FLUCON®

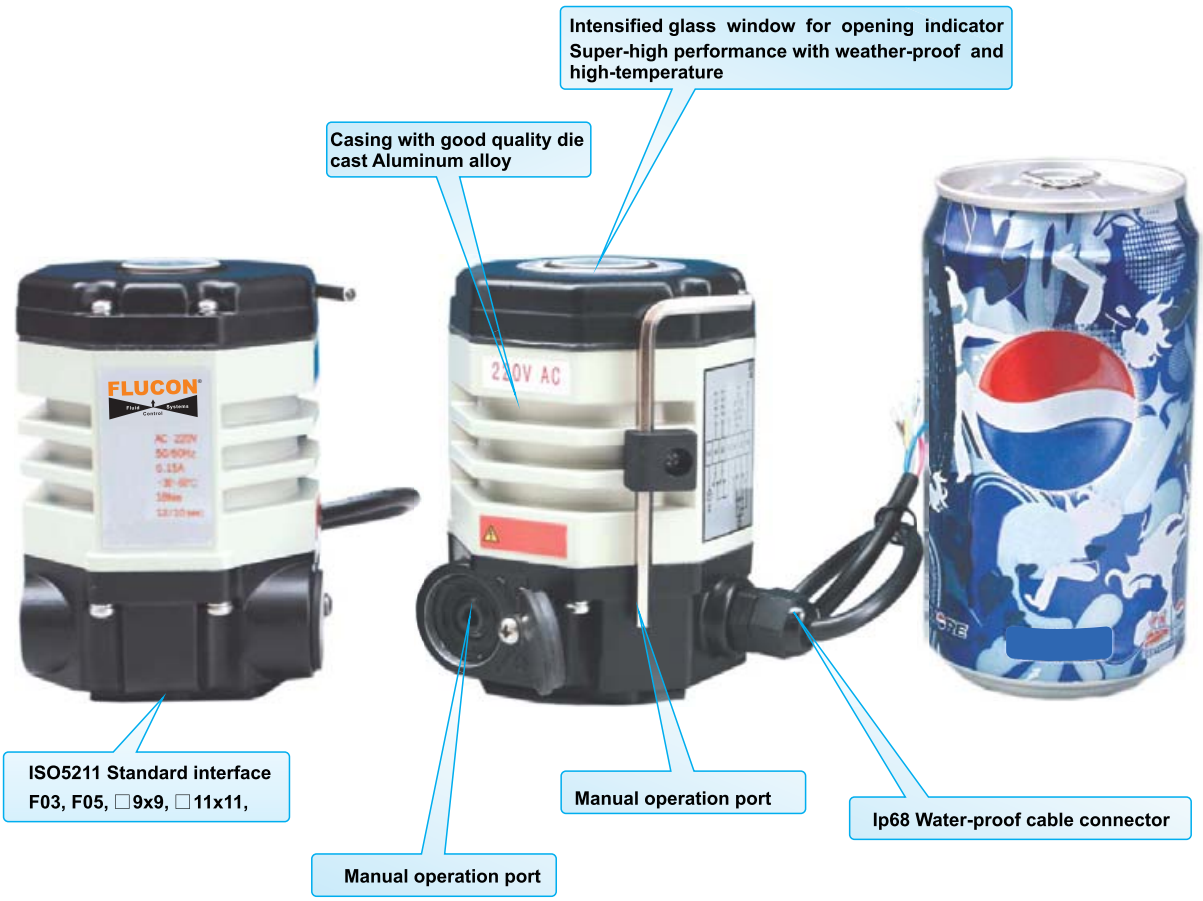
Fluid Systems Control

EA 10 SERIES SUBMINIATURE ELECTRIC ACTUATOR

Attention

1. ⚠ No manual operation is allowed when it is energized.
2. Do not open the rubber cover at manual operation port if you are not operating manually, so as to avoid water or dust from entering into the actuator.
3. Please not to operate the actuator out of the range of the indicator. Otherwise the actuator will not be able to work normally.
4. The actuator is internally provided with overheat protection device, when the motor exceeds the temperature of 125°C, the overheat protection device will switch off the motor power automatically.
5. It is necessary to additionally install the leakage protection device before it is put into operation.
6. Please confirm the input voltage and all connections.
7. It is not allowed to put the power lines for two or more sets of actuators in series or in parallel, otherwise it will cause movement out of control and motor over temperature rising due to the interference of condensers from each other.
8. It is prohibited to operate the actuator under overload condition.
9. The manufacturer will not be responsible to the improper changes and maintenance on the actuator.

