

本公司其它产品

Other produces of our company

直行程电动执行器
Linear electric actuator

多回转电动执行器
Muli-turn electric actuator

防爆电动执行器
Explosion-proof electric actuator

气动执行器
Pneumatic actuator

快速开关电动执行器
Express open/closed electric actuator

极慢电动执行器
Hyperslow electric actuator

各种电压直流执行器
Various Voltage DC actuator

阀门电动执行器

Valve Electric Actuators



使用说明书

The use specifications

1.概述 Summary

电动执行器用于控制0°-270°旋转的阀门及其他同类产品，如蝶阀，球阀，阻尼器，挡板阀，旋塞阀，百叶阀等。广泛应用于石油，化工，水处理，船舶，造纸，电厂，供暖，轻工等行业。可由380V / 220V / 110V交流电源或24V / 110V直流电源驱动，输入4-20mA电流信号或0-10V直流电压信号作为控制信号。将阀门移动到正确的位置，实现自动控制，其最大输出扭矩为2000N•M。（Ce认证）。

electric actuator is used for controlling 0°-270° rotation of the valves and other similar products, such as butterfly valve, ball valve, damper, flapper valve, plug valve, louver valve and so on. It widely applies to petroleum, chemical, water treatment, shipping, paper making, power plant, heating, light industry and other industries. It can be driven by 380V/220V/110V AC power or 24V/110V DC power, inputs 4-20mA current signal or 0-10V DC voltage signal as control signal. It moves the valve to the right position, and achieves automatic control, its maximum output torque is 2000N·M. (CE certificate approved).

2.性能特点 Performance Feature

2.1 壳体 – 盖体由硬质铝合金制成，具有阳极氧化处理和聚酯粉末涂层。高耐腐蚀，防水等级为IP67。IP68是可选的。

Actuator body —The body is made of hard aluminum alloy with anodize treatment and polyester powder coating. It is highly corrosion-resistant and waterproof level is IP67. IP68 is optional.

2.2 电机 – 全封闭式鼠笼式电机，体积小，扭矩大，惯性力小，F级绝缘等级。内部热保护开关避免损坏电机。

Motor —Fully enclosed squirrel-cage motor with small size, large torque, small inertia force and F class insulation rating. Internal hot protection switch avoids damaging of the motor.

2.3 手动结构 – 手柄设计保证安全可靠、省力、体积小。当执行器未通电时，可通过手柄操作。当您不需要手动操作时，将扳手放在执行机构背面的插槽中。

Manual Structure —The design of spanner is safe, reliable, labor-saving and small. When the actuator is not energized, it can be operated by handle. When you don t need manual operation, put the spanner in the slot on back side of the actuator.

2.4 位置指示器 – 安装在中心轴上，用于观察阀门的位置。为了避免沉积和观察方便，它是由凸透镜设计的。

Position Indicator – Installed in the center axis for observing position of valve. To avoid ponding and observe conveniently, it is designed by convex lens.

2.5 密封 – 密封性能好。其防护等级为IP67，IP68也是可选的。

Seal — It has good seal performance. And its protection class is IP67, also IP68 is optional.

2.6 限位开关 – 机械和电子双限位。机械限位螺丝可调，安全可靠。电子限位开关由凸轮机构来控制，简单的调整机构能精确方便的设定位置，且不受手轮过量的影响。

Limit Switch—Mechanical and electronic double limit. Mechanical limit screw is adjustable, safe and reliable.

Electronic limit switch is controlled by the cam. Position of limit switch can be set accurately and conveniently by simple adjustment.

2.7 自锁—精密蜗轮蜗杆传动大扭矩，噪音低（最高50dB），使用寿命长。自锁功能可防止反转，确保稳定性和可靠性。高效润滑油在出厂前已经添加，不再需要添加。

Self-lock— Precise worm and worm gear transfer large torque efficiently with low noise(max. 50 dB) and long life. The self-lock function prevents inversion and insure stability and reliability. High-effective lubricant oil has been added ex-factory, it doesn t need to add any more.

2.8 防脱螺栓— 拆下盖子时，螺栓将附着在盖板上。所有外部螺栓均采用不锈钢制成。

Anti-off bolt — The bolt will attach to the cover when removing the cover. All external bolts are made of stainless steel.

2.9 安装— 电动执行器底部的安装尺寸符合国际标准ISO5211和DIN3337。孔成四方形，易于通过线性或45°安装。执行器可以垂直或水平安装。

Installation — Installation size at the bottom of Electric Actuator meets international standard ISO5211 and DIN3337. The output hole is ditetragon that it is easy to install by linear or 45°. The actuator can be installed vertically or horizontally.

