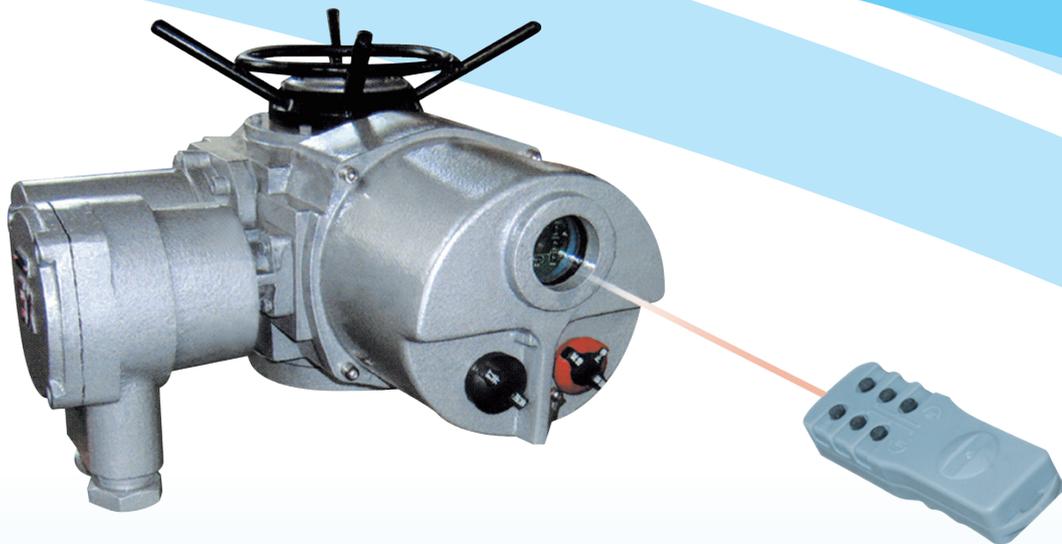




XFZJT
XFZBIT

非侵入式多回转阀门电动装置
Non-Invasive Multi-Turu Valve Electric Actuator

使用说明书 Instructions



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1. 概述 Summary

多回转阀门电动执行机构，通称为Z型。适用于启闭件做直线运动的阀门，如闸阀、截止阀、隔膜阀、闸门、水闸阀等。用于阀门的开启、关闭或调节。是对阀门实现远控、集控和自控的必不可少的驱动装置。他们具有功能全、性能可靠、控制系统先进、体积小、重量轻、使用维护方便等特点。

广泛用于电力、冶金、石油、化工、造纸、污水处理等行业。

多回转电动执行机构有：户外型、隔爆型、整体型、整体调节型、隔爆整体型、隔爆整体调节型等。

按连接型式，分为转矩型和推力型。

本产品的性能符合JB/T8528-1997《普通型阀门电动装置技术条件》的规定。隔爆型的性能符合GB3836.1-2000《爆炸性气体环境用电气设备第1部分：通用要求》，GB3836.2-2000《爆炸性气体环境用电气设备第2部分：隔爆型“d”》及JB/T8529-1997《隔爆型阀门电动装置技术条件》的规定。并经国家防爆电气产品质量监督检验测试中心检定，取得了全系列的防爆合格证。经中华人民共和国国家质量监督检验检疫总局批准取得全国工业产品生产许可证。

Multi-turn valve electric actuator, known by the name of Z-type, which is used for opening, closing or adjusting the valves, is an essential actuating device which can be used for remote control, centralized control and self control to the valves, with the features of comprehensive function, reliable performance, advanced control system, small volume, light weight, convenient application and maintenance and so on. It can be applicable to the valves, whose open-close parts will move in a straight line, such as gate valve, stop valve, diaphragm valve, anchor gate, water gate valve and so on.

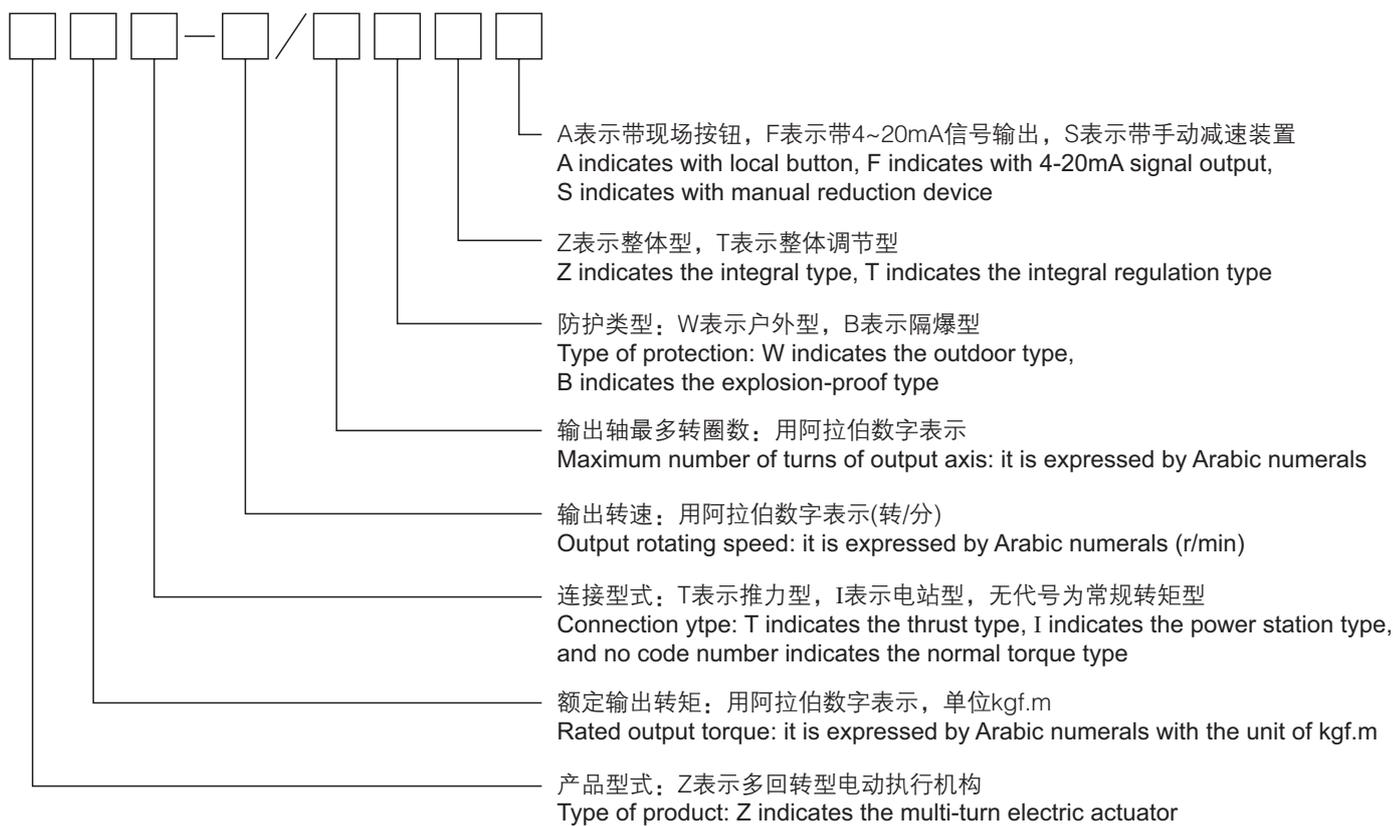
The actuator can be used in the industries like electric power, metallurgy, petroleum, chemical engineering, paper-making, sewage disposal and so on.