SMART-02 Series Subminiature-Electric Actuator



Three characteristics

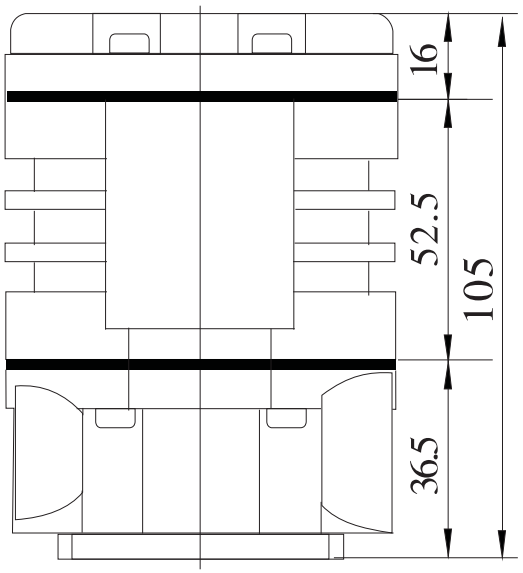
- Subminiature in volume (smaller than a pop can)
- Super torque (18Nm/12Sec.)
- Super protection performance (full Aluminum alloy casing)

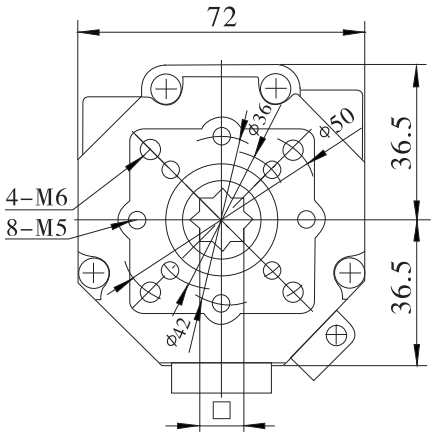
Main Applications:

It is widely applied in various automatic operation systems, such as: level, flow, pressure control, air-conditioning systems, fire fighting systems, water treatment systems, and applied to equipment, chemical industry and food machineries. It is matched with butterfly valves with diameter less than DN40 and ball valves with diameter less than DN32.

It is suitable for many kinds of installation conditions with its super miniature in volume and any installation angle within 360.

I. OVERALL DIMENSIONS





Square	□ 9x9、□ 11x11
Flange	F03、F04、F05
Valve shaft	Height: ≤ 16mm

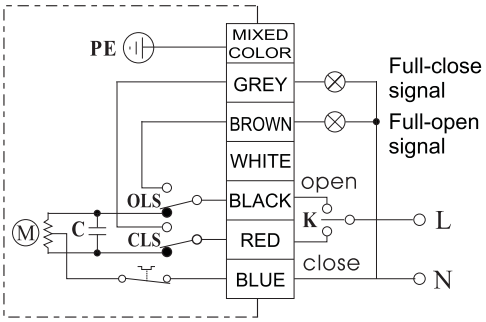
II. PERFORMANCE PARAMETERS

Type / Parameters / Power / Performance	SMART-02			
	DC24V	AC24V	AC110V	AC220V
Motor Power	8W	6W	6W	6W
Rated Current	0. 7A	1. 3A	0. 3A	0. 15A
Standard Time/Torque	12S/18Nm			
Optional Time/Torque	6S/9Nm			
Turning Angle	0～90° 、0～180°			
Available Control Circuit	G Type	A Type , B Type		
Total Weight	1. 0kg			
Insulation Resistance	100MΩ/250VDC		100MΩ/500VDC	
Voltage-withstand Class	500VAC, one minute		1500VAC, one minute	
Protection Class	IP67			
Installation Angle	360°, at any angle			
Electric Interface	7- core cable for connection			
Ambient Temperature	-30℃～+60℃			
Fuse	2A	3A	1A	1A

III. CONTROL CIRCUIT

Type A: Limit Switch with Active contact

The opening or closing operation is realized by switching “close” and “open” the circuit, outputting a group of full open or close active signals.

