

# SINTEK

## SET Small Electric Actuator

Installation and Operation Instructions



To make flow control easier and safer

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### 1 Summary

**SET-** series electric actuator is used for control 0°-270° rotation of the valves and other similar products, such as butterfly valves, ball valves, dampers, flapper valves, plug valves. It's widely used in petroleum, chemical, water treatment, shipping, paper making, power plants, heating, light industry and other industries. It drives by 380V/220V/110V AC power, control signal is 4-20mA current signal or 0-10V DC voltage signal, so the valve can be moved to the desired location to achieve automatic control. The maximum output torque is 2000N.M.

### 2 Performance Features

#### 1.Shell

The shell is made of aluminium alloy, with anodic oxidation treatment and polyester powder coating. It is strong corrosion-resistant and enclosure IP67,NEMA 4 and 6, IP68 is optional.

#### 2.Motor

Fully enclosed squirrel-cage asynchronous motor, small, large torque, and small inertia force F-class insulation rating, with thermal protection to avoid damaging.

#### 3.Manual Structure

The design of handle is safe, reliable, labor-saving, small. If power is failure, operated by handle.

#### 4.Indicator

Install indicator in the center shaft and adopts convex mirror design, no cumulate water, more convenient to observe.

#### 5.Space Heater

It is used for controlling temperature to avoid condensing internal of housing and keep dry.

#### 6. Sealing

Well sealing performance and enclosure IP67, IP68 is optional.

#### 7. Limit Switch

Mechanical limit stoppers are adjustable, safe and reliable; and not affected by excessive handle.

#### 8.Self-locking

Accurate worm and worm gear transfer large torque efficiently, high efficiency, low noise (Max.50dB),long life, stable and reliable transmission parts, no need to refuel.

#### 9.Anti-off Bolt

The bolt attached to the shell and be not off when remove the shell.

#### 10. Installation

The installation size meets 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.

#### 11. Circuitry

Controlling circuit meets the single-phase or three-phase power supply standard, circuit layout is reasonable and compact, terminals meet various of additional functional requirements effectively.

### 3 Performance Parameters

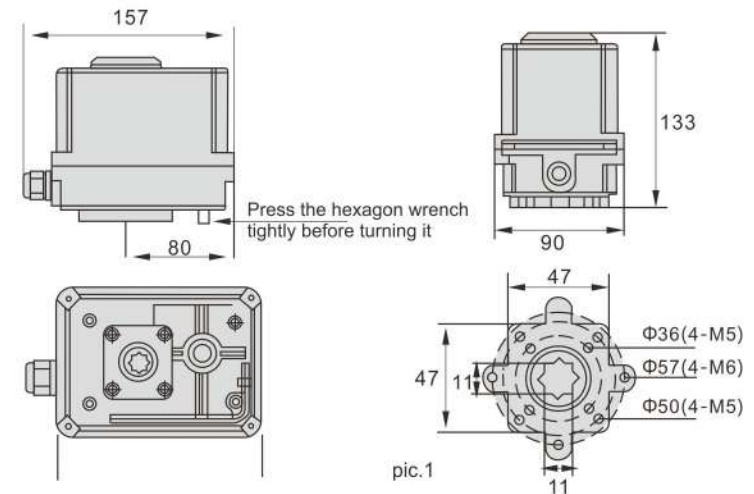
Model	Max output torque	Operating time 90 °		Output shaft	Motor	Rated current(A) 50/60HZ			Weight
	N.M	Special (S)	Standard (S)	MM	W	AC 220V	AC 380V	DC 24V	kg
<b>SET-30</b>	30	5/10	15	11x11	15	0.20	0.05	1.00	1.0
<b>SET-50</b>	50	5/15	30	14x14 Φ13-5	20	0.30	0.15	2.00	3.5
<b>SET-100</b>	100	15/30/60	30	17x17 Φ16-5	30	0.35	0.19	2.50	4.7
<b>SET-150</b>	150	15/30/60	30	17x17 Φ19-5	60	0.90	0.22	5.00	5.0
<b>SET-200</b>	200	5/15/90	40	22x22 Φ22.5-5	70	0.80	0.25	8.50	10.0
<b>SET-500</b>	500	5/15/90	40	22x22 Φ28.5-8	108	0.90	0.45	8.50	10.5
<b>SET-1000</b>	1000	5/15/40	40	27x27 Φ32-8	118	1.00	0.50	9.00	11.0
<b>SET-2000</b>	2000	5/15/40	90	27x27	140	1.10	0.60	10.0	11.5

