万讯愿景：成为自动化行业受人尊敬的世界级企业

万讯使命：为客户创造价值，为员工创造健康丰盛的生活

经营理念：与您共享世界新技术成果

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Maxonic 万讯

MVP智能阀门定位器

MVP SMART POSITIONER

↘ 3800系列用户手册

中国第一款防雷型智能阀门定位器

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1、用户须知 MVP >>>>>

在安装和调试前请认真阅读此手册

1.1 安全图标

为了您能更好地应用这份说明，以及保障您在调试，运行和维修这台仪器时的安全，请注意下列符号的用途：

符号	标语	解　　说
警告	警告	警告指如果某个操作或过程执行不当，将会导致人身伤害或安全事故。请严格遵守规范，谨慎操作。
注意	注意	如果某个操作或过程执行不当，将会导致设备操作故障或设备损坏。请严格遵守规范。
提示	提示	如果某个操作或过程执行不当，会间接影响设备运行或触发设备某部分发生意外响应。

1.2 安全注意事项

提示	1、本设备的设计满足先进的安全要求，通过出厂测试，出厂时操作安全有效。 2、本设备遵守相关的法规和标准。 3、本设备制造商保留修改技术参数不提前通知的权利。 4、必须遵守允许的贮存、运输和操作温度。 5、必须按照连接图的规定对设备进行接线。 6、必须遵循设备上附带的警告标志、铭牌和接线图中所含的信息。 7、可在危险区域中使用的设备的铭牌上有相应的标记。在危险区内操作设备时，必须遵守相关的国家规定。必须遵守该Ex防爆文档中提供的安装规范、连接参数以及安全说明。 8、用于爆炸性粉尘环境中时，存在潜在静电危险，因此不能用于受产生电荷过程、机械摩擦、分离过程、电子发射和气动传输粉尘影响的区域。不得吹扫产品外壳表面，以防静电引燃危险。

1.3 安装和调试操作

注意	1、本设备只能由经过培训，获得授权的合格专业人员(如电工)进行安装、连接、调试和维护，并需要完全遵守《用户使用手册》指引、相关应用规范、法律法规要求中的规定，并具有相应的资质证书(与应用条件相关)。 2、安装本设备前，安装人员必须阅读《用户使用手册》，理解并遵守其中规定。 3、安装本设备时，应在断电状态下且没有外部负荷或应力时进行。 4、除非《用户使用手册》允许，否则不能对设备进行修改或维修。 5、对本设备进行修理时，必须在明确允许进行修理并使用原装备件情况下。 6、如果在设备附近进行焊接作业，不可以通过本设备实行焊接设备接地。

1.4 应用范围

注意	1、除本手册规定的应用范围，其它任何应用范围均会对人员和整个设备系统的安全造成威胁，禁止使用。 2、制造商对于操作不当或者非指定用途引起的损害不承担责任。

1.5 开箱清单

MVP智能阀门定位器；
用户手册；
安装配件（可选）。

2、概　　述

MVP智能阀门定位器为深圳万讯自控股份有限公司推出的智能型两线制现场仪表。本定位器作为气动阀门的配套控制部件，广泛运用于化工、石油、冶金、轻工、电力等领域的自动控制系统中。

MVP智能阀门定位器接受来自控制系统的4～20mA阀位信号，通过A/D转换得到阀位设定值；同时通过位置传感器得到实际的阀位反馈信号；两者经过控制软件的计算处理，从而控制气动执行机构的动作，驱动阀位到达设定值（如图2-1所示）。

MVP智能阀门定位器是基于微处理器技术的高性能智能阀门定位器，能很好地克服摩擦力和阀芯上的不平衡力，提高调节阀的响应速度，使其定位迅速准确。它不仅完全能替代传统的电/气阀门定位器，而且可直接接入HART协议网络，实现与控制系统的信息交换。