2.10 线路— 控制线路符合单相或三相电源标准，布局合理紧凑。端子有效满足各种附加功能要求。

Circuit — Controlling circuit meets single-phase or three-phase power supply standard with reasonable and compact layout. Terminals meet various of additional functional requirements effectively.

3.性能参数 Performance Parameter

| 型号 Model | 最大输出扭矩 Max output torque | 动作时间 Operating time to 90°(S) | | 电机 Motor (W) | | 额定电流 Single-phase rated current (A) | | | | | | 重量 Weight |
|-------------|-----------------------------|----------------------------------|----|-----------------|-----|--|--------|--------|--------|-------|--------|--------------|
| | N·M | AC | DC | AC | DC | AC24V | AC110V | AC220V | AC380V | DC24V | DC220V | Kg |
| 003 | 30 | 30 | / | 8 | / | / | / | 0.2 | / | / | / | 2.1 |
| 005 | 50 | 30 | 10 | 10 | 15 | 2.2 | 0.48 | 0.24 | 0.15 | 1.2 | 0.15 | 3.4 |
| 008 | 80 | 30 | 10 | 12 | 15 | 2.2 | 0.48 | 0.27 | 0.16 | 1.2 | 0.15 | 3.4 |
| 010 | 100 | 30 | 10 | 16 | 25 | 3 | 0.64 | 0.32 | 0.25 | 1.6 | 0.2 | 4.6 |
| 015 | 150 | 30 | 10 | 23 | 25 | 3.8 | 0.68 | 0.35 | 0.25 | 1.6 | 0.2 | 4.6 |
| 020 | 200 | 30 | 15 | 40 | 40 | 5 | 0.9 | 0.48 | 0.25 | 2.6 | 0.3 | 11 |
| 040 | 400 | 30 | 15 | 60 | 60 | 5 | 0.9 | 0.48 | 0.25 | 2.6 | 0.3 | 11.8 |
| 060 | 600 | 30 | 15 | 90 | 70 | 8.5 | 2 | 0.92 | 0.45 | 4.5 | 0.5 | 12 |
| 100 | 1000 | 40 | 25 | 130 | 100 | 9 | 2.2 | 1 | 0.48 | 5.0 | 0.6 | 12.5 |
| 200 | 2000 | 40 | 25 | 25 | 100 | 10 | 2.6 | 1.1 | 0.51 | 5.0 | 0.6 | 68 |
| 300 | 3000 | 40 | 25 | 25 | 100 | 10 | 2.6 | 1.1 | 0.51 | 5.0 | 0.6 | 68 |

4.标准技术参数 Standard Technical Parameter

| | |
|---|---|
| 外壳 Actuator body | 铝合金外壳，防水级别：IP67，NEMA4或者6 Aluminum alloy, waterproof level: IP67, NEMA4 or 6 |
| 电机电源 Power Supply | 24/110/220/380V AC ±10% , 24/110/220VDC 50/60HZ ±10% |
| 电机 Motor | 鼠笼式异步电动机 Squirrel-cage Asynchronous Motor |
| 限位开关 Limit Switch | 2* 开/关, SPDT, 250V AC, 10A 2* open/close, SPDT, 250V AC, 10A |
| 辅助限位开关 Assistant Limit Switch | 2* 开/关, SPDT, 250V AC, 10A 2* open/close, SPDT, 250V AC, 10A |
| 行程 Stroke | 90° - 270± 10° (90°以上提前说明) 90° - 270± 10° (please inform us if over 90°) |
| 失效保护/操作温度 Failure Protection/Operating Temperature | 内置热保护开: 120°C ± 5°C, 关: 97°C ± 15°C Internal thermal protection. Open: 120°C ± 5°C, Close: 97°C ± 15°C |
| 指示器 Indicator | 连续的位置指示 Continuous position indicate |
| 手动操作 Manual Operation | 机械手柄（可选装手轮） Spanner (option: handwheel) |
| 自锁装置 Self-lock Device | 涡轮、蜗杆机构提供自锁 Self-lock by worm and worm gear |
| 机械限位 Mechanical Limit | 2个外部调整 External adjusting bolts (2 pieces) |
| 接线孔 Connecting Hole | M18(2个) M18 (2 pieces) |
| 环境温度 Ambient Temperature | -20°C ~+70°C |
| 润滑 Lubrication | 铝基润滑脂（EP型） Aluminum-base grease(EP type) |
| 材料 Material | 钢、铝合金、铝青铜、聚碳酸脂 Steel, Aluminum alloy, Aluminum bronze, Polycarbonate |
| 环境湿度 Ambient Humidity | 最大90% RH Max 90% RH |
| 抗震性能 Anti-vibration | X Y Z 10克, 0.2~34HZ, 30 分 X Y Z 10g, 0.2~34HZ, 30 minutes |
| 外表涂层 External Coating | 干粉、环氧聚酯 Dry Powder Epoxy Polyester |

5.5 200~300 外观及安装尺寸 (虚线部分为模拟量控制盒, 开关型无此尺寸)
200~300 Appearance and installation dimension(The pait of broken line is used for analog quantity control box, On-off model don 't have this size.)

