



使用说明书

instruction manual

智能型防爆电动球阀

Intelligent explosion-proof electric ball valve



手机网站
Mobile site

生产厂家：上海金钢自控阀门有限公司
Manufacturer: Shanghai Jin Gang Automatic Control Valve Co.

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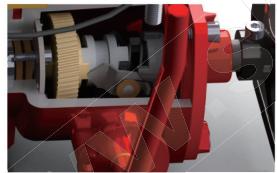
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上海金钢自控阀门有限公司
shanghai jingang automatic controlling valve co;ltd

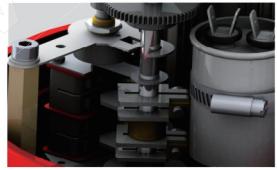
执行器内部图 Internal diagram of actuator



<<手动操作(离合器系统)>>

Manual operation(Clutching system)

- 手自动转换手柄和手轮由手动操作
- 通电后，手柄会自动复位转换成自动方式
- Manual/Auto convert to handle and handwheel used for emergency manual operation
- Powered, handle will automatically reset to auto operation



<<凸轮及限位开关>>

Cam and limit switch

- 由两个螺丝在上面紧固，设置简单
- 每个凸轮可单独设置
- 一旦设置完成，每个凸轮会永远保持在此位置

- Tighten with two screws and simple setting
- Each cam can be set separately
- Once set,each cam will be on the position forever.

智能型控制模块
Intelligent Control Model

旋钮开关
Rotary Switch

位置指示
Position indication

安装基座, 符合ISO5211标准
Installation base,in line with ISO5211 standard

扭矩开关 (JGQT1 除外)
Torque Switch System
(except JGQT1)

上盖
Cover

单相/三相电机
One/three phase motor

接线端子排
Terminal block

电容
Capacitance

手轮
Hand wheel

干燥器
Dryer

蜗轮蜗杆
Turbine shaft

离合器手操系统
Clutch hand system

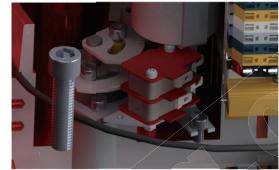


<<视窗上的两个小槽>>

Two slots on window glass

- 视窗盖上有两个小槽，便于雨水排出，且视窗为凸镜不积水，更宜观察
- 流水视窗盖的雨水可能会影响视窗的密封
- 这样两个小槽就可防止，上面的问题发生

- Two slots on the window covers and convex are convenient for drainand observing, and ensure the well sealing of the cover.



<<扭矩开关>>

Torque switch

- 扭矩开关可防止由于过载引起的电机及其他内部元件应过热对内部元件的损伤
- 一旦扭矩开关起作用，执行器应立即停止动作

- Torque switch protect motorand internal electric Components from overheat caused by overload of valve.
- If torque works, the actuator stop at once.



<<防脱螺栓 Anti-off bolt>>

- 上盖螺栓为专门设计，保养及安装时不会脱落
- 所有外部螺栓为不锈钢材质，不会生锈

- Cover bolts are specially designed to prevent falling down during maintenance or installation.
- All external bolts are stainless steel for rust Prevention.



<<接线端子排>>

Terminal block

- 有足够的端子，使用户使用方便，最多为22个
- 能保证坚固、牢靠的电线连接
- 端子长度: 8-9mm(2.5mm²)
- 端子尺寸: 10x22 x 32mm

- Enough terminal for customer's convenience (Max 22 points)
- Proven reliability and tight wiring connection
- Terminal length: 8-9mm (2.5mm²)
- Terminal dimension: 10 x 22 x 32mm.



<<上盖与体的结合为斜面 Inclined plane>>

- 其他执行器由于上盖和体的结合面是竖直的，这样由于此处的公差很小，卸下上盖很不容易
- JGQ执行器此处设计为3°的斜面，解决了这个问题，尽管公差依然很小，但是卸下上盖就很容易了

- For other actuators, it is hard to take off cover because of little tolerance when the interface between cover andbody is vertical.
- For OHQ actuators,it is easy to take off cover as small tolerance, the design of interface is 3 degree inclined plane.