There are many types for multi-turn electric actuator: outdoor type, explosion-proof type, integral type, integral-regulation type, integral explosion-proof type, integral-regulation explosion-proof type and so on.

It can be divided into torque type and thrust type according to the connection type.

The performance of the product shall conform to the specification in JB/T8528-1997 Technical Condition for Common Valve's Electrical Devices. The performance of the explosion-proof product shall conform to the specifications in GB3836.1-2000 The Electrical Equipment used in Explosive Gas Atmosphere: the first part: General Requirements, GB3836.2-2000 The Electrical Equipment used in Explosive Gas Atmosphere: the second part: Explosion-proof type "d", and JB/T8529-1997 Technical Condition for Explosion-proof Valve's Electrical Devices. And it has passed the verification of National Quality Supervision & Testing Centre for Explosion-proof Electrical Products, and has got the Conformity Certificate of Protection of the whole series. And we have got the manufacturing license of industrial products approved by General Administration of Quality Supervision, Inspection and Quarantine.

2. 型号表示方法 Presentation of Model



型号示例:

1. Z30I-18/50W: 表示电动执行机构为多回转,输出转矩 $300\text{N}\cdot\text{m}$ ($30\text{kgf}\cdot\text{m}$), 电站型接口, 输出转速 $18\text{r}/\text{min}$, 最大转圈数50, 户外型。
2. Z45T-24/120BS: 表示电动执行机构为多回转, 带手动二级减速装置, 输出转矩 $450\text{N}\cdot\text{m}$ ($45\text{kgf}\cdot\text{m}$), 推力型接口, 输出转速 $24\text{r}/\text{min}$, 最大转圈数120, 隔爆型。
3. Z120-24/80T: 表示电动执行机构为多回转,输出转矩 $1200\text{N}\cdot\text{m}$ ($120\text{kgf}\cdot\text{m}$), 输出转速 $24\text{r}/\text{min}$, 最大转圈数80圈, 整体调节型。

Sample of Model:

1. Z30I-18/50W: Indicate that the electric actuator is multi-turn; the output torque is $300\text{N}\cdot\text{m}$ ($30\text{kgf}\cdot\text{m}$); Power station interface; the output rotating speed is $18\text{r}/\text{min}$, and the maximum number of turns is 50; outdoor type.
2. Z45T-24/120BS: Indicate that the electric actuator is multi-turn equipped with manual double reduction device; the output torque is $450\text{N}\cdot\text{m}$ ($45\text{kgf}\cdot\text{m}$); Thrust interface; the output rotating speed is $24\text{r}/\text{min}$, and the maximum number of turns is 120; explosion-proof type.
3. Z120-24/80T: Indicate that the electric actuator is multi-turn; the output torque is $1200\text{N}\cdot\text{m}$ ($120\text{kgf}\cdot\text{m}$); The output rotating speed is $24\text{r}/\text{min}$, and the maximum number of turns is 80; integral-regulation type.

3. 工作环境和主要技术参数 Operating Environment and Major Technical Parameters

3.1 电源 Power supply

常规：单相 220V、三相 380V，远程 DC24V (50Hz)

特殊：单相 110V、三相 415V、660V，(50Hz、60 Hz)

General: single-phase 220V, three-phase 380V (50Hz), long distance DC24V

Special: single-phase 110V, three-phase 415V, 660V, (50Hz, 60Hz)

3.2 工作环境 Operating environment

a) 环境温度：-20~+60℃(特殊订货-60~+80℃)

b) 相对湿度：95%(25℃时)

c) 户外型用于无易燃/易爆和无腐蚀性介质的场所；

d) 隔爆型产品有d I 和d II BT4两种，d I 适用于煤矿非采掘工作面；d II BT4用于工厂，适用于环境为 II

A、II B级T1~T4组的爆炸性气体混合物。(详见GB3836.1)

e) 防护等级：户外型和防爆型为 IP55、IP65、IP67

f) 工作制：为短时 10 分钟 (特殊订货 15-60 分钟)

a) Ambient temperature: -20~+60℃ (special order -60~+80℃)

b) Relative humidity: 95% (when 25℃)

c) The outdoor type can be used in the places without inflammable/explosive and corrosive medium;

d) There are two types of explosion-proof products: d I can be applicable to non-excavating working area for coal mine, and d II BT4, which is applicable to the environment with II A, II B grade T1~T4 explosive gas mixture, can be used in the factory. (For details refer to GB3836.1)

e) Defense grade: the outdoor type and explosion-proof type is IP55、IP65、IP67.

f) Working time: 10 minutes for short time (special order can reach to 15-60 minutes).

3.3 型号规格和主要性能参数(见表1) Refer to Table 1 for the model and major performance parameter

表1 / Table 1

型号规格 Model & spec.	转矩 Torque (N.m)	推力 Thrust (KN)	最大阀杆直径 Maximum diameter of calve stem (mm)	手动速比 Manual ratio	输出转速 Output rotation speed (r/min)	电机功率 Motor power (KW)	电流 Current (A)	参考重量 Referential weight (kg)
Z5	50	20	28	1:1	12/36	0.12/0.18	0.57/0.83	28
Z10	100	40	28	1:1	18/36	0.25/0.37	1.03/1.38	45
Z15	150	40	28	1:1	18/36	0.37/0.55	1.38/2.2	46
Z20	200	100	40	1:1	18/36	0.37/0.75	1.38/2.62	56
Z30	300	100	40	1:1	18/36	0.55/1.1	2.2/4	58
Z45	450	150	48	1:1 / 20:1	24/36	1.1/1.5	4/4.12	110
Z60	600	150	48	1:1 / 20:1	24/36	1.5/2.2	4.12/5.25	112
Z90	900	200	60	1:1 / 25:1	24/36	2.2/3	5.25/7.9	140
Z120	1200	200	60	1:1 / 25:1	24/36	3/4	7.9/8.87	142
Z180	1800	325	70	22.5:1	18/36	4/7.5	8.87/15.6	250
Z250	2500	325	70	22.5:1	18/36	5.5/10	12.05/20.5	255
Z350	3500	700	80	20:1	18/24	7.5/10	15.6/20.5	330
Z500	5000	700	80	20:1	18/24	10/15	20.5/26.6	350

注：如用户需要，本厂可提供其它的转速：12/18/24/30/36/42/48/60(r/min)，常规按三排计数器供货，如转圈数大定货时注明，可按四排计数器供货。

Note: If user requires, we could provide the products with other rotation speed: 12/18/24/30/36/42/48/60(r/min). Normally, we provide the products with treble counters. If the number of turns is large, give clear indication of it when placing an order, we can provide the products with quadruple counters.

