

PİKSEL ÖLÇÜ AKIŞKAN KONTROL OTOMASYON

Electric Actuators



1. Summary

PIKSEL-EA series electric actuator is used for controlling 0~270° rotation of the valves and other similar products, such as butterfly valve, ball valve, damper, flapper valves, cock valves, etc. It's widely used in petroleum, chemical, water treatment, shipping, paper making, power plants, heating, light industry and other industries. It drives by 3 80V 1220V 110V AC power. Control signal is 4-20mA current signal or 0-10V DC voltage signal, enables move the valve to the desired position, achieving its automation, maximum output torque is up to 4000N·m ..

2. Performance Features

2.1 Shell

The shell is made of high-strength aluminum alloy, pass through anodic oxidation treatment and polyester powder coating, so it has strong corrosion resistance. Protection grade is IP67, NEMA 4 AND 6, and optional IP68 type.

2.2 Electric Machinery

Fully enclosed Squirrel-cage electric Machinery, small volume, large torque, and small inertia force, F -class insulation rating, inside hot protection switch, avoid damaging the electric machinery.

2.3 Manual Structure

The design of handle ensures safe, reliable, labor-saving, small volume. When it doesn't have electricity, it can be manually operated by handle. When you don't operate by manual, you can put the spanner in the spanner folder, and then you can easily use it.

2.4 Indicator

Indicator installs in the center axis, so it can observe the valve position. It adopts convex mirror design, no cumulate water, more convenient to observe.

2.5 Space heater

It is used for controlling temperature, avoiding internal moisture of electric actuator condensed because of the changing of temperature and weather, keep inner electric device dry

2.6 Sealing

Good sealing performance and the protection class of standard product is IP67, and optional IP68 protection grade.

2.7 Limit switch

Mechanical, electronic double limit. Mechanical limit screw is adjustable, safe and reliable; electron limit switch is controlled by the cam mechanism, easy adjustment institutions can set the position accurately and conveniently, and it doesn't affect overly by hand wheel

2.8 Self-locking

Exact worm and worm gear can efficiently transfer large torque, high efficiency, low noise (max. 50 dB), long life, and it has self-locking function to prevent the inversion, transmission part is stable and reliable, no need to add oil.

2.9 Anti-off bolt

When removed the shell, the bolt would be attached to the shell and didn't fall off.

2.10 Install

The installation size of the bottom conforms to the international standard ISO5211 / DIN3337, The holes are double square so that it's easy to fix the linear or 45° corner valves attached square bar, adaptable. It can be installed vertically, and also can be installed level.

2.11 Circuitry

Control circuit conforms to the single-phase or three-phase power supply standard, reasonably compact line layout, wiring terminals can effectively satisfy a variety of additional functional requirements.

3. Performance Parameter

Model	Max output torque N·M	90° Operating (S)	Output axis				Motor (W)	Single-phase rated current (A) 50HZ 220V(A)50HZ	Weigh (kg)
			Square	Deep	Round	Deep			
EA-030	30	12	11	15	12.6	26	8	0.25	2.2
EA-050	50	30	11x11	15.5	12.6	26	10	0.25	3.6
			14x14	18					
EA-080	80	30	11x11	15.5	15.7	26	10	0.25	3.6
			14x14						
			14x14	18	15.7	28			
EA-100	100	30							
			17x17	22.5	18.95	28			
EA-150	150	30	14x14	18					
			17x17	22.5					
EA-200	200	30	22x22	26	22.13	45	45	0.3	13
EA-300	300	30	22x22	26	28.48	45	45	0.31	13.4
EA-400	400	30	22x22	26	28.48	45	60	0.33	13.8
EA-600	600	30	27x27	32.5	31.65	45	90	0.33	14
EA-800	800	45	27x27	32.5	31.65	45	180	0.47	14.3
EA-1000	1000	45	27x27	32.5	31.65	45	180	0.47	14.5
EA-1600	1600	135	Max: cp45		65		180	0.85	60
EA-2000	2000	135	Max: cp45		65		180	0.85	60
EA-3000	3000	135	Max: cp45		65		180	0.85	60