一、概述 Overview

金钢智能型防爆电动球阀广泛应用于石油、化工、水处理、船舶、造纸、电站、供暖供热、楼宇自控、轻工等各行业。它以380V/220V/110V交流电源为驱动电源，以4-20mA电流信号或0-10V DC电压信号为控制信号，实现其自动化控制，(该产品已获得CE与防爆认证证书，产品质量具有保障)。

Jingang Intelligent explosion-proof electric ball valves are widely used in various industries such as petroleum, chemical, water treatment, shipbuilding, papermaking, power station, heating and heating, building automation, light industry and so on. It takes 380V/220V/110V AC power supply as the driving power, and 4-20mA current signal or 0-10V DC voltage signal as the control signal to realize its automation control, (the product has obtained CE and explosion-proof certification, product quality is guaranteed).

二、性能特点 Performance Feature

1.壳体—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和防爆型可选择。
Housing – Made of hard aluminum alloy with anodized and polyester powder coated finish. Highly corrosion-resistant, waterproof grade IP67, IP68 and explosion-proof types are available.

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.

3.动手动轮—手轮设计安全可靠, 省力。当执行器未通电时, 将离合器拉到正确的位置后, 可用手轮操作。一旦通电, 离合器将自动返回。
Manual Handwheel—The design of hand wheel is safe, reliable labor saving and small. When the actuator is not energized, it can be operated by hand. Once energized, the clutch will return automatically.

4.位置指示器—安装在中心轴上, 用于观察阀门的位置, 为了避免沉和和观察方便, 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.

5.加热器和恒温器—用于控制执行器内的温度, 以避免内部潮湿。
Heater and Thermostat—it is used for controlling temperature inside the actuator to avoid internal moisture because of changes of temperature and weather.

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

7.扭矩开关—提供过载保护(JGQT1除外)。并且当阀门堵塞时, 通过自动切断电源来避免阀门和执行器的损坏。(工厂设置, 无需用户修改)
Torque Switch – it provides overload protection (Except type JGQT1) and avoids damages to valve and actuator by cutting power supply. (Set up factory, no need to modify by users)

8.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.

9.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.

10.安装—电动执行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 pores are ditetragon that it is easy to install by linear or 45°. The actuator can be installed vertically or horizontally.

11.线路—电路控制电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.

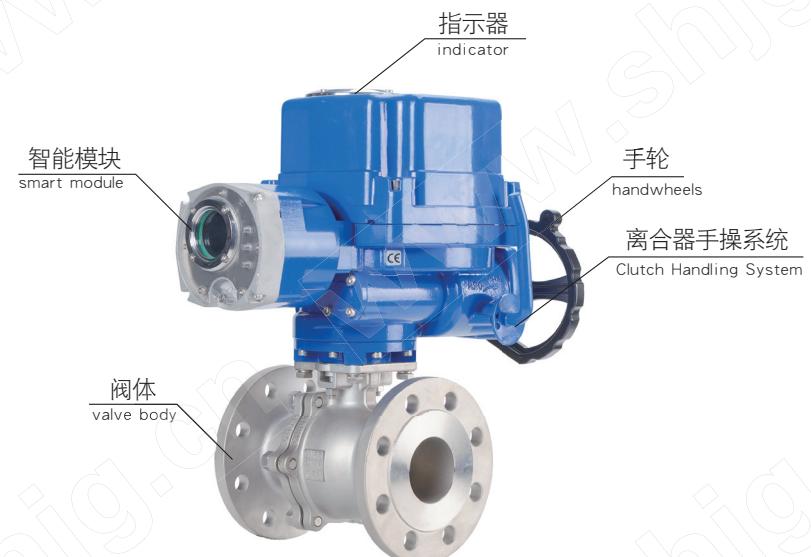
12.智能模块—采用高度集成, 低功耗的MCU和模拟电路控制板, 由于全金属外部安装, 电机热源和控制板有效分离, 大大提高了软、硬件的抗干扰和耐热性。
Intelligent Module – It adopts highly integrated and low consumption control plate with MCU and analog circuit. Because of all-metal external mounting, motor heat source and control plate are separated effectively improving the anti interference and heat resistance of software and hardware greatly

13.阀位数字显示—执行器打开和关闭期间, 液晶显示屏上显示阀门位置的变化。
Display of Valve Position – During opening and closing of the actuator the changes of valve position is displayed by big number on LCD screen.

