Q系列电动执行机构

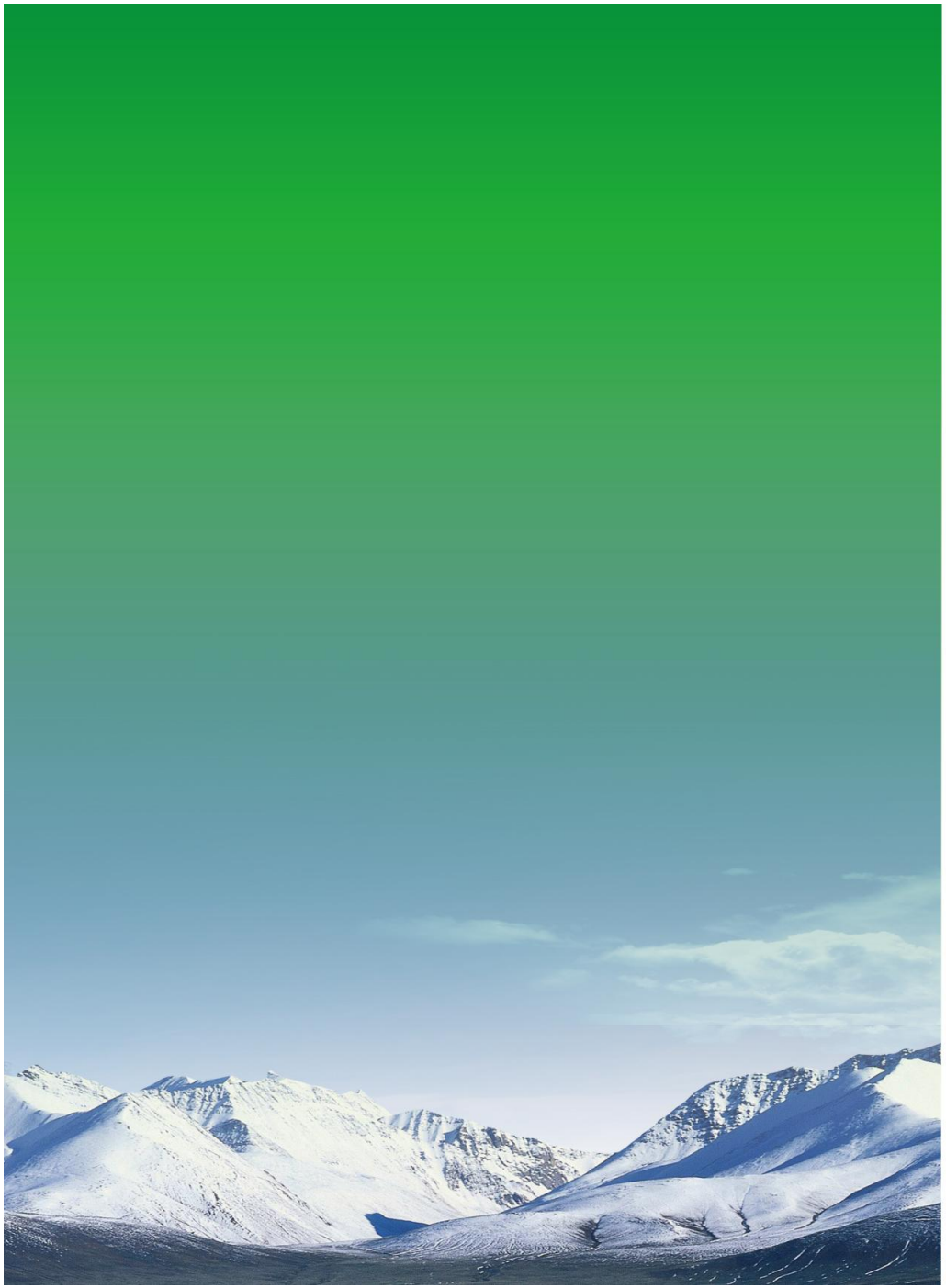
Q Series Electric Actuator

【用于90°回转阀门】

[For 90 ° rotary valve]

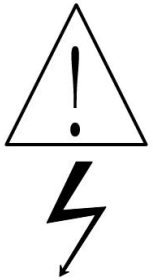
使用说明书

User's manual



请在使用本公司产品前仔细阅读本说明书

Please read this manual carefully before using our products



安全

Safety

该机电设备是在工业强电流的条件下使用的。在操作中，该设备上有些裸露零件带电，同时有些零件能够运动或转动，都是很危险的。因此，未经许可拆下所需的罩盖，不合理的使用，不正确的操作或不合适的维护，均会造成严重的人身伤害或损坏设备性能。为了设备的安全，必须保证：

仅允许有资质的人员对这些机械和设备进行使用。

无论何时，在上述有资质的人员对该机械和设备进行作业时，他们都应备有这些机械和设备的操作说明书或其它产品文件，以便按说明书的要求执行。

请确认输入电压.频率及配线接点是否准确，因线序或电压引起的电机损坏，厂家不承担维修和更换。

配线进口必须做好防水处理，否则会损坏执行器，厂家不承担任何对执行器的不正当改变或维修之责任

对于使用其它厂家提供的产品或零件的错用.不正确安装.腐蚀.及未经许可的人为改动或修理，不在厂家质保服务内。

当阀门不经常工作时，应定期检查保养并进行操作，建议1次/月，时间不超过10分钟。

The electromechanical equipment is used under the condition of industrial strong current. In operation, some exposed parts of the device are charged, and some parts can move or rotate, which is very dangerous. Therefore, removing the required cover without permission, improper use, incorrect operation or improper maintenance will cause serious personal injury or damage the performance of the equipment. For the safety of the equipment, you must ensure:

Only qualified personnel should use these machines and equipment.

Whenever the above-mentioned qualified personnel work on the machinery and equipment, they should have operating instructions or other product documents for these machinery and equipment in order to perform as required by the instructions.

Please confirm whether the input voltage, frequency, and wiring contacts are accurate. The motor is not responsible for repair and replacement due to wire sequence or voltage damage to the motor.

The wiring inlet must be waterproofed, otherwise the actuator will be damaged, and the manufacturer will not bear any responsibility for improper alteration or repair of the actuator.

For the misuse, incorrect installation, corrosion, and unauthorized modification or repair of products or parts provided by other manufacturers, they are not covered by the manufacturer's warranty service.

When the valve works infrequently, it should be regularly checked and maintained, and it is recommended to operate it once a month for less than 10 minutes.