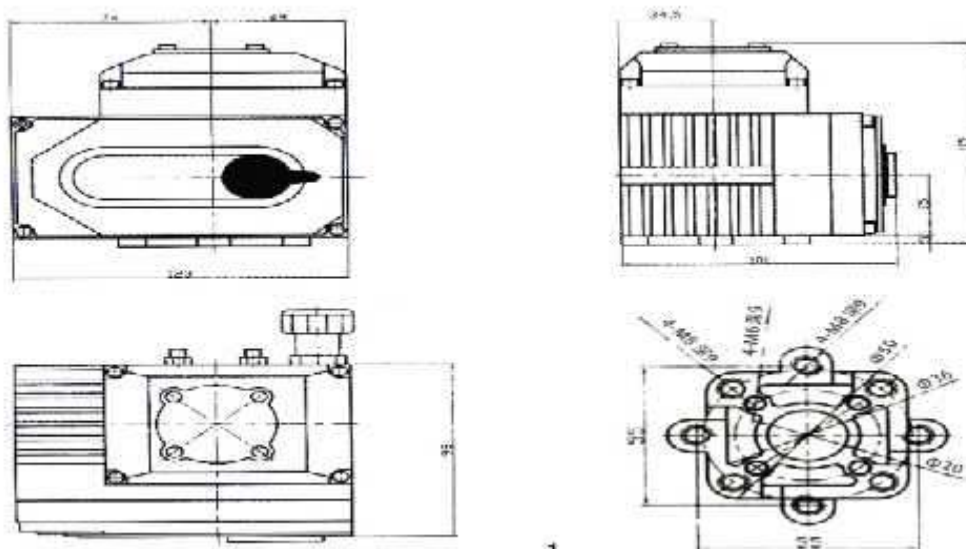
4. Standard Technical Parameter

Shell	Aluminum alloy Shell, waterproofleve:IP67,NEMA4 and 6	
Power supply	110/220V AC IPhase,380/440V AC 3Phase, 50/60Hz, $\pm 10\%$	
Control supply	110/220V AC I Phase, 50/60 Hz, $\pm 10\%$	
Motor	Squirrel-cage Asynchronous Motor	
Limit switch	2 X (Open) / (Close) , SPDT,250Y AC IOA	
Additional Limit switch	2 X (Open) / (Close) , SPDT,250Y AC IOA	
Travel angle	When it's over 90°,please note us in advance	0° ~270°
Stall protection!		
Operating temperature	Built t-in thermal protection, On 120°C $\pm 5^{\circ}\text{C}$ /Off9TC $\pm 5^{\circ}\text{C}$	
Indicator	Continuous situation indication	
Manual operation	Mechanical handle (Optional: fixing with the hand wheel)	
Self-locking device	Provide self-locking by worm and worm gear	

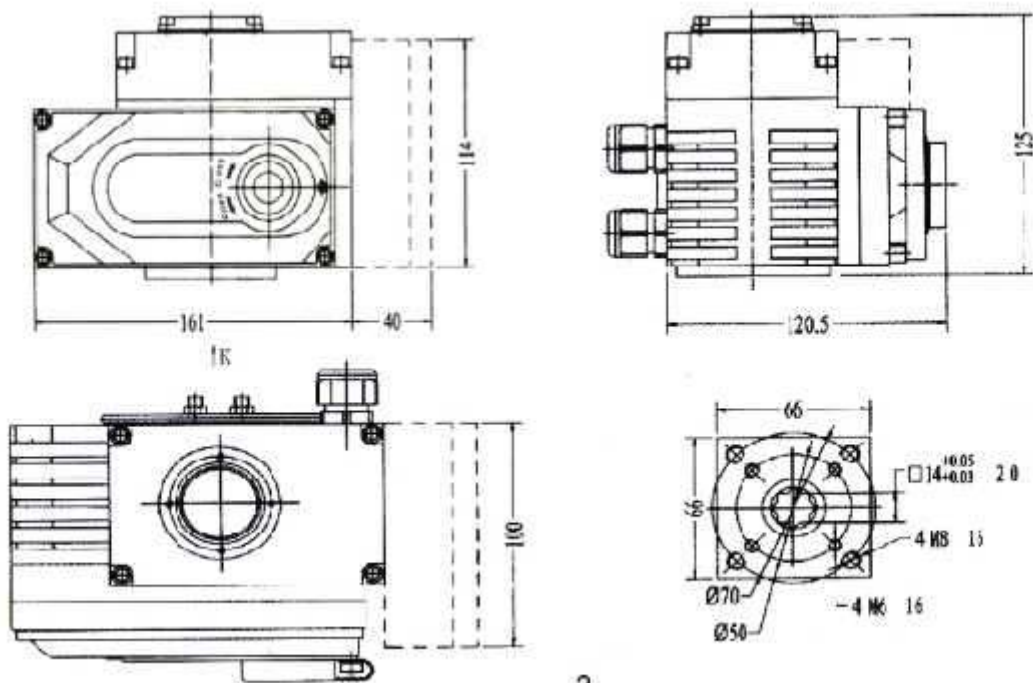
5. Outside View

Mechanical Limit	2 external adjustable screws	
Space heater	7-10W (110/220V AC) Anti +condensation 2 - (Pieces) M18 -20·C--+70·C (EP) Grease moly (EP type)	
Conduit entries		
Ambient temperature		
Lubrication		
Material	Steel, Aluminum alloy, Aluminum bronze, Polycarbonate	
Ambient humidity	(Max) 90% RH	Non-Condensing
Anti-vibration	X Y Z 109, O. 2~34 Hz, 30 (minutes)	
External coating	Dry powder, Epoxy polyester	

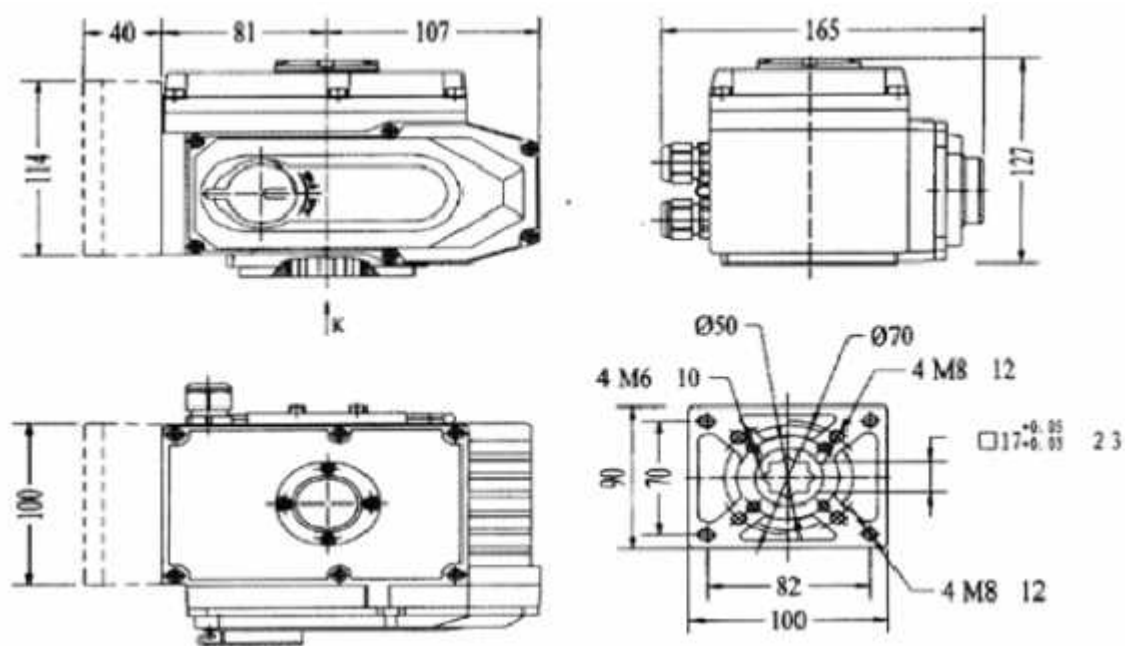
5.1 EA-030 Appearance and installation dimension (The part of broken line is used for analog quantity control box, Open/Close model don't have this size.)