14.相序自动化调整—智能执行器需自动连接到三相电源相序。
Automatic adjust of phase sequence – intelligent actuator connects to 3 phase power supply phase sequence automatically

15.阀门开启和关闭—本阀门通过电源启动电动执行器转动球体做90度旋转运动来达到开启或关闭。
Valve opening and closing – This valve is opened or closed by starting the electric actuator through the power supply to rotate the ball to do 90 degrees rotary movement.

16.阀门结构—由执行器、左阀体、右阀体、球体、阀杆等组成, 具有结构紧凑、维修简便、流阻小、启闭快、密封性能好等优点。
Valve structure – by the actuator, the left valve body, the right valve body, ball, stem, etc., with a compact structure, easy maintenance, small flow resistance, fast opening and closing, good sealing performance and other advantages

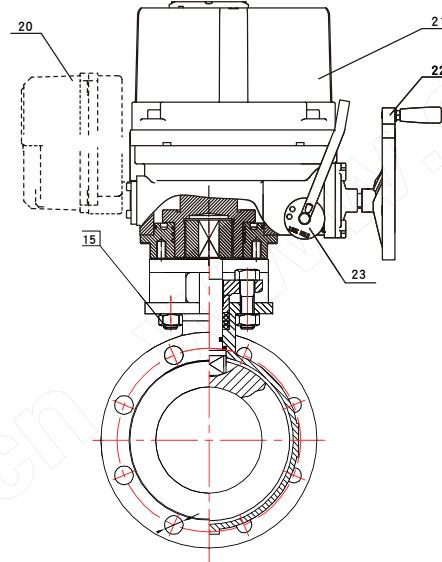
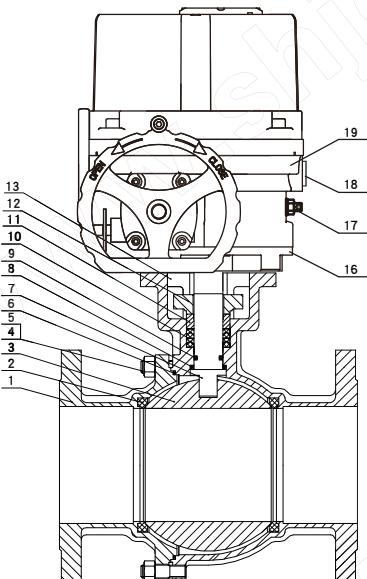


产品实物图

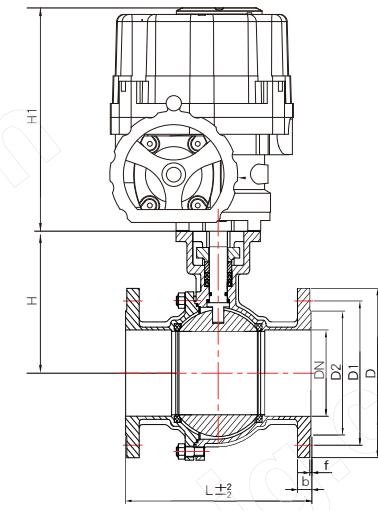
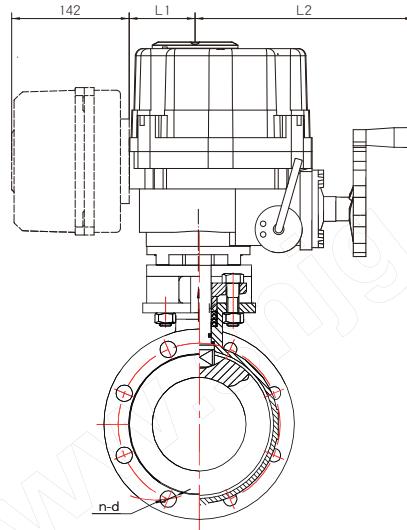
Product Picture

