



# MT-A 系列智能型电动执行机构

MT-A Series Intelligent Electric Actuators

## 操作手册 Operation manual



在调试和使用该设备前敬请仔细阅读该手册 A/01  
Please read the manual carefully before commissioning & using the device.

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本手册适用于 D+R MT-A 系列智能型电动执行机构的安装、调试、使用和维护指导。

The operation manual is applicable to the installation, commissioning, usage and maintenance instruction of D+R MT-A series intelligent electric actuator.



**严重警告：**禁止在通电情况下打开设备机壳。

**Serious warning:** It's forbidden to open the device enclosure with power on.



**严重警告：**调试过程中采用点动进行全开/全关位置设置时，在接近阀门的全开或全关位置时，应该改为手轮操作，以防止使用点动按钮操作造成阀门走过(此时过力矩保护不起作用)，致使阀门或者执行机构损坏，由此种原因造成阀门或执行机构损坏，D+R 概不负责。

**Serious warning:** In the inching setup of open/closed position during the commissioning, please change to handwheel operation mode when it is near the open or closed position of the valve; otherwise, the inching button will lead to valve position pass-off (at this moment, the over torque protective function does not play any effective role) so that valve or actuator is damaged. D+R will not bear any responsibilities for such damage.

**注：**点动:是指在进行阀门行程设置过程中，不采用手动旋转手轮的方式改变阀门行程，而是通过操作面板的旋钮改变行程，当手离开旋钮时，电机就会停止。

**Note:** Inching: refers to the process of setting the valve stroke, where the valve stroke is not changed by manually rotating the handwheel, but by changing the stroke through the knob on the operating panel. When the hand leaves the knob, the motor will stop



**警告：**在安装、调试、使用和维护 D+R MT-A 系列电动执行机构前，必须仔细阅读本手册，严格按照安全操作规程操作，以防造成设备及人身安全事故。

**Warning:** Please carefully read the operation manual before installation, commissioning, usage and maintenance of D+R MT-A series intelligent electric actuator; operate in strict accordance with the safe operation modulating types and prevent equipment and personal safety accident.



**警告：**在操作过程中，必须小心高温、高压、易燃、易爆、有毒及腐蚀性介质、高电压和强大外力等危险情况。

**Warning:** In the normal operation, please pay special attention to such dangers: high-temperature, high-pressure, combustible, explosive, poisonous and corrosive medium, high voltage and strong external force, etc..



**警告：**必须严格按照规范、图纸和手册等要求进行正确的安装、接线、调试、使用、储存和维护，否则有可能导致严重伤害及设备损坏。

**Warning:** Please execute correct installation, wiring, commissioning, usage, storage Andmaintenance in strict accordance with the codes, drawings and operation manual;otherwise, it may lead to serious damage against the equipment or injury to the operator.

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D+R MT-A 系列智能型电动执行机构可用显示面板上的霍尔磁性旋钮和遥控器进行调试、操控、参数设置、修改等。

The D+R MT-A series intelligent electric actuator can be debugged, operated, parameter set, modified, etc. using the Hall magnetic knob and remote control on the display panel.

所有执行机构在出厂前，对其功能、参数、保护等进行了完整的确定，无需再进行重复设置，只需在与阀门连接后进行行程限位、信号校准即可。

The functions, parameters and protective functions of all the actuators are set up before they leave the factory; it is only needed to limit the stroke and calibrate the signal upon valve connection.

**本手册提供如下指导：**

**The operation manual provides the following instructions:**

◆ 手动/电动[就地/远程]操作

Manual/electric [local/remote] operation

◆ 执行机构的安装

Installation of actuator

◆ 执行机构基本设定。

Basic setup of actuator

◆ 执行机构组态设定。

Configuration setup of actuator

◆ 维护及故障排除。

Maintenance and fault settlement

◆ 技术支持。

Technical support

本机为非侵入式设计思想体现在两个方面。第一方式选择旋钮和就地操作旋钮采用霍尔接近开关控制电气壳内的接近开关，摒弃了传统的旋钮贯通轴，第二方式采用红外设定器对执行机构进行参数设定、更改、调试且不需要打开执行机构的外壳。非侵入式结构的好处是：

Non-intrusive design ideas are reflected in two aspects. First, the mode selection knob and the local operation knob use the Hall proximity switch to control the proximity switch in the electrical enclosure, and the conventional knob through shaft is discarded. Second, the infrared setting device is used to parameterize and change the actuator. Commissioning does not require opening the housing of the actuator. The benefits of a non-intrusive structure are:

(1)不用打开外壳，避免了环境中的灰尘、有害气体和潮气对执行机构的侵蚀。

It is not necessary to open the outer casing to avoid the erosion of the actuator by dust, harmful gases and moisture in the environment.

(2)在雨中或在有可燃气体的场合都可以方便地调试。

It can be easily debugged in the rain or in the presence of flammable gases.

(3)可以方便地查询执行机构的各种状态。

It is easy to query the various states of the actuator.



## 1、安全使用/Usage of safety

### 1.1 普通型电动执行机构/Ordinary electric actuator

本手册是为满足条件的用户在安装、操作、调试 MT-A 系列执行机构的需要而出版的。

The operation manual is published to meet the user's installation, operation and commissioning demand of MT-A series actuator.

只有经过培训、有经验的现场仪表工程师才可以对 D+R 执行机构进行安装、操控及维护，并且必须依照本手册中的相关说明为准。用户及其设备操作人员应根据当地相关的安全与健康条例规定来熟悉他们的职责。

Only well-trained and experienced on-site instrument engineer is able to execute installation, operation, control and maintenance of D+R actuator; it must strictly adhere to related specifications herein. The user and its equipment operator shall become familiar with their responsibilities according to local safety and health stipulations.

当 MT-A 系列执行机构与其它设备共同使用时，应充分考虑有可能发生的情况。如需要 D+R MT-A 系列执行机构安全使用的更多资料及相关指导，可根据需要提供。

When MT-A series actuating mechanism is applied together with other equipment, an adequate consideration shall be made to possible conditions; more documents and related instructions are provided if required for safe usage of D+R MT-A series actuator.

电动执行机构的电气安装、维护及使用应按照本国相关的、适合现场安装条件以及设备安全使用的法律、法规。

The electric installation, maintenance and usage of actuator are in accordance with the national related laws and stipulations applicable to on-site installation conditions and safe usage of the equipment.

本电动执行机构已取得 WF2 防腐等级证书。

This electric actuator has obtained the WF2 anti-corrosion grade certificate.

### 1.2 防爆电动执行机构/Explosion proof electric actuator

当电动执行机构安装在炸性环境中时，应满足以下要求。

When electric actuators are installed in explosive environments, the following requirements should be met.

D+R MT-A 电动执行器（下称“电动执行器”）是根据 GB3836.1-2021《爆炸性环境 第1部分：设备 通用要求》、GB3836.2-2021《爆炸性环境 第2部分 由隔爆外壳“d”保护的的设备》的规定制成隔爆型结构，其防爆标志为 Exdb II CT5 Gb，适用于工厂存在或可能存在 II A、II B、II C 类，T1~T5 组可燃性气体、蒸气与空气混合形成的爆炸危险 1 区或 2 区场所。

The D+R MT-A electric actuator (hereinafter referred to as "electric actuator") is an explosion-proof structure made in accordance with the provisions of GB3836.1-2021 "Explosive Atmospheres - Part 1: General Requirements for Equipment" and GB3836.2-2021 "Explosive Atmospheres - Part 2: Equipment Protected by Flameproof Enclosures". Its explosion-proof mark is Exdb II CT5 Gb, suitable for the presence or possibility of Class IIA, IIB, IIC, T1 to T5 combustible gases in factories Explosion hazard zone 1 or zone 2 areas formed by the mixing of steam and air.

该产品经国家防爆电气产品质量监督检验中心检验合格并取得了防爆合格证，其防爆合格证编号为 CNEx23.2827X。

This product has passed the inspection by the National Quality Supervision and Inspection Center for Explosion-proof Electrical Products and obtained an explosion-proof certificate. Its explosion-proof certificate number is CNEx23.2827X.

### **1.2.1 执行器在下列环境条件下能可靠地工作：**

The actuator can operate reliably under the following environmental conditions:

- a. 海拔不超过 2000m;
- a. The altitude does not exceed 2000m;
- b. 环境温度 -20℃~+70℃ (-40℃~+80℃，特殊要求)；
- b. Environmental temperature -20℃~+70℃ (-40℃~+80℃，特殊要求)；
- c. 周围环境相对湿度不大于 95%(+25℃)；
- c. The relative humidity of the surrounding environment shall not exceed 95%(+25℃)；
- d. 存在 II A、II B、II C 类，T1~T5 组可燃性气体、蒸气与空气混合形成的

爆炸性混合物的场所；

d.Places where Class IIA, IIB, IIC, T1 to T5 combustible gases, vapors, and air are mixed to form explosive mixtures;

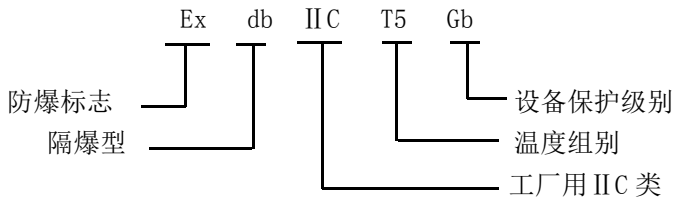
e.在无破坏绝缘的气体或蒸气的环境中；

e.In an environment without damaging insulation gases or vapors

f.在无显著摇动和冲击振动的地方；

f.In areas without significant shaking and shock vibrations;

### 1.2.2.防爆标志含义/Meaning of explosion-proof signs:



### 1.2.3.结构说明/Structure Description

电动执行器的整体结构图见总装图 DR-MT-A, 电动执行器为隔爆结构(防爆类型“db”)。

The overall structure of the electric actuator is shown in the general assembly drawing DR-MT-A, the electric actuator is of explosion-proof structure (explosion-proof type "db")

### 1.2.4.防爆要点/Explosion-proof points

a 电动执行器为隔爆型，在进行电动执行器结构设计时，充分考虑了当爆炸性气体混合物侵入其内部，因某种原因发生爆炸时，不致引起电动执行器外部的爆炸性气体混合物爆炸。从外壳强度和组成外壳各零件的接合面间隙、长度以及限制外壳最高表面温度等关键条件着手，确保隔爆性能。

a The electric actuator is an explosion-proof type. When designing the structure of the electric actuator, full consideration is given to not causing the explosion of the explosive gas mixture outside the electric actuator when the explosive gas mixture intrudes into its interior and explodes for some reason. The explosion isolation performance is ensured from the key conditions such as the strength of the housing and the clearance and length of the joint surfaces of the components that make up the housing, as well as limiting the maximum surface

temperature of the housing.

b 隔爆外壳在隔爆部件精加工后,进行静压试验,试验压力为 1.5MPa,历时 10~12S,试验结果以不滴水为合格。

b explosion-proof housing in the explosion-proof parts after finishing, hydrostatic test, test pressure of 1.5MPa, lasting 10~12S, the test results to not drip as qualified.

c 电动执行器所有的紧固件均应采用不锈钢或经电镀等防锈处理的钢质材料制造。

c All fasteners of the electric actuator should be made of stainless steel or steel with rustproof treatment such as electroplating.

d 电动执行器工作时最高表面温度不得超过 100℃。

d The maximum surface temperature of the electric actuator shall not exceed 100℃ when it is in operation.

e 电动执行器外壳应能承受 GB3836.2 第 15 章规定的外壳耐压试验试验和内部点燃不传爆试验。

e Electric actuator shell should be able to withstand the GB3836.2 Chapter 15 of the shell pressure test test and internal ignition does not transmit the explosion test.

f 电动执行器金属外壳应能承受外壳能承受质量为 1kg 的试验物体从高度 0.7m 垂直落下所产生的冲击作用,透明件应能承受质量为 1kg 的试验物体从高度 0.4m 垂直落下所产生的冲击作用。

f The metal housing of the electric actuator should be able to withstand the impact of a test object with a mass of 1kg falling vertically from a height of 0.7m, and the transparent parts should be able to withstand the impact of a test object with a mass of 1kg falling vertically from a height of 0.4m.

g 电动执行器配用的电缆引入装置已取得防爆合格证,防爆标志和合格证号为 Exd II C。

g The electric actuator with the cable introduction device has obtained the explosion-proof certificate, the explosion-proof mark and certificate number is Exd II C.

h 电动执行器应有内接地和外接地,且均应有接地标志。

h The electric actuator should have internal grounding and external grounding, and both should have grounding mark.

i 隔爆面参数应符合 GB3836.2 的规定。

i Explosion-proof surface parameters should be consistent with the provisions of GB3836.2.

j 电动执行器外壳防护等级符合 IP68 要求。

j The protection level of electric actuator casing meets the requirement of IP68.

k 电动执行器的玻璃观察窗能承受 GB3836.1 规定的热剧变试验。

k The glass observation window of the electric actuator can withstand the thermal drastic change test specified in GB3836.1.