一：产品概述 / Product description

部分回转电动执行器，统称为Q系列执行器，是阀门实现开启、关闭、调节控制的驱动设备。本系列执行器具有功能全、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。

Q系列执行器适用于蝶阀、球阀、旋塞阀、风门等做90°回转的阀门。可对阀门进行远控、集控和自动控制，广泛应用于电力、冶金、石油、化工、制药、污水处理、农业灌溉等行业。

本系列普通型产品性能符合GB/T24923-2010《普通型阀门电动装置技术条件》的规定；

本系列隔爆型产品性能符合GB3836.1-2010《爆炸性环境第1部分：通用要求》、GB3836.2-2010《爆炸环境 第2部分：由隔爆外壳“d”保护的设备》及GB/T24922-2010《隔爆型阀门电动装置技术条件》的规定。

Partial rotary electric actuators, collectively referred to as Q series actuators, are driving equipment for valves to achieve opening, closing, adjustment and control. This series of actuators have the characteristics of full-featured, reliable performance, advanced control system, small size, light weight, convenient use and maintenance.

Q series actuator is suitable for butterfly valve, ball valve, plug valve, damper and other valves that make 90 ° rotation. The valve can be controlled remotely, collectively and automatically. It is widely used in power, metallurgy, petroleum, chemical, pharmaceutical, sewage treatment, agricultural irrigation and other industries.

The performance of this series of ordinary products conforms to the requirements of GB / T24923-2010 "Technical Conditions for Ordinary Valve Electric Devices";

The performance of this series of flameproof products conforms to GB3836.1-2010 "Explosive Environment Part 1: General Requirements", GB3836.2-2010 "Explosive Environment Part 2: Equipment Protected by Flameproof Enclosure" d "" and GB / T24922-2010 "Technical Conditions of Flameproof Valve Electric Device".

二：产品分类 / Product Categories

按控制方式分：普通型、智能开关型、智能调节型

（Profibus现场总线、Modbus现场总线、Hart现场总线、FF现场总线、Device Net现场总线）；

按防护类型分：户外型和防爆型；

Divided by control mode: ordinary type, intelligent switch type, intelligent adjustment type

(Profibus fieldbus, Modbus fieldbus, Hart fieldbus, FF fieldbus, Device Net fieldbus);

Divided by protection type: outdoor and explosion-proof;

三：主要技术指标 / Main Specifications

输入信号 Input signal	4mA~20mA；无源触点 / Passive contact	
供电电源 Power supply	常规 Conventional	三相 / Three phase：AC380V（50Hz）
	特殊 Special	三相 / Three phase：AC660V、AC440V、AC415V（50Hz、60Hz）
		单相 / Simplex：AC220V、AC110V（50Hz、60Hz）
		DC24V
基本误差限 Basic error limit	≤1%	
防护等级 Protection class	IP65、IP68……	
防爆型等级 Explosion-proof grade	ExdII BT4、ExdII CT4、ExdII CT6；	
环境温度 Ambient temperature	-30℃~+70℃（可选 / Optional：-40℃~+100℃）	
环境湿度 Environment humidity	≤95%（25℃）	
电机工作制：标配长时电机，F级绝缘 Motor working system: Standard long-term motor, F-class insulation		

四：安装和拆卸 / Installation and removal

允许阀门电动执行器任意位置安装，但必须注意电机尽量呈水平位置，电器箱盖呈水平或垂直向上状态为推荐安装方式，这样有利于润滑.调试.维护和手动操作。

The electric actuator of the valve is allowed to be installed at any position, but it must be noted that the motor shall be in a horizontal position as far as possible, and the electrical box cover shall be in a horizontal or vertical upward state, which is the recommended installation mode, so as to facilitate lubrication, commissioning, maintenance and manual operation.

五：接线注意事项 / Wiring precautions

用手轮将阀门开启至50%开度处，按下开阀或关阀键，检查阀门的旋向是否与按键对应，如果不一致立即按停止键，切断三相电源，调换三相电源中的任意二相。

Open the valve to 50% opening with the hand wheel, press the open or close key, check whether the rotation direction of the valve corresponds to the key, if not, press the stop key immediately, cut off the three-phase power supply, and replace any two phases of the three-phase power supply.

六：行程控制机构调整 / Adjustment of travel control mechanism

1.转动手轮使阀门“全关”，松开输出轴上的螺钉，顺时针转动关向凸轮，使其干好压动关向微动开关，再拧紧螺钉。

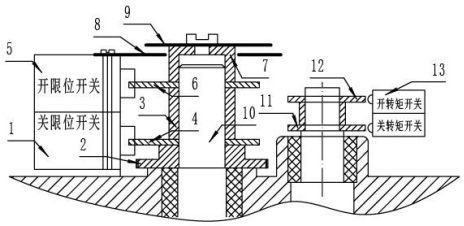
2.转动手轮使阀门“全开”，松开输出轴上的螺钉，逆时针转动开向凸轮，使其干好压动开向微动开关，再拧紧螺钉。

1. Turn the hand wheel to make the valve "fully closed", loosen the screw on the output shaft, turn the closing cam clockwise, make it dry, press the closing microswitch, and then tighten the screw.

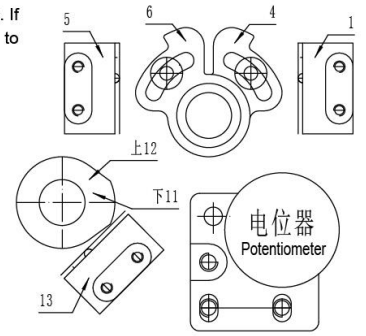
2. Turn the hand wheel to make the valve "fully open", loosen the screw on the output shaft, turn the opening cam anticlockwise, make it dry, press the opening microswitch, and then tighten the screw.

3.手动或电动开，关阀门，检查阀门开启或关闭是否符合要求，如果不符合要求，按上述步骤微调，直至符合要求为止。

3. Open or close the valve manually or electrically. Check whether the valve opening or closing meets the requirements. If it does not meet the requirements, follow the steps above to fine-tune until it meets the requirements.



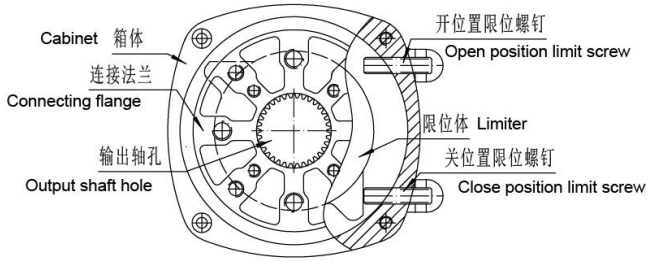
VGDQ1-2 (200-2000N/m) 行程/力矩控制机构
VGDQ1-2 (200-2000N / m) stroke / torque control mechanism



VGDQ05 (50-150N/m) 行程/力矩控制机构
VGDQ05 (50-150N / m) stroke / torque control mechanism

1.关限位开关：Close limit switch	2.大齿轮：Big gear wheel	3.轴套：Axle sleeve	4.关限位凸轮：Close limit cam
5.开限位开关：Open limit switch	6.开限位凸轮：Open limit cam	7.压盖：Gland	8.开度盘：Opening dial
9.指针：Pointer	10.输出轴：Output shaft	11.关转矩凸轮：Off-torque cam	
12.开转矩凸轮：Open torque cam	13.转矩开关：Torque switch		

七：机械限位机构调整 / Adjustment of mechanical limit mechanism



调整的目的是把阀门的开关件（碟板.阀球等）限制在其工作行程（一般是90°）内，使其不能随意转动。

1：使阀门处于“全关”位置，螺钉与限位体的位置如图所示，旋进关位置的机械限位螺钉至螺钉的顶部接触到限位体上，然后再把螺钉退回1-2圈，再把锁止螺母拧紧。

2：使阀门处于“全开”位置，按上述方法调整开位置的机械限位螺钉。

The purpose of adjustment is to limit the valve's switching elements (disk, valve ball, etc.) within its working stroke (generally 90 °), so that it cannot be rotated at will.