三、外观图及安装尺寸 Exterior view and mounting dimensions

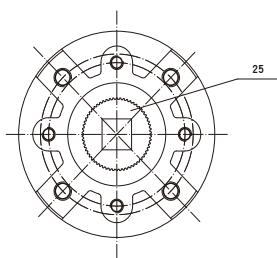
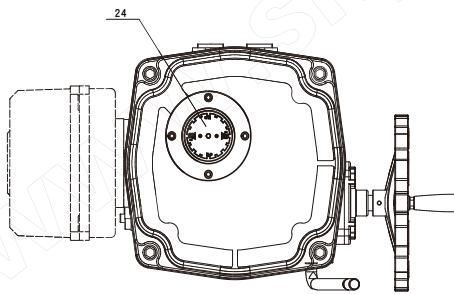
1. 外观图 Appearance



2. 安装尺寸 Mounting Dimensions



虚线为调节型 开关型无此尺寸
Dotted line is for adjustable type Switching models do not have this dimension



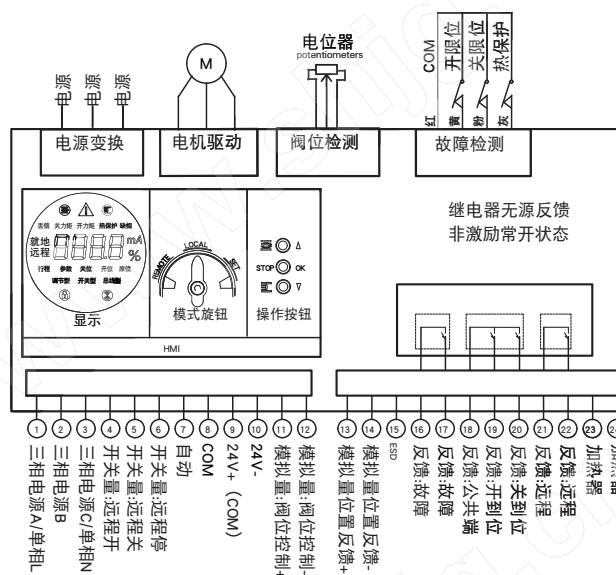
1	螺栓 bolt
2	螺母 Nut
3	阀体 Body
4	填料压盖 Packing gland
5	填料 Packing
6	V型填料 V-packing
7	O型圈 O-ring
8	垫片 Gasket
9	阀杆 Stem
10	垫片 Gasket
11	螺栓 Bolt
12	螺母 Nut
13	球体 Balls
14	密封圈 Seal
15	阀盖 Bonnet
16	连接盘 Connecting disc
17	机械限位螺 Mechanical Limit Screw
18	线缆接入堵头 Cable Entry Plug
19	壳体 Housing
20	控制室 Control Room
21	外罩 Outer cover
22	手轮 Handwheel
23	离合器手柄 Clutch Handle
24	视窗 window
25	输出轴 output shaft