### 4 Standard Technical Parameters

Shell	Aluminum alloy waterproof level:IP67, NENA4and6	SET-30 is ABS material
Power supply	110/220VAC 1Phase 380/440VAC 3 Phase,50/60Hz, ±10%	
Control supply	110/220VAC 1Phase 50/60Hz,±10%	
Motor	Squirrel-cage asynchronous motor	SET-30 is permanent magnet synchronous motor
Limit switch	2x ON/OFF, SPDT, 250V AC 10A	
Auxiliary Limit switch	2x ON/OFF,SPDT,250V AC 10A	
Stroke	90°~270±10°(When it's over 90° please inform in advance)	0°~270°
Speed protection	Inside hot protection	
Operating temperature	On 120°C±5°C / OFF 97°C±15°C	
Indicator	Continuous position indication	
Manual operation	Mechanical handle (Optional:fixing with the handwheel)	
Self-locking device	Provide self-locking by worm and worm gear	
Mechanical limit	2 pieces of adjustable outside bolts	
Space heater	7-10w (110VAC/220VAC) Anti-Condensation	
Cable interface	2 piecesM18x1.5	
Ambient temperature	-20°C~+70°C	
Lubrication	Aluminium base grease (Ep)	
Material	Steel,aluminium alloy Aluminium bronze	
Ambient humidity	Max 90% RH	
Shock survival	XYZ10g, 0.2-34Hz,30 minutes	
External coating	Dry powder, epoxy polyester	Non-condensation

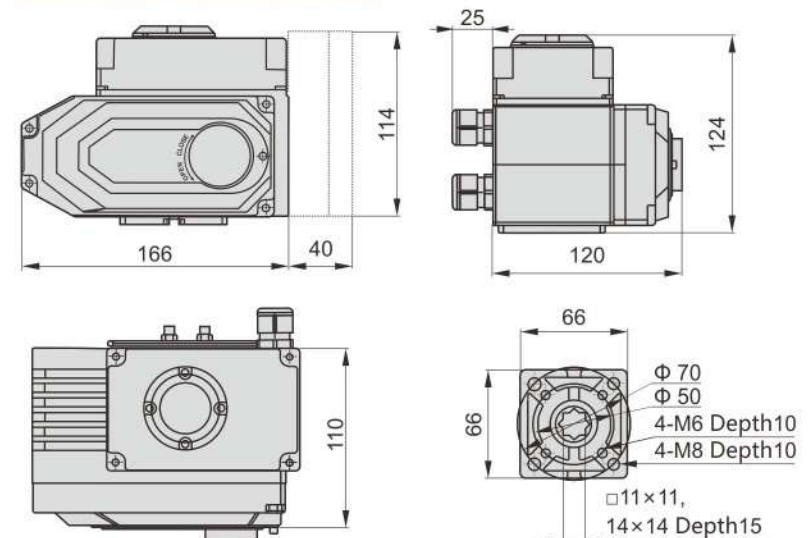
### 5 Overall Dimensions

#### 1.SET-30 appearance and installation dimension



pic.1

#### 2.SET-50 appearance and installation dimension (The part of broken line is used for analog quantity control box. On-off model do not have this size)