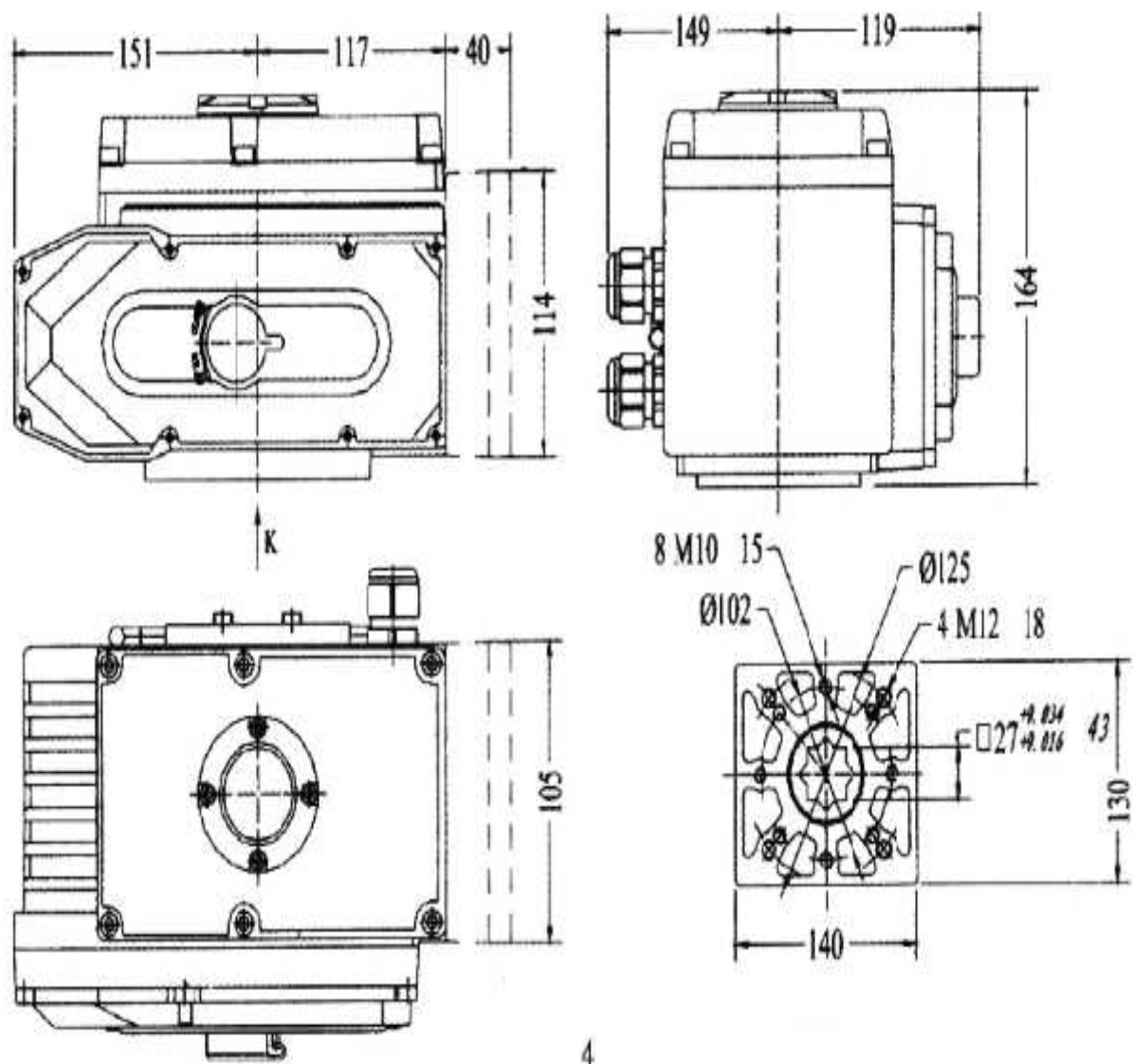
5.2 EA050-080 Appearance and installation dimension (The part of broken line is used for analog quantity control box, Open/Close model don't have this size.)