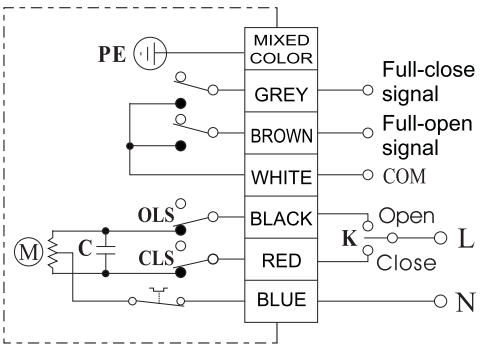


Notes of wiring terminals:

1. Terminal in blue is for the connection of zero line of power cord.
2. The connection between power phase line and terminal in red is for the operation of “close”.
3. The connection between power phase line and terminal in black is for the operation of “open”.
4. When the power phase line is connected with the terminal in red and “close” operation is at position, the "full close" signal indication lamp connected with terminal in grey lights.
5. When the power phase line is connected with the terminal in black and “open” operation is at position, the "full open" signal indication lamp connected with terminal in brown lights.

Type B Position Switch with Passive contact

The opening or closing operation is realized by switch “close” or “open” the circuit, outputting a group of full open or close passive signals.

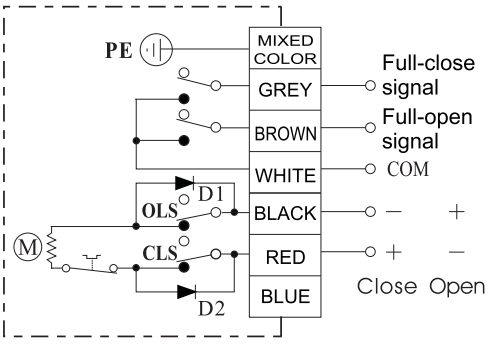


Notes of wiring terminals:

1. Terminal in blue is for the connection of zero line of power.
2. The connection between power phase line and terminal in red is for the operation of “close”.
3. The connection between power phase line and terminal in black is for the operation of “open”.
4. Terminal in white is common terminal as passive contact.
5. When it is at “open” operation position, terminal in brown will output the "full open" signal.
6. When it is at “close” operation position, terminal in grey will output the "full close" signal.

G Type: DC Control Circuit, with Passive Contact Switch

According to the single conductivity of diode, the opening and the closing operation can be realized by means of the exchanging of the positive polarity and the negative polarity of DC power supply and output a group of full open or close passive signals.



Notes of wiring terminals:

1. For the operation of “close”, the terminal in red is connected with positive pole and the terminal in black is connected with negative pole. For operation of “open”, the terminal in black is connected with positive pole and the terminal in red is connected with negative pole.
2. The terminal in white is the common terminal with passive contact.
3. When it is at “open” operation position, terminal in brown will output the "full open signal".
4. When it is at its “close” operation position, terminal in grey will output the "full close signal".

IV.REQUIREMENT OF INSTALLATION CONDITIONS

- The product can be installed not only indoors, but also outdoors.
- The product is not explosion-proof, Care shall be taken to avoid inflammable and explosive environment.
- It is necessary to have protective cover installed, if it operates in such conditions of long time raining, directly receiving sunshine or spatter.
- Maintenance space shall be reserved for connection and manual operation.
- The ambient temperature shall be within the rang of -30℃~+60℃.

Special hint: This type of product is not for high temperature environment.

V.REQUIREMENT OF WORKING MEDIUM TEMPERATURE

- When it operates with valve, the heat of working medium will be conducted to the body of the unit, care shall be taken to the temperature rising.
- It is possible to directly install the unit if the temperature of working medium is below 80℃.
- If the temperature of working medium is higher than 80℃, direct installation is forbidden. The heat radiation device shall be additionally installed.

VI.REQUIREMENT OF INSTALLATION AND APPLICATION

- This type of actuator is suitable for the valve with ISO5211 standard: Installation size: F03, F04, F05, square valve rod with sizes of 11x11 or 9x9; Height: ⩽ 16mm.
- During the connection with valve, both actuator and valve must be situated at full close position.
- After connection with the valve, drive the electric actuator by crank for full open and full close once per each and confirm the operation is stable without off center and distortion. Check the valve, see if the full close and full open positions can be realized within the indication range of opening indicator of electric actuator.

Special hint: 1. Too much force will lead the electric actuator over-travel and being damaged.
2. Not to operate the electric actuator outside the range of opening indicator.