4. 外形及连接尺寸 Outline and connection dimension

4.1 外形和外形尺寸(见图1和表2) Outline and outline dimension (refer to Figure 1 and Table 2)

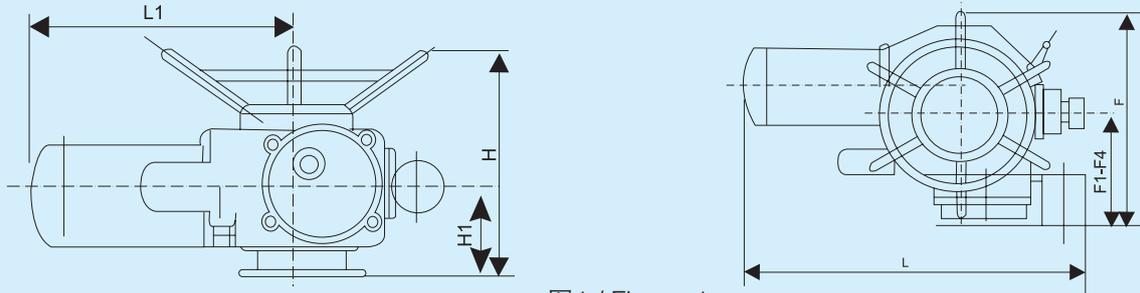


图1 / Figure 1

表2 / Table 2

型号 Model	H	H1	L1	L2	L3	F	F1	F2	F3	F4	ØD
Z5	271	96	158	226	249	158	259	-	310	-	316
Z10/Z15	282	113	150	238	287	150	236	313	332	354	300
Z20/Z30	316	130	200	238	295	200	255	317	349	374	400
Z45/Z60	415	195	277	277	394	230	275	391	369	394	460
Z90/Z120	453	195	281	281	412	278	310	426	404	429	556
Z180/Z250	585	250	320	320	474	295	360	476	455	476	320
Z350/Z500	717	280	399	399	1076	433	417	442	417	542	565

注: 1) L1为户外型/隔爆型; L2为整体型/隔爆整体型。

2) F1为户外型; F2为隔爆型; F3为整体型; F4为隔爆整体型/隔爆整体调节型。

Note: 1) L1 is outdoor type / explosion-proof type; L2 is integral type / integral explosion-proof type.

2) F1 is outdoor type; F2 is explosion-proof type; F3 is integral type; F4 is integral explosion-proof type / integral regulation explosion-proof type.

4.2 与阀门连接的结构示意图及尺寸

The structural schematic drawing and dimension of the connection with the valves

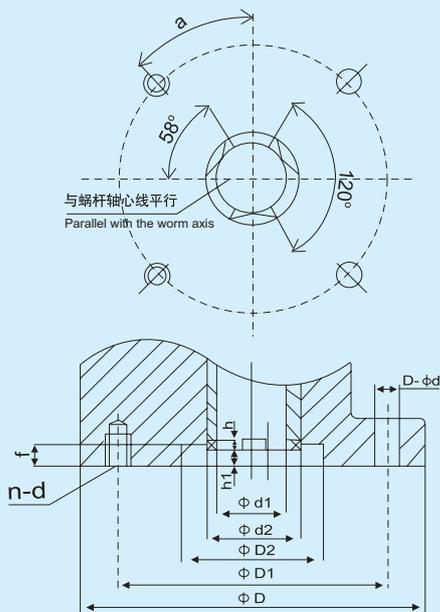


图2 / Figure 2

转矩型的连接尺寸见图2和表3

Refer to figure 2 and table 3 for connection dimension of the torque type

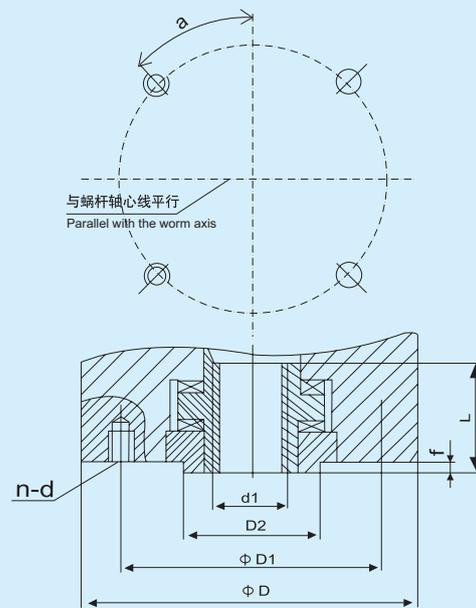


图3 / Figure 3

推力型的连接尺寸见图3和表3

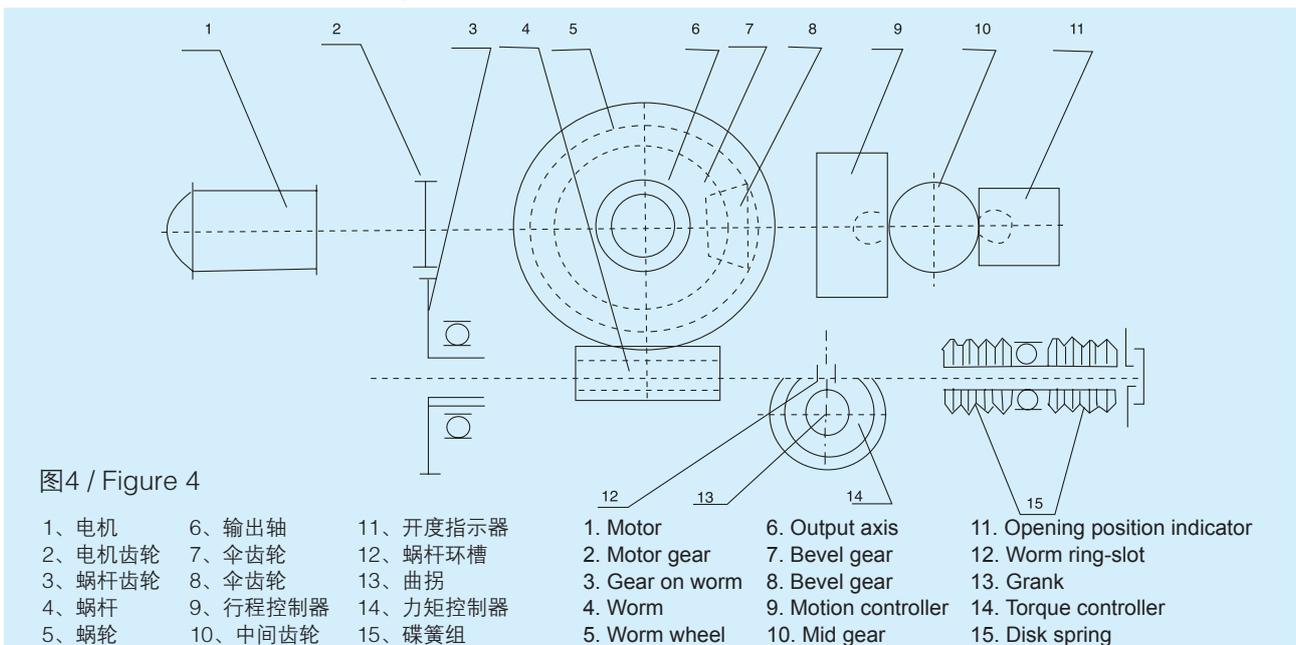
Refer to figure 3 and table 3 for connection dimension of the thrust type