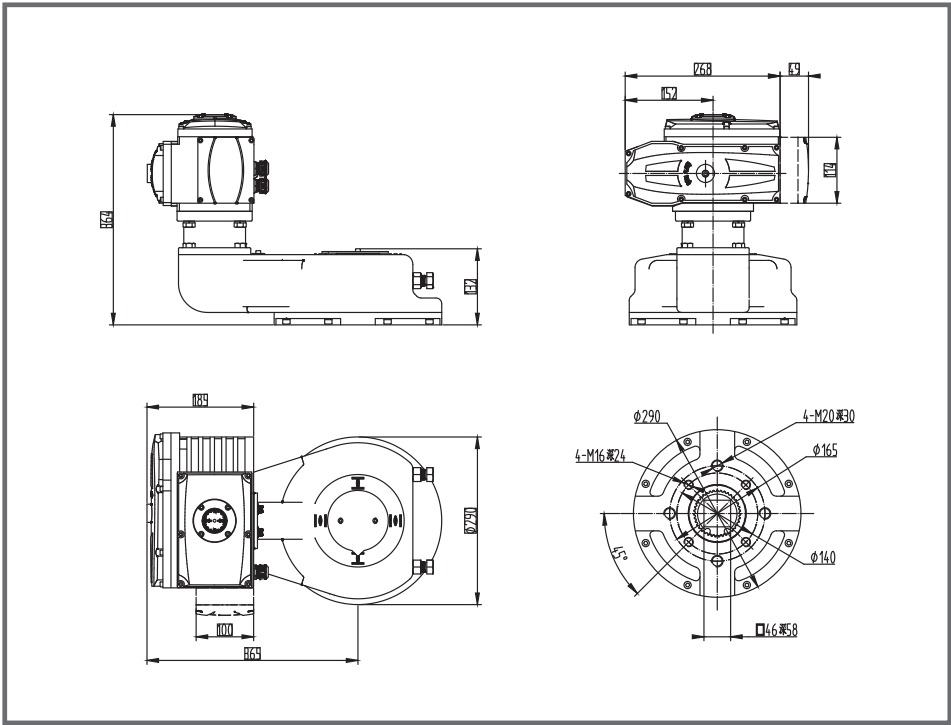


图5

6. 线路图 Circuit Diagram

6.1 标准开关无源触点信号输出线路图 (AC 220V/110V/24V)
Standard on-off passive contact signal output circuitry

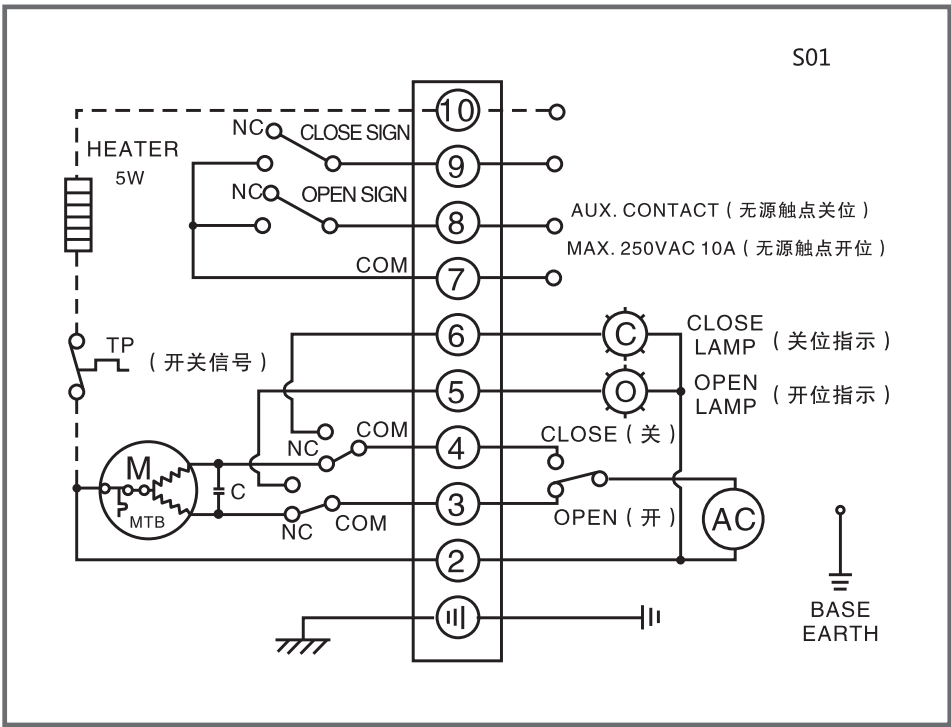


图6

6.2 模拟量无源触点信号输出线路图 (AC 220V/110V/24V)
Analog quantity passive contact signal output circuitry