1 本手册是为满足条件的用户在安装、操作、调试 MT-A 系列执行机构的需要而出版的。

1 The operation manual is published to meet the user's installation, operation and commissioning demand of MT-A series actuator.

m 只有经过培训、有经验的现场仪表工程师才可以对 D+R 执行机构进行安装、操控及维护，并且必须依照本手册中的相关说明为准。用户及其设备操作人员应根据当地相关的安全与健康条例规定来熟悉他们的职责。

m Only well-trained and experienced on-site instrument engineer is able to execute installation, operation, control and maintenance of D+R actuator; it must strictly adhere to related specifications herein. The user and its equipment operator shall become familiar with their responsibilities according to local safety and health stipulations.

n 当 MT-A 系列执行机构与其它设备共同使用时，应充分考虑有可能发生的情况。如需要 D+R MT-A 系列执行机构安全使用的更多资料及相关指导，可根据需要提供。

n When MT-A series actuating mechanism is applied together with other equipment, an adequate consideration shall be made to possible conditions; more documents and related instructions are provided if required for safe usage of D+R MT-A series actuator.

o 电动执行机构的电气安装、维护及使用应按照本国相关的、适合现场安装条件以及设备安全使用的法律、法规。

o The electric installation, maintenance and usage of actuator are in accordance with the national related laws and stipulations applicable to on-site

installation conditions and safe usage of the equipment.

p 执行机构的电气安装、维护和使用也应依照特殊防爆认证相关的实施规程来进行。

p The electric installation, maintenance and usage of actuator are in accordance with the execution modulating types clearly specified in the special explosion-proof accreditation.

q 如果执行机构符合防爆区域认证的要求,则无需对其进行检查和维修。无论在任何情况下,都不得对执行机构进行任意改造,因为这将使已经获得的防爆认证无效。

q If the actuator meets the accreditation requirements of explosion-proof area, it is not needed to make inspection or execute maintenance; under any circumstance, it is forbidden to modify the actuator since it will make obtained explosion-proof accreditation become invalid.

r 在防爆区域内,禁止用任何带电导体接触执行机构,除非进行经特殊允许的工作,否则应切断电源,将执行机构卸下并移到非防爆区域进行维修或保养。

r In the explosion-proof area, it is forbidden to contact the actuator with any charged conductor except for special permission; otherwise, the user shall cut off the power supply, dismantle the actuator and displace to the non-explosion-proof area for maintenance or servicing.

s 执行机构外壳为铝合金,紧固件为不锈钢,推力型底座为铸铁或碳钢。

s The shell of actuator is made of aluminum alloy; the fastener is made of stainless steel; the thrust foundation is made of cast iron or carbon steel.

t 用户必须确保操作环境和执行机构的外围材料在安全使用中不受影响,不能仅依赖执行机构本身承担完全保护作用。

t The user must avoid negative impact on surrounding materials of operation environment and actuator in the safe usage; it is forbidden to merely depend on the actuator to play the total protective-role.

u 适当情况下,用户须确保操作环境对执行机构的适当保护。

u Under proper conditions, the user must assure proper protection of operation environment to the actuator.



**警告：**电机温度在常规操作时，执行机构电机外壳表面温度可能超过60℃。如果执行机构设定为电机温度保护旁路，则其防爆认证无效，使用此设定有可能发生电气危险，用户应考虑使用必要的安全措施加以保证。

**Warning:** In the normal operation, the surface temperature of motor shell of actuator may exceed 60℃; if protective bypass is collocated for the motor temperature, the explosion-proof accreditation is invalid. The setup may lead to electric danger; the user shall consider necessary safety measures.

### 1.3 防爆电动执行器注意事项

电动执行器具有 Ex db II CT5 Gb 的防爆等级和防爆性能，可安装和适用于存有与 Ex db II CT5 Gb 防爆等级相应的爆炸性气体的危险场所。

The electric actuator has Ex db II CT5 Gb explosion-proof grade and explosion-proof performance, and can be installed and applied in hazardous places where there are explosive gases corresponding to Ex db II CT5 Gb explosion-proof grade.

#### 1.3.1 电动执行器安装前检查：

##### 1.3.1 Pre-installation inspection of the electric actuator

电动执行器安装前应进行如下检查

The following checks should be performed before installation of the electric actuator

- a. 铭牌是否有防爆标志、防爆合格证编号；  
a. Whether the nameplate has explosion-proof mark and explosion-proof certificate number;
- b. 打开电动执行器盖检查内部是否有杂物、灰尘,并给予清理；  
b. Open the electric actuator cover to check whether there is debris and dust inside, and give cleanup;
- c. 有无内外接地螺栓及标志；  
c. Whether there are internal and external grounding bolts and signs;
- d. 所有零件有无损坏或丢失；  
d. All parts are not damaged or missing;
- e. 电缆引入装置的选用必须与使用的场所

e. The selection of the cable introduction device must be used with the site

1.3.2 在安装时首先打开电动执行器接线盒盖,处理时注意保护防爆接合面,不得发生碰撞、敲击,从进线装置中卸下压紧螺母、垫圈、及引入装置,然后按照压紧螺母-垫圈-引入装置的顺序逐一套在电缆上,调整好进线长度,拧紧压紧螺母。接好线后应仔细检查接线是否正确,将盖拧紧。

1.3.2 In the installation of the first open the electric actuator junction box cover, when dealing with the protection of the flameproof joint surface, no collision, knock, remove the compression nut, washer, and the introduction of the device from the inlet device, and then in accordance with the compression nut - washer - the introduction of the device in the order of one set on the cable, adjust the length of the inlet, tighten the compression nut. After connecting the line should be carefully checked whether the wiring is correct, the cover will be tightened.

1.3.3 经检验合格出厂的产品不允许随意更改影响防爆性能的零部件。

1.3.3 The products qualified by inspection are not allowed to change the parts that affect the explosion-proof performance.

1.3.4 电动执行器设有专门的内外接地,用户均应正确连接,不得存在不接现象,接地线电阻应 $\leq 1 \Omega$ ,接地极电阻应 $\leq 1 \Omega$ 。

1.3.4 Electric actuator has a special internal and external grounding, the user should be correctly connected, there should be no phenomenon of not connected, grounding wire resistance should be  $\leq 1 \Omega$ , grounding pole resistance should be  $\leq 1 \Omega$ .

1.3.5 防爆电动执行器安装点附近不应有较强的电磁场、大功率电机和频繁起动的大功率继电器等等,它们会形成干扰致使电动执行器不能正常工作。

1.3.5 Explosion-proof electric actuator installation point should not be near the strong electromagnetic field, high-power motors and frequent starting high-power relays, etc., they will form interference resulting in electric actuator can not work properly.



## 1.4 执行机构的工作原理 （见图 1-4-1）

电机的旋转通过联轴机构直接带动蜗杆转动，蜗杆带动蜗轮转动，再通过离合器带动输出轴转动。当切换手柄拨在手动位置时，离合器上移，脱离蜗轮与手轮联接，转动手轮驱动输出轴转动。电动操作总是优先，除非操作手柄被锁定在手动档。在输出轴转动的同时带动一对锥齿轮转动，并通过阀位传感器检测阀位变化。

The rotation of the motor is directly driven by the coupling mechanism to rotate the worm gear, which then drives the output shaft to rotate through the clutch. When the switching handle is turned to the manual position, the clutch moves up, detaches the connection between the worm gear and the handwheel, and turns the handwheel to drive the the output shaft to rotate. Electric operation always takes priority unless the operating handle is locked in manual mode. Drive a pair of bevel gears to rotate while the output shaft rotates, and detect valve position changes through valve position sensors

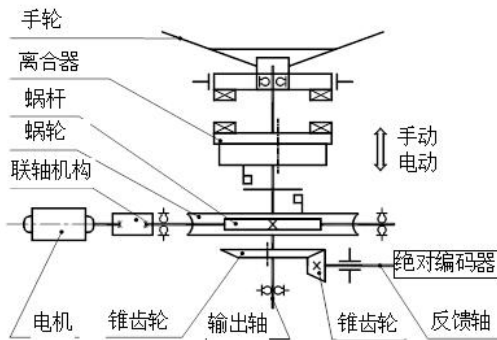


图 1-4-1 执行机构内部结构示意图

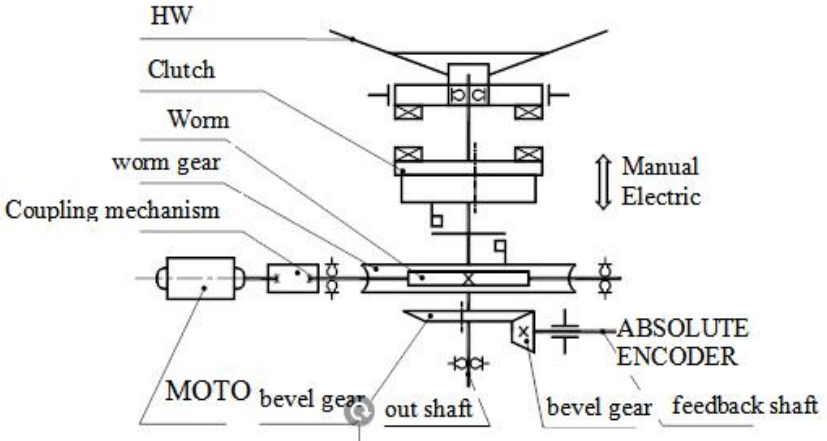


Figure 1-4-1 Schematic diagram of the internal structure of the actuator

## 2、存放/Storage

如果执行机构不能立即安装到固定位置，则应将其保存在一个干燥、通风的场所。

If the actuator fails to be immediately installed to the fixed position, it shall be stored in a dry and ventilated area.



**警告：**禁止露天、潮湿、雨水和淹没的环境中存放，由此造成的后果，D+R 公司将不承担任何责任。

**Warning:** It is forbidden to store the actuator in open air, humid, rainy and sunken environment; D+R does not bear any responsibilities for such consequences.

如果执行机构已经安装到固定位置，但还没有电气连接，建议您将电缆入口的塑料塞换成缠有聚四氟乙烯带的密封金属塞。

If the actuator is installed into a fixed position without electric connection, it is recommended to replace plastic plug at the cable inlet into sealed metal plug enwrapped with teflon tape.

在使用过程中，执行机构主体部分需与腐蚀性介质、高压电缆、高强度磁

场等有影响的环境隔离。

In the normal usage, the main part of actuator must be isolated from the influential environment such as corrosive medium, high-voltage cable and high-strength magnetic field.

如无意外，D+R 执行机构的密封结构将会很好地保护内部的电气部件。

The sealing structure of D+R actuator is able to protect the internal electric components except for accidental conditions.

调试 MT-A 系列执行机构时仅仅只需打开接线端子仓盖即可。

In the commissioning of MT-A series actuator, the user only needs to open the cover of wiring terminal.

如果由于用户曾经打开过除接线端子仓盖之外的任何腔体而使执行机构受到损坏，D+R 公司将不承担任何责任。

If the user once opened any cavity beyond the cover of wiring terminal and thus damaged the actuator, D+R does not bear any responsibilities.

每一台执行机构在出厂前均已经过全面检测，如果正确安装、调试、使用，则可提供多年的无故障运行。

Each actuator has received integrated inspection before leaving the factory; correct installation, commissioning and usage will assure non-fault operation for years.



**警告：**由于执行机构外壳为铝制品结构，禁止外力冲击以免变形造成外部结构损伤等相关联事件发生。

**Warning:** Since the shell of actuator is made of aluminum structure, it is forbidden to impact by strong external force; otherwise, the shell is deformed and outer structure is damaged.

### 3、执行机构控制方式/Actuator control mode

在电动操作之前，请检查供电电源，确定与执行机构铭牌上的电压要求相符。

Before electric operation, please inspect and confirm the voltage of the power supply correspond with voltage requirements clearly specified in the nameplate of

actuator.



**警告：**设备的安装和连接只能由具备相应资质的受过专业培训的仪表工程师或有授权的人员完成，并严格按照本手册进行操作。

**Warning:** The qualified and well-trained instrument engineer or authorized personnel are designated for the equipment installation and connection in strict accordance with the operation manual.

### 3.1 手轮的操作/HandwheelOperation

执行机构运转驱动，可手动和电动切换手柄是用于将执行机构的电动运转切换到手动操作，如电机运转时操作手柄会自动切换到电动运转的方式，这就是电动优先的设计。

The actuator is driven by the operation. The manual and electric switch handles are used to switch the electric operation of the actuator to manual operation. For example, when the motor is running, the operation handle will automatically switch to the electric operation mode. This is the electric priority design.



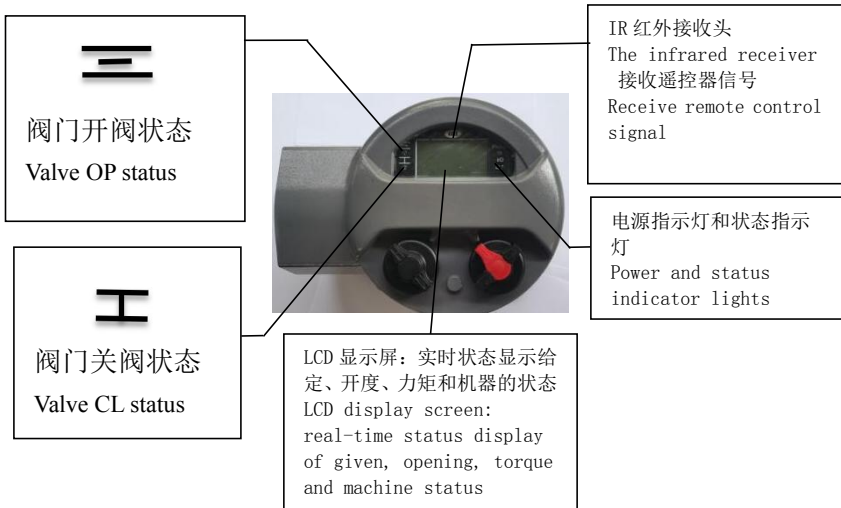
**警告：**关于电动执行机构的操作，任何情况下不允许使用其它附加工具旋转手轮，这样可能会导致手轮、阀门或电动执行机构损坏。

**Warning:** Under any circumstance, it is forbidden to rotate the handwheel by other additional tools; otherwise, the handwheel, valve or electric actuator is damaged.

