

2018

SATION Fan Coil Actuator User Manual



The user manual refer to the following device :
SATION- AC0501.1004

Zhuhai Sation Technology Co.,

Ltd

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Version

Version No.	Release Date	Description
V1.0	May 15 th , 2018	1 st Release

Notice

1. Please read this user manual carefully before using the product.
2. This product is used in indoor environment and installed in electrical control box.
3. Please install this product in a dry and ventilated place.
4. Before power on, please confirm the input voltage according to the manual; after power on, please confirm the normal output voltage before connecting to the control bus.
5. Please make sure the secure shell is in good condition, if the shell is damaged, please stop using to avoid accident.
6. This product is NOT a toy, please make sure it is out of children touch.
7. Only be suitable for EIB/KNX system bus.
8. Others:
The below sign indicates this product can't be dealt as ordinary family rubbish, in order to avoid the possible environment and human health harm caused by the electrical waste, this product must follow recovery processing. Please contact the local recycling department after this product is scrapped, to make sure it can go as the right waste processing procedure.



1 Fan Coil Actuator

1.1 Electrical Parameters

Power supply	KNX-Bus Power	DC 21V...32V	
	KNX device current consumption	<12mA	
	KNX bus loss	<250mW	
	Single bus voltage	DC 12V	
	Single bus current	<750mA	
Rated output feature	Control fold	Relay output 5	
	Rated working voltage	230V AC(50/60Hz)	
	Rated working current	8A MAX(5-fold)	
	The loss rate of per fold	0.6W (8A output)	
Open circuit features	6 A	$\mu=0.45$ (Switch the motor in operation)	6A/230V AC
		$\mu=0.8$ (Light or resistive load)	6A/230V AC
		Capacitive load	Fluorescent lamp load 6 A/250V AC (35 μ F)
		Minimum breaking parameters	20mA/5V
			10mA/12V
			7mA/24V
Switching DC load	6A/24V DC		
Service life	Switch operation mechanical life.	>100000 Times	
	Contact electrical life		
	$\mu=0.8/240V$	> 100000 Times	
	$\mu=0.45/240V$	>15000 Times	
	$\mu=0.45/240V$	>15000 Times	
External connection	KNX-TP1	Use twisted pair cable that conforms to the KNX standard.	
	Load terminals.	The minimum use of 0.6Nm torque is required to be connected.	
Operation and display interface	Program key and corresponding indicator light	LED	

Enclosure protection grade	IP20	EN 60 529
Security level	II	EN 61 140
Insulation isolation	overvoltage	EN 60 664-1 III
	Power grid pollution	EN 60 664-1 2
KNX Safety voltage	SELV	24V DC
Temperature range	Working temperature	-5°C...+45°C (3K5)
	Storage temperature	-25°C...+55°C
	Transit temperature	-25°C...+70°C
Environmental requirements	Maximum air humidity	93%, no condensation
The mechanical parameters	Volume	4TE
	Weight	0.042 kg
	Installation	35mm U-shape guide rail (EN60715)
Outlook	Grey white	Color No.: PANTONE PMS444
Certification	KNX EN50090-1\2	
CE Certification	See appendix for EMC indicators.	

1.2 Product Appearance



2 Function Summary

This manual provides you with detailed information on the product of the SATION Fan Coil Actuator, including installation and how to use it.

It is used in distributed heating and refrigeration applications. This device is installed in a room with power heating and refrigeration systems. Through this system, the room temperature quickly adjusts to the personal preference state. The functions provided are as follows:

- control the fan gear.
- control the refrigeration valve and the heating valve.

2.1 Function Description

The Sation Fan Coil Actuator uses the KNX bus terminals to connect to the system network. No additional power supply is required to control the AC load. The allocation of physical address and the setting of parameters are completed using the engineering design software ETS.

The Fan Coil Actuator is dedicated to the control of fan coil unit, and the control node is 8A, with 7 nodes.

The following are the main functions:

- (1). Support the single-phase fan that controls up to three fan speeds;
- (2). Support the control of heating valve and refrigeration valve;
- (3). Support the control system of 2- pipe, 3- pipe and 4- pipe.
- (4). Support manual control or automatic control of fans and valves;
- (5). Support status value query reply;
- (6). Support bus voltage disconnect and recovery relay switch position selection, etc.