1: Make the valve in the "full close" position, the position of the screw and the stopper as shown in the figure, screw the mechanical limit screw into the close position until the top of the screw contacts the stopper, and then return the screw 2 turns, then tighten the lock nut.

2: With the valve in the "full open" position, adjust the mechanical limit screw in the open position as described above.

八：转矩控制机构调整 / Adjustment of torque control mechanism

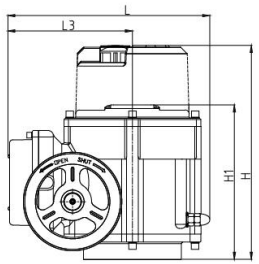
转矩控制机构在出厂时已经调至产品铭牌上的最大输出转矩，用户一般不作调整。

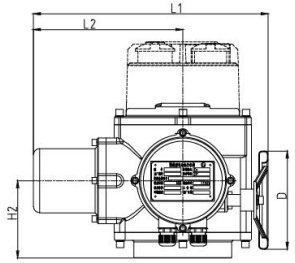
The torque control mechanism has been adjusted to the maximum output torque on the product nameplate at the factory, and users generally do not make adjustments.

九：故障及排除方法 / Troubleshooting and troubleshooting

序号 Serial number	故障 fault	原因 Reason	排除方法 Elimination method
1	电机起动不了 The motor won't start	1：电源线脱开 The power cord is disconnected	1：检查电源线 Check the power cord
		2：控制线路故障 Control line failure	2：排除线路故障 Troubleshoot the line
		3：行程或转矩机构失灵 Failure of the stroke or torque mechanism	3：排除行程或转矩故障 Troubleshooting stroke or torque
2	输出轴旋转方向不符合规定 The output shaft rotation direction does not meet the requirements	电源线序接反 The power cables are connected in reverse order	调换任意两根电源线 Replace any two power cords
3	电机过热 Motor overheating	1：连续工作时间太长 Continuous working time is too long	1：停止运行，使电机冷却 Stop running and allow the motor to cool
		2：电机与执行器不配套 Motor and actuator are not matched	2：检查配套情况 Check the supporting situation
		3：缺相 Missing phase	3：检查电源线 Check the power cord
4	运行中电机停转 Motor stalls during operation	1：转矩控制动作 Torque control action	1：增大整定转矩 Increase the setting torque
		2：阀门故障 Valve failure	2：检查阀门 Check valve
5	到位后电机不停或灯不亮 The motor does not stop or the light does not light after it is in place	1：行程或转矩机构故障 Stroke or torque mechanism failure	1：检查行程力矩机构 Check stroke torque mechanism
		2：行程控制器调整不当 Incorrect adjustment of the stroke controller	2：重新调整行程机构 Readjust the stroke mechanism

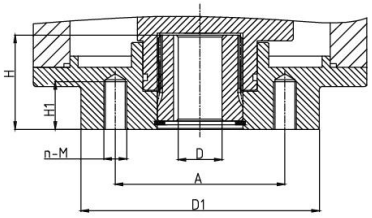
十：外形尺寸 / Dimensions

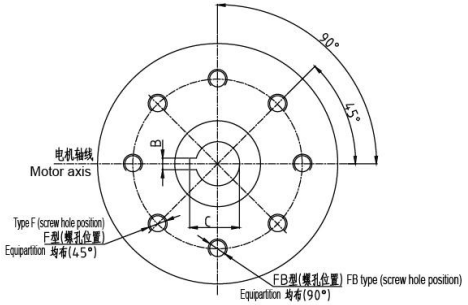




尺寸Size / 型号Model	H	H1	H2	D	L	L1	L2	L3
Q05/10/15	281	170	77	φ100	215	270	170	121
Q20/30/40	276	197	99	φ140	260	300	191	160
Q60/90/120/200	300	240	112	φ180	311	410	252	186

十一：法兰结构与连接尺寸 / Flange structure and connection dimensions





型号/规格 Model / Specification	法兰型式 Flange type		D1	H	H1	A	n-M	螺孔方向 Screw hole direction	D 预留Reserve	D 最大Maximum	B	C
Q05 Q10 Q15		FB1	φ92	34	>15	φ57	4-M6	90°	φ12.7/φ19		3/5	14.1/21.3
		FB2		34	>18	φ70	4-M8	90°	φ19		5	21.3
	F05			34	>15	φ50	4-M6	45°	φ8	φ19		
	F07			34	>18	φ70	4-M8	45°	φ8	φ19		
Q20 Q30 Q40		FB3	φ125	47	>24	φ89	4-M12	90°	φ22.2		5	24.5
	F07			47	>20	φ70	4-M8	45°	φ12	φ28		
	F10			47	>22	φ102	4-M10	45°	φ12	φ28		
Q60 Q90 Q120		FB3	φ150	57	>30	φ89	4-M12	90°	φ22.2/φ28		5/8	24.5/31.3
		FB4		57	>30	φ108	4-M12	90°	φ31.7			
	F10			57	>30	φ102	4-M10	45°	φ15	φ38		
	F12			57	>30	φ125	4-M12	45°	φ15	φ38		
Q200		FB5	φ200 (定制) Customized	60	>25	φ159	4-M16	90°	φ33.1/φ38		10	36.4/41.3
	F14			60	>25	φ140	4-M16	45°	φ20	φ38		

十二、型号及主要技术参数 / Flange structure and connection dimensions

型号/规格 Model / Specification	输出转矩 Output torque (N.m)	输出转速 Output speed (r/min)	最大阀杆直径 Maximum stem diameter (φmm)	手动速比 Manual speed ratio (手轮/输出) (Handwheel / Output)	电机功率(W) Motor power (380V)	电机功率(W) Motor power (220V)	额定电流(A) Rated current (380V)	额定电流(A) Rated current (220V)	参考重量 Reference weight (kg)
Q05	50	0.5/1	φ19	70:1	25	25	0.08	0.12	7.32
Q10	100	0.5/1	φ19	70:1	30	30	0.1	0.14	7.65
Q15	150	0.5/1	φ19	70:1	35	35	0.12	0.17	7.85
Q20	200	0.5/1	φ28	95:1	40	40	0.15	0.17	11.2
Q30	300	0.5/1	φ28	95:1	50	50	0.2	0.2	11.35
Q40	400	0.5/1	φ28	95:1	60	60	0.22	0.28	11.6
Q60	600	0.5/1	φ38	89:1	90	90	0.26	0.5	19.6
Q90	900	0.5/1	φ38	89:1	120	120	0.4	0.6	20.2
Q120	1200	0.5/1	φ38	89:1	150	150	0.5	0.8	21.2
Q200	2000	0.5/1	φ38	89:1	180	180	0.8	0.95	22.5