转矩型 JB2920 Torque type JB2920													
型号 Model	法兰号 Flange No.	D	D1	D2 (H9)	h1	f	h	d1	d2	d	n	α	
Z5/10/15	2	145	120	90	2	4	8	30	45	M10	4	45°	
	2I	115	95	75			6	26	39	M8			
Z20/30	3	185	160	125			10	42	58	M12			
	3I	145	120	90			8	30	45	M10			
Z45/60	4	225	195	150			5	12	50	72			φ18
Z90/120	5	275	235	180				14	62	82			φ22
	5I	230	195	150	12	50		72	φ18				
Z180/250	7	330	285	220	3	6	16	72	98	φ26			
Z350/500	8	380	340	280	3	6	20	83	118	φ22	8	22.5°	
推力型 GB12222 Thrust type GB12222													
型号 Model	法兰号 Flange No.	D	D1	D2 (F8)	f	d1 max	d	L	n	α			
Z5/10/15	F10	125	102	70	3	T28	M10	40	4	45°			
Z20/30	F14	175	140	100	4	T36	M16	55					
Z45/60	F16	210	165	130	5	T44	M20	70					
Z90/120	F25	300	254	200		T60	M16	90	8	22.5°			
Z180/250	F30	350	298	230		T70	M20	110					
Z350/500	F35	415	356	260		T80	M30	150					

5. 结构 Structure

Z型电动执行机构由电动机、减速器、力矩控制器、行程控制器、开度指示器、手—电动切换机构、手轮及电气部分组成。户外型采用了圆止口和O型圈密封，隔爆型与户外型的密封结构相同，并增加了隔爆面结构，采用了隔爆型接线盒和YBDF系列户外、防腐、隔爆型电动机用三相电动机。其传动原理如图4所示。

Z type electric actuator is consisted of motor, speed reducer, torque controller, motion controller, opening position indicator, manual-electric shifter, hand wheel and electric parts. The conventional type is sealing with ground surfaces; the outdoor type applies the round rabbit and o-seal ring seal; The explosion-proof type has the same sealing structure as the outdoor type, is added by the explosion-proof surface, and applies explosion-proof type connecting box and three phase motor used for the outdoors, anti corrosion, explosion-proof type electric valve of the YBDF series. The transmission principal is shown on Figure 4.



5.1 电动机 Motor

户外型采用 YDF 型，隔爆型采用 YBDF 型阀门专用三相异步电动机。

The outdoor type applies the YDF type, the explosion-proof type applies the three phase asynchronous motor dedicated for the YBDF type valve.

5.2 减速器 Speed reducer

由一对直齿轮和蜗轮副组成。电动机的动力经减速器传递给输出轴。

It is consisted of one pair of spur gear and worm gear. The motive power of motor is transmitted to the output axis through the speed reducer.

5.3 力矩控制器 Torque controller

力矩控制器分户外型系列和隔爆型系列，其结构见图 5。

The torque controller is divided into the outdoor type and explosion-proof type. Refer to Figure 5 for the structure.

5.3.1 户外型系列 The outdoor type series

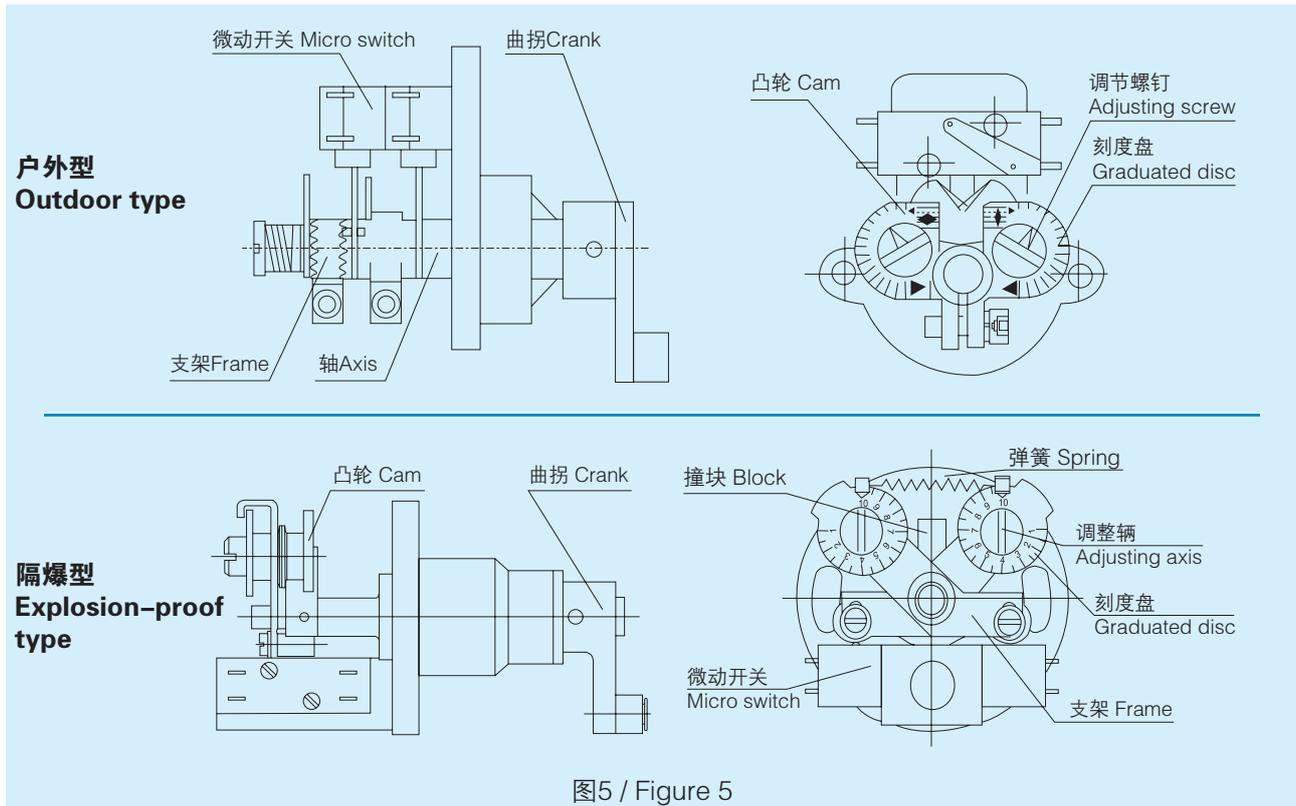
当输出轴上受到一定转矩后，蜗杆除旋转外还产生轴向位移，带动曲拐、曲拐动作时带动轴和凸轮压迫微动开关、切断电机电源、使电机停转，从而实现了对电动执行机构输出转矩的控制、达到保护电动阀门的目的。

When the output axis is subject to some torque, besides the rotation, the worm also generates the axial displacement and drives the crank. During the crank movement, it drives the axis and cam to compress the sensitive switch to cut off the motor power and stop the motor rotation. In this way, the output torque of the electric actuator is controlled to protect the electric valve.