3 Technical Performance /Product Size/ Circuit Diagram

3.1 Application Parameters

The Sation Fan Coil Actuator is a modular installation equipment required by the proM design to facilitate the installation of the 35mm u-shaped guide on the distribution box. Connect to EIB/KNX system via bus terminal.

The Fan Coil Actuator is connected to the load using two joints for a set of screw voltage power terminals, and each output can control the output separately. It is mainly used in the control system with heating and refrigeration valves.

Power - working voltage 21...32 V DC, bus provided;

- EIB/KNX current consumption < 12 mA.
- EIB/KNX power consumption Max. 250 mW.

Normal output

- Type SATION - AC0501.4002
- Output number 7

Output switch current:

- | | |
|---|--------------------------|
| - AC1(en60947-4-1)(resistive load) | 7 folds group
8A/230V |
| - AC3(en60947-4-1)(capacitive load) | 8A/230V |
| - A fluorescent lamp with an EN60669 load | 8A/250(35uF) |

Switching performance (contact)

- Maximum current peak I_p (150 μ s) 400A.
- Maximum current peak I_p (250 μ s) 320A.
- Maximum current peak I_p (600 μ s) 200A.

Output life:

- Mechanical life > million times.
- Electrical life character IEC 60947-4-1.
- AC1 (non - inductive or micro - inductive load, resistance furnace) > 100,000 times.
- AC3 (the starting and running of cage induction motor) > 10,000 times.
- AC5a (through the discharge of electric light) > 10,000 times.

Output switching time

- The maximum operating cycle of single relay is 100ms.
- The maximum delay time of startup is 30ms.
- The maximum delay time is 50ms.

The connection

- EIB/KNX bus terminals (0.8mm in diameter)
- Load output connection terminal 7.62mm screw terminal.

Operations and instructions

- Download and assign physical address and programming according to the programming keys;
- The application layer of the LED lamp is out of order;

The shell

- IP 20; On the basis of EN60529

Security level

- II; On the basis of EN61140

Temperature range

- Run - 5 °C...+ 45 °C

- Storage - 25 °C...+ 55 °C

- Transportation - 25 °C...+ 70 °C

Environmental conditions

-Humidity <93%, except for condensation.

Weight: no more than 1kg;

Design

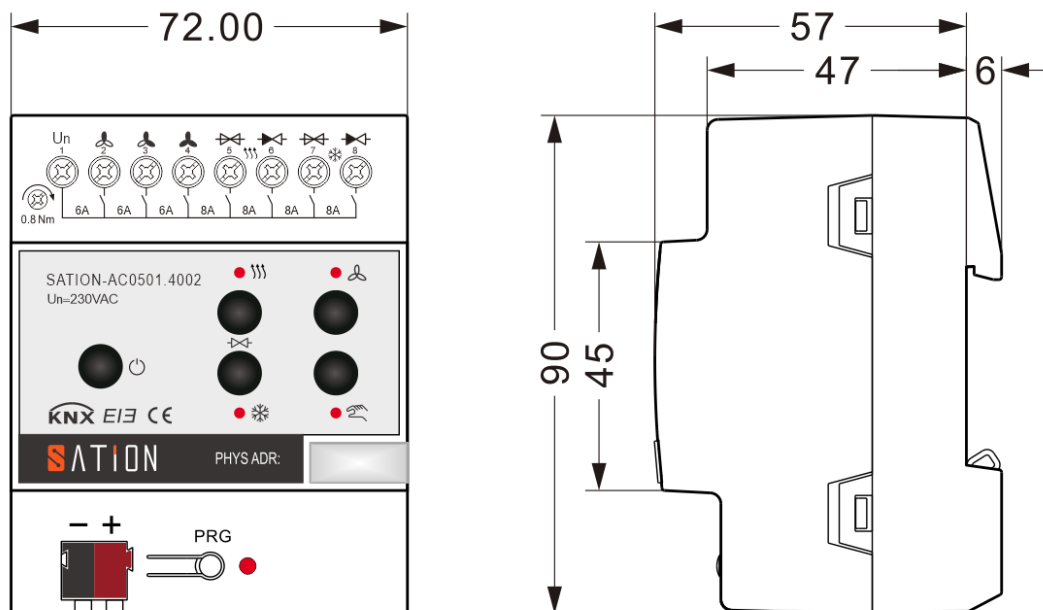
- DIN rail module component 35mm u-guide, modular installation.