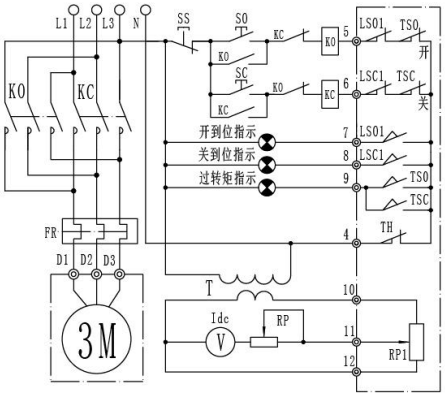
十三：电气控制部分 / Dimensions

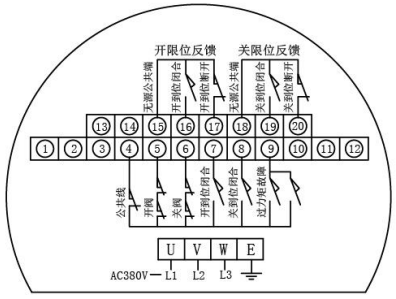
电器符号说明

LSO开向限位开关
LSC关向限位开关
TSO开向转矩开关
TSC关向转矩开关
RP1位置电位器（1K）
TH电机过热保护开关

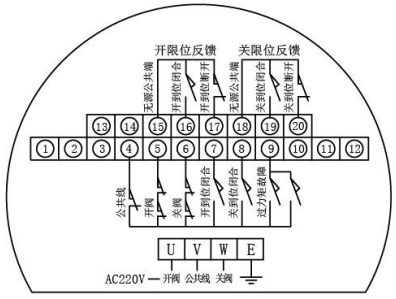
Electrical symbol description

LSO Open Direction Limit Switch
LSC close limit switch
TSO open direction torque switch
TSC Close Torque Switch
RP1 position potentiometer (1K)
TH motor overheat protection switch

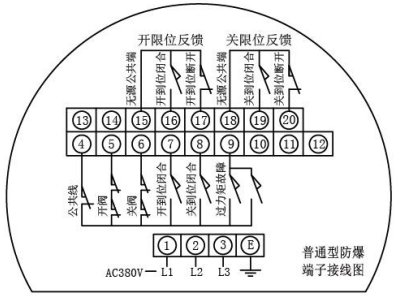




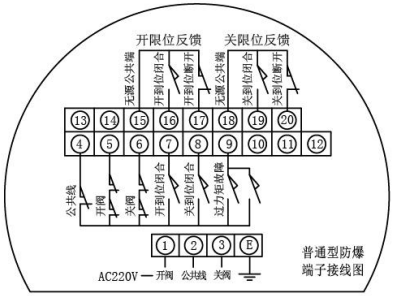
380V普通端子接线图
Wiring diagram of 380V common terminal



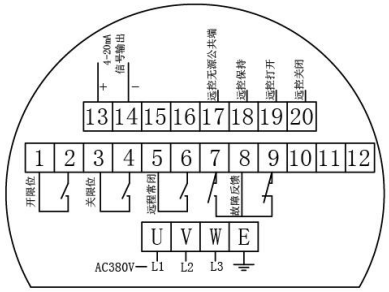
220V普通端子接线图
Wiring diagram of 220V common terminal



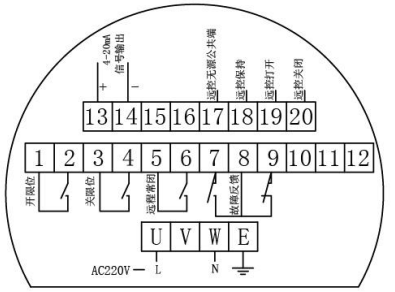
380V防爆端子接线图
Wiring diagram of 380V explosion-proof terminal



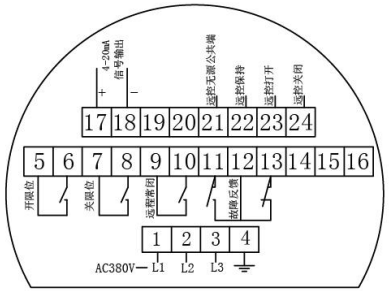
220V防爆端子接线图
Wiring diagram of 220V explosion-proof terminal



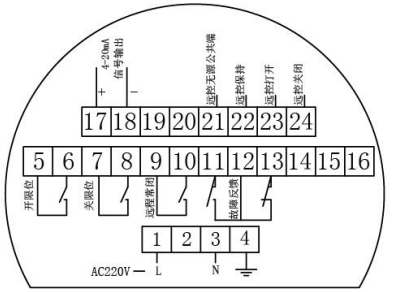
非侵开关型380V端子接线图
Wiring diagram of non invading switch type 380V terminal



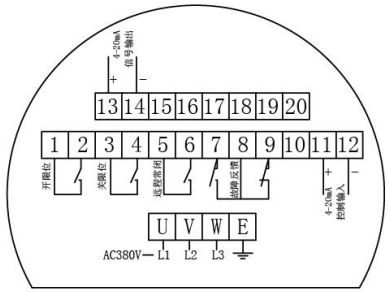
非侵开关型220V端子接线图
Wiring diagram of non invading switch type 220V terminal



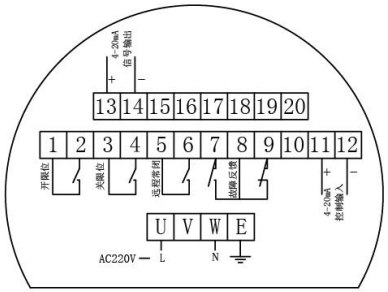
非侵防爆开关型380V端子接线图
Wiring diagram of non-invasive explosion-proof switch type 380V terminal



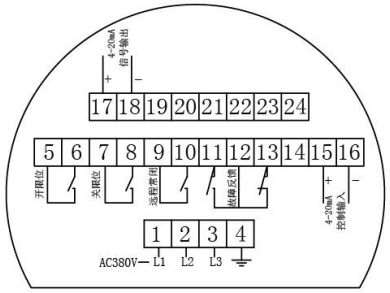
非侵防爆开关型220V端子接线图
Wiring diagram of non-invasive explosion-proof switch type 220V terminal