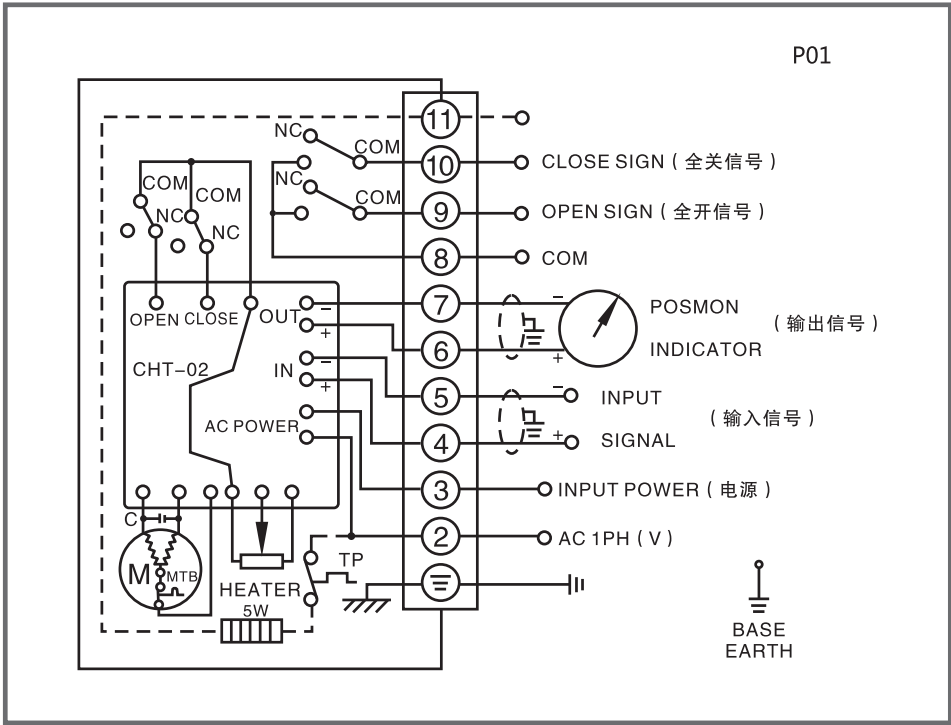


图7

6.3 直流标准开关无源触点信号输出线路图 (DC 24V/220V)
DC standard on-off passive contact signal output circuitry

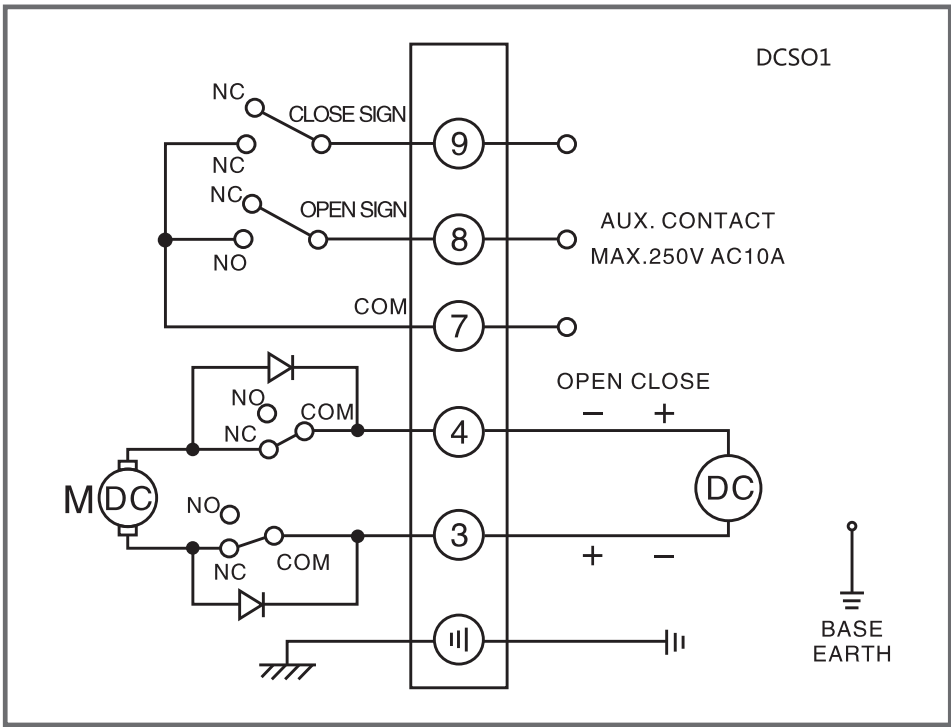


图8

6.4 开关量输入4~20mA信号及开关信号输出线路图(AC 220V/110V/24V)
On-off input 4~20mA signal and open-closed signal output circuitry