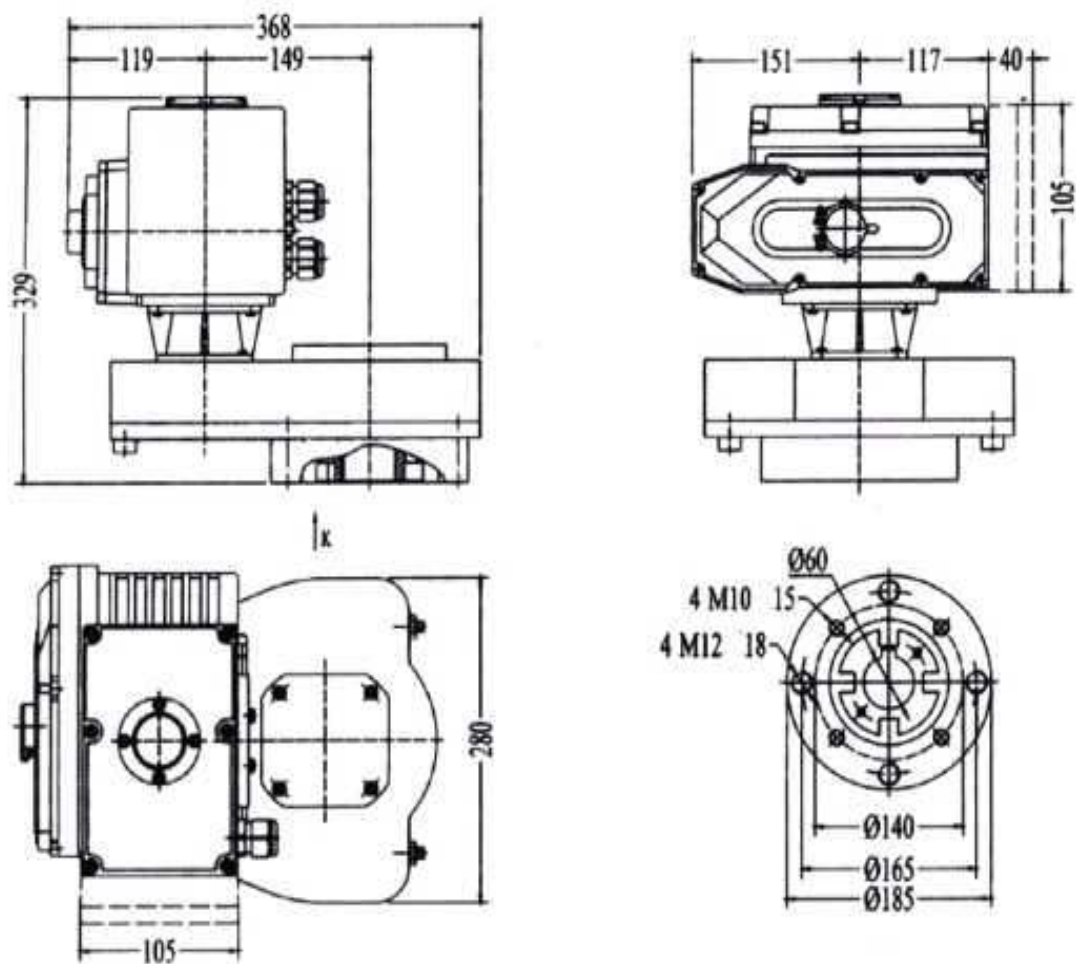
5.3 EA100-150 Appearance and installation dimension (The part of broken line is used for analog quantity control box, Open/Close model don't have this size.)



5.4 EA200-1000 Appearance and installation dimension (The part of broken line is used for analog quantity control box, Open/Close model don't have this size.)



5.5 EA 160-300 Appearance and installation dimension (The part of broken line is used for analog quantity control box, Open/Close model don't have this size.)