MVP智能阀门定位器符合GB/T 3836.1-2021《爆炸性环境 第1部分：设备 通用要求》、GB/T 3836.2-2021《爆炸性环境 第2部分：由隔爆外壳“d”保护的设备》、GB/T 3836.31-2021《爆炸性环境 第31部分：由防粉尘点燃外壳 "t" 保护的设备》、的标准，经国家认可的防爆电气产品认证机构检验合格，取得防爆3C证书。防爆标志为Ex db IIC T4…T6 Gb，适用于爆炸性气体环境；防爆标志为Ex tb IIIC T80℃…T130℃ Db，适用于爆炸性粉尘环境。

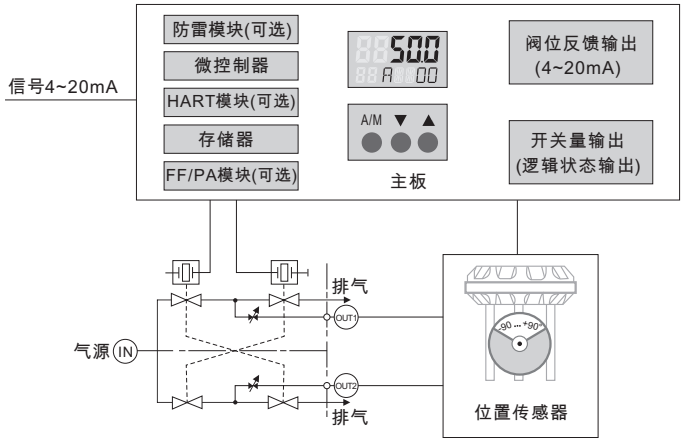


图2-1：MVP智能阀门定位器原理框图

2.1 功能介绍

自适应功能：自动寻找阀门零点和量程，优化阀门控制参数，提高控制精度；
组态功能： 可设置阀门特性曲线、动作方式、死区、紧密关闭、事件输出；
自诊断功能：能显示输入电流值、上/下行程时间、死区等；
安全阀位：可选择 全开、全关、保持、手动等模式；
通讯功能：HART协议的通讯功能，FF/PA通讯功能；
反馈功能：4～20mADC阀位反馈信号、开关量反馈信号；
抗振荡功能：提供多种抗振荡算法及专家模式。

2.2 特点

定位精度高达0.5%F.S；
操作无需开壳，高防护等级下实现真正的就地操作；
结构简单，体积小，可安装在小型执行机构上；
自动整定，自动诊断，阀门特性曲线可组态设定；
机械零件少，抗振性能好；
可就地或远程进行菜单设置；
低功耗、低耗气量、低运行成本；
采用二线制4～20mA标准信号；
防雷模块可选，降低定位器因雷击浪涌而损坏几率。

2.3 防雷特性

随着科技的进步，智能阀门定位器已逐步向智能化，总线化方向发展，因此，不可避免的要使用一些高度集成化的元件，从而造成设备耐压、耐过电流的水平下降，对雷电的承受能力下降。当有雷击时，这些元件很容易损坏，导致定位器失效，如果配套的控制阀用于关键工艺控制点或者对控制安全性要求较高的位置时，很可能因为定位器的突然失效而使工艺失去控制或者引发生产安全事故。普通的智能阀门定位器对通过导线侵入的大电流和过电压不具有防护作用，易遭受雷击破坏，给安全生产带来隐患。为了弥补这种缺陷，MVP智能阀门定位器可选防雷放电电路，构成具有防雷功能的阀门定位器。