Size (length * width * height mm)

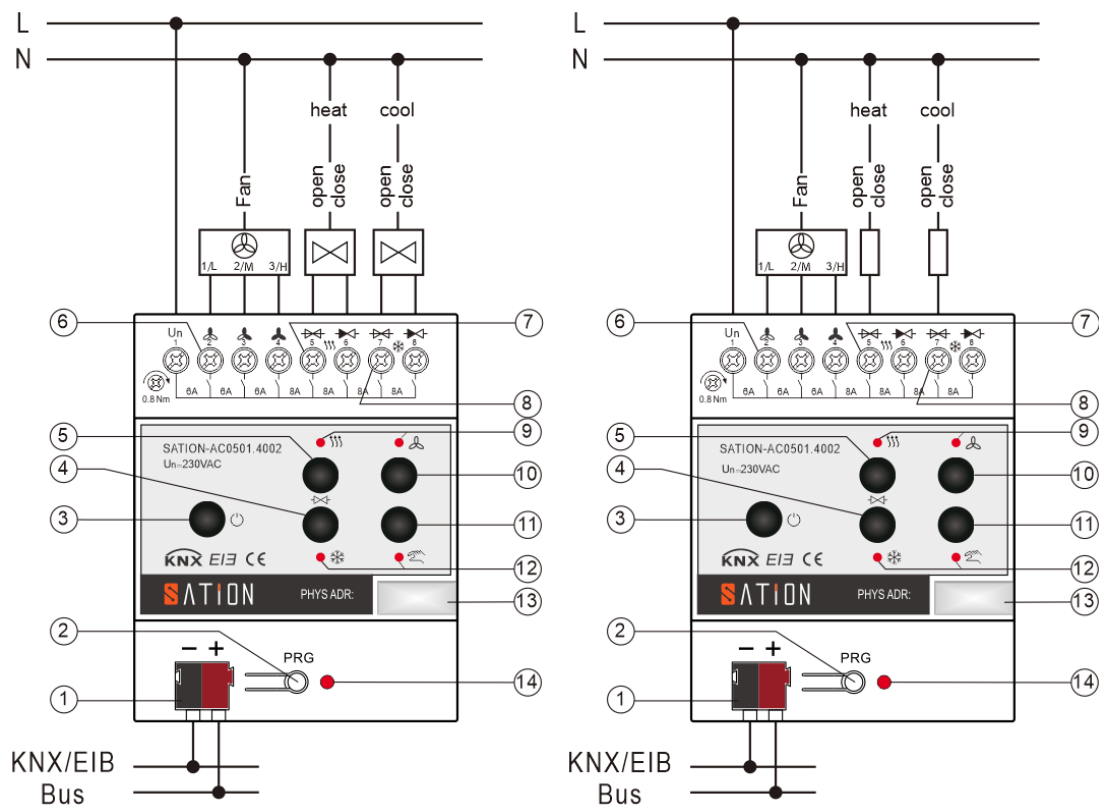
72 * 90 * 57

3.2 Dimension Figure and Circuit Diagram

3.2.1 Dimension Figure (mm)



3.2.2 Circuit Diagram








1. Bus connection
2. Programming keys
3. The ON/OFF button
4. Refrigeration valve key
5. Heating valve key
6. The fan
7. The heating valve
8. Refrigeration valve
9. Heating valve (left) and fan (right) indicator light.
10. Fan button
11. Manual mode button.
12. Refrigerating valve (left) and manual mode (right) indicator light.
13. Label bearing place
14. Programming indicator light.

Display part:

The indicator light is on the front of the device.

All indicator lights indicate the working status of the device. In KNX working condition, this indicator is closed.

The corresponding display elements are as follows:




LED	KNX Operation	Manual Operation
Manual key indicator light 	Off: equipment works in KNX mode;	On: the equipment works in manual mode;
Heating valve indicator light  Refrigeration valve indicator light. 	On, valve position = 0 %. Off, valve position \neq 0 %.	
Fan speed 1...3 	Flash 1Hz, wind speed 1. Flashing 2Hz, wind speed 2. Flash 3Hz, wind speed 3. Fan off	
 ON/OFF	On: fan automatic mode activation. Off: fan runs in manual mode or KNX direct operation mode.	



Note: ON/OFF LED indicator is dark light.