DN	D	D1	D2	f	b	n-d	L	L1	L2	H	H1	E	E1	G	执行器 actuators
15	95	65	45	2	16	4-Φ14	130	58	177	106	237	157	67	110	JGQT1
20	105	75	58	2	18	4-Φ14	130	58	177	114	237	157	67	110	JGQT1
25	115	85	68	2	18	4-Φ14	140	58	177	124	237	157	67	110	JGQT1
32	140	100	78	2	18	4-Φ18	165	58	177	145	237	157	67	110	JGQT1
40	150	110	88	2	18	4-Φ18	165	58	177	160	237	157	67	110	JGQT1
50	165	125	102	2	18	4-Φ18	203	80	275	175	275	227	94	155	JGQT2
65	185	145	122	2	18	8-Φ18	222	80	275	200	275	227	94	155	JGQT2
80	200	160	138	2	20	8-Φ18	241	82	276	211	276	243	96	155	JGQT3
100	220	180	155	2	20	8-Φ18	305	82	276	246	276	243	96	155	JGQT3
125	250	210	188	2	22	8-Φ18	356	115	288	293	288	276	103	205	JGQT4
150	285	240	212	2	22	8-Φ22	394	115	288	335	288	276	103	205	JGQT4
200	340	295	268	2	24	12-Φ22	457	115	288	409	288	276	103	205	大JGQT4

四、接线图 wiring diagram

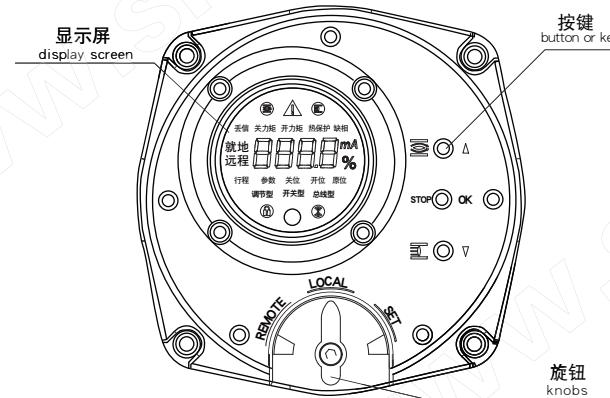
JCQT AC220V/DC24V/AC380V (智能调节型)

JCQT AC220V/DC24V/AC380V (Intelligent modulating model)



五、模块界面简介 Module Interface Introduction

主视图
main view



如上图所示,界面的操作方式为3按键和1旋钮,使用OLED屏显示信息。旋钮指针用于指示、选择模块的三种状态:

REMOTE(远程)、LOCAL(就地)、SET(设置)。按键用来选择、确认相应的操作。其中:

As shown in the figure above, the interface is operated by 3 buttons and 1 knob, using an OLED screen to display information. The knob pointer is used to indicate and select the three states of the module: REMOTE, LOCAL and SET. The buttons are used to select and confirm the corresponding operations. Among them:

▲/▼键:就地或行程设置时执行开命令、设置参数时修改参数——加。

▲/▼键:就地或行程设置时执行停命令、设置参数时修改参数——减。

OK键: Execute open command in local or travel setting, modify parameters when setting parameters – plus.

OK键: Execute stop command during local or travel setting, modify parameters during parameter setting – minus.

STOP/OK键:就地或行程设置时执行关命令、设置参数时进入和确认参数。

STOP/OK key: Execute the OFF command during in-situ or travel setting, enter and confirm the parameters when setting parameters.

当模块处于就地和设置状态时,按键操作有效。执行 \triangle 和 \square 命令时,短按操作为点动开、关命令;若长按保持3秒钟则开、关命令为保持指令,执行器将继续执行开、关命令;执行器运行过程中,再次点动 \triangle 或 \square ,执行器停止运行。执行Stop命令时,执行器运行过程中点动Stop键,执行器立即停止运行。

When the module is in the local and set state, the button operation is effective. When executing commands \triangle and \square , the short press operation is a jog open and close valve command. If the long press is held for 3 seconds, the open and close commands are held commands, and the actuator will continue to execute the open and close commands; During the operation of the actuator, click \triangle or \square again to stop the operation. When executing the Stop command, pressing the Stop key during the operation of the actuator will immediately stop the operation.

本模块支持38KHz红外遥控器(选配),红外遥控器按键操作与HMI一致。显示屏采用高亮度OLED技术,彩色显示效果,耐高、低温性能好。

This module supports 38KHz infrared remote control (optional), infrared remote control key operation and HMI consistent. The display adopts high brightness OLED technology, color display effect, good performance of high and low temperature resistance.