5.3.2 隔爆型系列 The explosion-proof type

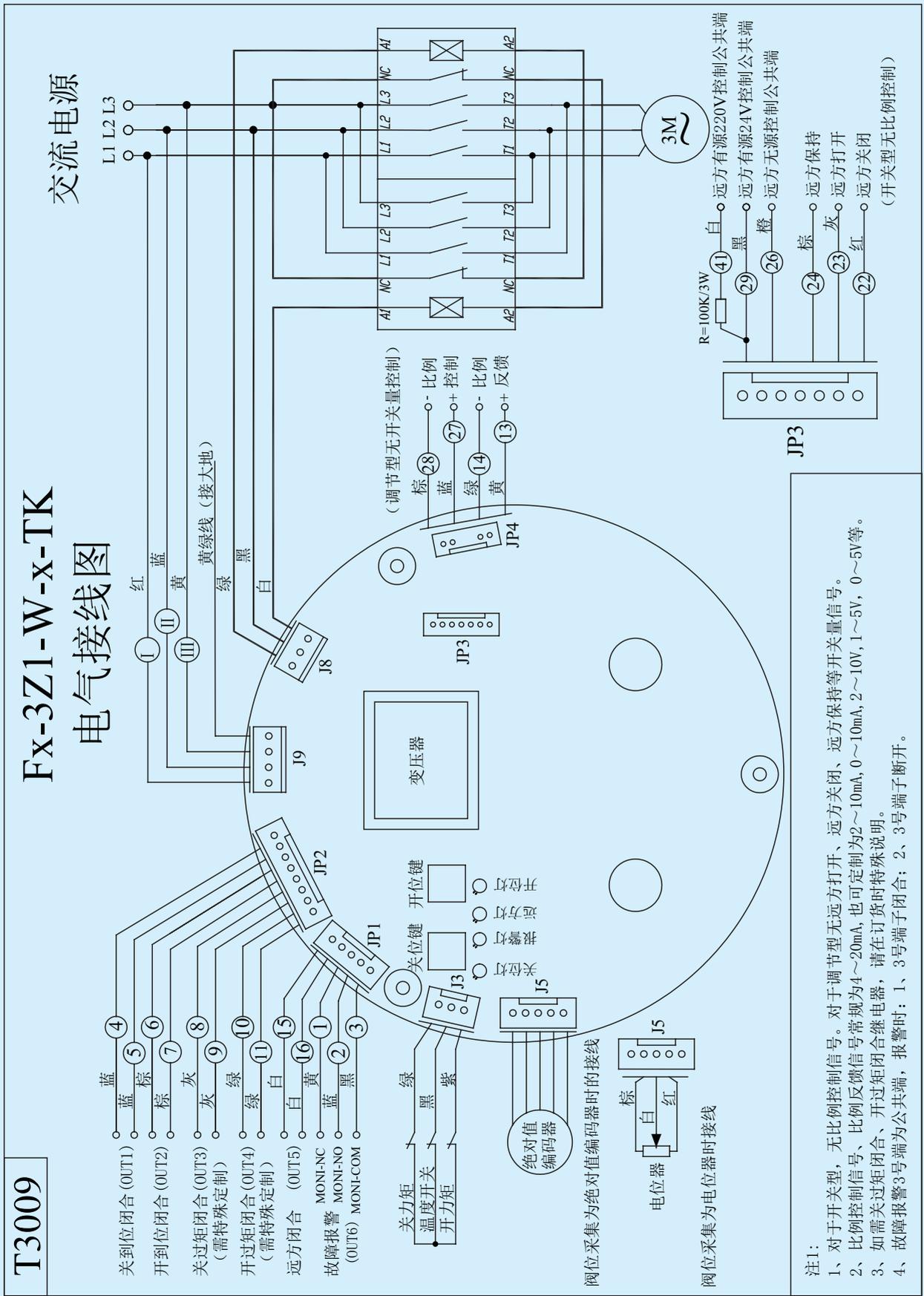
当输出轴上受到一定转矩后，蜗杆除旋转外还产生轴向位移，带动曲拐、使撞块产生角位移，从而压迫凸轮，使支架上抬。当输出轴上的转矩增大到整定转矩时，则至微动开关动作，切断电机电源，使电机停转，从而实现了对电动执行机构输出转矩的控制，达到保护电动阀门的目的。

When the output axis is subject to a certain torque, besides the rotation, the worm also generated the axial displacement and drives the crank to make the block generate the angular displacement, to compress the cam to uplift the bracket. When the torque on the output axis increases to the setting torque, the bracket is uplifted until the sensitive switch moves to cut off the motor power and stop the motor rotation. In this way, the output torque of the electric actuator is controlled to protect the electric valve.



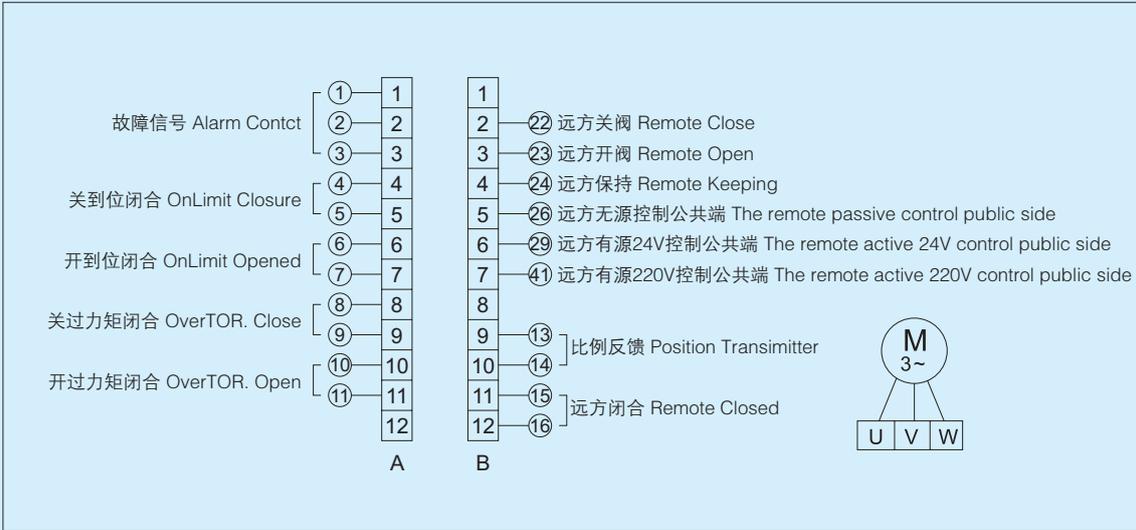
Fx-3Z1-W-x-TK 电气接线图

交流电源

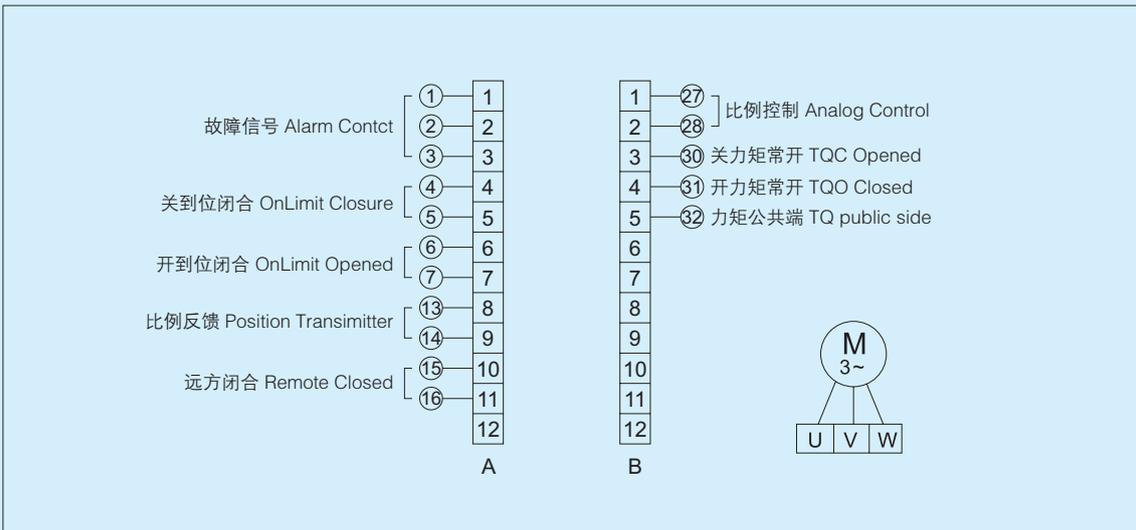


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注1:
1、对于开关型, 无比例控制信号。对于调节型无远方打开、远方关闭、远方保持等开关量信号。
2、比例控制信号、比例反馈信号常规为4~20mA, 也可定制为2~10mA, 0~10mA, 0~10V, 1~5V, 0~5V等。
3、如需关过矩闭合、开过矩闭合继电器, 请在订货时特殊说明。
4、故障报警3号端为公共端, 报警时: 1、3号端子闭合; 2、3号端子断开。