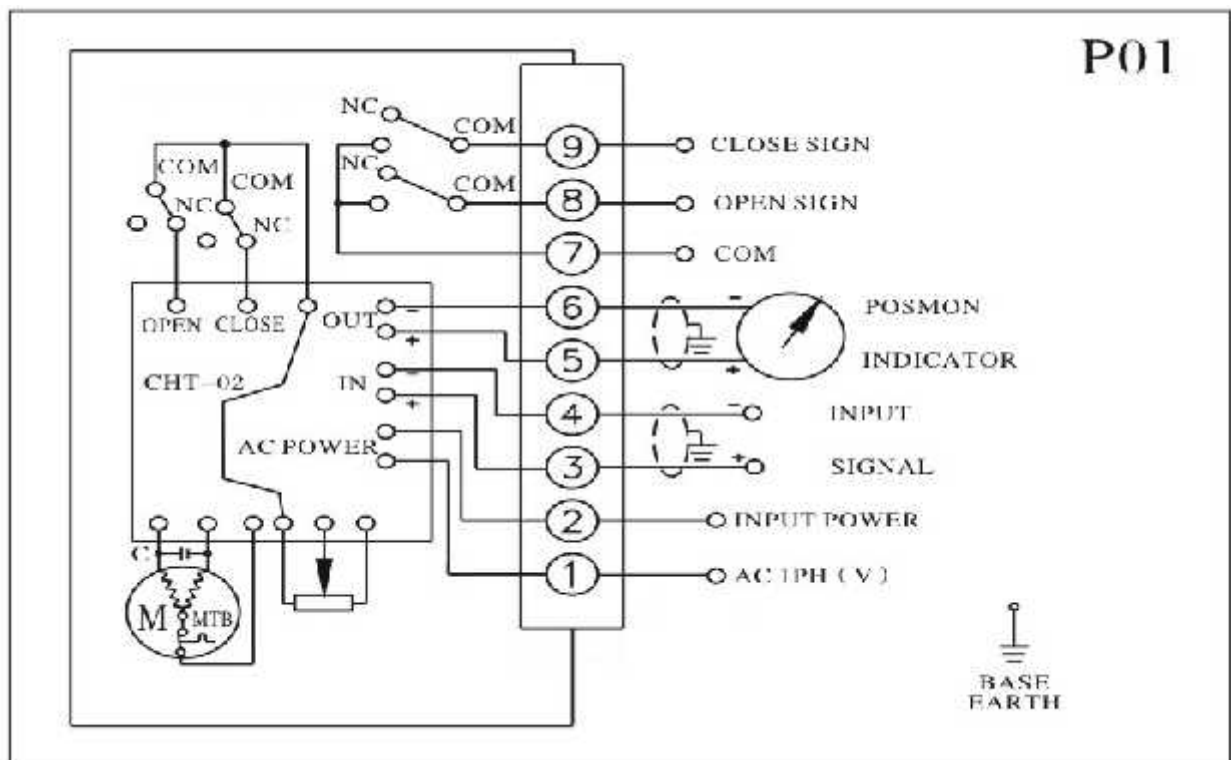


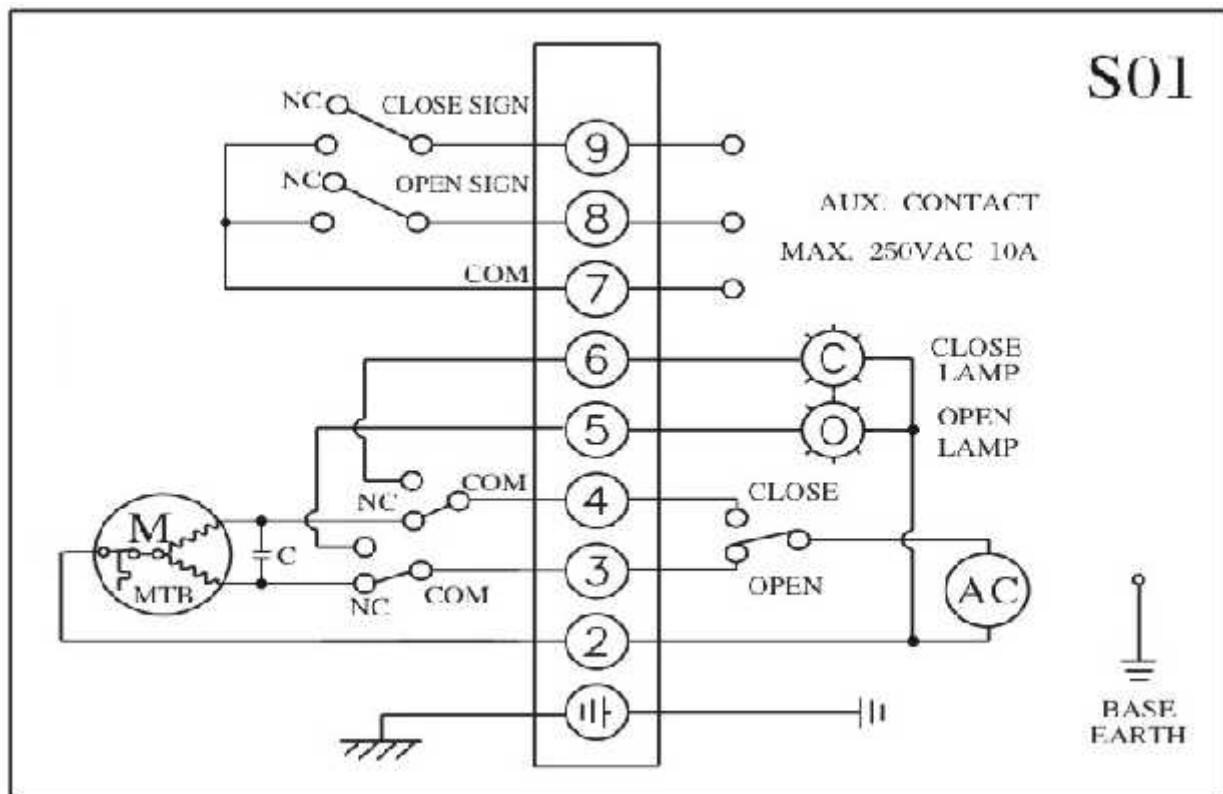
6. Wiring Diagram

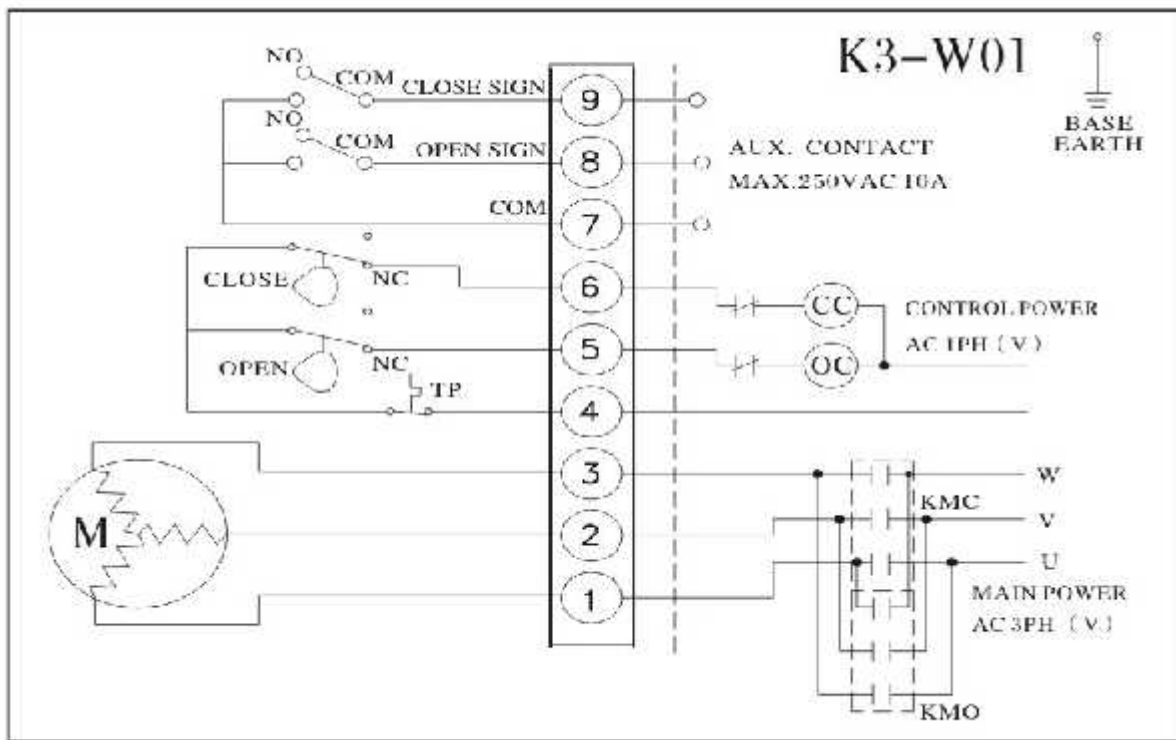
NOTE: Wiring Diagram is only for