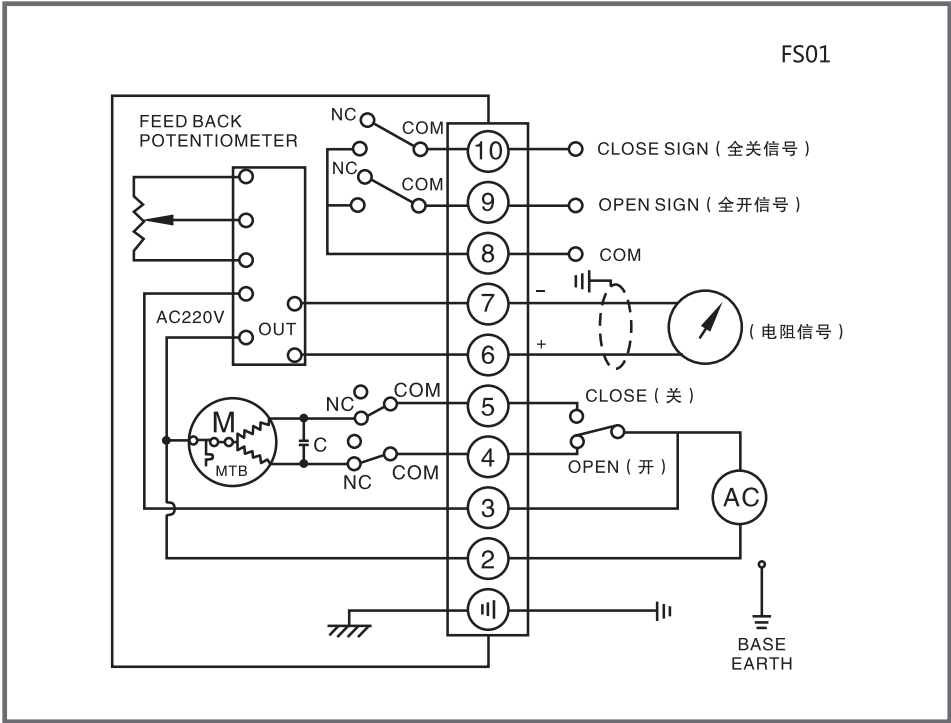


图9

6.5 380/440VAC/50/60Hz,3相(外置控制开关型)
380/440VAC/50/60Hz,3Ph(Outer control On-off type)

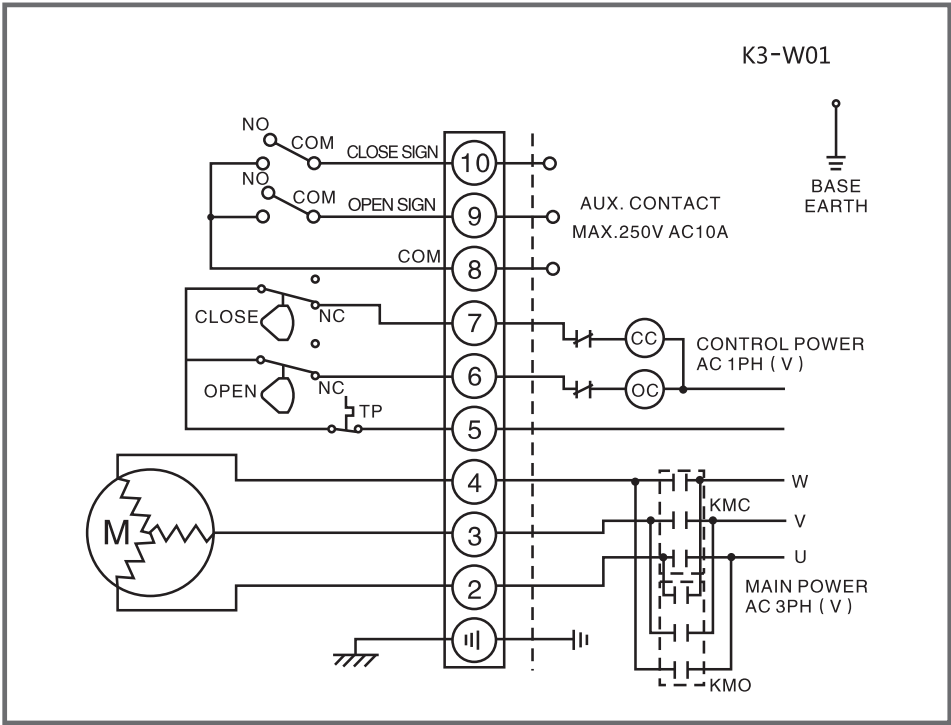


图10

6.6 380/440VAC/50/60Hz,3相 (调节型)
380/440VAC/50/60Hz,3PH (modulating type)