非侵入式开关型接线图
Non-Invasive on/off type Connecting Illustration



非侵入式调节型接线图
Non-Invasive Terminal drawing for integral regulation
explosion-proof switching type electric actuator

7. 非侵入型电动执行器电控组件调试说明

Non-Invasive Electric Actuator / Electronic Control Module Debugging Instructions

7.1 操作说明 Operating Instructions

7.1.1 旋钮操作说明 Knob Operating Instructions

红色旋钮为方式钮，可在现场/停止/远方之间切换；或在设定状态实现菜单的保存(从停位旋到现场)和退出(从停位旋到远方)。黑色旋钮为操作钮，可在现场模式进行打开或关闭操作，或在设定状态进行加减设置。现场旋钮操作时，短时间作用为现场点动模式，当操作钮有效作用时间超过3秒钟后报警区显示“bc”为自动进入现场保持模式，反向旋操作钮或将方式钮旋到停止，即停止动作。

The red knob is the mode button, can be switched between Local/Stop/Remote. Or in a set state, to save the menu contents (from the stop bit screwed to the site) or to exit the menu (from the stop bit screwed into the remote). Black knob for the operating button can be opened or closed operation at the local. Or to plus or minus in the set state.

With button operation, short time effect for the inching mode. When the operation button is effective for more than 3 seconds, in the lower right corner of the LCD, the bc is displayed automatically entered into the hold mode. When actuator movement, click the action button reverse rotation or spin mode button to Stop, the actuator stops.

7.1.2 遥控器操作说明 Setting tool description

(遥控器为选配件，需要时请在订货时特殊说明)

Up--开位标定键，Down--关位标定键，Enter--确认/保存键，Stop--停止/退出键，Open--现场打开键，Close--现场关闭键

在现场方式时，按“Open”键执行保持方式开阀，按“Close”键执行保持方式关阀，按“Stop”键停动。

现场方式，连接三次“Up”键进入开位标定状态，“Open”、“Close”、“Stop”键可控制电动执行器开、关、停，“Enter”键用于保存行程，“Stop”键用于返回。

现场方式，连接三次“Down”键进入关位标定状态，其它操作同上。

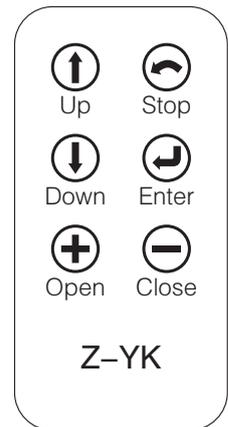
(setting tool are optional, need to please when ordering special instructions)

"Up" button = Open calibration key; "Down" button = close calibration key; "Enter" button = Confirm key or Save key; "Stop" button = stop key; "Open" button = open key; "Close" button = close key.

When mode button at Local location, press "Open" button to perform open, press "Close" button to perform off. In the action, press the "Stop" button to stop the move, short press "Close" to stop the opening process, short press "Open" to stop the closing process.

In local mode, even by three "Up" key to enter the open position calibration status, "Open", "Close" and "Stop" keys to control the electric actuator to open, close and stop, "Enter" key to save the trip, "Stop" key is used to return.

In local mode, even by three "Down" key to enter the closed position calibration status, like the rest of the operation as above.



7.2 信号查询 Signal Query

(显示屏左下角为信号查询区 LCD lower left corner for a signal check area)

7.2.1 远控信号查询 Remote control signal inquiry

方式钮旋到远方，在显示屏的左下角显示接收到的远控信号。开关型：OP代表有远方打开；CL代表有远方关闭；bc代表有远方保持(多状态并存时交替显示)。调节型：显示收到控制电流值或电压值。

When the mode button is screwed into the Remote, the remote control signal received is displayed in the lower-left corner of the LCD. Switch type: show OP represents a open signal, show CL represents a close signal, show BC represents a keep signal (multi state of coexistence of alternate display). Regulating type: to display the received control current value or voltage value.

7.2.2 阀位信号查询 Valve position signal query

方式钮旋到现场，显示屏左下角显示阀位信号。阀位采集为电位器时显示阻值的百分比(d01 ~ d99)；阀位采集为12位编码器时显示编码器的百分比(b00 ~ b99)；阀位采集为18位编码器时显示编码器的千分比(000 ~ 999)。

When the mode button is screwed onto the Local, the LCD shows the valve position signal in lower left corner. When using a potentiometer, show the percentage of resistance (d01 ~ d99); When using 12 encoder, shows the percentage of the encoder (b01 ~ b99); When using 18 encoder, display micrometer ratio of the encoder (001 to 999).

7.3 行程标定 Stroke Calibration

注：先确定电动执行器的转向和力矩接线正确，并调整好电位器或编码器的旋转区间。

7.3.1 关位标定 Calibration for close limit

停止位置旋操作钮至关闭约3秒钟，等到闪烁显示字母L时松开操作钮并将方式钮旋到现场,此时L不再闪烁表示进入关位标定状态。可通过操作钮执行电动开或电动关动作，调整到关位后将方式钮旋到停止再旋回现场,此时红灯闪两次表示关位标定完成。若方式钮由停止旋至远方则直接退出行程标定。

The mode button at the Stop position, the rotary operation knob to the Close position for about 3 seconds, until the letter L is flashing of the LCD to release operation button, then the mode button to the Local position, now letter L no longer flashes and the system into the closed position calibration status. The actuator can open or close by the operating button. When the actuator operates to the closed position, then the mode button to spin the Stop position, and back to the Local position, at this time the red LED flashing two times said the closed position calibration is completed. If the mode button is screwed to the Remote position from Stop position, that exit travel calibration.

7.3.2 开位标定 Calibration for open limit

停止位置旋操作钮至打开约3秒钟，等到闪烁显示字母H时松开操作钮并将方式钮旋到现场,此时H不再闪烁表示进入开位标定状态。可通过操作钮执行电动开或电动关动作，调整到开位后将方式钮旋到停止再旋回现场,此时绿灯闪两次表示开位标定完成。若方式钮由停止旋至远方则直接退出行程标定。

The mode button at the Stop position, the rotary operation knob to the Open position for about 3 seconds, until the letter H is flashing of the LCD to release operation button, then the mode button to the Local position, now letter H no longer flashes and the system into the open position calibration status. The actuator can open or close by the operating button. When the actuator operates to the open limit position, then the mode button to spin the Stop position, and back to the Local position, at this time the green LED flashing two times said the open limit position calibration is completed. If the mode button is screwed to the Remote position from Stop position, that exit travel calibration.

注：保存行程时，出现Fu或Fn报警时，请重新调整电位器或编码器的旋转区间，并重标行程。

Note: When you save a stroke, display Fu or Fn characters on the LCD, please re-adjust potentiometer or rotary encoder range, and recalibrate the trip.