## 3.2 操作面板控制/ The operation panel control

操作面板包括 LOCAL/REMOTE 指示灯、Error 指示灯、IR 红外接收头、液晶显示屏和按钮功能。

The operation panel includes the LOCAL/REMOTE indicator light, the Errorlight, the infrared receiver , OLED and the Hall Magnetic function button.



注/Notes:

调试时：须切换到“就地”状态/When setting: Must switch to "Local"

远程自动时：须切换到“远程”状态/When Remote automatic: Must switch to "Remote"

### 3.2.1 阀位状态指示灯/Valve position status indicator light

阀位状态指示灯/Valve position status indicator light	
蓝色 Blue	绿色 green
<b>=</b>	<b>≡</b>

01、就地状态：旋转开阀方向旋钮时，阀门往开的方向运行时绿色指示灯闪烁，开阀到位时绿色指示灯常亮；旋转关阀方向旋钮时，阀门往关的方向运行时蓝色指示灯闪烁，关阀到位时绿色指示灯常亮；如果运行到中间

位置时停止时指示灯熄灭。

01、On site status: When rotating the valve opening direction knob, the green indicator light flashes when the valve runs in the open direction, and the green indicator light remains on when the valve is opened in place; When rotating the valve closing direction knob, the blue indicator light flashes when the valve runs in the closed direction, and the green indicator light remains on when the valve is closed in place; If the indicator light goes off when it stops running to the middle position.

02、远程状态：调节型给定信号机器运转时指示灯按开阀或关阀对应的指示灯闪烁，到达阀位全开或全关时对应方向指示灯常亮再给反方向信号时常亮指示灯熄灭对应方向的指示灯闪烁到达阀位全开或全关时指示灯常亮。开关型给定信号机器运转时指示灯按开阀或关阀对应的指示灯闪烁，到达阀位全开或全关时对应方向指示灯常亮再给反方向信号时常亮指示灯熄灭对应方向的指示灯闪烁到达阀位全开或全关时指示灯常亮。

02、Remote status: When the machine is running, the indicator light corresponding to the valve opening or closing will flash. When the valve position is fully open or fully closed, the corresponding direction indicator light will remain on. When the signal in the opposite direction is given, the indicator light will remain on and turn off. When the valve position is fully open or fully closed, the indicator light will remain on. When the switch type signal machine is running, the indicator light corresponding to the valve opening or closing will flash. When the valve position is fully open or fully closed, the corresponding direction indicator light will remain on. When the reverse direction signal is given, the indicator light will remain on and off. When the valve position is fully open or fully closed, the indicator light will remain on.

### 3.2.2 实时状态显示/Display of real-time status

显示屏为 4 行 8 字的显示器，可显示中文也可以显示英文。显示器一般分为两种：第一种常温 LCD 显示器使用温度 $-20^{\circ}\text{C}\sim+70^{\circ}\text{C}$ ，第二种低温 OLED 显示器使用温度 $-40^{\circ}\text{C}\sim+85^{\circ}\text{C}$ 。显示如下：

The display screen is a 4-line 8-character display that can display both Chinese and English. There are generally two types of displays: the first type is a

room temperature LCD display with a temperature of  $-20\text{ }^{\circ}\text{C} \sim +70\text{ }^{\circ}\text{C}$ , and the second type is a low temperature OLED display with a temperature of  $-40\text{ }^{\circ}\text{C} \sim +85\text{ }^{\circ}\text{C}$ . The display is as follows:

给定:	50.0 %	S
开度:	50.0 %	
电流:	00.000A	
状态:	就地/停止	

InPu:	50.0 %	S
Posi:	50.0 %	
Curr:	00.000A	
CTRL:	Loc/STOP	

MT-A 系列执行机构支持实时状态显示:

MT-A series actuator supports the display function of real-time status:

第一行: 给定信号显示;

The first line: Display set signal.

第二行: 反馈角度显示;

The second line: Feedback angle display

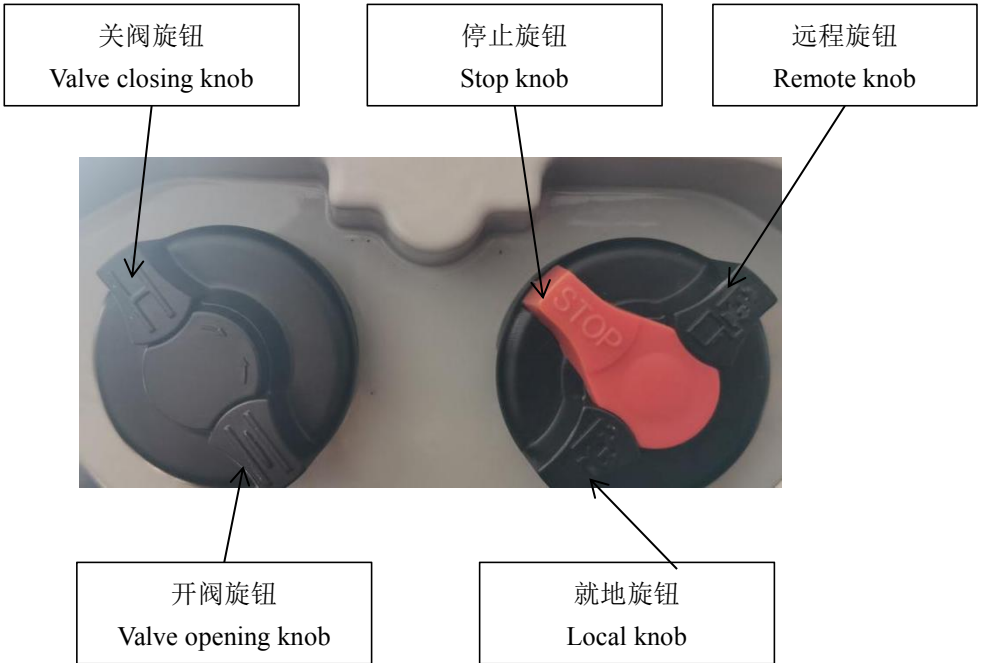
第三行: 实时电流值显示。

The third line: Display real time torque value;

第四行: 电动执行器的运转状态, 例如“就地”旋钮旋转的位置上, “停止”是电动执行器当前运行状态为停止状态。

The fourth line: The operating status of the electric actuator, for example, at the position where the "local" knob rotates, "stop" indicates that the current operating status of the electric actuator is in the stopped state.

### 3.2.3 旋钮功能/ function button



- 1、旋钮进入菜单功能：旋钮选到就地+开阀旋钮 6s 后进入菜单设置界面  
Knob to enter menu function: After selecting the knob to the local position and opening the valve knob for 6 seconds, enter the menu setting interface.
- 2、菜单设置功能：开阀旋钮是确认或移位，关闭旋钮是往下翻页  
Menu setting function: The valve opening knob is for confirmation or shifting, and the valve closing knob is for flipping down the page.
- 3、旋钮复位功能：旋钮选到就地+关闭旋钮 6s 后软故障取消  
Knob reset function: After selecting the knob to the local position and closing the valve knob for 6 seconds, the soft fault is cancelled.

### 3.2.4 就地/远程设置/Local/Remote Settings

通过面板磁性霍尔旋钮可对执行机构进行“就地、远程和停止”切换操作。



The magnetic Hall knob on the panel allows for "local, remote, and stop" switching operations on the actuator.



**警告：**设置、修改、调试时，执行机构必须处于“停止”状态。

**Warning:** When setting up, modifying, and debugging, the actuator must be in a "stopped" state.

### 3.3 遥控器控制/The remote control

使用遥控器时建议在安装调试时使用，其他工作条件下慎用。

It is recommended to use it during installation and commissioning when using the remote control, and use it with caution under other working conditions.

将遥控器红外发射端朝向执行器面板，点击 Remote/Local 这个键是激活遥控器，可以修改一些参数、查看设置等，使用完成后再点击 Remote/Local 这个键遥控器功能关闭，不关闭会造成执行器故障。

Turn the infrared transmitter of the remote control towards the actuator panel, click the Remote/Local button to activate the remote control, modify some parameters, view settings, etc. After use, click the Remote/Local button again to turn off the remote control function. Failure to turn it off will cause actuator failure.

遥控器按键说明：

The remote control button description:

“Remote/Local”：遥控器激活功能；

“Remote/Local”：Remote control activation function;

“Open/↑”：上移位，增加；

“Open/↑”：Open valve, increase;

“Close/↓”：下移位，减小；

“Close/↓”：Close valve, reduce;

“Set/设置”：进入设置；

“Set/设置”：Enter setup;

“Enter/确认”：确认，保存；

“Enter”：Confirm, save;

“Cancel/取消”：取消，停止；



简易通用遥控器  
Simple universal remote control

“Cancel” : Cancel, stop;

### **3.4 4-20mA 控制/ The 4-20mA control**

根据现场实际情况, 将 4-20mA 信号线按 5-4-1 图正确接入执行机构。4mA 信号对应全关位置, 20mA 信号对应全开位置。根据给定的 4-20mA 信号, 控制执行机构来改变阀门的开度。同时, 执行机构还会把阀门的开度转换为 4-20mA 的信号反馈给控制中心, 让阀门的开度稳定在指定位置。

According to the actual situation on site, correctly connect the 4-20mA signal line to the actuator according to the 5-4-1 diagram. The 4mA signal corresponds to the fully closed position, and the 20mA signal corresponds to the fully open position. According to the given 4-20mA signal, control the actuator to change the opening of the valve. At the same time, the actuator will also convert the valve opening into a 4-20mA signal and feedback it to the control center, ensuring that the valve opening stabilizes at the specified position.

### **3.5 开关量控制/The switch control**

根据现场实际情况, 将开关量信号线按 5-4-1 图正确接入执行机构。

According to the actual situation on site, correctly connect the switch signal wire to the actuator according to the 5-4-1 diagram.

控制信号为保持型时, 信号长度不小于 100 毫秒。控制信号为点动型时, 高电平为有效信号。

When the control signal is held, the signal length is not less than 100 milliseconds. When the control signal is a jog type, high level is a valid signal.

此项已经根据要求设定完成。若需求有变动, 请联系 D+R 相关人员。

This item has been set up as required. If there is any change in demand, please contact D + R.

## **4、调试/Commissioning**

### **4.1 概述/Overview**

D+R MT-A 系列电动执行机构采用非侵入式设计(无需打开端盖即可进行

调试)。

D+R MT-A series electric actuator is in the non-invasive design mode(Commissioning can be executed without opening the end closure).

所有设定功能存储在执行机构内部的非易失性存储器内,由显示器查看所有设定功能,每个功能的设定值均可查看或更改。

All setting functions are stored in the non volatile memory inside the actuator, and are viewed by the display screen. The setting values of each function can be viewed or changed.



**警告:** 在调试之前,推荐将控制系统的给定信号调至中间位置(以 4~20mA 信号为例),应该将信号调至 12mA,或关闭输入信号。

**Warning:** Before commissioning, it is recommended to adjust set signal of control system to the middle (take 4—20mA signal as an example), adjust signal to 12mA or shut down the input signal.

## 4.2 进入执行机构的主界面/Access parameter setup of actuator

通电开机后,屏幕显示如下:

After power on, the screen displays as follows:

给定:	50.0 % S
开度:	50.0 %
电流:	00.000 A
状态:	停止/停止

InPu:	50.0 % S
Posi:	50.0 %
Curr:	00.000A
CTRL:	STOP/STOP

如果信号源未接通时,屏幕显示如下:

If the set signal is not connected, the screen is displayed as follows:

报警提示
信号断线
请检查排除

Alarm prompt
Signal disconnection
Please check and exclude

此故障信息会在主屏幕上每隔 1 分钟闪一次直到此故障解除。

This fault message will flash every 1 minute on the main screen until the fault

is resolved.

### **4.3 菜单/The menu**

#### **4.3.1 主菜单/Main Menu**

主菜单包括参数设置、报警查询、历史事件、极值纪录和版本信息。参数设置主要是对执行机构各个参数的设置，报警查询可查看执行器异常时所报警的事件，历史记录是对之前的报警事件记录可以查看，极值纪录是对电压电流还有就是开关次数等的记录，版本信息是指系统版本号。

The main menu includes parameter settings, alarm queries, historical events, extreme value records, and version information. Parameter setting mainly refers to the setting of various parameters of the actuator. Alarm query can view the events that are triggered when the actuator is abnormal. Historical records can view previous alarm event records, extreme value records can record voltage, current, and switch times, and version information refers to the system version number.

#### **4.3.2 参数设置/Parameter setting**

参数设置包含基本设置、报警设置、高级设置和恢复出厂。

The parameter settings include basic settings, alarm settings, advanced settings, and factory reset

#### **4.3.3 基本设置/Basic settings**

基本设置包括语言设置、就地/远程设置、行程限位、输入输出校准、死区范围设置、信号类型、故障位置、关阀方向、设备地址、和时钟设置。

Basic settings include language settings, local/remote settings, travel limits, input/output calibration, dead band range settings, signal type, fault location, valve closing direction, device address, and clock settings.