显示屏图标说明:

Display Icon Description.



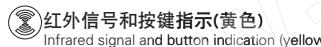
电子锁(黄色)

Electronic lock (yellow)

就地和设置模式下,若3分钟内都没有进行按键操作,系统自动锁定按键,按键操作将失效,解锁后按键操作有效。
In both local and setup modes, if no button operation is performed within 3 minutes, the system will automatically lock the button, and the button operation will become invalid. After unlocking, the button operation will be effective.

解锁方法:锁定状态下,同时按住 \triangle/\wedge 和 \square/\vee 键保持3秒钟,待⑪形图标消失,解锁完成。

Unlocking method: In the locked state, press and hold the \triangle/\wedge and \square/\vee keys at the same time for 3 seconds; wait until the ⑪ icon disappears, the unlocking is complete.



红外信号和按键指示(黄色)

Infrared signal and button indication (yellow)

红外遥控手操器操作时,该指示提示信号接收。HMI现场按键操作时,该指示提示按键操作中。

When the infrared remote control hand manipulator is operated, the indication prompts the signal reception, and when the HMI on-site key operation is performed, the indication prompts the key operation is in progress.

开阀、开位指示(红色)

Open valve, open position indication (red)

开阀中,标灯闪烁。开位置,指示灯长亮。

During valve opening, the indicator light flashes. On position, the indicator light remains on for a long time.

关阀、关位指示(绿色)

Closed valve, closed position indication (green)

开阀中,标灯闪烁。开位置,指示灯长亮。

During valve opening, the indicator light flashes. On position, the indicator light remains on for a long time.

小故障标识(黄色)

Minor fault identification (yellow)

执行器出现故障时,液晶显示故障信息或故障代码,故障标识长亮警示。

When the actuator malfunctions, the LCD displays fault information or code, and the fault identifier remains illuminated for a warning.

mA/% 开度显示模式(高白光)

Opening display mode(high white light)

阀位对应4—20mA和0—100%的数值显示。

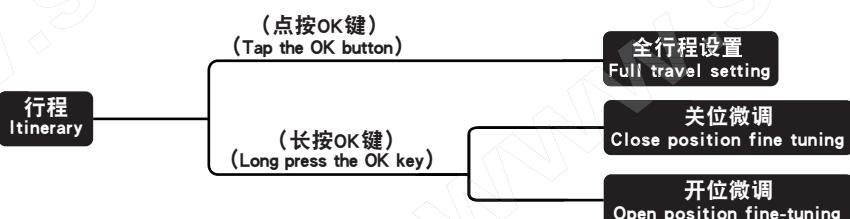
Valve position corresponds to 4—20mA and 0—100% numerical display.

六、系统设置 System settings

SET模式下,系统进入设置状态。在设置状态菜单中,显示内容闪烁状态,表示选中该参数菜单,可进入查看或者修改该参数。

In SET mode, the system enters the set state. In the setting status menu, the flashing status of the content is displayed, indicating that the parameter menu is selected, and you can enter to view or modify the parameter.

1.行程设置 Itinerary settings



注:

★执行器初始调试运行时,务必请先执行“全行程设置”操作,设定执行器初始关位和开位值!

★执行器初始调试运行后,可对开位或关位位置单独重新设定或对开位、关位位置微调设置以便精

NOTE:

★When the actuator is initially commissioned, be sure to perform the "Full Stroke Setting" operation to set the initial actuator shut-off and open position values!

★After the initial commissioning operation of the actuator, you can reset the position of the open or close position individually or fine-tune the setting of the open and close positions for accurate positioning!

