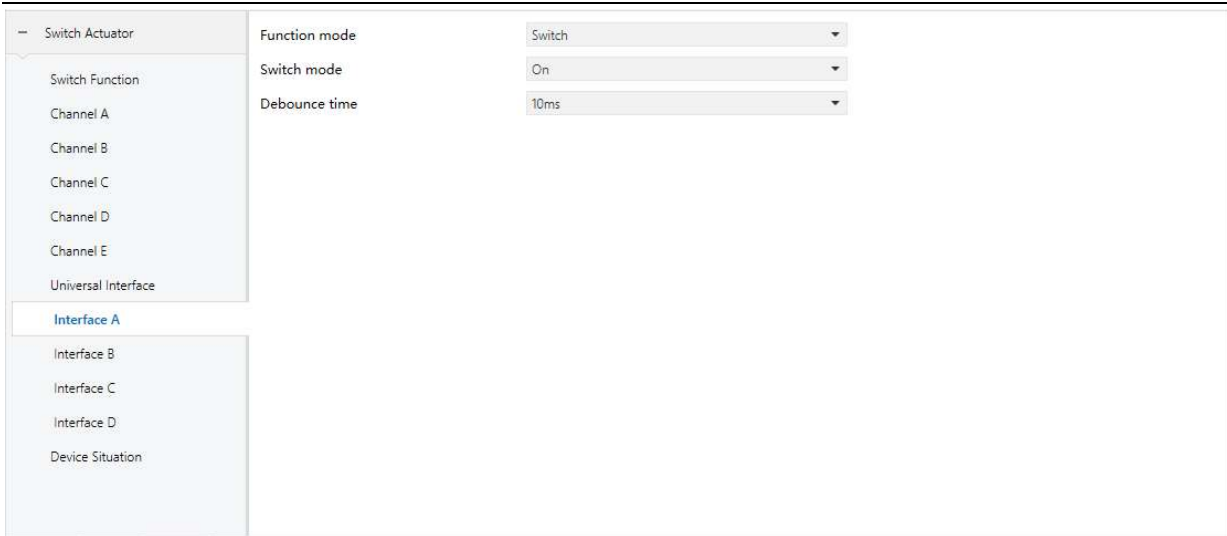
6.2 I/O contact interface parameter setting

1) Click "Universal Interface" as shown in Figure 6.2.1, Universal Interface A-D are set to enable, and four dry contact interfaces will be enabled.



Pic 6.2.1

2) After the setting is completed, four IO interfaces of Interface A-D will appear on the right side, click each dry contact interface to set its parameters. Take Universal Interface A as an example below, as shown in Pic 6.22



Pic 6.2.2

3) The parameter "function mode" is divided into 6 modes: Switch, Blind, Blind Position, Dimming, Dimming Position, Scene.

6.2.1 Switch model

Specification	Description
Switch mode	Indicates the action of the corresponding loop control when the dry contact is triggered, the options are: on, off, toggle, user define; when user define is selected, the following parameters appear: (1) Reaction on closing the contact indicates the reaction when the dry contact is closed, options: on, off, no reaction; (2) Reaction on opening the contact indicates the reaction when the dry contact is released , options: on, off, no reaction; (3) cyclic transmission of object represents the object to be sent cyclically, options: no (none), if "switch"=ON (when the relay is on), if "switch"=OFF (when the relay is off), always (always). When selecting if "switch"=ON, if "switch"=OFF or always, the parameters appear: transmission cycle time: base and Time factor [1-255] (the two parameters here represent the time of the cycle transmission interval, this Time = transmission cycle time: base value × Time factor [1-255] value).
debounce time	Indicates the time of debounce, optional: 10ms、 20ms.....100ms

6.2.2 Blind Model

Specification	Description
Blind model	Indicates the curtain action controlled by the corresponding loop when the dry contact is triggered, options: up, down, toggle;
Long operation	Long press operation, options: yes, no. When selecting yes, the parameter "Long operation after:" will be added, and the options are: 0.5s, 1s, 2s...7s; The interval of data (base: 0.1s) indicates the time interval for each piece of data to be sent when long-pressing, which can be filled in :1、 2、 3.....255;
debounce time	Indicates the time of debounce, optional: 10ms、 20ms.....100ms

6.2.3 Blind Position Model

Specification	Description
Blind value (Range:0-255)0-100%	Indicates the position percentage of the corresponding loop control curtain when the dry contact is triggered, can be filled in: 0-255;
debounce time	Indicates the time of debounce, optional: 10ms、 20ms.....100ms

6.2.4 dimming Mode

Specification	Description
Dimming mode	Indicates the dimming action of the corresponding loop control when the dry contact is triggered, options are: Dimming up, dimming down, toggle;
Long operation after:	Indicates that there will be a corresponding action after a few seconds of long press, options: 0.5s, 1s, 2s...7s
Transmission mode for long operation	Indicates the mode of data transmission when long-pressed, options: One-time transmission (send once), cyclic transmission (cyclic transmission)
Step dimming	Indicates the dimming range, options: 100%, 50%, 25%, 12%, 6%, 3%, 1%
Send stop instruction when releasing	When the long press is released, a stop command is issued, options: No, Yes
debounce time	Indicates the time of debounce, optional: 10ms, 20ms...100ms.