#### **4.3.4 报警设置/Alarm settings**

报警设置包含 6 路继电器设置编程、反馈区间设置编程和扩展继电器设置编程

Alarm settings include 6-way relay setting programming, feedback interval setting programming, and extended relay setting programming.

#### **4.3.5 高级设置/advanced setting**

高级设置包括保护设置、传动比设置、电机关阀方向、电源类型、电流参

数、产品编号、密码设置、公司信息、停车制动设置和保存出厂设置。

Advanced settings include protection settings, transmission ratio settings, motor valve closing direction, power type, current parameters, product number, password settings, company information, parking brake settings, and saving factory settings.



**警告：**出厂时，执行机构功能均已按出厂标准设定完成，除非在订货时有特殊要求，可按要求设定；在调试期间如果遇到问题，可恢复到默认设定状态，返回执行机构出厂的设定，然后开始现场调试。

**Warning:** Before leaving the factory, the functions of actuator are set up according to the factory standard; special requirements raised in the ordering are strictly adhered; in case of any problem in the commissioning, it is resumed to the default setup status and factory setup of actuator, and then on-site commissioning is started.



**警告：**默认各个设定根据需要谨慎使用，因为执行机构出厂后，在现场所设置数据对阀门或者使用厂家来说十分重要。

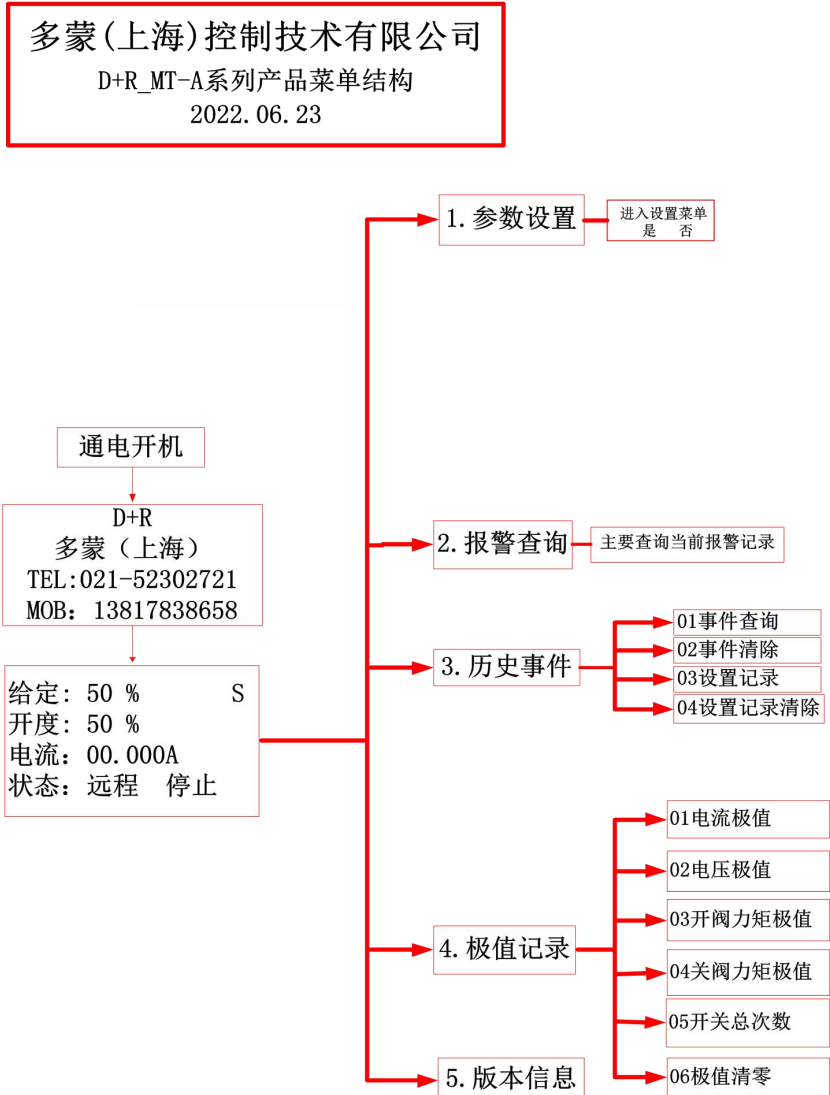
**Warning:** The default setup must be seriously used according to the actual demands; after leaving the factory, the on-site data setup of actuator is of vital importance to the valve or users.



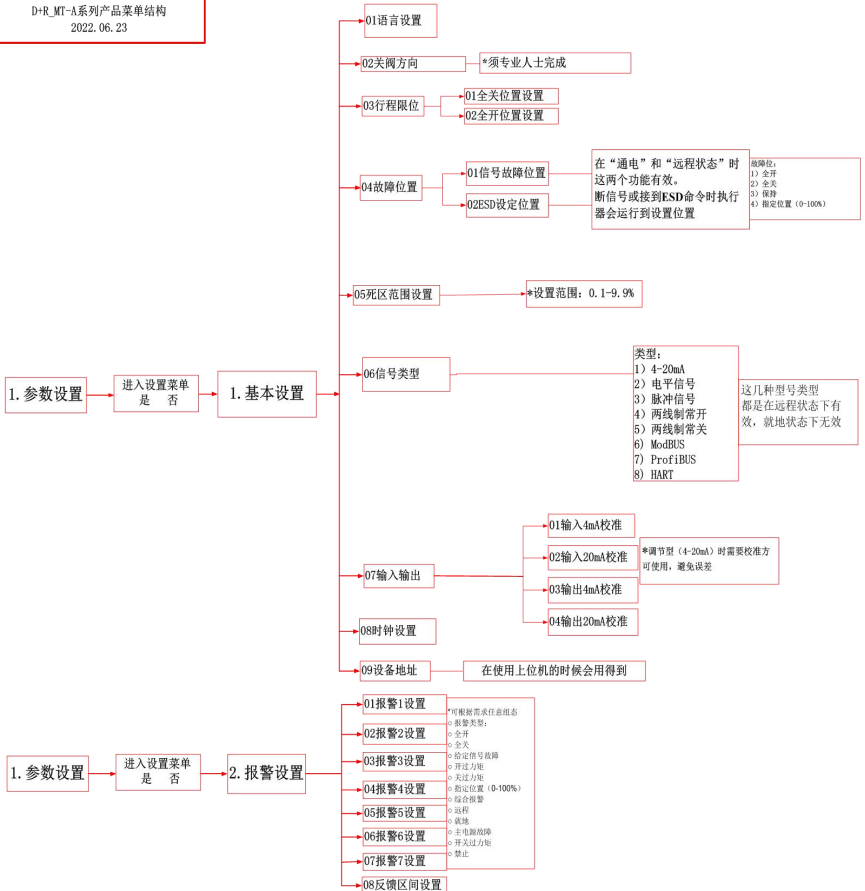
**警告：**必须先进行基本设置。出厂设置在执行机构出厂后，一般不需要改动。

**Warning:** The basic setup must be finished in advance. After the actuator leaves the factory, the factory setup hardly needs to change.

## 4.4 菜单结构图/The menu structure



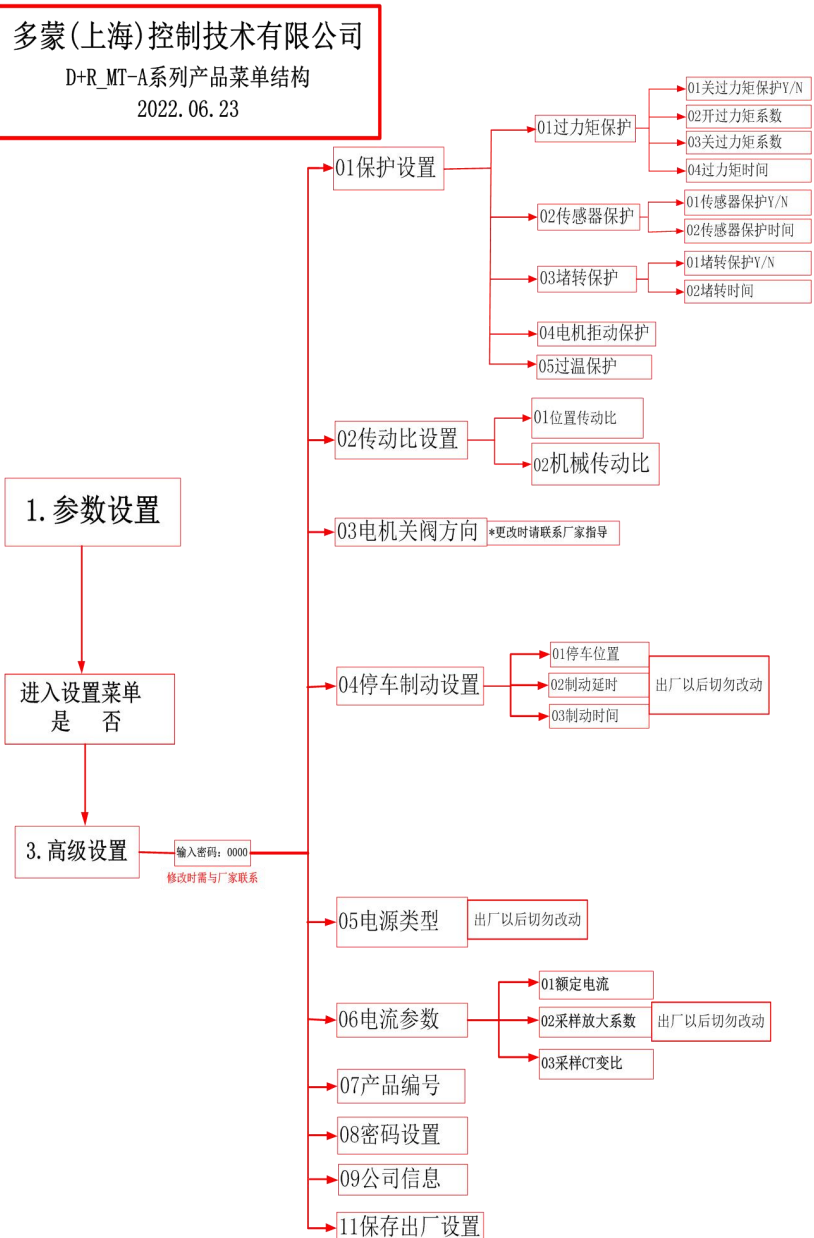
多蒙(上海)控制技术有限公司  
D+R\_MT-A系列产品菜单结构  
2022.06.23