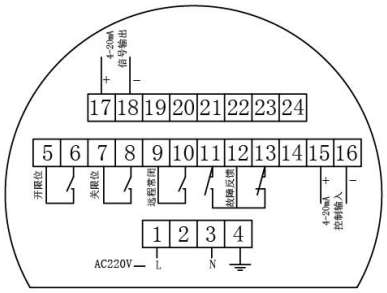
调节型380V端子接线图
Wiring diagram of regulated 380 V terminal



调节型220V端子接线图
Wiring diagram of regulated 220 V terminal



调节防爆型380V端子接线图
Wiring diagram of regulated explosion-proof 380V terminal



调节防爆型220V端子接线图
Wiring diagram of regulated explosion-proof 220V terminal

故障反馈 Fault feedback	开阀 Valve opening	关限位 Limit position
信号输出 Signal output	关阀 Shut off valve	公共线 Common line
远控打开 Remote control open	开限位 Opening limit	远控关闭 Remote control shutdown
远程常闭 Remote normal closure	远控保持 Remote control and maintenance	控制输入 Control input
过力矩故障 Over torque fault	关到位闭合 Closed in place closed	开到位闭合 Open in place closed
开到位断开 Open in place	关限位反馈 Off limit feedback	开限位反馈 Open limit feedback
无源公共端 Passive public	远控无源公共端 Remote control passive public terminal	

十四：非侵型电控组件调试说明

非侵型是我公司在数字型产品基础上开发的。其可接收DCS系统中PLC等控制器发出的开关量信号（无源干触点、有源24V、有源220V，点动保持可切换）或模拟量信号（DC4～20mA、0～10V等），可直接驱动，也可通过接触器或固态继电器驱动电动执行器动作。输出DC4～20mA反馈电流和四个继电器触点（开位、关位、远控、故障报警）。该组件集成了伺服控制单元、液晶显示单元、旋钮操作等单元。本产品操作简单，保护功能完善，是您重新定义高品质和简易智能型的最佳选择。

Non intrusive products are developed by our company on the basis of digital products. It can receive the on-off signal (passive dry contact, active 24V, active 220V, inching and holding can be switched) or analog signal (dc4-20ma, 0-10V, etc.) sent by PLC and other controllers in DCS system, and it can be directly driven, or it can also drive the electric actuator through contactor or solid-state relay. Output DC4 ~ 20mA feedback current and four relay contacts (open position, close position, remote control, fault alarm). The module integrates servo control unit, liquid crystal display unit, knob operation unit, etc. With simple operation and perfect protection function, this product is the best choice for you to redefine high quality and simple intelligent type.

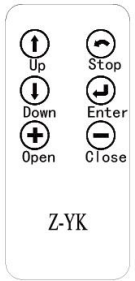
1. 旋钮操作说明

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, which can be switched between site / stop / remote; or the menu can be saved (from stop to site) and exited (from stop to remote) in the set state. The black knob is the operation knob, which can be opened or closed in the field mode, or set up plus and minus in the set state. When the field knob is operated, the short-term action is the field inching mode. When the effective action time of the operation knob exceeds 3 seconds, the alarm area displays "BC" as the automatic entry into the field holding mode. Turn the operation knob reversely or turn the mode knob to the stop, that is to say, stop the operation.

2. 遥控器操作说明（遥控器为选配件，需要时请在订货时特殊说明）

Up	--上移/开标定	Down	--下移/关标定
Enter	--确认/保存	Stop	--停止/退出
Open	--值加/现场开	Close	--值减/现场关



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，连按三次“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，连按三次“Down”键进入关位标定状态，其它操作同上。

现场方式，连按三次“Enter”键进入高级设置菜单，菜单内“Up”、“ Down”键用于菜单上移、下移，“Open”、“Close”用于参数值改变，“Enter”键用于进入菜单和保存参数，“Stop”键用于返回上级和退出菜单。

In the field mode, press the "open" key to open the valve in the holding mode,Press "close" to close the valve in holding mode, and press "stop" to stop.

In the field mode, press the "up" key three times to enter the open position calibration state, the "open", "close" and "stop" keys can control the opening, closing and stopping of the electric actuator, the "enter" key is used to save the stroke, and the "stop" key is used to return.

In the field mode, press the "down" key three times to enter the off position calibration state, and other operations are the same as above.

In the field mode, press the "enter" key three times to enter the advanced setting menu. The "up" and "down" keys in the menu are used to move up and down the menu. The "open" and "close" keys are used to change the parameter value. The "enter" key is used to enter the menu and save the parameter. The "stop" key is used to return to the superior and exit the menu.

3. 信号查询（显示屏左下角为信号查询区）

1.远控信号查询

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。

2.阀位信号查询

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）。

4. 行程标定

4.1 关位标定

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,此时字母L闪两次，输出反馈电流为4mA同时驱动关位继电器闭合并显示0%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。

4.2 开位标定

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,此时字母H闪两次，输出反馈电流为20mA同时驱动开位继电器闭合并显示100%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。

注：保存行程时，出现Fu或Fn报警时，请重新调整编码器的旋转区间，并重标行程；

3. Signal query (the lower left corner of the display is the signal query area)

1. Remote control signal query

Turn the mode button to the remote position, and the received remote control signal will be displayed in the lower left corner of the display screen. Switch type: OP stands for remote opening; CL stands for remote closing; BC stands for remote holding (alternate display when multiple states coexist). Regulating type: display the received control current value or voltage value.

2. Valve position signal query

Turn the mode button to the site, and the lower left corner of the display shows the valve position signal. When the valve position acquisition is potentiometer, it shows the percentage of resistance value (d01-d99); when the valve position acquisition is 12 bit encoder, it shows the percentage of encoder (b00-b99); when the valve position acquisition is 18 bit encoder, it shows the thousandth ratio of encoder (000-999).

4. Stroke calibration

4.1 off position calibration

When the stop position is turned to the off position for about 3 seconds, release the operation button and turn the mode button to the site when the display letter L flashes. At this time, when l no longer flashes, it means entering the off position calibration state. The electric opening or closing action can be performed through the operation button. After adjusting to the closing position, turn the mode button to the stop and then turn it back to the site. At this time, the letter L flashes twice, and the output feedback current is 4mA. At the same time, drive the closing relay to close and display 0% to indicate that the closing calibration is completed. If the mode button is turned from stop to remote position, it will exit the stroke calibration directly.

4.2 open position calibration

When the stop position is turned to the open position for about 3 seconds, release the operation button and turn the mode button to the site when the flashing letter H is displayed. At this time, h will no longer flash to indicate entering the open position calibration state. The electric opening or closing action can be performed through the operation button. After adjusting to the opening position, turn the mode button to the stop and then turn it back to the site. At this time, the letter H flashes twice, and the output feedback current is 20mA. At the same time, drive the opening relay to close and display 100% to indicate that the opening calibration is completed. If the mode button is turned from stop to remote position, it will exit the stroke calibration directly.