7.4 输出电流微调 Feedback current trimming

7.4.1 4mA输出电流微调 Feedback current 4mA trimming

停止位置旋操作钮至关闭约10秒钟，等到闪烁显示字母LF时松开操作钮并将方式钮旋到现场再旋回停止,即进入4mA输出电流微调状态。此时可通过操作钮调整输出电流的大小，调整输出电流达到4mA后将方式钮旋到现场，此时红灯闪烁三次表示4mA输出电流微调完成。若方式钮由停止旋至远方则直接退出输出电流微调状态。

The mode button at the Stop position, the rotary operation knob to the Open position for about 10 seconds, until the letter LF is flashing of the LCD to release operation button, then the mode button to the Local position and back to the Stop position, and the system into the 4mA current trimming status. At this point, the size of the output current can be adjusted by the operating button. When adjusting the output current reaches 4mA, then mode button to spin the Local position, this time the red LED flashes three times, said 4mA output current trim is complete. If the mode button to Stop position from Remote position, which exit status of the output current trim.

7.4.2 20mA输出电流微调 Feedback current 20mA trimming

停止位置旋操作钮至打开约10秒钟，等到闪烁显示字母HF时松开操作钮并将方式钮旋到现场再旋回停止，即进入20mA输出电流微调状态。此时可通过操作钮调整输出电流的大小，调整输出电流达到20mA后将方式钮旋到现场，此时绿灯闪烁三次表示20mA输出电流微调完成。若方式钮由停止旋至远方则直接退出输出电流微调状态。

The mode button at the Stop position, the rotary operation knob to the Open position for about 10 seconds, until the letter HF is flashing of the LCD to release operation button, then the mode button to the Local position and back to the Stop position, and the system into the 20mA current trimming status. At this point, the size of the output current can be adjusted by the operating button. When adjusting the output current reaches 4mA, then mode button to spin the Local position, this time the green LED flashes three times, said 20mA output current trim is complete. If the mode button to Stop position from Remote position, which exit status of the output current trim.

7.5 死区设置 About dead zone

(此功能只适用于调节型，开关型不具备)

死区为自调整，无需设置，自动选择最佳死区，保证最优控制精度，减少振荡。

The dead zone to adapt automatically, without setting can ensure that in any conditions without oscillation, and the positioning precision is higher.

7.7 高级设置 Advanced Settings

注：高级设置时，需电源断电，方式钮在停止位置；红灯（关位灯）、绿灯（开位灯）、关位键、开位键在线路板上。

NOTE: All the Advanced Settings can be set after the mode button in the "Local" position. Advanced settings must open the electrical box cover and you can operate. The Close Key and Open Key mentioned below are in the electronic control board.

7.7.1 丢信动作 Action when the control current loss

(仅调节型有此设置，默认设置——丢信保位)

- 按下关位键上电约3秒钟，红灯第一次亮释放按键，红灯闪烁三下，丢信关设置完成。
- 按下开位键上电约3秒钟，绿灯第一次亮释放按键，绿灯闪烁三下，丢信开设置完成。
- 同时按两按键上电约3秒钟，两灯同亮释放按键，两灯同闪三下，丢信保位设置完成。

(Only positioning type, default: Remain in Situ)

- To press the "Close Key" and power up for 3 seconds until the red LED on the board is lit. And you release the key, then the red LED flashes three times; the "Full Close" setup is completed.
- To press the "Open Key" and power up for 3 seconds until the green LED on the board is lit. And you release the key, then the green LED flashes three times; the "Full Open" setup is completed.
- Simultaneously press two keys and power up for 3 seconds until the green and red LEDs on the board are lit. And you release the two keys simultaneously, then the two LEDs flashes three times; the "Remain in Situ" setup is completed.

7.7.2 控制电流标定 Control current calibration

(仅调节型有此设置)

输入4mA电流，按下关位键上电约10秒钟，红灯第二次亮释放按键，红灯闪烁三下标定完成。

输入20mA电流，按下开位键上电约10秒钟，绿灯第二次亮释放按键，绿灯闪烁三下标定完成。

(Only positioning type)

To send 4mA control current to the module from the outside, press the "Close Key" and power up for 10 seconds until the red LED on the board is lighted second times. And you release the key, then the red LED flashes three times; and the 4mA calibration is completed.

To send 20mA control current to the module from the outside, press the "Open Key" and power up for 10 seconds

until the green LED on the board is lighted second times. And you release the key, then the green LED flashes three times; and the 20mA calibration is completed.

7.7.3 正反作用 Polarity for the control current

(仅调节型有此设置，默认设置——正作用)

同时按下两按键上电约10秒钟，两灯第二次亮释放按键。红灯亮为正作用，绿灯亮为反作用。短按任意键进行切换，同时按下两按键约3秒钟两灯同亮释放按键，对应灯闪烁三下设置完成。

(Only positioning type)

20mA = Full Open /4mA = Full Open (default: 20mA = Full Open) Simultaneously press “Open Key” and “Close Key” and then power up for 10 seconds. To release the key after the red LED and green LED second lights up. Short press “Open Key” or “Close Key” to alternately lit red LED or green LED. The red LED light represents “20mA = Full Open”, the green LED light represents “4mA = Full Open”. Simultaneously press “Open Key” and “Close Key” for 3 seconds. To release two keys after the two LEDs lights up. Then corresponding LED flashes three times, the polarity for the control current setup is complete.

7.7.4 两线控制设置 Two-Wire Control

(仅开关型有此设置，默认设置——常规控制)

- 按住关位键上电约10秒钟，红灯第二次亮时释放按键，红灯闪烁三下设置为“有信关无信开”。
- 按住开位键上电约10秒钟，绿灯第二次亮时释放按键，绿灯闪烁三下设置为“有信开无信关”。
- 同时按两按键上电约10秒钟，两灯第二次亮时释放按键，两灯闪烁三下设置为“常规控制”。

(Only on-off type) Disable or Open First or Close First (default: Disable)

a) You press “Close Key” and then power up for 10 seconds. The key is released after the red LED second light up. And the red LED flashes three times, this setup is complete. This Close First refers to the actuator close operation when voltages signal on the “Remote Close” terminal of the actuator. But no voltage signal, actuators open operation. When wiring, “Remote Open” terminal connected to 24V +.

b) You press the “Open Key” and then power up for 10 seconds. The key is released after the green LED second light up. And the green LED flashes three times, this setup is complete. This Open First refers to the actuator open operation when voltages signal on the “Remote Open” terminal of the actuator. But no voltage signal, actuators close operation. When wiring, “Remote Close” terminal connected to 24V +.

c) You press the two keys simultaneously and then power up for 10 seconds. The key is released after the two LEDs second lights up. Then the two LEDs flashes three times, this setup is complete.

7.7.5 关闭方向 Close direction

(默认设置——顺时针)

同时按下两按键上电约20秒钟，两灯第三次亮释放按键。红灯亮为顺时针，绿灯亮为逆时针。短按任意键进行切换，同时按下两按键约3秒钟两灯亮释放按键，对应灯闪烁三下设置完成。

Clockwise /Anti-clockwise (default: Clockwise)

You press the “Open Key” and “Close Key” simultaneously and then power up for 20 seconds. The keys are released after the red LED and green LED third lights up. Short press “Open Key” or “Close Key” to alternately lit red LED or green LED. Red LED light represents “Clockwise”, green LED light represents “Anti-clockwise”. You press the two keys simultaneously for 3 seconds. The keys is released after the two LEDs light up. Then corresponding LED flashes three times, the Close direction setup is complete.