# 多蒙(上海)控制技术有限公司

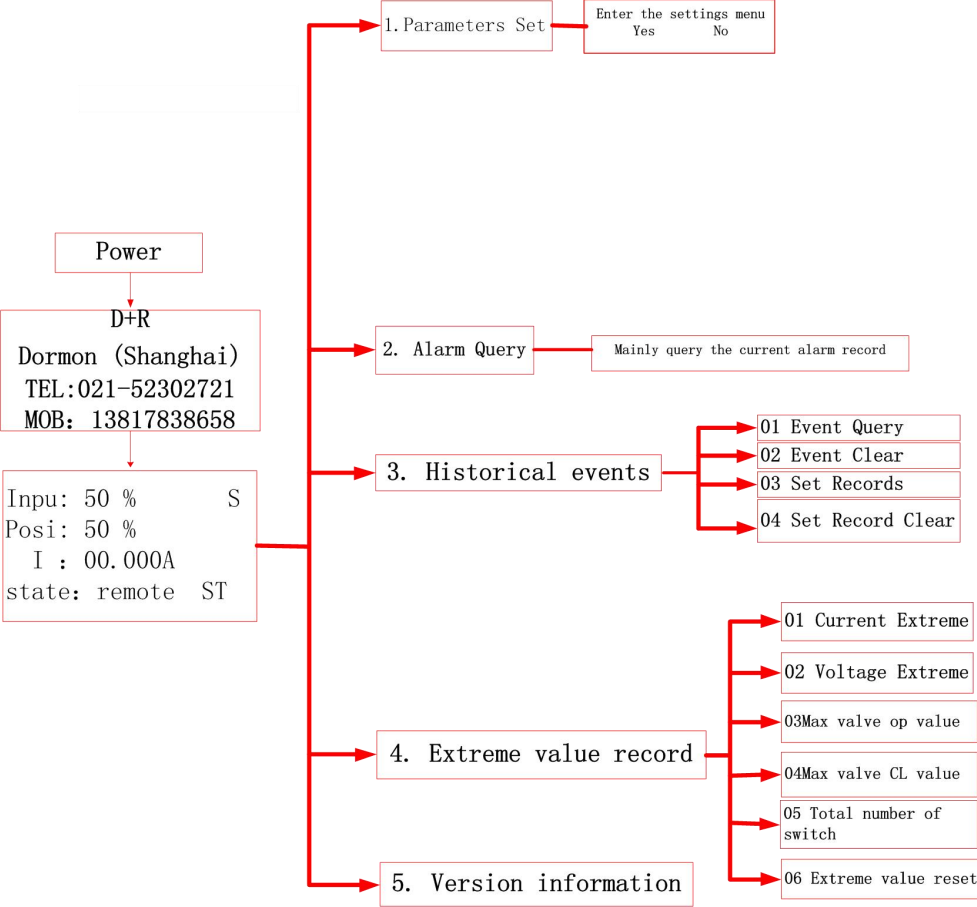
D+R\_MT-A系列产品菜单结构

2022. 06. 23

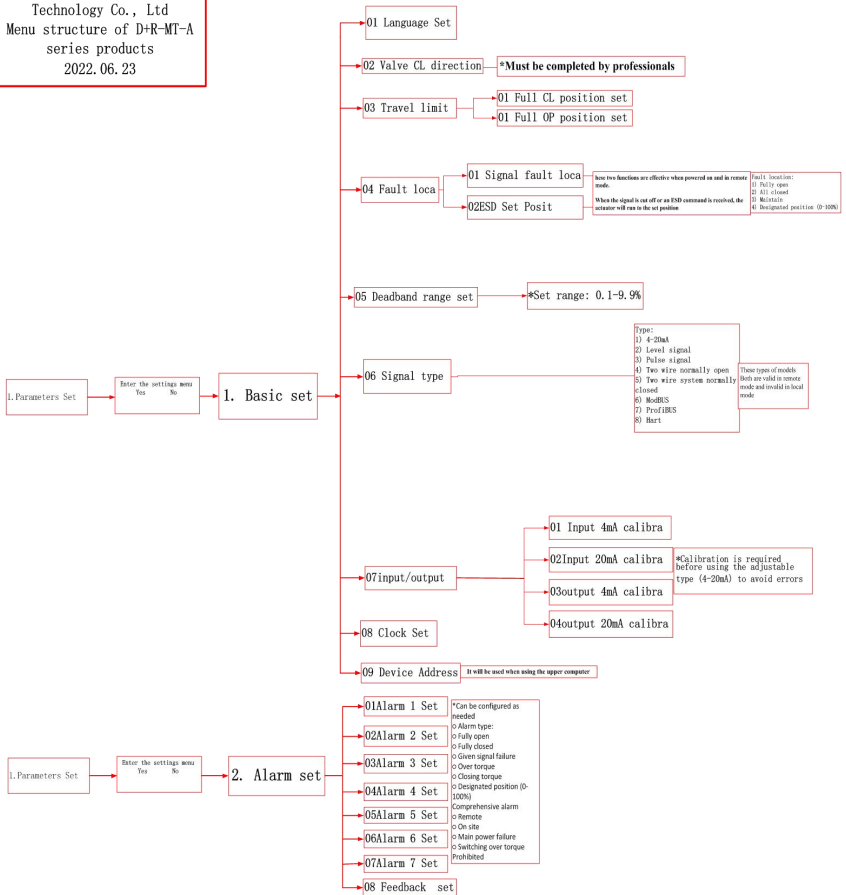




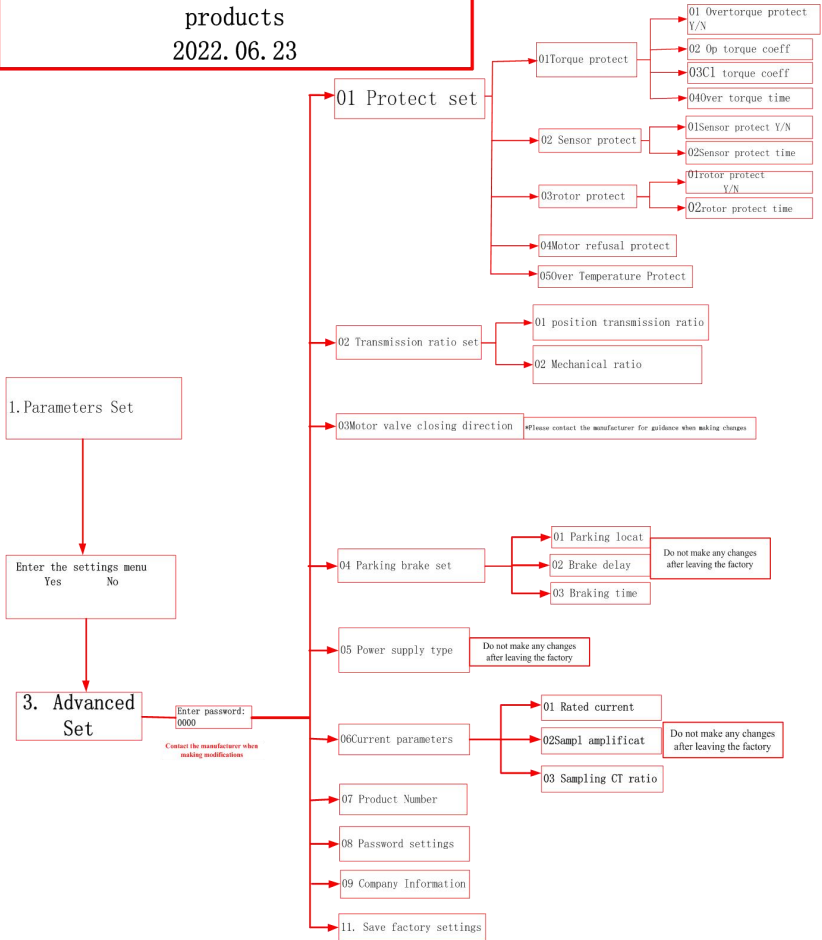
Dormon (Shanghai) Control Technology Co., Ltd  
 Menu structure of D+R-MT-A series products  
 2022.06.23



Dormon (Shanghai) Control Technology Co., Ltd  
Menu structure of D+R-MT-A series products  
2022.06.23



Dormon (Shanghai) Control Technology  
 Co., Ltd  
 Menu structure of D+R-MT-A series  
 products  
 2022. 06. 23

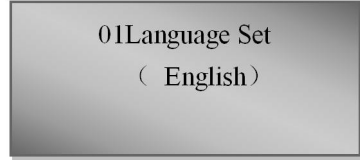
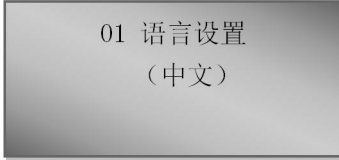


## 4.5 菜单项介绍/Menu item introduction

### 4.5.1 语言设置/Language setting

进入语言设置菜单后，屏幕显示如下：

The screen is displayed as follows in the language setting menu:



语言选择项值：简体中文和 English，默认为英文。

Item values of language option: Chineseand English(default) .

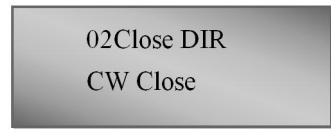
按遥控器“Set/设置”按键后，进入设置状态，此时项值闪烁。按遥控器“Open/↑”或“Close/↓”按键进行上下切换。选中后，按“Enter/确认”按键保存，并提示设置成功。

After pressing the "Set/Set" button on the remote control, it enters the setting state and the item value flashes. Press the "Open/ ↑ " or "Close/ ↓ " buttons on the remote control to switch up and down. After selection, press the "Enter/Confirm" button to save and prompt for successful setting.

### 4.5.2 关阀方向/Valve closing direction

进入该项设置菜单时，屏幕显示：

The screen is displayed as follows upon access into the setting menu:



注：勿动出厂已经调整好，如果私自调整会出现撞机的风险。

Note: Do not move it. It has been adjusted before delivery. If it is adjusted privately, there will be a risk of collision.

### 4.5.3 行程限位/Travel limit

#### 01 全关位置设置/Full close position setting

“全关位置设置”对应阀门最小开度位置。顺时针摇动手轮使阀门到达全关位置，进入此设置项。屏幕显示：

The "fully closed position setting" corresponds to the minimum opening position of the valve. Rotate the handwheel clockwise to reach the fully closed position to enter this setting. Screen display:

```
01 全关位置设置
      已停止
当前：2053.2072
已设：0000.0400
```

```
01Full CL Pos
      STOP
RT: 2053.2072
SET: 0000.0400
```

第二行显示“已停止”表示执行器状态是停的状态。

The second line displays "Stopped" to indicate that the actuator status is in a stopped state.

第三行显示“2053.2072”表示编码器当前的位置值。

The third line shows "2053.2072" indicating the encoder's current position value.

第四行显示“0000.0400”表示已设定的位置值

The fourth line displays "0000.0400" indicating the set position value

在显示停止状态下，按“Enter/确认”按键将当前位置保存到全关位置。设置成功后，显示如下：

In the display stop state, press the "Enter/Confirm" button to save the current position to the fully closed position. After successful setup, the display will be as follows:

```
01 全关位置设置
      已停止
当前：2053.2072
已设：2053.2072
```

```
01Full CL Pos
      STOP
RT: 2053.2072
SET: 2053.2072
```

02 全开位置设置”对应阀门最大开度位置。逆时针摇动手轮使阀门到达全开位置，进入此设置项。屏幕显示：

The "fully open position setting" corresponds to the maximum opening position of the valve. Rotate the handwheel counterclockwise to reach the fully open position to enter this setting. Screen display:

第二行显示“已停止”表示执行器状态是停的状态。

The second line displays "Stopped" to indicate that the actuator status is in a stopped state.

第三行显示“2003.0802”表示编码器当前的位置值。

The third line shows "2003.0802" indicating the encoder's current position value.

第四行显示“2053.2072”表示已设定的位置值

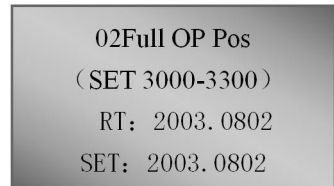
The fourth line displays "2053.2072" indicating the set position value

在显示停止状态下，按“Enter/确认”按键将当前位置保存到全开位置。设置成功后，显示如下：

In the display stop state, press the "Enter/Confirm" button to save the current position to the fully open position. After successful setup, the display will be as follows:



02 全开位置设置  
已停止  
当前：2003.0802  
已设：2003.0802



02Full OP Pos  
(SET 3000-3300)  
RT: 2003.0802  
SET: 2003.0802

注释：

01、行程限位检测使用了最先进的精密光电、磁混合绝对编码器，输出轴带动精密光电、磁混合绝对编码器转动，形成的编码信号送入主控芯片计算出当前阀位值，用作阀位显示信号。由于绝对编码器获取的是阀位的绝对信息，掉电和干扰均不会对其造成影响，故得到的阀位永远是正确的。

Comment:

01. The travel limit detection uses the most advanced precision optoelectronic and magnetic hybrid absolute encoder. The output shaft drives the precision

optoelectronic and magnetic hybrid absolute encoder to rotate, and the encoded signal is sent to the main control chip to calculate the current valve position value, which is used as a valve position display signal. Since the absolute encoder obtains absolute information about the valve position, power failure and interference will not affect it, so the obtained valve position is always correct.

#### 4.5.4 故障位置/Fault location

01“信号故障位置”功能定义为：当执行机构出现给定信号故障时，执行机构所采取的动作，出厂时默认保持状态。

The "Signal Fault Location" function is defined as the action taken by the actuator when a given signal fault occurs, which is maintained by default at the factory.

信号故障类型项值：全开、全关、保持和指定位置。

The item values of “Signerrtype”: Fully Open, Fully Close, Maintain and Specify Seat.

项值解释：

Interpretation of item value:

1. 全开：当发生信号故障时，执行机构运行至全开位置；

Fully Open: In case of signal fault, the actuator operates to open position.

2. 全关：当发生信号故障时，执行机构运行至全关位置；

Fully Close: In case of signal fault, the actuator operates to closed position.

3. 保持：当发生信号故障时，执行机构保持当前位置不变；

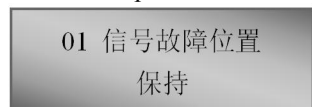
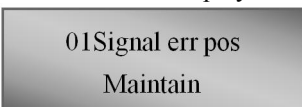
Hold: When a signal fault occurs, the actuator maintains its current position unchanged.

4. 指定位置：当发生信号故障时，执行机构运行到预设的位置。

Specify Seat: In case of signal fault, the actuator operates to the preset position.

进入该项设置菜单时，屏幕显示：

The screen is displayed as follows upon access into the setup menu:

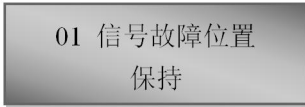


第二行显示“保持”表示信号故障类型已设值。

The second line shows "Hold" indicating that the signal failure type has been set.

按遥控器“Enter/确认”按键进入设置状态，显示如下：

Press the "Enter/Confirm" button on the remote control to enter the setting state, as shown below:



第二行显示“保持”，并闪烁。此时可根据实际需要选择其他选项。选择后按“Enter/确认”按钮进行设保存。

The second line displays "hold" and flashes. At this point, other options can be selected according to actual needs. After selecting, press the "Enter/Confirm" button to save the settings

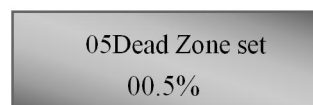
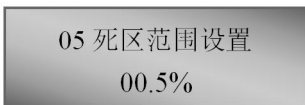
## 02、ESD 设定位置同 01 信号故障位置一样

The ESD setting position is the same as the 01 signal fault position

### 4.5.5 死区范围设置/Dead zone set

死区范围设置又称灵敏度调整，设置范围为 0.1~9.9，推荐值为 0.3~0.8。进入该项设置，屏幕显示：

The dead zone setting is also called sensitivity adjustment. The setting range is 0.1~9.9, and the recommended value is 0.3~0.8. Enter this setting and the screen will display:



### 4.5.6 信号类型/Signal type

如需要用到联系厂家勿私自操作/Contact the manufacturer if necessary. Do not operate without permission



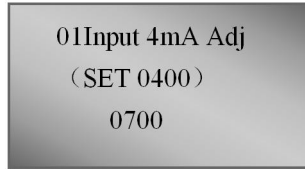
#### 4.5.7 输入输出校准/I / O calibration

01、输入“01 输入 4mA 校准”，屏幕显示：

Enter "01 Input 4mA Calibration", the screen displays:



01 输入 4mA 校准  
(已设 0400)  
0700



01Input 4mA Adj  
(SET 0400)  
0700

第二行显示“0400”表示 4mA 输入已设校准值。

The second line displays "0400", indicating that the 4mA input has a calibration value set.