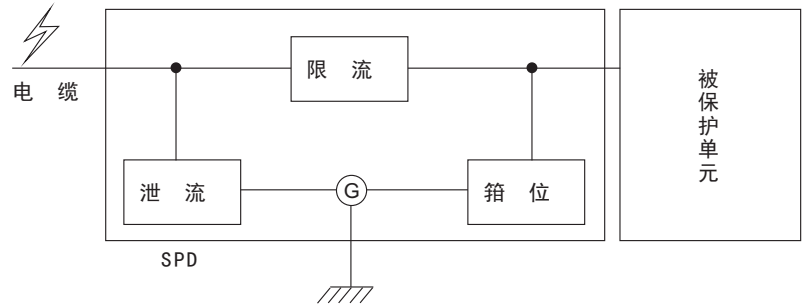


图2-2：MVP防雷智能阀门定位器原理框图

注意	1、防雷功能非标配，作为产品选型中的可选项； 2、使用防雷定位器时，必须按相关国家标准进行接地处理； 3、带防雷功能时，不能做绝缘耐压测试。

2.4 组件和部件

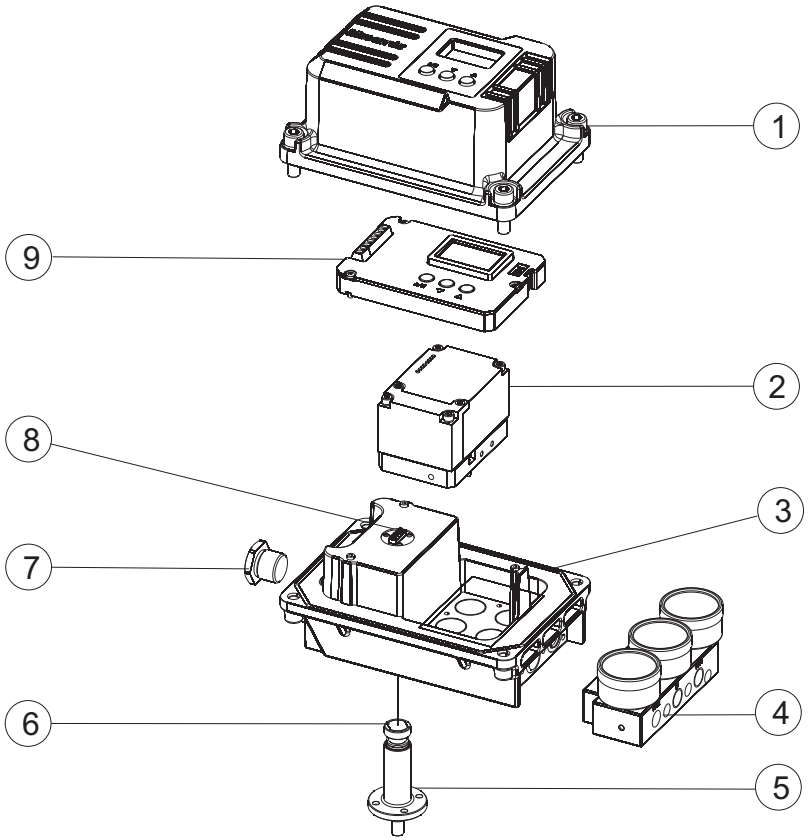


图2-3：定位器主机组件和部件分解图

1. 上壳体组件
2. I/P转换模块
3. 下壳体组件
4. 压力表组件(气接头连接块)
5. 反馈轴组件
6. 磁铁
7. 堵头
8. 反馈传感器
9. 主控板组件

3、技术参数 MVP >>>>>

气指标	气源压力	0.14～0.7MPa
	阀泄漏量	＜ 0.6L/H
	稳态耗气量	＜ 36L/H
	气源质量要求	根据ISO8573-1最大颗粒尺寸和密度：4级 含油量：4级；露点：低于最低环境温度10K
输入输出	适应执行机构	单作用、双作用
	行程范围	直行程10～130mm;角行程30～160°
	电流输入	4～20mA DC，最小工作电流>3.8mA DC； 可设定分程控制起点和终点
	反馈输出	4～20mA DC
	开关输出	2路电子开关
	压电阀开关次数	平均无故障动作次数 ＞ 20亿次
	输出特性修正	线性，快开1:30，30:1，用户自定义20段曲线，双曲线
	通讯方式	HART通讯协议(HART7)
显示方式	液晶显示	2排7位数字液晶，尺寸22×38mm
	压力表指示	可选配2-3个压力表，显示进出口空气压力
组态操作	自整定	自整定阀门零点及量程，最小死区(自动值)
	自诊断	能显示输入电流值、上/下行程时间、死区
	就地手操	前面板3个按键，可就地手动操作阀门开度
精度	死区	0.1～10% 可调整
	基本误差	≤±0.5% F.S
	回差	≤0.5% F.S
工作环境	环境温度	-40～+65℃(T6)/70℃(T5)/80℃(T4)
	环境湿度	5～95%RH
	抗振性能	15～150Hz@2g
	防护等级	IP66（根据客户需求）
	防爆等级	Ex db IIC T4…T6 Gb Ex tb IIIC T80℃…T105℃ Db
外形	重量	3 .2 kg(含压力表组件)
	尺寸	206.5×117.4×107mm
	外壳材质	铝合金 / 不锈钢（可选）