8. 报警信息 Alarm Description

显示屏右下角为报警区 Error code displayed on the LCD in the lower right corner

故障码 Fault code	故障信息 Fault information
FA	转向出错 Actuator running direction error
Fb	比例标定错误Fb闪烁3次 Current control signal calibration error(only positioning)
FC	关过矩 Over closed torque
Fd	堵转或其它原因导致的阀位不变化 Stall or other causes the valve position does not change
FE	电机温度开关断开或力矩公共端开路 The motor is too hot or the torque public terminal is open
FF	阀位故障(电位器开路、接错或编码器故障) Broken valve position potentiometer, rotary to blind or pick the wrong line, or encoder failure
FH	远控开、关信号同在 Remote control signals to open and close signals exist (only on-off type)
FL	限位开关或力矩开关接线反或开路 Limit contact line or torque contact line reversed
FO	开过矩 Over open torque
FP	电源缺相 Power phase
FS	DC4-20mA远控信号丢失 Control current signal is lost (only positioning)
Fu	阀位电位器或编码器转角过大 Valve position potentiometer or encoder Angle is too large
Fn	阀位电位器或编码器转角过小 Valve position potentiometer or encoder Angle is too small

注：开位灯——绿色；关位灯——红色

9. 常见问题处理方法 Common Problems to Deal With

通电指示灯和显示屏不显示 Power LED is not lit or digital display does not show	A.电源实际未接入 B.电压过低 C.接线错 D.电路坏	1. Power is not actually access 2. Voltage is too low 3. Wiring fault 4. Module bad
工作中灯和显示屏显示异常 LEDs and digital display abnormal	A.故障码 B.查询信息 C.指示灯或显示屏坏需更换电路	1. See fault code 2. Query information 3. Replace the module
通电现场和远控均不动作 After power on, actuator can't be control in the LOCAL and REMOTE mode	A.接线错或开路 B.故障保护 C.电机坏或卡死 D.启动电容坏 E.电路坏	1. Wiring fault or loose wiring 2. Fault Protection 3. Motor bad or stuck 4. Bad start capacitor 5. Module bad
现场工作正常但远控不动作 LOCAL mode work is normal but the REMOTE mode can't control	A.无信号或接线反 B.旋钮板坏或没在远方 C.正/反作用设错 D.电路坏	1. No signal or junction anti- 2. Bad or no knob plate in Remote 3. Positive / reaction set wrong 4. Module bad
现场不动作但远控工作正常 REMOTE mode work is normal but the LOCAL mode can't control	A.旋钮板坏或没在现场模式 B.操作钮未旋到位 C.电路坏	1. Not in LOCAL mode. 2. Knobs board bad or not at the scene mode 3. Operation button is not properly screwed in place
能开不能关或能关不能开 Actuator can open but not close or can close but not open	A.力矩接线错或开路 B.到限位或过矩 C.电机坏或堵转或接线错 D.电路坏	1. Torque wiring fault or loose wiring 2. To limit position or over torque 3. Motor bad or stall or wiring fault 4. Module bad
无控制信号通电立即动作 The action immediately after power on	A.接线错 B.控制信号实际有效存在 C.丢信动作 D.设为两线控制 E.电路坏	1. Wiring fault 2. Control signal is present 3. Implementation the action when the control current loss 4. Set the wrong 5. module bad
中间位置能动作到限位不动 The middle position can move but to the limit position does not move	A.力矩开关接线反 B.恰巧到位电机坏或接线开路 C.电路坏	1. Reverse limit switch line 2. Motor bad or loose wiring 3. Module bad
动作方向反 The direction of movement is the anti	A.电机接线反 B.阀位标定反 C.正/反作用或关闭方向设反 D.信号反	1. Motor lines reversed 2. Anti valve calibration 3. Signal Reverse 4. Polarity for the control current or closing direction set wrong
无输出电流或时有时无 No output current or sometimes no	A.输出接线错或接触不良 B.电位器或编码器故障或接触不良 C.电路坏	1. The output wiring fault or bad 2. Module bad 3. Potentiometer wiring fault or loose wiring
反馈电流偏大或偏小或不变 Feedback current is larger or smaller or unchanged	A.电位器或编码器故障 B.标定错 C.电位器与传动齿轮啮合不好 D.电路坏	1. Potentiometer failure 2. Calibration error 3. Module bad 4. Potentiometer meshing with drive gear not well

注：接线请严格按照电气接线图连接。

Note: Please strictly in accordance with the wiring diagram electrical wiring connection.

10. 安装与拆卸 Installation and dismantling

1. 本电动执行机构的安装形式无原则要求，但电机处于水平状态，电气箱盖处于水平或垂直向上状态为推荐安装形式，这样有利于润滑、调试、维护和手动操作；
2. 安装时应保证维修检查人员拆卸各部件所需的空间；
3. 安装与阀门连接的牙嵌轴向间隙不少于 1~2mm；
4. 当用于明杆阀门时，应检查阀杆伸出量与阀杆护套的长度是否相符；
5. 安装、拆卸、调试时不可损伤密封面、密封件和防爆型电动执行机构的防爆面，并应在隔爆面上涂防锈油；
6. 当需要拆卸时，应先将手动手轮旋转数圈，在阀门稍开状态下进行。

1. Principle requirements for the mounted form of this electric actuator, but it is suggested that the electric machine shall be in level position, and the cover of electrical box shall be in level position or in upright position, which will be of great advantage to the lubricating, debugging, maintenance and manual operation;
2. When installing, ensure the space that the maintenance people required for dismantling each parts.
3. The axial clearance for installing the jaw connected with the valve shall not be less than 1~2mm;
4. When it is used for rising stem valve, you shall check if the extending length of the valve stem can conform to the length of the sheath of the valve stem;
5. During installation, dismantling, and debugging, do not damage the sealing surface, sealing member and the explosion-proof surface of explosion-proof electric actuator, and spread the rust preventive oil on the explosion-proof surface.
6. When requiring dismantling it, first turn the hand wheel for several turns manually, and this shall be carried out at when the valve is opened a little.

11. 订货须知 Notice for order

1. 请按型号表示方法写明型号，开、关向所需转矩必须分别说明，若不说明则按本公司规定提供。
2. 环境具有爆炸性气体必须说明，并必须符合本说明书中防爆标志的规定。
3. 请写明连接尺寸标准，阀杆直径及伸出长度，若连接尺寸与本说明书不符，可与本公司协商解决。
4. 手轮顺时针旋转为关阀，如与此相反必须说明。
5. 推力型的阀杆螺母螺纹一般由用户加工，本公司只留一预制孔。若需本公司加工，请提供螺纹的尺寸。
6. 本公司还可按用户要求，提供其他转速的电动执行机构。

1. Give clear indication of model number according to the expression measure of model number; the torque required by opening and closing must be provided, if not, we will follow the specification of our company.
2. If there is explosion gas in the environment, please give an indication in advance, and shall conform to the regulations for the explosion-proof sign in this manual.
3. Please indicate the connection size standard, valve handle diameter and extension length. If the connection can not conform to this manual, please negotiate with our company for settlement.
4. Turning the hand wheel clockwise means closing the valve, please give indication if the uses wants converse.
5. Normally, the thread of thrust-type valve stem nut is processed by users, and our company only leaves one ready-made hole. If the users want our company for processing, please provide us the size of thread.
6. Our company can provide the electric actuator with other rotating speed according to the requirements of users.

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