6.2.5 Dimming position Model

Specification	Description
Dimming position	Indicates the brightness percentage of the corresponding loop control dimming when the

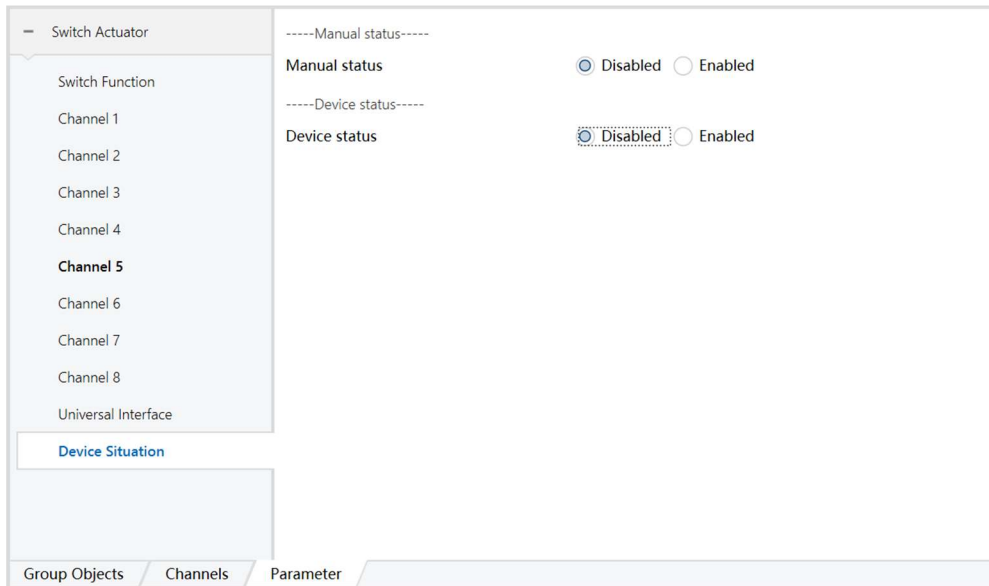
(Range:0-255)0-100%	dry contact is triggered, can be filled in: 0-255;
debounce time	Indicates the time of debounce, optional: 10ms, 20ms...100ms.

6.2.6 Scene Model

Specification	Description
Scene number	Indicates the scene number called when the dry contact is triggered, can be filled in: 1-64;
debounce time	Indicates the time of debounce, optional: 10ms, 20ms...100ms.

6.3 Equipment situation

1) Click "Device Situation" as shown in Figure 6.3.1, and when the parameters Manual status and Device status are set to Enabled, the corresponding functions will be enabled.



Pic 6.3.1

Parameter	Description
Manual status <i>(This function is not available at the moment)</i>	Indicates manual status, options: Disabled, Enabled, when "Enabled" is selected, ① parameter "Transmission of manual status" is manual transmission status, options: using read request only, on change in status, always in operation; ② parameter "ON time during manual mode", options: unlimited, 1minutes, 2minutes...120minutes;
Device status	Indicates the device status, options: Disabled, Enabled, when "Enabled" is selected, the parameter "Transmission of device status" is the transmission status of the device, options: using read request only, on change in status, always in operation;

6.4 Communication object description

The communication object is the medium through which the device communicates with other devices on the bus, that is, only the communication object can communicate on the bus. The function of each communication object is described in detail below.

There are 45 objects in the 10A FCU actuator, as shown in pic 6.3.1, and the specific functions are shown in Table 1.1

Note: "C" in the table attribute column below represents the communication function enable of the communication object, and "W" represents that the value of the communication object can pass through the bus Rewrite, "R" means that the value of the communication object can be read through the bus, "T" means that the communication object has a transmission function, and "U" means that the value of the communication object can be Updated.