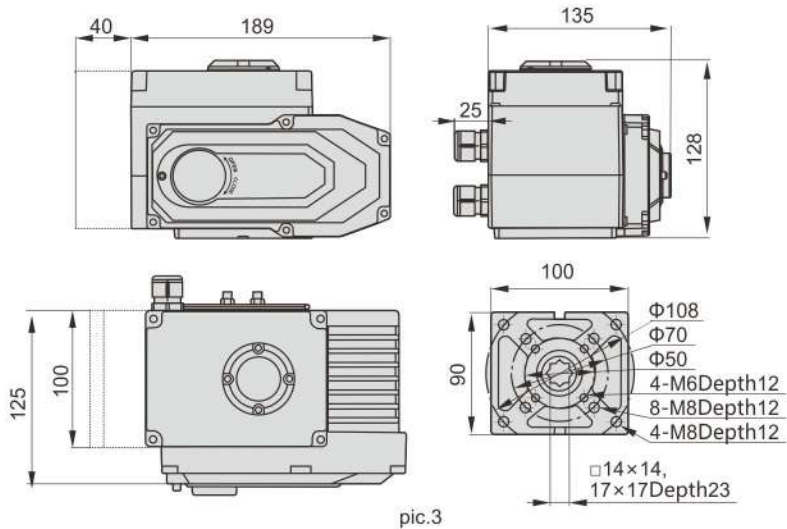
pic.2



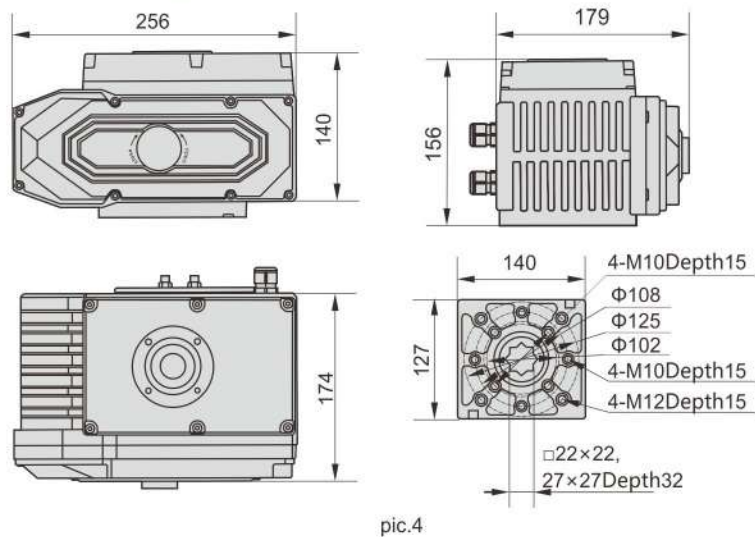
# SET Small Electric Actuator

## Installation and Operation Instructions

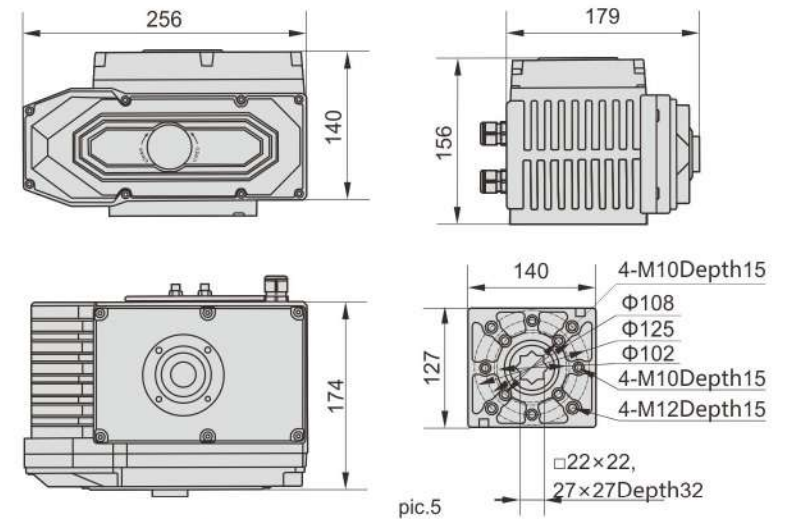
3.SET-100-150 appearance and installation dimension  
 The part of broken line is used for analog quantity control box.  
 On-off model do not have this size)