备注:常规最低使用环境温度为-30℃，低温型为-40℃。

4、安装说明

4.1 外形尺寸

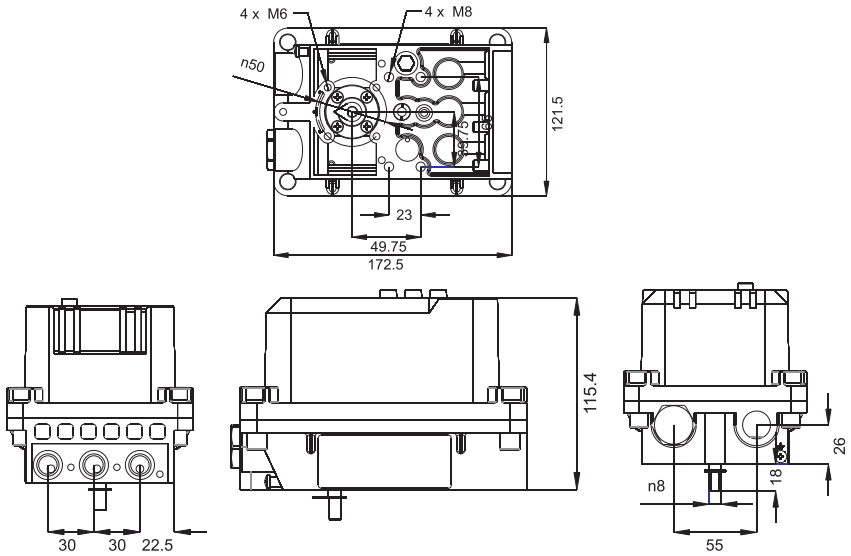


图4-1：MVP智能阀门定位器外形尺寸图

4.2 机构安装

4.2.1反馈杆转角范围

图4-2所示为定位器反馈指示器及其转角范围的箭头标志。实线具体位置参照图4-2，中间位置（LCD显示的对应的反馈值在未初始化时（LCD下排显示NOINI为50.0左右）；极限位置表示反馈杆转角范围。定位器出厂前，已对内部位置传感器进行调整。

图4-3为直行程定位器标配反馈杆装到定位器上的效果图。本定位器作直行程应用时，推荐反馈角度在40°到60°之间。

图4-4为角行程定位器标配反馈杆装到定位器上的效果图。

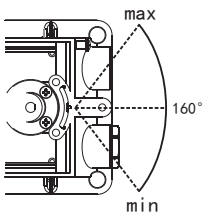


图4-2

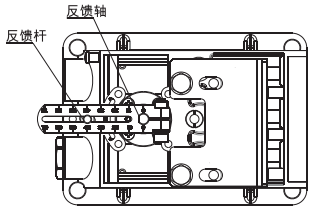


图4-3

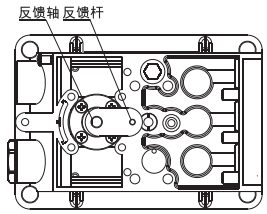


图4-4

4.2.2直行程定位器安装连接

直行程安装元件列表

序号	数量	名称	规格
1	6	六角头螺栓	M8×12
2	6	弹簧垫片	D8
3	6	平垫圈	D8
4	1	执行器连接板	
5	1	定位器连接板	
6	2	内六角螺栓	M6×12
7	2	弹簧垫圈	D6
8	2	平垫圈	D6
9	1	反馈滑杆	
10	1	反馈杆	
11	2	十字槽组合螺钉	M5×10