reference, which is subject to the wiring diagram attached to product actually.

6.1

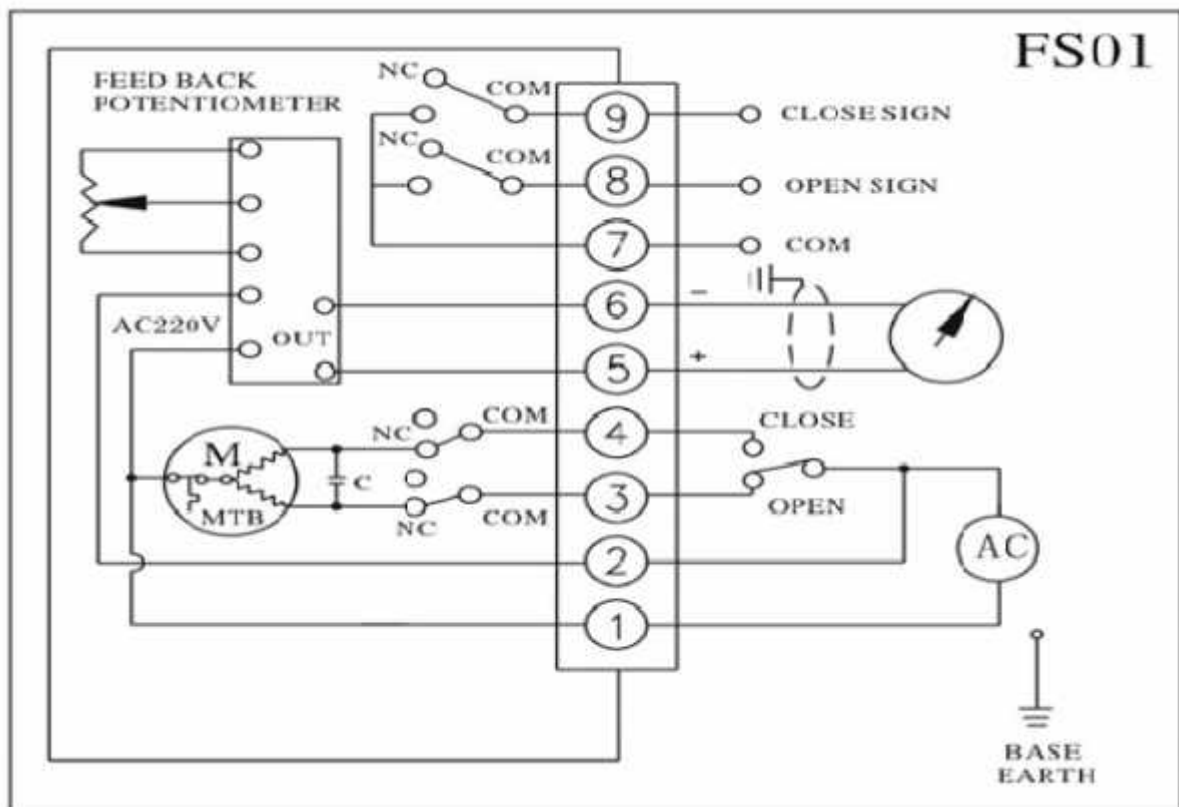
Analog quantity passive contact signal output wiring diagram