第三行显示“0700”表示当前 4mA 输入校准值。

The third line shows "0700" indicating that the current 4mA input is the calibration value.

按遥控器“Enter/确认”按键保存当前校准值。设置成功后，显示如下：

Press the Enter/Confirm button on the remote control to save the current calibration value. After successful setup, the display will be as follows:



01 输入 4mA 校准  
(已设 0700)  
0700



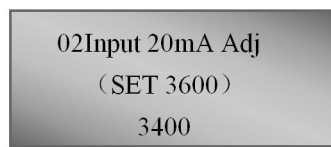
01Input 4mA Adj  
(SET 0700)  
0700

02、输入“02 输入 20mA 校准”，屏幕显示：

Enter "02 Input 20mA Calibration", the screen displays:



02 输入 20mA 校准  
(已设 3600)  
3400



02Input 20mA Adj  
(SET 3600)  
3400

第二行显示“3600”表示 20mA 输入已设校准值。

The second line displays "3600", indicating that the 20mA input has a calibration value set.

第三行显示“3400”表示当前 20mA 输入校准值。

The third line shows "3400" indicating that the current 20mA input is the calibration value.

按遥控器“Enter/确认”按键保存当前校准值。设置成功后，显示如下：

Press the Enter/Confirm button on the remote control to save the current calibration value. After successful setup, the display will be as follows:

02 输入 20mA 校准  
(已设 3400)  
3400

02Input 20mA Adj  
(SET 3400)  
3400

03、输入“03 输出 4mA 校准”，屏幕显示：

Enter "03 Output 4mA Calibration", the screen displays:

03 输出 04mA 校准  
0400

03Out 4mA Adj  
0400

第二行显示“0400”表示 4mA 输出已设定校准值。

The second line displays "0400", indicating that the calibration value has been set for the 4mA output.

按遥控器“Enter/确认”按键进入设置状态，显示如下：

Press the Enter/Confirm button on the remote control to save the current calibration value. After successful setup, the display will be as follows:

03 输出 04mA 校准  
0190

03Out 4mA Adj  
0190

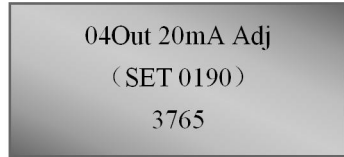
第二行显示“0190”表示当前可修改值，根据实际输出反馈值调整，若输出值大，则减小此值；若输出值小，则增大此值（按 Open/↑键是增加 Close↓键是减小）。调整后，按遥控器“Enter/确认”按键进行设保存，会提示设置成功，保存后显示如下：

The second line displays "0190" indicating the current modifiable value, which can be adjusted based on the actual output feedback value. If the output value is large, reduce this value; If the output value is small, increase this value

(press the Open/ ↑ key to increase and the Close ↓ key to decrease). After adjustment, press the "Enter/Confirm" button on the remote control to save the settings, and a prompt will appear indicating successful settings. After saving, the display will be as follows:

04、输入“04 输出 20mA 校准”，屏幕显示：

Enter "04 Output 20mA Calibration", the screen displays:

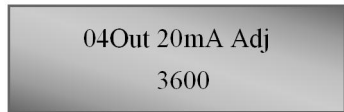


第二行显示“3600”表示 20mA 输出已设校准值。

The second line displays "3600", indicating that the 20mA output has a calibration value set.

按遥控器“Enter/确认”按键进入设置状态，显示如下：

Press the "Enter/Confirm" button on the remote control to enter the setting state, as shown below:



第二行显示“3400”表示当前可修改值，根据实际输出反馈值调整，若输出值大，则减小此值；若输出值小，则增大此值（按 Open/↑键是增加 Close/↓键是减小）。调整后，按遥控器“Enter/确认”按键进行设保存，会提示设置成功，保存后显示如下：

The second line displays "3400" indicating the current modifiable value, which can be adjusted based on the actual output feedback value. If the output value is large, reduce this value; If the output value is small, increase this value (pressing the Open/ ↑ key increases the Close/ ↓ key decreases). After adjustment, press the "Enter/Confirm" button on the remote control to save the settings, and a prompt will appear indicating successful settings. After saving, the display will be as follows

#### 4.5.8 时钟设置/Clock set

进入该项设置菜单时，屏幕显示：

The screen is displayed as follows upon access into the setting menu:



按遥控器“Enter/确认”按键进入设置状态，此时设置项闪烁，从左到右，依次按位设置。

Press the "Enter/Confirm" button on the remote control to enter the setting state. At this time, the setting items will flash, from left to right, and set by bit in sequence.

按“Open↑”或“Close↓”按钮进行数字加和减。Cancel/取消键为往前移位键，遥控器“Enter/确认”为往后移位键。按遥控器“Enter/确认”按键保存，并提示设置成功。

Press the "Open ↑" or "Close ↓" buttons to add and subtract numbers. The Cancel/Cancel key is the forward shift key, and the Enter/Confirm button on the remote control is the backward shift key. Press the "Enter/Confirm" button on the remote control to save and prompt for successful setup.

#### 4.5.9 设备地址/Device address

进入该项设置菜单时，屏幕显示：

The screen is displayed as follows upon access into the setting menu:



用于现场总线时设备识别编号。Device identification number when used for fieldbus

#### 4.5.10 反馈设置/Feedback settings

反馈继电器节点容量为 5A/250VAC 或 5A/30VDC 的无源切换触点。

反馈继电器标配 4 路报警端口（模拟量）或 5 路报警端口（开口量）（报

警输出数量根据现场实际情况而扩充)，每个端口的报警设置可以通过“报警功能”进行设定。可以对每个端口的报警分别设置且独立。

Passive switching contacts with a node capacity of 5A/250VAC or 5A/30VDC for feedback relays

The feedback relay is equipped with 4 alarm ports (analog quantity) or 5 alarm ports (opening quantity) as standard (the number of alarm outputs can be expanded according to the actual situation on site), and the alarm settings of each port can be set through the "alarm function". The alarms for each port can be set separately and independently.

反馈输出出厂默认设置：报警 1（全开位），报警 2（全关位），报警 3（综合报警），报警 4（远方）报警 5（就地）。

Factory default settings of feedback output: Alarm 1 (fully open position), Alarm 2 (fully closed position), Alarm 3 (integrated alarm), Alarm 4 (remote).

进入报警设置，屏幕显示：

The screen is displayed as follows upon access into "Alarm Set" setup

01 报警 01 设置  
02 报警 02 设置  
03 报警 03 设置  
04 报警 04 设置  
05 报警 05 设置  
06 反馈区间设置

01Alarm -1 set  
02Alarm -2 set  
03Alarm -3 set  
04Alarm -4 set  
05Alarm -5 set  
06Alarm Range

报警功能项值：全开位报警、全关位报警、给定信号故障、关过力矩、开过力矩、指定位置（050.0%）、综合报警、远方、就地和禁止报警。

The item values of alarm function: Full Open, Full Close, No g/Siven Signal, Close Torque, Open Torque ,Spec Add (050.0%) ,Complex Alarm, Remote, Local and Prohibit Alarm

当报警设置编程时，屏幕会显示当前所设置的报警功能项值在闪烁：

When the alarm setting is selected "Specified position",The screen is displayed as follows upon access into the setup menu :

01 报警 01 设置  
禁止

01Alarm -1 set  
Prohibit Alarm

按“Open/↑”或“Close/↓”按钮进行上下翻页，选择全开反馈输出，按遥控器“Enter/确认”按键保存，并提示设置成功。

Press the "Open/↑" or "Close/↓" buttons to scroll up and down, select fully open feedback output, press the "Enter/Confirm" button on the remote control to save, and prompt for successful setting

01 报警 01 设置  
全开

01Alarm -1 set  
Full open

报警 2 到报警 5 设置同报警 1。

Alarm 2 and alarm 5 are set with alarm 1.

注释：反馈选择表/Comment: Feedback Selection Table

项 目	可选择功能				接线图
	1	2	3	4	
基 本 控 制 单 元	增加一付开过力矩触点 增加一付关过力矩触点	增加一付开限位触点 增加一付关限位触点	4-20mA 输入信号	阀位反馈输 出信号	参 考 5-4-1
✓					
✓					
✓					

注：“✓”表示已选，“×”表示可选，空白表示不选。

#### 4.5.11 保护设置/Protection settings

进入保护设置，屏幕显示：

Enter the protection setting, and the screen displays:

01 过力矩保护  
02 传感器保护  
03 电机拒动保护  
04 过温保护

01 Over Torque Prot  
02 Sensor Prot  
03 Mo NoCur Prot  
04 Over Temp Prot

出厂前已设置好无需编程。需要编程联系厂家指导调试

It has been set in the factory without programming. Programming is required to contact the manufacturer to guide debugging

注释:

#### 01 过力矩保护/Torque protection

用以防止执行机构操作中途中过转矩，这个功能既保护阀门，又保护执行机构本身，转矩保护值由设定器设定。

It is used to prevent the actuator from running through the torque. This function protects the valve and protects the actuator itself.

02 转矩的检测是靠检测电机的电流和磁通来获得转矩，实现了对输出转矩的连续测量，使得调整转矩保护值可以由设定器来完成，非常方便。并排除了机械磨损，长期保持稳定。

The torque protection value is set by the setter. The detection of the torque is obtained by detecting the current and magnetic flux of the motor to obtain the torque, and the continuous measurement of the output torque is realized, so that the adjustment torque protection value can be completed by the setter, which is very convenient. It also eliminates mechanical wear and remains stable for a long time.

#### 03 隐藏式自动相序调整/Automatic phase sequence adjustment

MT-A 系列执行机构自动检测接入电源端子的三相电源的相序，通过适当的逻辑运算，决定执行机构操作时激励哪一只交流接触器，以确保给电机接通正确的相序。如果没有自动相序调整功能，有可能会由于接线相序错误而损坏阀门。由于有了自动相序调整功能，执行机构电源的接线可以不考虑相序。

The MT-A series actuator automatically detects the phase sequence of the three-phase power supply connected to the power supply terminal, and determines which AC contactor is energized during the operation of the actuator through appropriate logic operations to ensure that the correct phase sequence is applied to the motor. If there is no automatic phase sequence adjustment function, the valve may be damaged due to incorrect wiring phase sequence. Thanks to the automatic phase sequence adjustment, the wiring of the actuator power supply can be ignored regardless of the phase sequence.

#### 04 隐藏式瞬时反转保护/Instantaneous reversal protection

当执行机构接受向相反方向动作的命令时，自动加上一个时间延迟，防止产生对阀轴和变速箱的不必要的磨损。

When the actuator accepts commands that move in the opposite direction, a time delay is automatically added to prevent unnecessary wear on the valve shaft and the transmission.

#### 05 电源缺相保护/Power phase loss protection

MT-A 系列执行机构具有非常完善的电源缺相保护功能。它采用监视电压和电流相结合的方法，既能检测电机静止时发生的电源缺相，也能检测电机运行过程中发生的电源缺相，从而禁止电机运行，避免缺相运行造成电机过热。需要注意的一个重要事实是，绝大多数的电机缺相是在电机运行过程中发生的。

The MT-A-Series actuators feature a very comprehensive power phase loss protection. It adopts a combination of monitoring voltage and current, which can detect the phase loss of the power generated when the motor is stationary, and also detect the phase loss of the power generated during the operation of the motor, thereby prohibiting the motor from running and avoiding overheating of the motor caused by phase loss. An important fact to note is that most of the motor phase loss occurs during motor operation.

#### 06 阀门卡住时的动作/Action when the valve is stuck

无论执行机构向打开方向还是关闭方向动作，在发出激励电机的信号之后的 5~10 秒时间内暂时禁止转矩保护功能(如果在上述 5~10 秒时间内执行机构没有动作，控制电路则切断电机的供电)。此项功能可以实现阀门卡住时的解卡。

Regardless of whether the actuator is moving in the opening or closing direction, the torque protection function is temporarily disabled within 5 to 10 seconds after the signal of the excitation motor is issued (if the actuator does not operate within the above 5 to 10 seconds, the control circuit is cut off Power supply to the motor). This function can be used to unlock the valve when it is stuck.

#### 07 过热保护/Overheating protection

在电机绕组的端部装有二个热继电器，直接检测电机绕组的温度。当热继电器检测到绕组过热时，控制电路将禁止执行机构动作。



Two thermal relays are installed at the ends of the motor windings to directly detect the temperature of the motor windings. When the thermal relay detects that the winding is overheated, the control circuit will disable the actuator action.

#### 08 电气保护/Electrical protection

模拟量输入输出和开口量输入通道均采用光电隔离, 输出信号反馈采用电磁隔离。

The analog input/output and opening input channels both use photoelectric isolation, and the output signal feedback uses electromagnetic isolation.