1.1全行程设置 Full Travel Setting

说明:在设定行程过程中必须使用电动操作将阀门运行到关位或开位状态,避免使用手动(手轮)操作,否则会造成行程数据采集错误而不能正确保存参数。“SET”模式下,通过▲/▼键选中“行程”(闪烁),点按OK键进入行程关位设置,显示屏显示“行程、关位”和传感器数值,将执行器电动方式运行到到全关位置按下OK键后,会进入行程开位设置,将执行器电动方式运行到全开位置然后按下OK键,保存行程关位、开位值并退出行程设置。

Explanation: During the process of setting the stroke, it is necessary to use electric operation to operate the valve to the closed or open position, avoiding manual (handwheel) operation, otherwise it may cause errors in stroke data collection and failure to save parameters correctly. In the "SET" mode, select the "stroke" (flashing) with the ▲/▼ keys, press the OK key to enter the stroke close position setting, and the display screen will display the "stroke, close position" and sensor values. Run the actuator electrically to the fully closed position, press the OK key, and enter the stroke open position setting. Run the actuator electrically to the fully open position, and then press the OK key to save the stroke close position and open position values and exit the stroke setting.

1.2行程微调 Travel fine-tuning

“SET”模式下,通过▲/▼键选中“行程”(闪烁),长按OK键3秒钟,进入微调。通过▲/▼键选择“开位”、“关位”行程微调并按OK键确认。

In the "SET" mode, use the ▲/▼ keys to select "Stroke" (flashing), and press and hold the OK key for 3 seconds to enter fine-tuning. Use the ▲/▼ keys to select the "open position" and "close position" stroke adjustment, and press the OK key to confirm.

2.参数设置 Parameter settings

“SET”模式下,通过▲/▼键选中“参数”(闪烁),按OK键进入参数设置菜单。说明:每次进入参数菜单,进行参数修改操作时,会先提示需要输入密码“C*****”,系统参数修改密码为“118”,之后在不退出参数菜单情况下,再次修改参数则不再需要输入密码。

In the "SET" mode, use the ▲/▼ keys to select the "parameter" (flashing), and press the OK key to enter the parameter setting menu. Explanation: Every time you enter the parameter menu and perform parameter modification operations, you will first be prompted to enter the password "C * * * *", and the system parameter modification password will be "118". Then, without exiting the parameter menu, modifying the parameters again will no longer require entering the password.

参数菜单模式下,任意菜单状态下,旋钮操作切换到非“SET”模式,系统自动退出参数设置状态。

In the parameter menu mode, in any menu state, the knob operation switches to a non "SET" mode, and the system automatically exits the parameter setting state.

2.1参数列表 parameter list

序号 serial number	参数代码 parameter code	参数功能Parameter function	默认值 default value	开关型(MO) switch-type (MO)	调节型(AO) regulating type(AO)	总线型(BUS) bus-based(BUS)
0	P-0	返回return		✓	✓	✓
1	P-01	ESD	ESD1 原位 ESD1 original position	✓	✓	✓
2	P-02	P-2.1 阀位反馈 低信号(4mA/0V) 校准 Valve position feedback Low signal (4mA/0V) calibration		✓	✓	
		P-2.2 阀位反馈 高信号(20mA/10V) 校准 Valve position feedback High signal (20mA/10V) calibration		✓	✓	
		P-2.0 返回 P-02 return P-02		✓	✓	
3	P-03	P-3.1 阀位控制 低信号(4mA/0V) 校准 Valve position control Low signal (4mA/0V) calibration			✓	
		P-3.2 阀位控制 高信号(20mA/10V) 校准 Valve position control High signal (20mA/10V) calibration			✓	
		P-3.0 返回 P-03 return P-03			✓	
4	P-04	灵敏度 (level of) sensitivity	1.0%		✓	✓
5	P-05	惯性量 inertia (mechanics)	0%		✓	✓
6	P-06	丢失信号控制Loss of signal control	原位 original position		✓	
7	P-07	P-7.1 阀位反馈信号倒置 Valve position feedback signal inversion	ou 0		✓	
		P-7.2 阀位控制信号倒置 Valve position control signal inversion	iu 0		✓	
		P-7.0 返回 P-07 return P-07			✓	
8	P-08	远程控制信号方式 Remote Control Signal Method	Sin 0	✓		
9	P-09	站号 station number	5			✓
10	P-10	波特率baud	BTLZ(9600)			✓
11	P-11	校验位check digit	0			✓
12	P-12	预留 reserve				

七、安装说明 Installation instructions

安装在有水淹没及户外请提前说明:

Installation in flooded and outdoor areas, please specify in advance.