Operation control part:

The manual operation button is on the front of the device.

The behavior of the operation depends on the working state of KNX. Manual operation is described in the following table:

Button	KNX Operation	Manual Operation
	Press this button for 3 seconds to switch to manual operation. By setting parameter, manual operation can be carried out smoothly.	Press this button for 3 seconds to switch to KNX. With parameter setting, it can automatically switch back to KNX operation.
 Heating valve key  Refrigerating valve key	In the case of error, if the controller fails to monitor, the corresponding indicator will display the flicker state. Press the corresponding button for more than 4 seconds to respond to the error.	Control valve by pressing the corresponding button. The error was not answered. The feature curve adjustment is not implemented. The button can be disabled by setting corresponding parameters.

 <p>Fan Button</p>	<p>No effect</p>	<p>By pressing the button, the individual wind speed can be switched, the order is 0->1->2->3->0... This button can be disabled by parameter setting.</p>
 <p>ON/OFF button</p>	<p>No effect</p>	<p>With the parameter configuration, the button can be operated to send ON message to the bus.</p>

4 Contact

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5 Appendix

(1) Sation Fan Coil Actuator electromagnetic compatibility (CE) standard implementation schedule:

The index name	Execution standard number	Level	Performance criteria	Remark															
ESD (EN61000-4-2)	EN61000-6-1	Contact 4KV/ air 8KV	B																
RS (EN61000-4-3)		80MHz-2GHz: 3V/m 2G-2.7GHz: 1V/m	A																
EFT (EN61000-4-4)		±1KV	B																
SURGE (EN61000-4-5)		L-N ±1KV L-PE ±2KV	B																
C/S (EN61000-4-6)		3V	A																
M/F (EN61000-4-8)		3V/m	A																
DIPS (EN61000-4-11)		<table border="1"> <tr> <td>0</td> <td>% residual voltage cycle</td> </tr> <tr> <td>0.5</td> <td>% residual voltage cycle</td> </tr> <tr> <td>0</td> <td>% residual voltage cycle</td> </tr> <tr> <td>1</td> <td>% residual voltage cycle</td> </tr> <tr> <td>70</td> <td>% residual voltage cycle</td> </tr> <tr> <td>25/30 at 50/60Hz</td> <td>% residual voltage cycle</td> </tr> <tr> <td>0</td> <td>% residual voltage cycle</td> </tr> <tr> <td>250/300 at 50/60Hz</td> <td>% residual voltage cycle</td> </tr> </table>	0	% residual voltage cycle	0.5	% residual voltage cycle	0	% residual voltage cycle	1	% residual voltage cycle	70	% residual voltage cycle	25/30 at 50/60Hz	% residual voltage cycle	0	% residual voltage cycle	250/300 at 50/60Hz	% residual voltage cycle	B&C
0	% residual voltage cycle																		
0.5	% residual voltage cycle																		
0	% residual voltage cycle																		
1	% residual voltage cycle																		
70	% residual voltage cycle																		
25/30 at 50/60Hz	% residual voltage cycle																		
0	% residual voltage cycle																		
250/300 at 50/60Hz	% residual voltage cycle																		
Conducted interference	EN61000-6-3	66dB(μV) - 56 dB(μV) QP 56dB(μV) - 46 dB(μV) AV	A	0.15MHz-0.5MHz															
		56 dB(μV) QP 46 dB(μV) AV	A	0.5MHz-5MHz															
		60dB(μV) QP 50dB(μV) AV	A	5MHz-30MHz															
Radiated interference		40 dB(μV/m)	A	30MHz-230MHz															
		47 dB(μV/m)	A	230MHz-1000MHz															
Harmonic current	EN61000-3-2		A																
Voltage flicker	EN61000-3-3		B																

Note 1: the above standard grade requirements are from the KNX standard 4-2 volumes.

Note 2: performance criterion A: equipment transmission and function are not wrong; Performance criterion B: allow for errors;

(2) Sation Fan Coil Actuator Security (CE) standard implementation schedule:

The index name	Execution standard number	Level	Performance criteria	Remark
	EN60947-3			
Dielectric strength test	√	2	--	
Flame retardant test	√	2	--	
Temperature rise test	√	2	A	
Corrosion test	√	2	A	
Electrical life test	√	2	A	
Pass capacity test.	√	2	A	
Test for normal operation	√	2	A	