#### 4.5.12 传动比设置/Transmission ratio setting

进入传动比设置, 屏幕显示: /Enter the transmission ratio setting, and the screen displays

01 位置传动比  
02 机械传动比

01 POS Trans Ratio  
02 Overall Ratio

出厂前已设置好无需编程。需要编程联系厂家指导调试

It has been set in the factory without programming. Programming is required to contact the manufacturer to guide debugging

#### 4.5.13 电机关阀方向/Motor valve closing direction

进入电机关阀方向, 屏幕显示:

Enter the motor valve closing direction, and the screen displays:

03 电机关阀方向

03Motor Close DIR

出厂前已设置好无需编程。需要编程联系厂家指导调试

It has been set in the factory without programming. Programming is required to contact the manufacturer to guide debugging

#### 4.5.14 停车位置制动设置/Parking position brake setting

进入停车位置制动设置, 屏幕显示

Enter torque calibration, screen display

01 停车位置  
02 制动延时  
03 制动时间

01 parking position  
02 Brake delay  
03 Braking time

出厂前已设置好无需编程。需要编程联系厂家指导调试

It has been set in the factory without programming. Programming is required to contact the manufacturer to guide debugging

#### 4.5.15 电源类型/ Power type

进入电源类型/, 屏幕显示/Enter the moment unit, and the screen will display

05 电源类型  
AC220V

05Power type  
AC220V

出厂前已设置好无需编程。

Factory set without programming

#### 4.5.16 电流参数/Current parameters

进入电流参数参数, 屏幕显示

Enter the motor control parameters, and the screen displays

01 额定电流  
02 采样放大系数  
03 采样 CT 变比

01 Rated current  
02 Sampl amplification factor  
03Sampling factor

出厂前已设置好无需编程。

It has been set in the factory without programming. Programming is required to contact the manufacturer to guide debugging

#### 4.5.17 产品编号/Product Num

进入产品编号, 屏幕显示/Enter the product number and the screen will display

07 产品编号  
00000001

07Product Num  
00000001

出厂前已设置好无需编程。

It has been set in the factory without programming. Programming is required to contact the manufacturer to guide debugging

#### 4.5.18 密码设置/Password settings

进入产品编号， 屏幕显示/Enter the product number and the screen will display



出厂前已设置好无需编程。

It has been set in the factory without programming. Programming is required to contact the manufacturer to guide debugging

#### 4.5.19 公司信息/Company information



出厂前已设置好无需编程。

It has been set in the factory without programming. Programming is required to contact the manufacturer to guide debugging

#### 4.5.20 保存出厂设置/Voltage extreme reset

出厂设置主要设置执行器配置相关的参数，此参数已在出厂时已设定完成。若要进入出厂设置，需向 D+R 相关人员索取密码。

The factory setting is to set the parameters related to the actuator configuration. This parameter has been set at the factory. To enter the factory settings, need to D + R related personnel to obtain a password.

#### 4.5.21 恢复出厂/Restore factory parameters

出厂时所设置的参数已经备份，若有需要可恢复出厂时的参数使用。

The parameters set at the factory have been backed up, and if necessary, the factory parameters can be restored for use.

#### 4.5.22 报警查询/Alarm Query

报警查询中主要记录了当前所发生的报警事件，以便处理各种异常。

The alarm query mainly records the current alarm events to handle various

exceptions.

#### **4.5.23 历史记录/History**

历史记录中主要记录了对前 32 个报警的记录和位置变更的记录，以便查询所发生故障事件和位置变更次数，以方便后续问题分析。

The historical records mainly record the records of the first 32 alarms and location changes, in order to query the occurrence of fault events and the number of location changes, and facilitate subsequent problem analysis

#### **4.5.24 极值纪录/Extreme value record**

极值纪录主要是对电流、电压、开阀力矩极值、关阀力矩极值和开关总次数等的记录。

The extreme value record is mainly used to record the extreme value of current, voltage, valve opening torque, valve closing torque and total switching times.

#### **4.5.25 版本信息/Version information**

版本信息主要是记录主板系统版本号和显示系统版本号。

The version information mainly records the system version number of the main board and displays the system version number.

#### **4.5.26 现场总线控制/Fieldbus Control**

现场总线技术是仪器仪表、计算机技术和网络技术在控制系统和自动化领域发展的新技术,现场总线使得现场仪表之间、现场仪表和控制器之间构成网络互连系统,实现全数字化、双向、多点的数字通信。具有统一、公开的国际标准 ISO/OSI 模型的开放式总线,可将不同厂家的仪表组成开放互连网络,具有互可操作性和互用性,为全分散控制系统提供了基础。通过多种网络传输介质,带有现场总线通讯卡的执行机构可以构成开放的现场总线系统,支持 ProfibusDP 和 Modbus-RTU 等现场总线,实现远程通讯、远程数据采集和远程诊断与维护。

Fieldbus technology is a new technology developed by instrumentation, computer technology, and network technology in the fields of control systems and automation. Fieldbus enables network interconnection systems between field instruments, as well as between field instruments and controllers, achieving fully digital, bidirectional, and multi-point digital communication. An open bus with a

unified and publicly available international standard ISO/OSI model can form an open interconnect network of instruments from different manufacturers, providing interoperability and interoperability, and laying the foundation for fully decentralized control systems. Through various network transmission media, actuators with fieldbus communication cards can form an open fieldbus system, supporting fieldbuses such as Profibus DP and Modbus-RTU, achieving remote communication, remote data acquisition, and remote diagnosis and maintenance.

#### 4.5.27 当前告警/Current Alarm

报警事件/Alarm event	故障分析/Failure analysis	解决办法/Solution
无输入电流信号 No Input Current	4-20mA 信号线连接松动 4-20mA signal cable connection loose	检查 4-20mA 线路, 重新接线 Check the 4-20mA lines and re-wiring
关过力矩保护 Two Close Prote 开过力矩保护 Two open Prote	执行机构所驱动的力, 已经远 大于所要求的力。 The force driven by the implementing agency is far greater than the force required.	检查机械部分 Check the mechanical parts
其他报警信息 Other alarm information		请联系维修人员 Please contact the service personnel

### 4.6 调节型执行器调试/Adjustment type actuator debugging

#### 4.6.1 确认接线无误/Confirm that the wiring is correct

按照 5-4-1 接线图正确接入电源线、4-20mA 输入和 4-20mA 输出；参考 4.5.7 调试。

Properly connect the power line, 4-20mA input and 4-20mA output according to the 5-4-1 wiring diagram; Refer to 4.5.7 Debugging.

1、通电后执行机构通过自身带有显示器对执行器进行自检功能查看是否有错误报警。屏幕正常显示误报警，说明接线连接正常。

After being powered on, the actuator performs a self check function on the actuator through its own display to check for any error alarms. The screen displays

a false alarm normally, indicating that the wiring connection is normal.

2、进入“参数设置-->基本设置-->07 输入输出校准-->01 输入 4mA 校准”，调节 4-20mA 输入信号，观察显示屏最下面一行数值，数值在正常范围内变化，说明 4-20mA 输入线连接正常。否则，请检查 4-20mA 输入接线是否正常。若接线无问题，请检查 4-20mA 信号源是否正常。

Enter "Parameter Setting -->Basic Setting -->07 Input/Output Calibration -->01 Input 4mA Calibration", adjust the 4-20mA input signal, and observe the value at the bottom of the display screen. The value changes within the normal range, indicating that the 4-20mA input line is connected normally. Otherwise, please check whether the 4-20mA input wiring is normal. If there is no problem with the wiring, please check whether the 4-20mA signal source is normal.

3、4-20mA 输出接收终端，可正常接收到信号。说明 4-20mA 接线正常。否则，请检查 4-20mA 输出接线是否正常。若接线无问题，请直接在接线端子处，用万用表测量 4-20mA 输出是否正常。

4-20mA output receiving terminal, can receive signals normally. Note that the 4-20mA wiring is normal. Otherwise, check if the 4-20mA output wiring is normal. If there is no problem with the wiring, please measure the 4-20mA output with a multimeter directly at the terminal.

#### **4.6.2 全开全关位置设定/Full open and Close position setting**

1、全开位置设置：将阀门开到全开位置，再进入“参数设置-->基本设置-->03 行程限位-->03 全开位置设置”，点击遥控器“Enter”按键确认并保存全开位置值。

Setting of full open position: open the valve to the full open position, enter "parameter setting -->basic setting -->03 travel limit -->03 full open position setting", click "ENT" to confirm and save the full open position value.

2、全关位置设置：将阀门关到全关位置，再进入“参数设置-->基本设置-->03 行程限位-->02 全关位置设置”，点击遥控器“Enter”按键确认并保存全关位置值。

Setting of fully closed position: close the valve to the fully closed position, enter "parameter setting -->basic setting -->03 travel limit -->02 fully closed position setting", click "ENT" to confirm and save the fully closed position value.

### 4.6.3 就地试运行/Local operation

1、确认工作在就地状态，显示板显示就地状态。如果为远程状态，把旋钮旋到就地位置，切换到就地状态。

Confirm that the work is in the local state, and the display board displays the local state. If in remote mode, turn the knob to the local position and switch to the local mode.

2、旋钮往开方向旋进行开阀，旋钮往关方向旋进行关阀，并观察 4-20mA 输出反馈是否满足要求。如果反馈有偏差，请重新校准 4-20mA 输出信号。

Rotate the knob towards the open direction to open the valve, and towards the close direction to close the valve. Observe whether the 4-20mA output feedback meets the requirements. If there is deviation in the feedback, please recalibrate the 4-20mA output signal.

### 4.6.4 远程试运行/Remote operation

1、把旋钮旋到远程地位置，显示板状态栏显示远程。

Turn the knob to the remote position, and the status bar on the display board will display remote.

2、远程给定控制信号，观察执行器动作是否满足要求。满足要求，则调试结束。

The control signal is given remotely to see if the actuator action meets the requirements. If the requirements are met, the commissioning ends.

## 4.7 开关型执行器调试方法/Adjustable actuator debugging method

### 4.7.1 确认接线无误/Confirm that the wiring is correct

按照 5-4-1 接线图正确接入电源线、开关量输入和继电器反馈输出线。

Connect the power line, switch input, and relay feedback output lines correctly according to the 5-4-1 wiring diagram.

1、通电后执行机构通过自身带有显示器对执行器进行自检功能查看是否有故障报警。屏幕正常显示无故障报警，说明接线连接正常。

After power on, the actuator performs a self check function on the actuator through its own display to check for any fault alarms. The screen displays normally without any fault alarms, indicating that the wiring connection is normal.

1、开关量远程控制电路可由执行机构内部的 24V 直流电源供电，外部无需另外供电，具体的接线，请参照详细接线图 5-4-1。

Switch input wiring is divided into two categories: dry contact and wet contact. There are two types of wet contact input signals: input control signal with 24VDC. If the input control signal is dry contact, the 24VDC provided by the actuator itself needs to be connected in series to the circuit. For specific wiring, please refer to the detailed wiring diagram.

2、继电器反馈输出是否正确。

The relay feedback output is correct.

#### **4.7.2 就地试运行/Local operation**

1、确认工作在就地状态，显示板显示就地状态。如果为远程状态，把旋钮旋到就地位置，切换到就地状态。

Confirm that the work is in the local state, and the display board displays the local state. If in remote mode, turn the knob to the local position and switch to the local mode.

2、旋钮往开方向旋进行开阀开到位，旋钮往关方向旋进行关阀关到位，并观察继电器反馈输出是否正常。如果反馈有问题，请重新继电器反馈输出接线和菜单设置项中报警输出功能的配置是否正确。

Rotate the knob in the open direction to open the valve to its full position, and rotate the knob in the close direction to close the valve to its full position. Observe whether the relay feedback output is normal. If there is a problem with the feedback, please re configure the alarm output function in the relay feedback output wiring and menu settings to ensure it is correct.

#### **4.7.3 远程试运行/Remote operation**

1、把旋钮旋到远程地位置，显示板状态栏显示远程。

Turn the knob to the remote position, and the status bar on the display board will display remote.

2、远程给定控制信号，观察执行器动作是否满足要求。满足要求，则调试结束。如果执行器不动作，请确认当远程给信号时屏幕上给定值是否有相应的变化。如果给定值无相应的变化，请检查接线方式是否正确；否则，请查看出厂设置中信号类型的选择是否匹配。



The control signal is given remotely to see if the actuator action meets the requirements. If the requirements are met, the commissioning ends. If the actuator does not operate, please confirm whether there is a corresponding change in the value given on the screen when the signal is given remotely. If there is no corresponding change in the given value, please check if the wiring is correct; otherwise, check if the signal type selection in the factory setting matches.

## 5 电气联接/Electric connection



**警告：**执行机构在接通电源前，请确认接地线是否已可靠接地。

**Warning:** Before connection of actuator with the power supply, please confirm the reliable grounding of grounding wire.



**警告：**电气连接必须在断电状态下进行，连接之前一定要检查电源形式（电压和频率等）和电机参数是否与本机要求一致。

**Warning:** The electric connection must be made under power off status; before connection, please inspect the power mode (voltage and frequency) and motor parameters for conformity with the requirements.



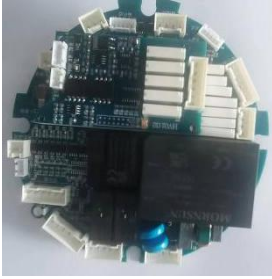
**警告：**电气设备的安装和连接只能由具备相应资质的受过专业培训的电气技术人员完成，严格按照相应规范进行操作。

**Warning:** The qualified and well-trained electric personnel are designated for the installation and connection of electric equipment in strict accordance with the codes.

### 5.1 高度集成 CPU 控制模块/High-integrated CPU control module

D+R MT-A 系列控制模块采用 ARM 32 位集成芯片，其特点：功能强大、计算速度快、控制精度更高。

D+R MT-A series control module adopts ARM 32-digit integrated chip, featuring powerful function, Powerful function, fast computing speed and higher control precision.