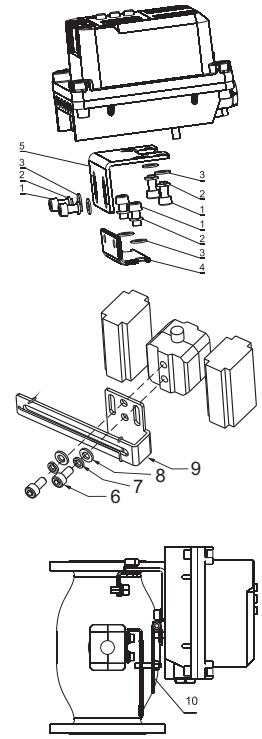


图4-5：直行程阀门定位器安装连接图

备注：1、备用件(同6)

2、执行器只有左侧有安装孔时，定位器连接板相应的安装于定位器左侧。

定位器安装在执行机构的正前方。它通过可调的反馈杠杆机构可与执行机构推杆连接（如图4-5），安装步骤如下：

用内六角头螺栓①、弹簧垫片②和平垫圈③把定位器连接板⑤，固定在定位器底部。

用内六角头螺栓①、弹簧垫片②和平垫圈③把执行器连接板④，固定在执行器上。

用内六角螺栓⑥和弹簧垫圈⑦平垫圈⑧把反馈滑杆⑨固定到执行器上。

旋紧反馈杆⑩上的内六角螺栓，将之固定到定位器主动轴上。

用内六角头螺栓①、弹簧垫片②和平垫圈③，把定位器连接板⑤与执行器连接板④连接固定。

安装好以后，可以微调执行器连接板④、反馈滑杆⑨的位置，使得阀开度为50%时反馈杆⑩是水平状态，即图4-3中实线所绘反馈杆所处状态。

本定位器作直行程应用时，反馈杆的反馈角度应尽可能在40°到60°之间，超过此范围太多会产生较大的非线性误差。

4.2.3角行程定位器安装连接

序号	数量	名称	规格
1	4	平垫圈	D6
2	4	弹簧垫圈	D6
3	4	六角头螺钉	M6×12
4	1	反馈杆	
5	1	紧定螺钉	M4×5
6	1	上支架块	
7	2	下支架块	
8	1	叉形反馈杆	
9	1	六角螺母	M6
10	4	六角头螺钉	M5×12
11	4	弹簧垫圈	D5
12	4	平垫圈	D5
13	4	十字槽螺钉	M5×12
14	4	弹簧垫圈	D5
15	4	平垫圈	D5