请预留接线、手动操作维修用空间:

Please reserve space for wiring, manual operation and maintenance.

为了避开雨水、阳光直射等问题,需要安装保护盖;或选用防护等级IP67以上;

In order to avoid rain, direct sunlight and other problems, it is necessary to install a protective cover; or choose the protection grade IP67 or above.

环境温度在-20C +70C范围内:

The ambient temperature is within the range of -20C +70C.

环境温度为0C以下时,在机内加装除湿加热器:

If the ambient temperature is below 0C, install a dehumidifying heater inside the machine.

定期运转:在阀门的动作很稀少时,可以定期驱动机器,检查无异常:

Installation in flooded and outdoor areas, please specify in advance.

特别注意:安装前管道必须清洁及吹扫干净,以免杂质堵塞阀门及破坏密封面,如有微小杂质和灰尘在阀前须安装“金钢公司”提供的过滤器(过滤网≥80目/cm)。

Special attention: the pipeline must be clean and purged before installation, so as to avoid impurities blocking the valve port and damage to the sealing surface, such as tiny impurities and dust in front of the valve must be installed 'Golden Steel Company' to provide filters (filter ≥ 80 mesh / cm →).

注意介质的清洁,使用中应定期清洗阀体内部件,拆卸后应同时检查密封垫,发现破损应及时更换。

Pay attention to the cleanliness of the medium, the use of the valve should be regularly cleaned body parts, disassembly should be checked at the same time as the gasket, found broken should be replaced in a timely manner.

当电动球阀发生故障时,为了及时隔离电动球阀,并保证系统正常运行,最好安装旁路装置。

When the electric ball valve failure, in order to isolate the electric ball valve in time, and to ensure the normal operation of the system, it is best to install a bypass device.

当电动球阀安装在支路时,电动球阀的口径应比主管道的阀门口径小。

When the electric ball valve is installed in the branch circuit, the caliber of the electric ball valve should be smaller than the valve caliber of the main pipeline.

安装后须通入流体动作数次,确保动作正常后,方可投入正常使用。

After installation, the fluid must be passed into the action several times to ensure that the action is normal before being put into normal use.

安装前要检查压力、温度、电压、材质是否与铭牌及实际参数一致。

Before installation, check whether the pressure, temperature, voltage and material are consistent with the nameplate and actual parameters.

八、订货须知 Ordering Information

1.订货前未选定型号,请您提供相应的技术参数,如:公称通径、介质种类、工作压力、额定电压、连接方式、安装方式、连接尺寸、介质温度、环境温度、阀体材质及特殊功能要求(包括:防爆、常开及安装定时开关等);我们专业工程师会及时与您沟通落实相应的型号。

Before ordering, please provide the corresponding technical parameters, such as: nominal diameter, media type, working pressure, rated voltage, connection, installation, connection size, medium temperature, ambient temperature, valve body material and special functional requirements (including: explosion-proof, normally open and installed timer switch off, etc.); our professional engineers will communicate with you in a timely manner to implement the corresponding model.

2.已由设计院或单位部门选定我公司产品型号的,按指定型号与我公司销售中心订购同时提供相应具体的技术参数。

Has been selected by the design institute or unit department of my company's product model, according to the specified model and my company's sales center to order at the same time to provide the corresponding specific technical parameters.

3.使用工况非常重要或管路系统比较复杂时,请您务必提供管路安装示意图及详细的参数,由双方工程师共同沟通审核把关。

When the working condition is very important or the piping system is complicated, please make sure to provide the piping installation schematic and detailed parameters, and the engineers from both sides will communicate with each other to review and control.