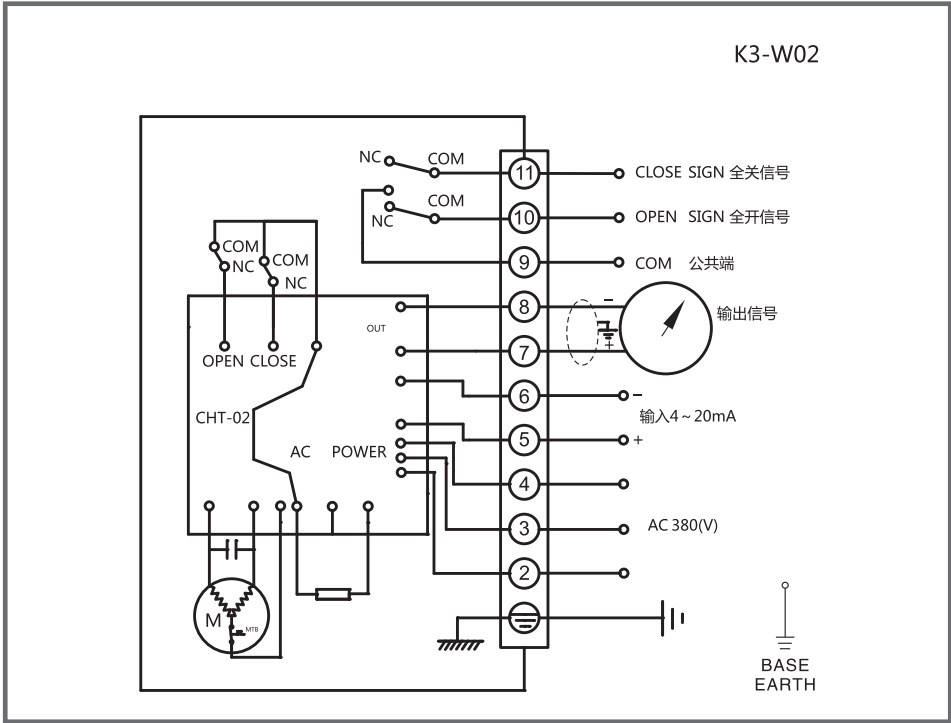


图11

7. 结构 Structure

电动执行器主要由以下几部分组成 Electric actuators is make up of the following parts:

- ◎壳体部分：包括外壳及底座部分；
Shell: including shell and pedestal
- ◎驱动部分：以高性能全封闭鼠笼式电机为动力源；
Drive parts: Full sealing high-performance squirrel-cage motor for the power source
- ◎传动机构：蜗轮与齿轮传动部分；
Driving mechanism: Worm and gear drive parts
- ◎比例控制部分：与机械部分分离，便于调试；
Ratio control parts: separate with the mechanical parts, easy to debug
- ◎限位开关部分；
Limit switch part
- ◎开度检测与反馈部分。
Opening Detected and Feedback Parts

8. 执行器的安装 Installation of Electric actuators

8.1 安装场所 Installation sites

8.1.1 室内安装的注意事项 Notes of interior installation

- ◎属非防爆产品，所以不要安装在有爆炸性气体的地方；
It's not a explosion-proof product, so that please don't install in the place of explosive gases;
- ◎安装在有水淹没及户外请提前说明；
When installing in the submerged or outdoor, please note us in advance;
- ◎请预留接线，手动操作等维修用空间。
Please reserve space for repairing cables, manual operation;

8.1.2 室外安装的注意事项 Notes of outdoor installation

◎为了避免雨水，阳光直射等问题，需要安装保护盖，或选用防护等级 IP68

In order to avoid the rain, direct sunlight and so on, it needs to install a protective cover,or choose IP68 protection grade.

◎请预留接线、手动操作等维修用空间。

Please reserve space for repairing cables, manual operation.

8.2 环境温度、流体温度条件The condition of Ambient temperature and Fluid temperature

8.2.1 环境温度 Ambient temperature

◎环境温度在-30℃~+60℃

Ambient temperature at -30℃~+60℃

◎环境温度为零度以下时，在机内加装除湿加热器。

When ambient temperature is below zero, the machine needs to install space heater.