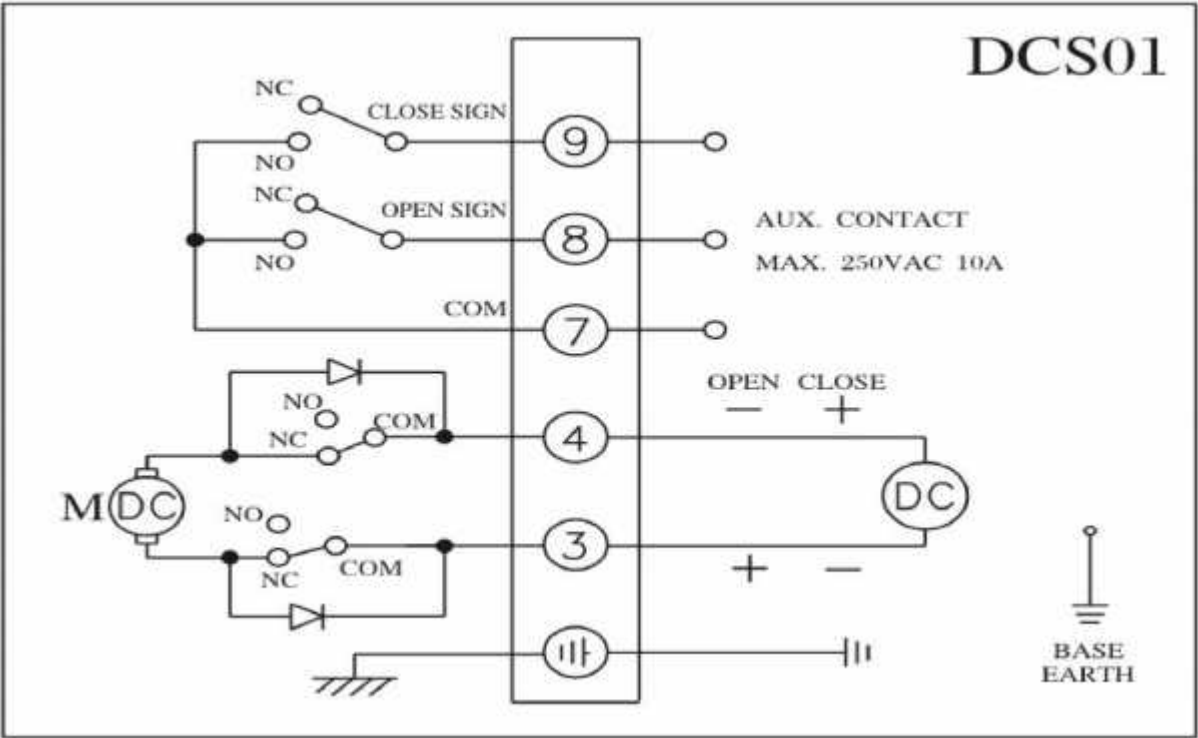




6.5 Open/Close input signal 4~20mA and Open/Close signal output wiring diagram



6.6 DC standard Open/Close passive contact signal output wiring diagram



7. Structure

Electric actuators is makeup of the following parts

- Shell: including shell and base
- Drive parts: Full sealing high-performance squirrel-cage motor for the power source
- Driving mechanism: Worm and gear drive units
- Proportion control units: separate with the mechanical units, easy to debug C
- Limit switch Units
- Opening Detected and Feedback Units.

8. Installation of Electric actuators

8.1 Installation sites

8. 1. 1 Notes of interior installation

- It's not a explosion-proof product, so please don't install in the place of explosive gases
- When installing in the submerged or outdoor, please note us in advance
- Please reserve space for repairing cables, manual operation. 8.

8.1.2 Notes of outdoor installation

- In order to avoid the rain, direct sunlight and so on, it needs to install a protective cover, or choose IP68 protection grade
- Please reserve space for repairing cables, manual operation.

8.2 The condition of ambient temperature and Fluid temperature

8. 2. 1 Ambient temperature

- Ambient temperature at $-30^{\circ}\text{C}\sim+60^{\circ}\text{C}$;
- When Ambient temperature is below zero, the machine needs to install space heater.

8.2.2 Fluid temperature

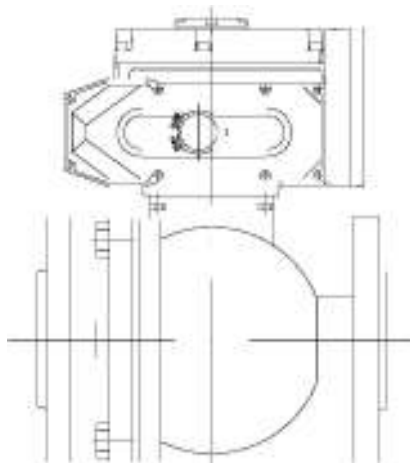
- When using with the valve, the heat of the fluid will move to the body, then the body temperature will rise.

8.2.3 3 When the fluid temperature is a high temperature, the bracket which is connecting with the valve need to make special treatment.

- Standard bracket: when the fluid temperature is below +65 'C, it use standard bracket or no need to use bracket;
- Intermediate temperate bracket: when the fluid temperature is over +65 'C, it use intermediate temperate bracket;
- High-temperature bracket: when the fluid temperature is over +180 'C, it use high-temperature bracket.

8.3 Connect with the valve

- Turning valves by hand, confirmed that it didn't t have abnormal situation, then turn to full-closed position;
- Fix the bracket on the valve;
- Put the electric actuator on the bracket, then screwing the bolts and nuts lightly;
- Put the electric actuator to the closed position, fixing valve mandrel and electric actuator with coupling and screw bolts;
- Screw the bolts between the electric actuator and the bracket;
- Rotate the electric actuator by handle to confirm non-eccentric, curved ramps, smooth movement, and pay attention to not over travel!