4.SET-200-500 appearance and installation dimension

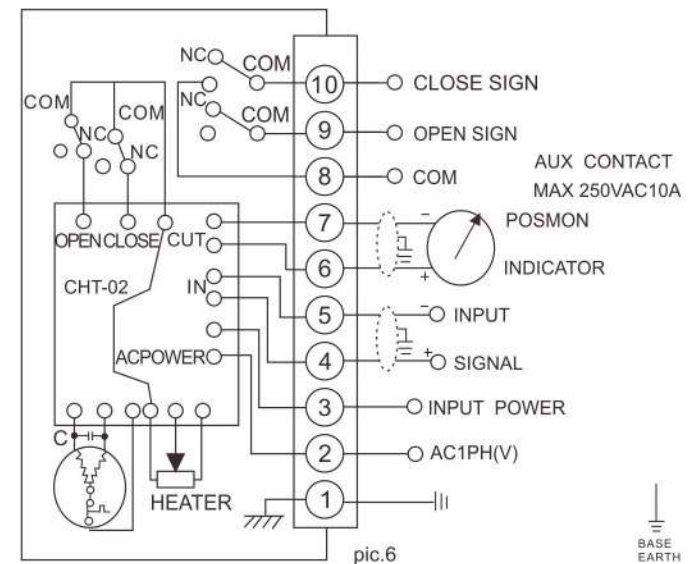


5.SET-1000-2000 appearance and installation dimension

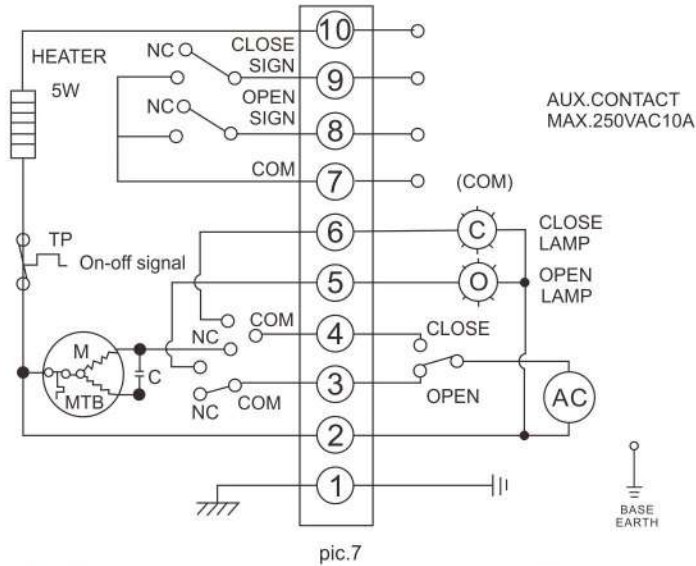


### 6 Circuit Diagram

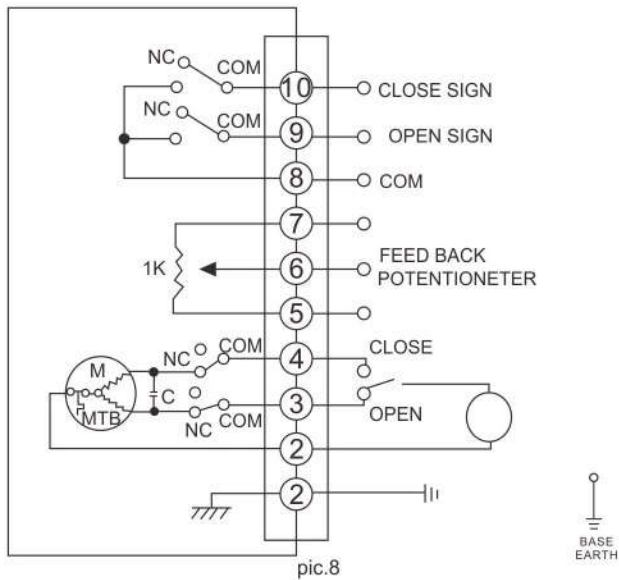
1.Analog quantity 4-20mA, 0-10V passive contact signal output circuitry



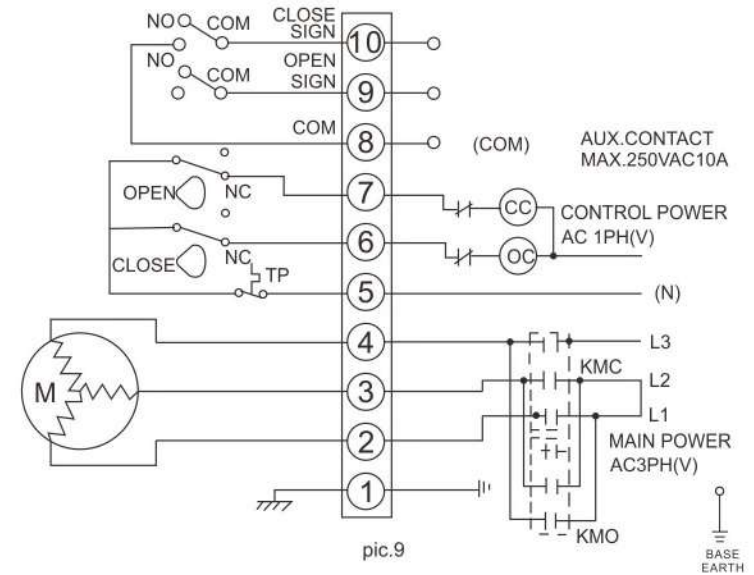
### 2. Standard on-off passive contact signal output circuitry