Note: when saving the stroke, in case of Fu or FN alarm, please readjust the rotation range of encoder and re mark the stroke;

5. 输出电流微调

5.1 4mA输出电流微调

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LF闪烁两次表示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。

5.2 20mA输出电流微调

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HF闪烁两次表示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。

6. 死区设置（此功能只适用于调节型）

死区为自调节，无需设置，且精度更高无震荡。

5. Output current fine adjustment

5.1 4mA output current fine adjustment

Turn the operation button to the stop position for about 10 seconds, release the operation button when the flashing display letter LF is displayed, turn the mode button to the site, and then turn it back to stop, that is, enter the 4mA output current fine-tuning state. At this time, the output current can be adjusted through the operation button. When the output current reaches 4mA, turn the mode button to the site. At this time, lf flashes twice to indicate that the output current of 4mA is fine-tuning. If the mode button is turned from stop to remote, it will directly exit from the output current fine-tuning state.

5.2 20 mA output current fine adjustment

Turn the operation button to the stop position for about 10 seconds, release the operation button when the flashing display letter HF is displayed, turn the mode button to the site, and then turn it back to stop, that is, enter the 20mA output current fine-tuning state. At this time, the output current can be adjusted through the operation button. After the output current reaches 20mA, turn the mode button to the site. At this time, HF flickers twice to indicate that the output current of 20mA is fine adjusted. If the mode button is turned from stop to remote, it will directly exit from the output current fine-tuning state.

6. Deadband setting (this function is only applicable to the adjustable type)

The deadband is self-adjusting, no need to set, and the accuracy is higher without vibration.

7. 高级设置

停止位置，旋操作钮至打开约18秒钟，等到闪烁显示字母CF时松开操作钮并将方式钮旋到现场再旋回停止，即进入高级设置菜单。

遥控操作时，现场方式连按三次“Enter”键即可进入高级设置菜单。

注：各级菜单内，若方式钮由停止旋至远方（或按遥控器“Stop”键）则返回上级或退出菜单

7.1 CF---关闭方向 (默认值---C，顺时针)

菜单项移至“CF”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入关闭方向设置，此时显示屏左下角显示参数值C---顺时针，A---逆时针，可通过操作钮调整参数值（或按遥控器“Open”、“Close”键），调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时CF闪烁两次表示关闭方向设置完成并退回上级菜单。

7. Advanced settings

In the stop position, turn the operation button to the open position for about 18 seconds. When the letter CF is flashing, release the operation button, turn the mode button to the site, and then turn the button back to the stop position to enter the advanced setting menu.

During remote control operation, press "enter" three times in field mode to enter advanced setting menu.

Note: in all levels of menus, if the mode button is turned from stop to remote (or press the "stop" key of the remote control), return to the upper level or exit the menu

7.1 CF --- closing direction (default value --- C, clockwise)

Move the menu item to "CF" and turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter the setting of the closing direction. At this time, the parameter value C --- clockwise, a --- counter-clockwise is displayed in the lower left corner of the display screen. Adjust the parameter value (or press the "open" and "close" keys of the remote control). After adjustment, turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control) Press the "enter" key of the remote control), when CF flashes twice, it means that the closing direction setting is completed and the upper menu is returned.

7.2 LS---控制低信

菜单项移至“LS”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入控制低信设置，此时显示屏左下角显示收到控制电流值或电压值，当控制信号改变时参数值同步改变，调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时LS闪烁两次表示控制低信设置完成并退回上级菜单。

7.3 HS---控制高信

菜单项移至“HS”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入控制低信设置，此时显示屏左下角显示收到控制电流值或电压值，当控制信号改变时参数值同步改变，调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时HS闪烁两次表示控制低信设置完成并退回上级菜单。

7.4 CA---死区设置（默认值-A，死区自适应）

菜单项移至“CA”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入死区设置，此时显示屏左下角显示参数值A---死区自适应、03～99---死区设定0.3%～9.9%，可通过操作钮调整参数值（或按遥控器“Open”、“Close”键），调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时CA闪烁两次表示死区设置完成并退回上级菜单。

7.5 CS---丢信动作（默认值-丢信保位，调节型时此设置有效）

菜单项移至“CS”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入丢信动作设置，此时显示屏左下角显示参数值OP---丢信开、CL---丢信关、SP---丢信保位，可通过操作钮调整参数值（或按遥控器“Open”、“Close”键），调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时CS闪烁两次表示丢信动作设置完成并退回上级菜单。

7.2 LS --- control low signal

Move the menu item to "LS" and turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter the control low signal setting. At this time, the lower left corner of the display shows the received control current value or voltage value. When the control signal changes, the parameter value changes synchronously. After adjustment, turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control). At this time, LS Flashing twice indicates that the control low signal setting is completed and returned to the upper menu.

7.3 HS - control high signal

Move the menu item to "HS" and turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter the control low signal setting. At this time, the lower left corner of the display shows the received control current value or voltage value. When the control signal changes, the parameter value changes synchronously. After adjustment, turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control). At this time, HS Flashing twice indicates that the control low signal setting is completed and returned to the upper menu.

7.4 CA --- deadband setting (default value - A, deadband adaptive)

Move the menu item to "CA" and turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter the dead zone setting. At this time, the lower left corner of the display shows the parameter value a --- dead Zone adaptive, 03 ~ 99 --- dead zone setting 0.3% ~ 9.9%. You can adjust the parameter value through the operation button (or press the "open" and "close" keys of the remote control). After adjustment, turn the mode button to the site Then turn the cycle to stop (or press the "enter" key of the remote control), when the CA flashes twice, it indicates that the dead zone setting is completed and returns to the upper menu.

7.5 CS --- loss of signal action (default value - loss of signal protection position, this setting is effective when it is adjust-able)

Move the menu item to "CS" and then turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter the setting of the loss of information action. At this time, the lower left corner of the display shows the parameter values OP --- loss of information on, CL --- loss of information off, SP --- loss of information protection. You can adjust the parameter values (or press the "open" and "close" keys of the remote control) through the operation button. After the adjustment, turn the mode button to the site Turn it back to stop (or press the "enter" key of the remote control), at this time, CS flashes twice to indicate that the setting of the lost signal action is completed and returns to the upper menu.

7.6 CH---两线控制（默认值-常规控制，开关型时此设置有效）

菜单项移至“CH”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入两线控制设置，此时显示屏左下角显示参数值OP---有信开无信关、CL---有信关无信开、SP---常规控制，可通过操作钮调整参数值（或按遥控器“Open”、“Close”键），调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时CH闪烁两次表示丢信动作设置完成并退回上级菜单。

7.6 ch --- two wire control (default - general control, this setting is effective when the switch type is used)

Move the menu item to "ch" and then turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter the two-wire control setting. At this time, the lower left corner of the display shows the parameter values OP --- with or without signal on, CL --- with or without signal on, SP --- general control. You can adjust the parameter values through the operation button (or press the "open" and "close" keys of the remote control). After the adjustment is completed, you can adjust the parameter values Turn the button to the site and then turn it back to stop (or press the "enter" key of the remote control). At this time, ch flashes twice to indicate that the setting of the lost signal action is completed and returns to the upper menu.