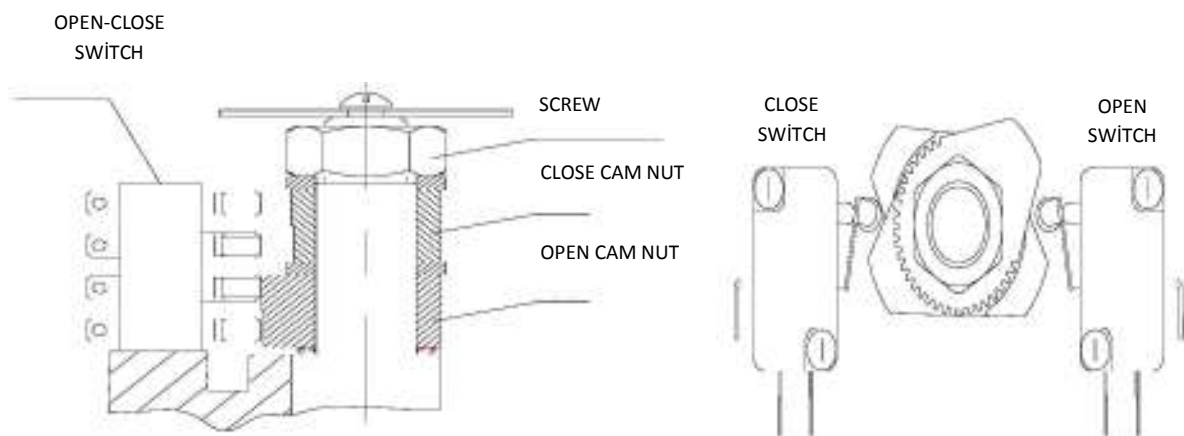
13. Note: Decrease hysteresis of the coupling as far as possible.

Pay attention to keeping the switch of electric actuator in line with the switch of the valve when installing. The flange of the electric actuator bottom conform to the standard 1S05211, if the valves which connect with the flange are also conform to this standard, it will be connect conveniently; if doesn't, it should be connecting with the bracket in addition.

9. Debug Description

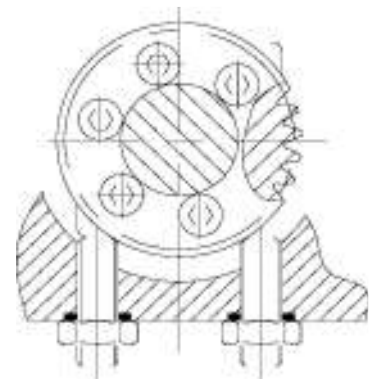
9.1 Stroke limit Adjustment

Turn round hand wheel making the electric actuator moved to the full-closed position. And loosen nuts on limit cam by spanner, rotating limit cam (yellow open, red close) to adjust to just push down limit switch (CLS) position, and then screw limit cam nut. So, it's the way to set the full-closed stroke limit position of the electric actuator. Full-opened position is setting as the same way.



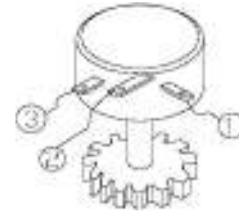
9.2. Mechanical limit Adjustment

Loosen the nuts of the mechanical limit, and then move the electric actuator to the full-closed position by hand, rotating the limit nuts, stop rotating when it comes across inside the fan-shaped gear, and then circle out two circles, screw the nuts at last. So, it's the way to set the full-closed mechanical position of the electric actuator. Full-open position is setting as the same way. Follow as the picture 14



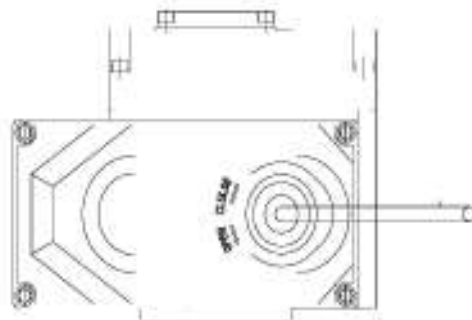
9.3 Potentiometer Adjustment

Potentiometer is used for exporting feedback signal in the actuators, it exports 3 pieces of terminals, there into (2) side connect with slide arm of potentiometer. (1) Side connect with the terminal which resistance between slide arms constantly decrease, when the actuator is opening movement, (3) side connect with the terminal which resistance between slide arms constantly decrease, when the actuator is closed movement. (Note: The potentiometer resistance should be not over-zero, jump phenomenon.) Rotating the valve to the wide-open position by handle, as per open to limit switch closed movement, measured with a multimeter to adjust the resistance between 2 and 1 side to $35\ \Omega \sim 60\ \Omega$. If it's not correctly, it can adjust through rotating drive gear of potentiometer.



10.1 Manual Operation

First of all, it should be cut off the power, when it's operating by hand; take off the rubber caps on the gear cover, put the accessory handle in the hexagonal hole; rotate the handle clockwise direction to reduce the opening.



Note: Opening to the full-open or full closed position, limit switch turns half circle, it will comes across mechanical block, if rotate excessively, it would result the damage of other parts, so it should be avoid excessive force.

10.2 Electric operation

Before electric operation, checking opening meters in line with the angle of valves by the methods of manual operation (full-open, full-closed);

Check the wiring correct, at the same time need to use an external switch to confirm opening and closing movements;

After confirm the over status, then start electric operation

NOTE

Check wiring diagram, power supply, input/output signal correctly.

Don't change the internal wiring.

If the power supply is 3 phase, it should be checking the rotating direction.

Enable the electric actuator lies in a half on/off position, turn on electricity and input the open signal.

If the electric actuator runs to the open position, it means the wiring is correct

If the running direction is opposite, it must be change 2 pieces wiring in 3 pieces of wiring.

11. Maintenance

Lubrication: Because of using the long life, good pressure resistance of special Mo-based grease, so it doesn't need to add the oil;

Regular operation: When the valve works infrequently, it should be drive the machine regularly, checking abnormality or not.

Note: Debugging description of analog volume adjustment type, please refer to the specification of the actuator control module part.