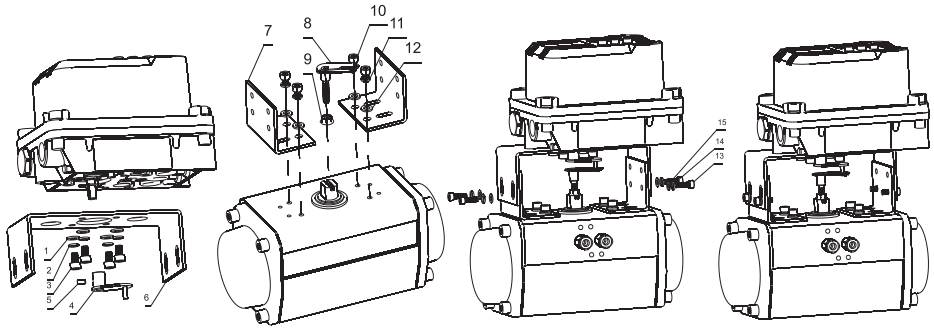


图4-6：角行程阀门定位器安装连接图

安装步骤如下（角行程定位器安装连接参看图4-6）：

用平垫圈①、弹簧垫圈②和六角头螺钉③把上支架块⑥，固定在定位器底部。

将反馈杆④套在定位器主动轴上，用紧定螺钉⑤固定。

用平垫圈⑫ 、弹簧垫圈⑪ 和六角头螺钉⑩将2块下支架块⑦固定在执行机构上。

先将六角螺母⑨拧入到叉形反馈杆⑧螺钉根部，再将叉形反馈杆⑧拧到执行机构上。

将装好安装支架的定位器小心的放在执行机构上，使反馈杆④上的圆柱销正确套入叉形反馈杆⑧的插槽内。调整定位器安装高度，锁紧反馈杆④上的圆柱销的紧定螺母，并把定位器通过上、下支架块用平垫圈⑮、弹簧垫圈⑭和六角头螺钉⑬固定在执行机构上。调节反馈杆的转动角度使之符合4.2.1一节所述要求。

i 提示

1、安装阀门定位器时，应避免安装支架堵住定位器排气孔。
2、反馈杆转动角度应符合4.2.1一节所述要求。
3、直行程阀开度为50%时，反馈杆是水平状态。

4.3 气路连接

气路连接在定位器的右侧，定位器的气路连接有两种：G1/4和1/4NPT（订货时请选择对应的型号），具体类型标识在壳体上，用户可根据不同的管道连接进行选择。

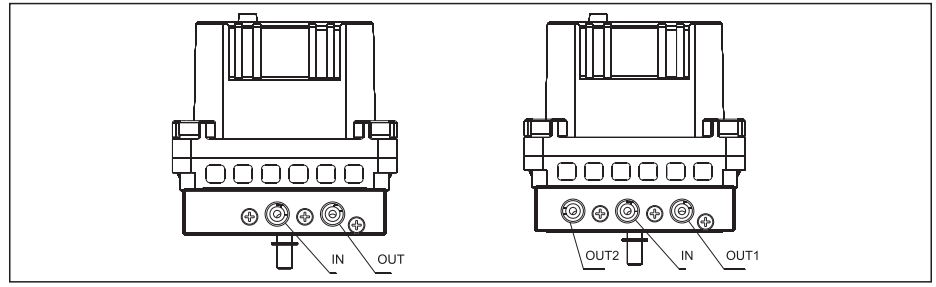


图4-7：气路连接图

安装步骤：

智能阀门定位器的输出口按图4-7与气动执行机构的输入口连接。

i 提示

1、避免连接处漏气，用肥皂水检查接头连接处的气密性；
2、当执行器体积过小时，可能发生振荡。可使用节流片避免发生振荡。

阀门定位器的IN口与气源连接。进入定位器的压缩空气必须经过空气过滤减压阀的过滤和稳压。

气源要求：

气源压力必须在0.14～0.7MPa之间，具体值视执行机构而定；

气源应为清洁干燥的空气,应无明显的油蒸汽、油和其他液体；

气源应无明显的腐蚀性气体蒸汽和溶剂；

气源中所含最大颗粒尺寸和密度4级，含油量4级；

工气源露点至少低于最低环境温度10K。

4.4 电气连接

4.4.1电气连接端子

端子名称	信号名称	功能
1+	电流输入信号(+)	4~20mA控制信号连接至此端子，对定位器提供电源和信号。
2-	电流输入信号(-)	
11+	电流输出信号(+)	指示当前阀门位置的4~20mA模拟反馈信号。
12-	电流输出信号(-)	
21+	开关量输出1(+)	报警输出1，阀门运行到设定的告警位置时，输出符合NUMAR标准的开关信号。
22-	开关量输出1(-)	
31+	开关量输出2(+)	报警输出2，阀门运行到设定的告警位置时，输出符合NUMAR标准的开关信号。
32-	开关量输出2(-)	