7.7 CU---正反作用 (默认值---正作用，调节型时此设置有效)

菜单项移至“CU”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入正反作用设置，此时显示屏左下角显示参数值P---正作用，n---反作用，可通过操作钮调整参数值（或按遥控器“Open”、“Close”键），调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时CU闪烁两次表示关闭方向设置完成并退回上级菜单。

7.8 Cd---堵转时间 (默认值---20)

菜单项移至“Cd”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入堵转时间设置，此时显示屏左下角显示参数值03-99，可通过操作钮调整参数值（或按遥控器“Open”、“Close”键），调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时Cd闪烁两次表示关闭方向设置完成并退回上级菜单。

7.9 CE---恢复出厂值

若在菜单设置过程中将各参数设乱了，可用此项来恢复除行程的“开位”、“关位”和“关闭方向”参数外的出厂设置值。

7.7 Cu - positive and negative action (default value - positive action, this setting is effective when the adjustment type is used)

Move the menu item to "Cu" and turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter the positive and negative action setting. At this time, the lower left corner of the display shows the parameter value p --- positive action, n --- negative action. You can adjust the parameter value (or press the "open" and "close" keys of the remote control) through the operation button. After the adjustment, turn the mode button to the site and then turn it back to stop (or Press the "enter" key of the remote control), and the Cu flashes twice, indicating that the closing direction setting is completed and the upper menu is returned.

7.8 CD --- locked rotor time (default value --- 20)

Move the menu item to "CD" and turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter the locked rotor time setting. At this time, the parameter value 03-99 is displayed in the lower left corner of the display screen. You can adjust the parameter value (or press the "open" and "close" keys of the remote control) through the operation button. After the adjustment, turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control) Key), CD flashes twice at this time, indicating that the closing direction setting is completed and returns to the upper menu.

7.9 CE --- restore factory value

If the parameters are set disorderly in the menu setting process, this item can be used to restore the factory settings except for the "on", "off" and "close direction" parameters of the stroke.

具体做法为：菜单项移至“CE”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入恢复出厂值设置，此时显示屏左下角显示参数值，no---不恢复，yes---恢复，可通过操作钮调整参数值（或按遥控器“Open”、“Close”键），然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时CE闪烁两次表示恢复出厂值完成并退回上级菜单。

The specific method is as follows: move the menu item to "CE" and turn the mode button to the site and then turn it back to the stop (or press the "enter" key of the remote control), that is, enter the factory value restoration setting. At this time, the parameter value is displayed in the lower left corner of the display screen, no --- no restoration, yes --- restoration. Adjust the parameter value (or press the "open" and "close" keys of the remote control), and then turn the mode button to the site and then Cycle to stop (or press the "enter" key of the remote control), when CE flashes twice, it means that the factory value is restored and returned to the upper menu.

7.10 SA---保存出厂值

菜单项移至“SA”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入保存出厂值设置，此时显示屏左下角显示参数值,no---不保存，yes---保存，可通过操作钮调整参数值（或按遥控器“Open”、“Close”键），调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时SA闪烁两次表示保存出厂值设置完成并退回上级菜单。

7.11 CJ---禁动时间 (默认值---02)

禁动时间指的是执行器在远方调节模式时，两次动作之间的停动时间间隔（00-10S）。

菜单项移至“CJ”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入禁动时间设置，此时显示屏左下角显示参数值03-99，可通过操作钮调整参数值（或按遥控器“Open”、“Close”键），调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时Cd闪烁两次表示关闭方向设置完成并退回上级菜单。

7.10 SA - save factory values

Move the menu item to "Sa" and turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter to save the factory value settings. At this time, the lower left corner of the display shows the parameter values, No --- do not save, yes --- save. You can adjust the parameter value through the operation button (or press the "open" and "close" keys of the remote control). After the adjustment, turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control). At this time, SA flashes twice, indicating that the factory value is saved and returned to the upper menu.

7.11 CJ --- stop time (default value --- 02)

Stop time refers to the stop time interval (00-10s) between two actions when the actuator is in remote adjustment mode.

Move the menu item to "CJ" and then turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is to say, enter the setting of the time to stop. At this time, the parameter value 03-99 is displayed in the lower left corner of the display screen. You can adjust the parameter value (or press the "open" and "close" keys of the remote control) through the operation button. After the adjustment, turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control) Key), CD flashes twice at this time, indicating that the closing direction setting is completed and returns to the upper menu.

8. modbus总线设置（需定制）

停止方式，旋操作钮至关闭约18秒钟，等到闪烁显示字母Id时松开操作钮并将方式钮旋到现场再旋回停止，即进入总线设置菜单。

遥控操作时，现场方式连按三次“Stop”键即可进入总线设置菜单。

注：本机总线参数重设以后，执行器须先断电，再重新上电后方能保证总线控制正常工作。

8. MODBUS bus setting (customized)

Stop mode: turn the operation button to close for about 18 seconds, release the operation button when flashing the letter ID, turn the mode button to the field and then turn it back to stop, that is, enter the bus setting menu.

During remote control operation, press the "stop" key three times in field mode to enter the bus setting menu.

Note: after resetting the bus parameters of the machine, the actuator must be powered off first and then powered on again to ensure the normal operation of the bus control.

8.1 Id---通道地址（默认住---003）

通道地址是指总线控制时所能被主控系统（主站）和自身识别的身份代码

菜单项移至“Id”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入通道地址设置，此时显示屏左下角显示参数值000-247，可通过操作钮或调整参数值（或按遥控器“Open”、“Close”键），调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时Id闪烁两次表示通道地址设置完成并退回上级菜单。

8.1 ID --- channel address (default address --- 003)

Channel address refers to the identification code that can be identified by the master control system (master station) and itself during bus control

Move the menu item to "Id" and then turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter the channel address setting. At this time, the parameter value 000-247 is displayed in the lower left corner of the display screen. You can turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control) after adjustment by operating the button or adjusting the parameter value (or press the "open" and "close" keys of the remote control) "Key), and the ID flashes twice to indicate that the channel address setting is completed and returns to the upper menu.