### 3. Angle feedback and passive contact signal output circuitry



### 4. Three phase passive contact ( Outer control on-off model )



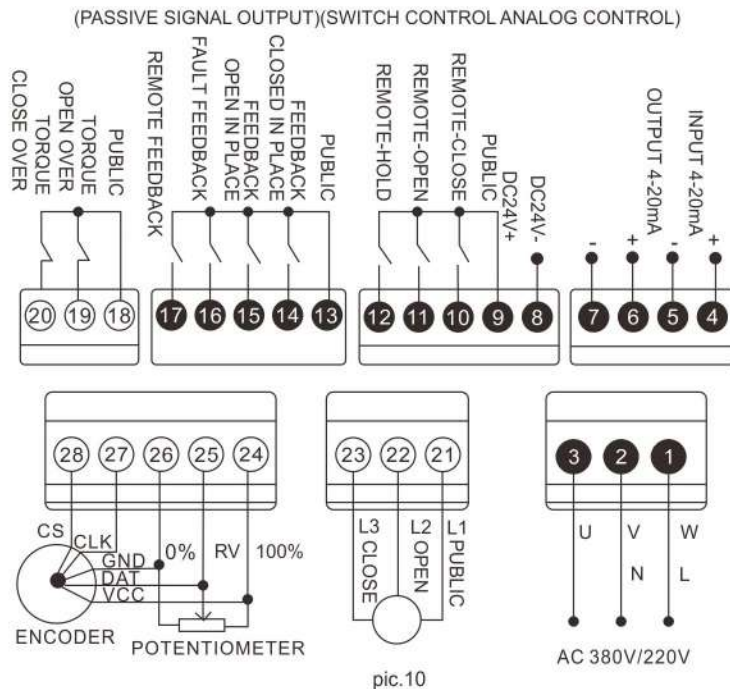
**Note:** When connecting, the valve should be in the semi open and closed position. Pay attention to the order of the phase line to ensure that the travel switch can be positive to control the valve for opening and closing, See picture 15, using a small screwdriver in time to press the corresponding limit switch. If it out of control , change the phase line position, otherwise it will damage the actuator.

#### Wiring instructions :

- 1.Terminal 2.3.4 is connected with three-phase alternating current , and the positive and negative rotation of the motor is realized by the external phase inversion circuit;
- 2.Terminal 5 is the common point of the external control circuit;
- 3.Terminal 6 is "open" operation control;
- 4.Terminal 7 is "close" operation control;
- 5.Terminal 8 is the common end of passive contacts;
- 6.When the "open" operation is in place, terminal 9 is "full open";
- 7.When the "close" operation is in place, terminal 10 is "off signal".

### 5. Wiring method and diagram

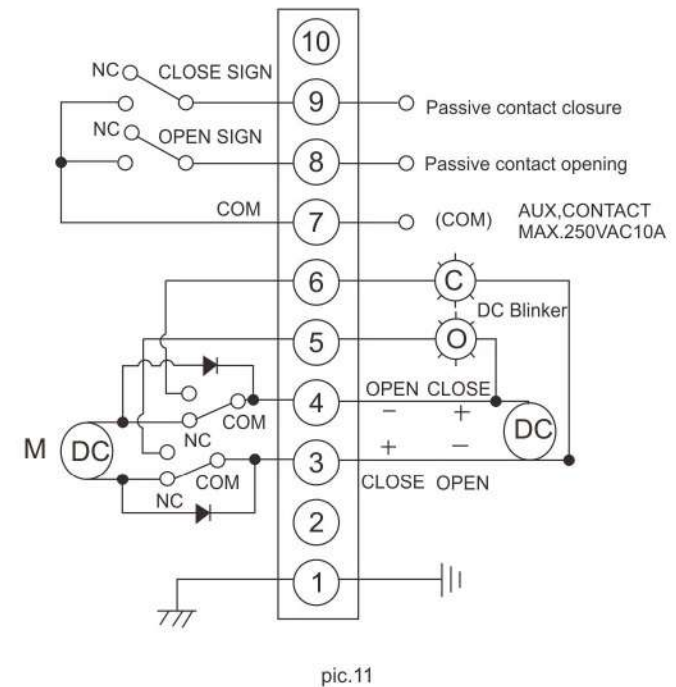
INTERNAL CONNECTION  
CONTROL ROOM CONNECTION



#### NOTE

- through the parameters of the P=9. 1 into the IP free choice for the regulation of the switch or the amount of one of its working mode, but can not be used simultaneously Section type and switch type (5 kinds of switch type control mode), factory default value for ip=0 or switch type ip=1, please refer to the remote control signal setting.
- open and close the torque port need to connect the switch type with normally closed limit switch, factory default value of Md=2, when not using this function, Can modify the Md=1 parameters through the P=9.5 shield this port function, please refer to the "actuator wiring type settings".
- the common end of the switch control is DC24V+, the voltage is provided by this module, without access to external power supply.
- the product can be connected potentiometer or encoder, please refer to the "valve sampling selection".

### 6. DC standard on-off passive contact signal output circuitry



#### 5 Structure

Electric actuator is make up of the following parts

- Shell : including shell and pedestal
- Drive part : full sealing high - performance squirrel- cage motor for the power source
- Driving mechanism : worm gear drive part
- Ratio control parts : Separation from the mechanical part, easy to debug
- Limit switch part
- Opening detected and feedback parts