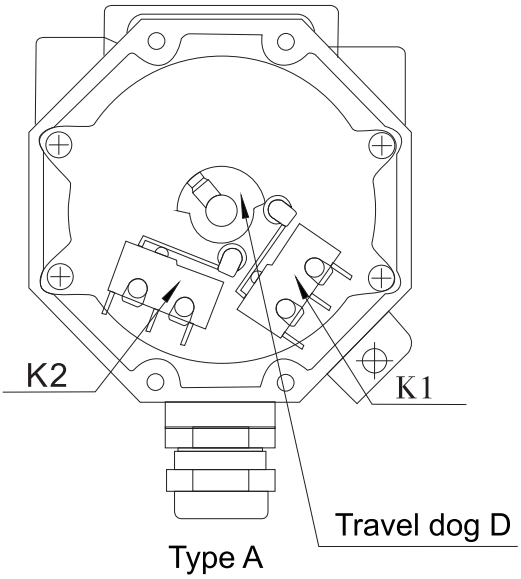
VII.ELECTRIC TEST-RUN

- Make correct wiring according to the control circuit drawing adhered inside the cover for Junction Box. After confirming, switch on the power supply.
- The switch is turned to CLOSE; execute the operation of mechanical driving of valve to close position (clockwise) till the closing of the limit switch (K1) being actuated. The electric actuator will stop turning.
- The switch is turned to OPEN; the actuator drives the valve to the operation of full open position (anti-clockwise) till the opening of the limit switch (K2) being actuated. The electric actuator will stop turning.

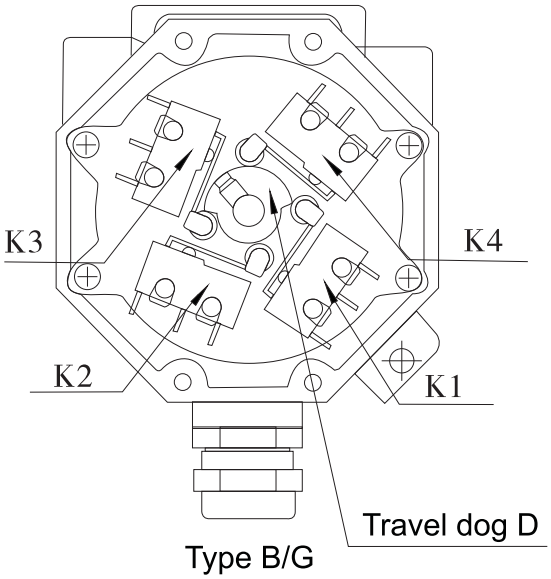
VIII.ADJUSTMENT OF LIMIT POSITION SWITCH (ELECTRIC LIMIT)

①Drive the valve to Full Close position by crank.
② Loose the fixing screw on travel dog, D; Turn D clockwise, making the corresponding micro switch, K1 move. When the micro-switch being initiated, you can hear a sound of "click", and then stop turning D and fasten the screws on D, so as to fix D. The adjustment is finished.

Note: The adjustment of limit position switch for all types of Smart-02 series is the same.



Type A



Type B/G

IX.MAINTENANCE

● Since the molybdenum-base grease with long service life and good pressure resistance is employed, no lubrication and periodical maintenance are needed.
● If the operation of valve is rare, periodically driving the actuator is necessary and check if there is any abnormal condition.

X.TROUBLE SHOOTING

Problem	Cause	Remedy
Motor does not start.	The power cord is not plugged in.	Plug in the power cord.
	Power line is disconnected or the connection between connector and terminals is loosen.	Connect the power line. Connect and fasten the terminal correctly.
	Voltage is not right or too low.	Check the voltage if it is normal.
	The overheat protection device is initiated.(The ambient temperature too high, or valve clogged)	Cool down the ambient temperature. Check the valve manually, see if it can be opened and closed normally.
	The micro-switch is not properly moving.	Replace the micro-switch.
	The capacitor is defective.	Contact the manufacturer and replace the capacitor.
	The diode for DC electric actuator is open circuited.	Contact the manufacturer and replace the diode.
Indication lamp for open/close does not work.	Bulb damaged.	Replace the lamp.
	The action of micro-switch is not proper.	Replace the micro-switch.
Motor could not stop running when reaching to the limit position	The action of limit-switch is not proper.	Replace the limit-switch.
	Misconnect the limit-switch with the control circuit.	Adjust the connection.
	The diode of DC electric actuator is short circuited.	Contact the manufacturer and replace the diode.
Actuator got water	The glass len for electric elements is broken.	Contact the manufacturer for repair.