8.2.2 流体温度Fluid temperature

◎与阀门配套使用时，流体的热量会传到机体上面，机体温度会升高。

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

8.2.3 流体温度属高温时，与阀门连接的支架要作特别处理

When the fluid temperature is a hightemperature, the bracket which is connecting with the valve need to make special treatment

◎标准支架：流体温度+65℃以下使用标准支架或免支架

Standard bracket: when the fluid temperature is below +65℃,it use standard bracket or no need to use bracket;

◎中温支架：流体温度+65℃以上使用中温支架

Intermediate temperate bracket:when the fluid temperature is over +65℃,it use intermediate temperate bracket;

◎高温支架：流体温度+180℃以上使用高温支架

High-temperature bracket:when the fluid temperature is over +180℃, it use high-temperature bracket.

8.3 与阀门的连接 Connect with the valve

① 手动转动阀门，确认无异常情况，并转到全闭位置；

Turning valves by hand, confirmed that it didn’ t have abnormal situation, then turn to full-closed position;

② 将支架固定在阀门；

Fix the bracket on the valve;

③ 将电动装置放在支架上用螺栓和螺母轻轻拧上；

Put the electric actuator on the bracket,then screwing the bolts and nuts

lightly;

④ 将电动装置转到关闭位置，用连轴器和螺钉将阀门芯轴和电动装置输出轴固定；

Put the electric actuator to the closed position, fixing valve mandrel and

electric actuator with coupling and screw bolts;

⑤ 拧上电动装置和支架间的螺钉；

Screw the bolts between the electric actuator and the bracket;

⑥ 用手柄转动电动装置，确认无偏心、弯斜、运动平稳，注意不要超程！

Rotate the electric actuator by handle to confirm non-eccentric, curved

ramps, smmooth movement, and pay attention to not over travel!

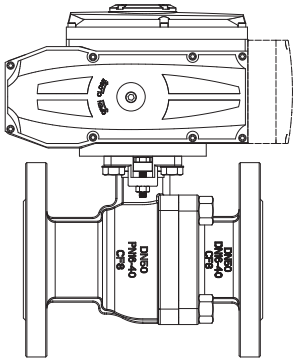


图12

注意事项：连轴器尽量减小回差

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

安装时，注意使执行器的开关与阀门的开关一致。执行器底部的法兰符合 ISO5211 标准，如果与之连接的阀门也符合此标准，则可方便连接；如不符合此标准，则需另加支架连接。

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 ISO5211, 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 conncting with the bracket in addition.

9. 调试说明 Debug Description

9.1 行程限位的调整 (图13，图14) Adjustment of stroke limit

转动手轮使执行器运动到阀门全关的位置。然后，用扳手松开限位凸轮固紧螺母，转动限位凸轮(黄色开，红色关)将其调整到恰好压下限位开关(CLS) 的位置，再将限位凸轮螺母固紧。这样就设定好了执行器全关时行程限位的位置。全开时的位置同样方法设定。

Turn round handwheel 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 adjusting 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.

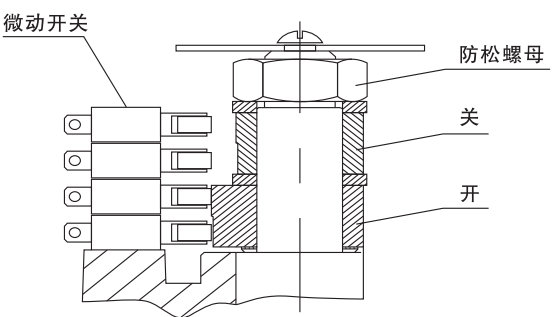


图13

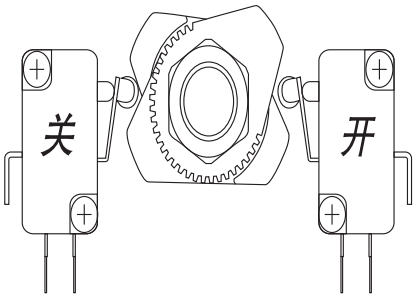


图14

9.2 机械限位的调整 Adjustment of mechanical limit

松开机械限位螺钉的锁紧螺母，然后手动使执行器运动到全关的位置，旋转限位螺母，当其碰到里面的扇形齿轮后停止转动，再旋出两圈，最后上紧锁紧螺母。这样就设定好了执行器全关时的机械限位的位置。全开时的位置可同样设定。如图15所示：

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 theelectric actuator.Full-open position is setting as the same way.Follow as the picture 15:

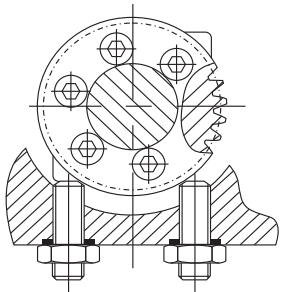


图15

9.3 电位器的调整 (图16) Adjustment of potentiometer

电位器在执行器中作为一种反馈信号输出，有三个输出端子，其中②脚接电位器的滑臂。①脚接执行器开动作时，与滑臂之间的电阻不断减小一端，③脚则接执行器关闭动作时与滑臂之间的电阻不断减小一端 (注意：电位器不应出现阻值过零，跳变现象)。用手柄转动阀门到全开位置，以开到限位开关动作为准，用万用表测量，将接线端子上②脚①脚电阻调整到 35Ω - 60Ω 之间。若不正确可通过转动电位器传动齿轮调整。

Potentiometer is used for exporting feedback signal in the actuators, it exports 3 pieces of terminals, thereinto ② side connect with slide arm of potentiometer (refer to picture 16). ① side connect with the terminal which resistance between slide armsconstantly decrease, when the actuator is opening movement, ③ side connect with the terminal which resistance between slide arms constantly decrease, when theactuator 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 35Ω ~60Ω .If it’ s not correctly,it can adjusts through rotating drive gear of potentiometer.

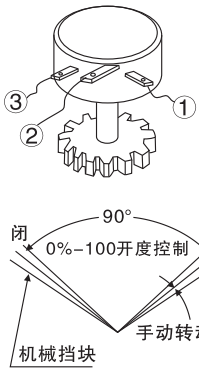


图16

10. 试运转 Running test

10.1手动操作 (图 17) Manual Operation

进行手动操作时，必须先把电源切断；摘下减速盖的橡胶帽，将附带的手柄插入六角孔内；将动手柄按顺时针方向转动使开度减少。

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.

★注意：开度转到全开、全团位置时，极限开关产生动作再转动半圈，会碰到机械挡块上，过分转动，会导致其它零件的损坏，因此要避免用力过大。

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.

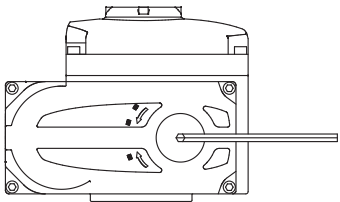


图17

10.2电动操作 Electric operation

◎电动操作之前，先用手动操作的方法，检查开度计和阀门角度 (全开、全闭) 是否一致；

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

◎检查接线是否正确，同时必需先用外部切换开关，确认开闭动作；

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

◎确认以上状态之后，开始电动操作。

After confirm the over status, then start electric operation

★注意 NOTE

①检查接线图，电源，输入/输出信号是否正确。

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

②尽量不要改变内部接线。

Don’ t change the internal wiring.

③如果电源为3相，应检查旋转方向。

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

④手动使执行机构处于半开/关位，通电并输入开信号。

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

⑤如果执行机构向开位运行，则说明接线正确。

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

⑥如果运动方向相反，则必须交换 3 根电源线中的两根。

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

11. 保养 Maintenance

加油：由于使用寿命长，耐压性好的特殊钼基润滑脂，所以不需加油；

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

定期运转：在阀门的动作很稀少时，可以定期驱动机器，检查在无异常。

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

★注: 模拟量调节型调试说明请参阅执行器控制模块部分说明书。

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

其他个性化功能 电动执行器 Other personalized features electric actuators

◎阀门全开、全关动作时间2.8秒到8秒(可选)，用于一些需快速动作的工况；

The time of the valve move to full–open or full–closed only need 2.8s–8s(optional), it’ s used for some working condition which need to move quickly.

◎水下短时间工作，用于一些有时电动执行器被水浸没的工况；

Working under the water in short time, it’ s used for some working condition which the electric actuator is immersed in the water sometimes.

◎阀门全开、全关特别缓慢，执行器可使阀门旋转90° 动作时间达到650秒；

The valve move to full–open or full–closed slowly in particular, the actuator is enable to rotating the valve 90° achieve 650 s.

◎手动操作可采用带离合手轮机构；

Manual operation adopts handwheel with clutch.

◎具有现场，就地/远程切换功能；

It's provided with the scene, local/remote switching function

◎有 DC 12V, DC 24V, DC 110V, DC 220V; AC 24V, AC 110V, AC 380V, 可订做；

It's provided with DC 12V, DC 24V, DC 110V, DC 220V; AC 24V, AC 110V, AC 380V;

★注：其他不详或特殊规格，请与本公司技术部联系。

Note: Other unknown or special specifications, please contact with Technology Department of our company.