8.2 bd---波特率（默认值---096）

波特率是指总线控制回路上每秒中传送的数据位数，通常用KB/S（千位/秒）表示。

菜单项移至“bd”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入波特率设置，此时显示屏左下角显示参数值003-384（003-0.3KB/S、006-0.3KB/S、012-1.2KB/S、024-2.4KB/S、048-4.8KB/S、096-9.6KB/S、192-19.2KB/S、384-38.4KB/S），可通过操作钮或调整参数值（或按遥控器“Open”、“Close”键），调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时bd闪烁两次表示波特率设置完成并退回上级菜单。

8.3 PA---校验位（默认值---n2）

校验位是指总线控制回路上传送的数据中校验位的设置。

菜单项移至“PA”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入校验位设置，此时显示屏左下角显示参数值O、E、n1、n2（O-奇校验、E-偶校验、n1-无校验和1位停止位、n2-无校验和2位停止位），可通过操作钮或调整参数值（或按遥控器“Open”、“Close”键），调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时PA闪烁两次表示校验位设置完成并退回上级菜单。

8.2 BD --- baud rate (default value --- 096)

Baud rate refers to the number of bits of data transmitted per second on the bus control loop, usually expressed in kilobytes / S (kilobits / second).

Move the menu item to "BD" and turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter the baud rate setting. At this time, the parameter values 003-384 (003-0.3kb/s, 006-0.3kb/s, 012-1.2kb/s, 024-2.4kb/s, 048-4.8kb/s, 096-9.6kb/s, 192-19.2kb/s, 384-38.4kb / s) will be displayed in the lower left corner of the display screen. You can adjust the parameter values (or press the remote control button or Control "open" and "close" keys. After adjustment, turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control). At this time, BD flashes twice to indicate that baud rate setting is completed and returns to the upper menu.

8.3 PA --- check bit (default value --- N2)

Check bit refers to the setting of the check bit in the data transmitted on the bus control circuit.

Move the menu item to "pa" and then turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter the calibration position setting. At this time, the parameter values o, e, N1, N2 (o-odd, e-even, n1-no calibration and 1-stop, n2-no calibration and 2-stop) are displayed in the lower left corner of the display screen. You can adjust the parameter values through the operation button or by pressing the remote control "open" And "close". After adjustment, turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control). At this time, PA flashes twice to indicate that the check bit setting is completed and returns to the upper menu.

8.4 Lo---丢信时间（默认值---010）

丢信时间是指执行器接收不到总线信号的容许时间。若超过此时间还接收不到总线信号，则判定为总线信号丢失，此时执行器将按照在高级设置中“丢信动作”项设定的要求进行动作。

菜单项移至“Lo”然后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），即进入校验位设置，此时显示屏左下角显示参数值O-199（0-199秒），可通过操作钮或调整参数值（或按遥控器“Open”、“Close”键），调整好后将方式钮旋到现场再旋回停止（或按遥控器“Enter”键），此时Lo闪烁两次表示丢信时间设置完成并退回上级菜单。

8.4 Lo --- lost time (default value --- 010)

The lost signal time refers to the allowable time when the actuator cannot receive the bus signal. If the bus signal is not received after this time, it is determined that the bus signal is lost. At this time, the actuator will act according to the requirements set in the "loss of signal action" item in the advanced settings.

Move the menu item to "Lo" and turn the mode button to the site and then turn it back to stop (or press the "enter" key of the remote control), that is, enter the calibration position setting. At this time, the parameter value o-199 (0-199 seconds) is displayed in the lower left corner of the display screen. You can turn the mode button to the site and then turn it back to stop (or press the remote control "open" and "close" key of the remote control) Enter), and lo flashes twice to indicate that the setting of the lost time is completed and returns to the upper menu.

8.报警信息说明（显示屏右下角为报警区）

8. Alarm information description (the lower right corner of the display is the alarm area)

故障码 Trouble code	故障信息 Fault information	故障码 Trouble code	故障信息 Fault information
FA	转向出错 Steering error	Fb	比例标定错误Fb闪烁3次 Proportion calibration error FB flashes 3 times
FC	关过矩 closing moment	FO	开过矩 Opening moment
Fd	堵转或其它原因导致的 阀位不变化 No change of valve position due to locked rotor or other reasons	FP	电源缺相 Power missing phase
FS	DC4-20mA远控信号丢失 Dc4-20ma remotecontrol signal lost	FH	远控开、关信号同在 Remote control on / off signal
FE	电机温度开关断开 或力矩公共端开路 Motor temperature switch open or torque common open	FF	阀位故障 (电位器开路、 接线错或编码器故障) Valve position fault (potentiometer open circuit, wrong wiring or encoder fault

9.常见问题处理方法

9. Solutions to common problems

通电指示灯和显示屏不显示 Power on indicator and display do not show	A.电源实际未接入 B.电压过低 C.接线错 D.电路坏 A. The power supply is not connected actually B. the voltage is too low C. the wiring is wrong D. the circuit is broken
工作中灯和显示屏显示异常 Abnormal display of working light and display	A.故障码 B.查询信息 C.指示灯或显示屏坏需更换电路 A. Fault code B. query information C. the circuit needs to be replaced if the indicator light or display screen is broken
通电现场和远控均不动作 Neither the power-on site nor the remote control will operate	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 A. Wrong wiring or open circuit B. fault protection C. motor broken or stuck D. starting capacitance broken E. circuit broken
现场工作正常,但远控不动作 The scene works normally, but the remote control does not work	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 A. No signal or wiring is reversed B. knob board is broken or not in remote C. positive / negative reaction is set wrong D. circuit is broken
现场不动作,但远控工作正常 No action on site, but remote control works normally	A.旋钮板坏或没在现场模式 B.操作钮未旋到位 C.电路坏 A. The knob board is broken or not in the field mode B. the operating knob is not screwed in place C. the circuit is broken
能开不能关或能关不能开 Can open or close or can not close	A.力矩或行程开关开路 B.到限位或过矩 C.电机坏或堵转或接线错 D.电路坏 A. Torque or travel switch open circuit B. to limit or over torque C. motor broken or locked rotor or wrong wiring D. circuit broken
无控制信号,通电立即动作 No control signal, 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 A. Wiring error B. control signal is actually valid C. signal loss action D. set as two-wire control E. circuit failure
中间位置能动作到限位不动 The middle position can move to the limit	A.力矩开关接线错误 B.恰巧到位电机坏或接线开路 C.电路坏 A. Torque switch wiring error B. motor in place is broken or wiring is open C. circuit is broken
动作方向反 Reverse direction	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 A. Motor wiring is reversed B. valve position calibration is reversed C. positive / negative action or closing direction is reversed D. signal is reversed
无比例反馈输出或时有时无 No proportional feedback output or sometimes none	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 A. Wrong output wiring or poor contact B. potentiometer or encoder failure or poor contact C. circuit failure
比例反馈偏大或偏小或不变 Proportional feedback is too large or too small or constant	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 A. Potentiometer or encoder fault B. wrong calibration C. poor engagement of potentiometer and transmission gear D. circuit failure

注：接线请严格按照电气接线图连接。

Note: please connect the wiring in strict accordance with the electrical wiring diagram.

注：本说明书如有更改恕不另行通知，如有疑问请联系供应商。

Note: This manual is subject to change without notice. If in doubt, please contact the supplier.