主板/motherboard



显示板/Display panel

高精度智能控制驱动模块/High precision intelligent control and driving module

## 5.2 接线端子排/Wiring terminal block

1. D+R MT-A 系列执行器进线入口接头预留有 M25×1.5、M20×1.5，可根据进线位置自由选择。

D+R MT-A series actuator inlet inlet joints are reserved with M25×1.5 and M20×1.5, which can be freely selected according to the incoming line position.

2. 请按照序号对应接线,具体请参照端子接线定义 5-3-1。

Please refer to the serial number for the wiring 5-3-1 .

强烈建议信号线采用屏蔽电缆，电源线和信号线分孔进入，以免造成干扰。

It is strongly recommended that the signal line be separated by shielding cable, power cable and signal cable to avoid interference.

3. 电缆接头防水处理。

Waterproofing of cable joints.

### 5.3 端子接线定义/Definition of wiring terminal

5-3-1 标准端子接线定义 (230V/400VAC)

1	4-20mA 输入 IN+	1	4-20mA IN+
2	4-20mA 输入 IN-	2	4-20mA IN-
3	4-20mA 输出 OUT+	3	4-20mA OUT+
4	4-20mA 输出 OUT-	4	4-20mA OUT-
5	开关量-开 (24VDC+)	5	Digital-OPEN (24VDC+)
6	开关量-关 (24VDC+)	6	Digital-CLOSE (24VDC+)
7	ESD	7	ESD
8	开关量-停 (24VDC+)	8	Digital-STOP (24VDC+)
9	手/自动	9	Manual/Automatic
10	开关量-公共端 (24VDC-)	10	Digital-COM (24VDC-)
11	阀位全开+	11	Valve position fully open +
12	阀位全开-	12	Valve position fully open -
13	阀位全关+	13	Valve position fully closed +
14	阀位全关-	14	Valve position fully closed -
15	综合报警	15	Integrated alarm
16	公共端	16	Common terminal
17	远程	17	Remote
18	公共端	18	Common terminal
19	就地	19	On site
20	公共端	20	Common terminal
21-32	备用	21-32	Spare
33	PE	33	PE
34	L1/L	34	L1/L
35	L2/N	35	L2/N
36	L3	36	L3

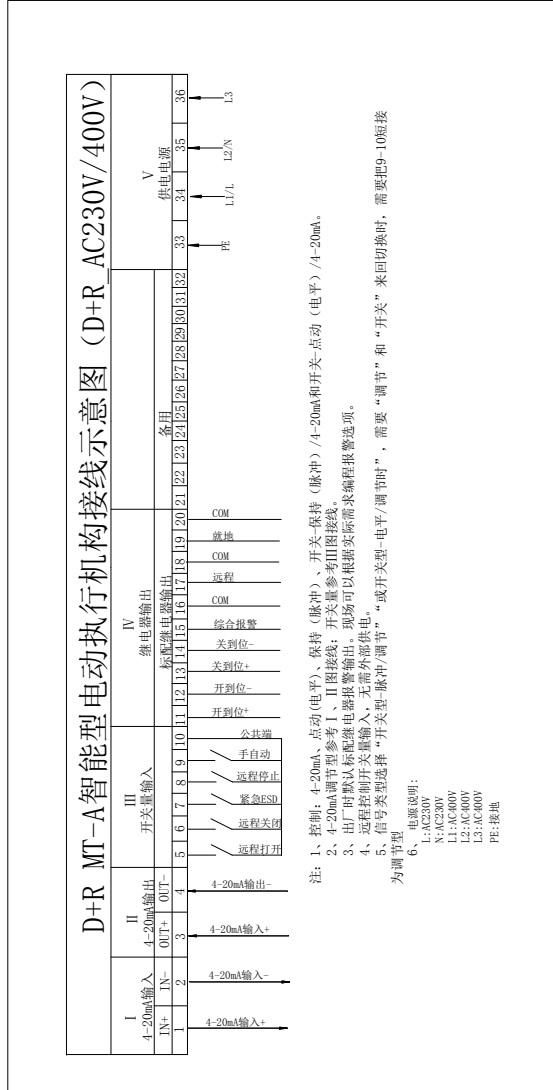


**警告:** 未接线时, 请勿松动接线端子仓堵塞, 以防进水, 湿气等, 非专业人员不得进行从事本接线工作, 否则由此造成的后果 D+R 不予保修。

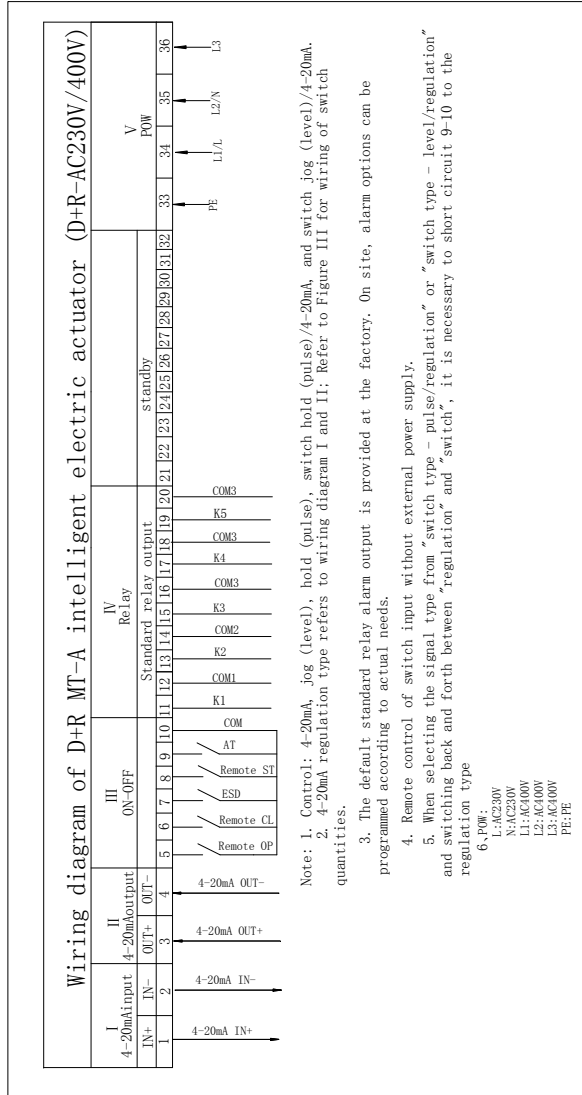
**Warning:** Please fasten the plug of wiring terminal before wiring to prevent water and humidity; it is forbidden for irrelevant personnel to execute the wiring; otherwise D+R does not bear maintenance and servicing responsibilities.

## 5.4 接线示意图/ Wiring diagram

5-4-1 标准接线示意图 (230VAC/400VAC)



## 5-4-1 Standard Wiring Diagram(230VAC/400VAC)



## 6 设备维护和保养/Maintenance and Servicing of Equipment

### 6.1 设备维护周期/Equipment Maintenance Cycle

在正常使用情况下，D+R MT-A 系列电动执行机构是免维护的，但是少量的日常维护是必须的。

Under normal usage, D+R MT-A series electric actuator is free from maintenance; however, a small amount of daily maintenance is necessary.

6.1.1 一切维修、保养等作业均须在切断前级电源后进行。

6.1.1 All repairs, maintenance and other operations must be carried out after cutting off the power to the previous level.

6.1.2 按钮发生故障必须先断电源后开盖。

6.1.2 Button failure must first cut off the power supply and then open the cover.

6.1.3 定期检验电缆引入装置及防护用密封圈的弹性,如因老化失去弹性,必顺用同种规格(尺寸、硬度)的零件更换,不得用其它替代产品。

6.1.3 Regular inspection of the cable introduction device and the elasticity of the protective seal, such as the loss of elasticity due to aging, must be replaced with the same specifications (size, hardness) parts, and not with other alternative products.

6.1.4 维修和保养时,注意保护隔爆面,所有隔爆面不得有损伤和锈蚀,装配时隔爆面应涂 204-1 防锈油。不要弄脏和损坏密封圈。

6.1.4 repair and maintenance, pay attention to the protection of the explosion-proof surface, all explosion-proof surface shall not be damaged and rust, assembly of the explosion-proof surface should be coated with 204-1 anti-rust oil. Do not dirty and damage the seal.

6.1.5 不得随意更换影响防爆性能的元器件，以免破坏防爆性能。

6.1.5 Do not arbitrarily replace components that affect the explosion-proof performance, so as not to destroy the explosion-proof performance.

6.1.6 产品在长期存放中，会在电动执行机构的法兰面和密封面上渗有少量的润滑油脂，这不会影响产品的寿命和使用，但为了确保设备的正常可靠运行，请定期做一次运行测试。

6.1.6 In the long-term storage, a small amount lubricant oil may be leaked on the flange and sealed surface of electric actuator, which will not influence the life time and normal usage of products. However, in order to ensure the normal and reliable operation of equipment, please make regular operating test.

6.1.7 当您使用的 D+R 产品出现您解决不了的故障，请您立即与我们办事处、代理商联系，我们将在最短的时间内给您圆满解决问题。

6.1.7 Please contact our office or agency whenever you encounter any unmanageable fault, and we promise to settle the problem within the shortest time.

## 6.2 润滑/Lubrication

D+R MT-A 系列电动执行机构在正常使用条件下，整个寿命周期内无须额外的润滑。所使用的润滑油脂为添加二硫化钼的多用途高级润滑油。如需购买请及时与 D+R 中国办事处或各级代理商联系。

Under normal usage, D+R MT-A series electric actuator does not require for additional lubrication within the whole use life. The lubricant refers to multi-purpose senior lubricant containing molybdenum disulfide. Please contact with D+R Chinese office or agent at various levels for procurem

## 7 故障信息及处理一览表/List of Fault Information and Settlement

故障情况 Faults	可能故障原因 Possible Reasons	故障处理 Solutions
不能开机 (指示灯或 OLED 显示屏不显示) Unable to start the machine (indicator light or OLED display does not display)	无供电电源或电源不符合要求 There is no power supply or the power fails to meet the requirements.	检查电源和接线端子接线的正确性和可靠性。 Inspect the power supply and wiring terminal for correct and reliable wiring.
	控制电路保险丝熔断或回路开路 Fuse of control circuit is fused or loop is open.	检查电路或更换保险 Inspect the circuit or replace the fuse.
开机后, 给定指令, 执行机构不动作 Upon start and issuing command, the actuator has no operation.	“全开位置”和“全关位置”数据相等 “Open_Pos/Open position” and “Close_Pos”/Closed position” are equivalent.	进入设置菜单检查数据, 并修改。 Enter into the setting menu, inspect and revise the related data.
	电机绕组烧毁 The motor winding is burnt out.	更换电机或维修 Replace or repair the motor.
	电机超温保护 The motor suffers from over temperature protection.	电机降温 Cool down the motor.
	开限位、关限位 Limit switches in open/close direction.	反向运转后正常 Operate reversely and become normal.
手动操作时执行机构不动作或很难动作 In the manual	传动轴承卡涩 The transmission shaft is blocked.	维修或更换 Repair or replace
	阀杆和执行机构输出轴不同轴 Valve stem and actuator's output shaft	维修或更换 Repair or replace





operation, the actuator has no operation or suffers from operation difficulty.	are not co-axial.	
	阀门卡涩或损坏 The valve is blocked or damaged.	维修或更换 Repair or replace
	传动齿轮没有润滑 The transmission gear isn't lubricated.	进行加油润滑 Add lubricant
电机工作时, 阀门不动作 In the normal operation of motor, the valve has no operation.	传动齿轮脱离或损坏 The transmission gear is stripped or damaged.	维修或更换 Repair or replace
	电机轴承损坏或卡涩 The motor shaft is blocked or damaged.	维修或更换 Repair or replace
	阀门卡涩或损坏 The valve is blocked or damaged.	维修或更换 Repair or replace
	阀门轴、阀杆的驱动螺母损坏 The driving nut of valve shaft and valve stem is damaged.	维修或更换 Repair or replace

D+R 电动执行机构分为 MT-A、MC、G 三个系列，适用于不同的用户。四十年的品质和近乎理想的控制性能与精度，赢得了世界范围广大用户的一致认可和支持。D+R 电动执行机构的生产、销售、服务都严格按照 ISO9001 质量体系 and ISO5211 标准执行。

The D+R electric actuator is divided into three series: MT-A, MC, and G, suitable for different users. Forty years of quality and almost ideal control performance and accuracy have won unanimous recognition and support from users worldwide. The production, sales, and service of D+R electric actuators are strictly carried out in accordance with the ISO9001 quality system and ISO5211 standards.

2005 年 D+R 在全球率先推出直流无刷无级调速电动执行机构 S1 系列，各种技术性能指标全面超过采用交流及交流变频调速执行机构。特别适用于要求输出力大、动作频率、调节精度高、反应速度快、快开快关场所。

In 2005, D+R launched DC brushless stepless variable speed electric actuator as first of its kind in the world g series; various technical properties and indicators have exceeded AC and AC variable frequency & speed actuators. It is particularly applicable to the areas with large output force, high action frequency, high adjustment precision, swift response and fast opening/closing.

D+R 电动执行机构广泛应用于电力/核电、冶金、有色、石油、化工、制药、造纸、市政、轻工、铁路等行业。D+R electric actuator is widely applied in the power/nuclear power, metallurgical, non-ferrous, petroleum, chemical engineering, pharmaceutical, paper making, municipal, light industry and railway industries.

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The operation instruction manual is extracted and translated by D+R China Office, Daume (Shanghai) Control Technology Co., Ltd., and the final interpretation right belongs to us. Please contact us whenever you encounter any problem; we reserves the right to change the above statement without prior notice!

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