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
0	Field switch	Recover / Save and Off			1 bit	C	R	W	T	U	switch	Low
1	Switch, Channel A	On / Off			1 bit	C	R	W	T	U	switch	Low
4	Scene, Channel A	Recall / Program			1 byte	C	R	W	T	U	scene cont...	Low
5	Status, Channel A	On / Off			1 bit	C	R	-	T	U	switch	Low
6	Switch, Channel B	On / Off			1 bit	C	R	W	T	U	switch	Low
9	Scene, Channel B	Recall / Program			1 byte	C	R	W	T	U	scene cont...	Low
10	Status, Channel B	On / Off			1 bit	C	R	-	T	U	switch	Low
11	Switch, Channel C	On / Off			1 bit	C	R	W	T	U	switch	Low
14	Scene, Channel C	Recall / Program			1 byte	C	R	W	T	U	scene cont...	Low
15	Status, Channel C	On / Off			1 bit	C	R	-	T	U	switch	Low
16	Switch, Channel D	On / Off			1 bit	C	R	W	T	U	switch	Low
19	Scene, Channel D	Recall / Program			1 byte	C	R	W	T	U	scene cont...	Low
20	Status, Channel D	On / Off			1 bit	C	R	-	T	U	switch	Low
21	Switch, Channel E	On / Off			1 bit	C	R	W	T	U	switch	Low
24	Scene, Channel E	Recall / Program			1 byte	C	R	W	T	U	scene cont...	Low
25	Status, Channel E	On / Off			1 bit	C	R	-	T	U	switch	Low
61	Switch, Interface A	On / Off			1 bit	C	R	W	T	U	switch	Low
69	Switch, Interface B	On / Off			1 bit	C	R	W	T	U	switch	Low
77	Switch, Interface C	On / Off			1 bit	C	R	W	T	U	switch	Low
85	Switch, Interface D	On / Off			1 bit	C	R	W	T	U	switch	Low
93	Manual status	On / Off			1 bit	C	R	W	T	U	switch	Low
94	Device status	On / Off			1 bit	C	R	-	T	U	switch	Low
95	Status, All switch channel	2-byte Value			2 bytes	C	R	-	T	U	channel ac...	Low

Pic 6.3.1

Item	Name	Communication object function	type of data	Attributes
0	Field switch	Recover/Save and Off	1 bit	C, R, W, T
The communication object is enabled when the parameter "Field control" selects "Enable". When the communication object receives the value "0", it saves the field channel status of the device and closes all channels; when the communication object receives the value "1" , recalls the last saved live state.				
1,6,11,16,21,26	Switch, Channel X	On/Off	1 bit	C, R, W, T
The communication object is enabled when "Enable" is selected for "Channel X". When the communication object receives the value "1", the channel will be "on" according to the corresponding mode set; when the communication object receives the value "0", the channel is "off" according to the corresponding mode set.				

5,10,15,20,25,30	Status, Channel X	On/Off	1 bit	C, R, T
The communication object is enabled when the parameter "Status response" of "Channel X" selects "Yes", and the value of this communication object can directly indicate the switching status of the channel X relay.				
61,69,77,85	Switch, Interface X	On/Off	1 bit	C, R, W, T
This communication object is enabled when "Switch" is selected for "Function mode" in "Interface X". When the dry contact is triggered, the channel sends the corresponding on or off command according to the set corresponding mode.				
62,70,78,86	Blind, Interface X	Up/Down	1 bit	C, R, W, T
This communication object is enabled when "Blind" is selected for "Function mode" in "Interface X". When the dry contact is triggered by a short press, the channel sends the corresponding up or down command according to the corresponding mode set.				
63,71,79,87	Blind, long, Interface X	Up/Down	1 bit	C, R, W, T
This communication object is enabled when "yes" is selected for "long operation" in "Blind" mode of "Interface X". When the dry contact is triggered by a long press, the channel sends the corresponding rising or falling command according to the corresponding mode set.				
64,72,80,88	Blind value, Interface X	8-bit value	1 Byte	C, R, W, T
This communication object is enabled when "Blind position" is selected for "Function mode" in "Interface X". When the dry contact is triggered, the channel sends the corresponding curtain height percentage command according to the corresponding mode set.				
65,73,81,89	Dimming switch, Interface X	On/Off	1 bit	C, R, W, T
This communication object is enabled when "Dimming" is selected for "Function mode" in "Interface X". When the dry contact is triggered by a short press, the channel sends the corresponding dimming on/off command according to the set corresponding mode.				
66,74,82,90	Dimming level, Interface X	Brighter/Darker	4 bits	C, R, W, T
This communication object is enabled when "Dimming" is selected for "Function mode" in "Interface X". When the dry contact is triggered by long-pressing, the channel sends relative dimming commands of the corresponding series according to the corresponding mode set.				
67,75,83,91	Dimming value, Interface X	8-bit value	1 Byte	C, R, W, T
This communication object is enabled when "Dimming position" is selected for "Function mode" in "Interface X". When the dry contact is triggered, the channel sends an absolute dimming command according to the set percentage.				
68,76,84,92	Scene, Interface X	8-bit value	1 Byte	C, R, W, T
The communication object is enabled when "Scene" is selected for "Function mode" in "Interface X". When the dry contact is triggered, the channel sends the corresponding scene control command according to the corresponding				

mode set.

Sheet1.1

7. Safe use and maintenance

- 1) Read all instructions carefully before use.
- 2) To establish a good ventilation environment.
- 3) During use, pay attention to moisture-proof, shock-proof and dust-proof.
- 4) Rain, contact with other liquids or corrosive gases are strictly prohibited.
- 5) If it is wet or invaded by liquid, it should be dried in time.
- 6) When the machine fails, please contact professional maintenance personnel or our company

8. Contact

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