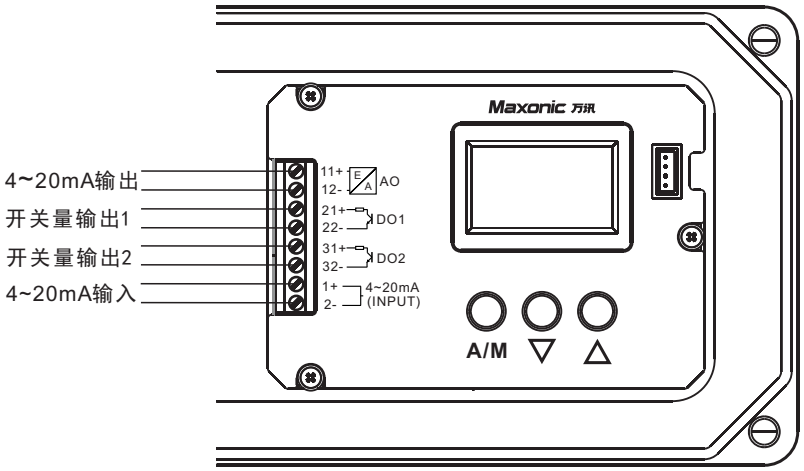


图4-8：电气连接端子图

4.4.2电气连接要求

电气连接应严格按照连接图进行，应可靠固定，不得松动。

1、当定位器安装于爆炸性气体环境时，其电缆引入口须配用经国家授权的检验机构认可的、符合国家标准GB/T 3836.1-2021和GB/T 3836.2-2021规定的、防爆标志为Ex db IIC的电缆引入装置或封堵件，方可用于爆炸性危险场所。

2、 当定位器安装于粉尘爆炸性环境时，其电缆引入口必须配用经国家授权的检验机构认可的、符合国家标准GB/T 3836.1-2021和GB/T 3836.31-2021规定的、防爆标志为Ex tb IIIC的电缆引入装置或封堵件，方可用于爆炸性危险场所。

3、外壳防护等级为IP66。

4、用户不得自行更换该产品得零部件，应会同产品制造商共同解决运行中出现得故障，以杜绝损坏现象得发生。

5、用户在安装、使用和维护产品时，须同时严格遵守产品使用说明书和下列标准：

GB/T 3836.13-2021 爆炸性环境 第13部分：设备得修理、检修、修复和改造

GB 3836.15-2024 爆炸性环境 第15部分：电气装置的设计、选型和安装规范

GB 3836.16-2024 爆炸性环境 第16部分：电气装置的检查和维护规范

GB 50257-2014 电气装置安装工程爆炸和火灾危险环境电气装置施工及验收规范

GB 15577-2018 粉尘防爆安全规程

6、产品温度组别和最高表面温度为T4/105℃时，应使用至少耐受温度为85℃的耐高温电缆。

⚠ 注意	1、请勿将电源连接至输入（直流4~20mA）端子，否则将导致主板PCB损坏； 2、请使用屏蔽电缆以避免电磁场和噪音干扰，定位器应可靠接地； 3、请勿将电缆安装于干扰较大的设备附近，例如变频器、大功率变压器或电机； 4、请确保本产品远离强磁材料。否则，可能引起故障。

4.4.3隔爆型连接

4.4.3.1 输入电气连接（如图4-9所示）

类型：两线制

输入信号：4～20mA DC

最小工作电流：3.8mA DC

输入阻抗：455Ω@20mA（无HART）/ 550Ω@20mA（HART型）

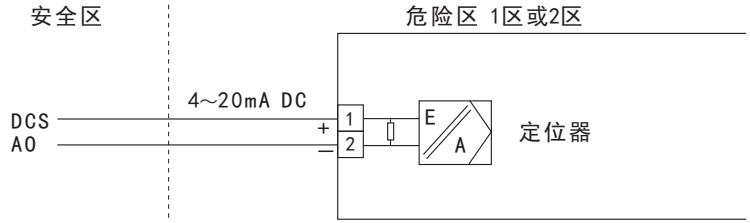


图4-9：输入电气连接图

4.4.3.2 开关量输出模块电气连接（如图4-10所示）

工作电压：18~35V DC

输出信号：

信号状态	输出电流
高（逻辑1）	≥2.1 mA
低（逻辑0）	≤1.2 mA

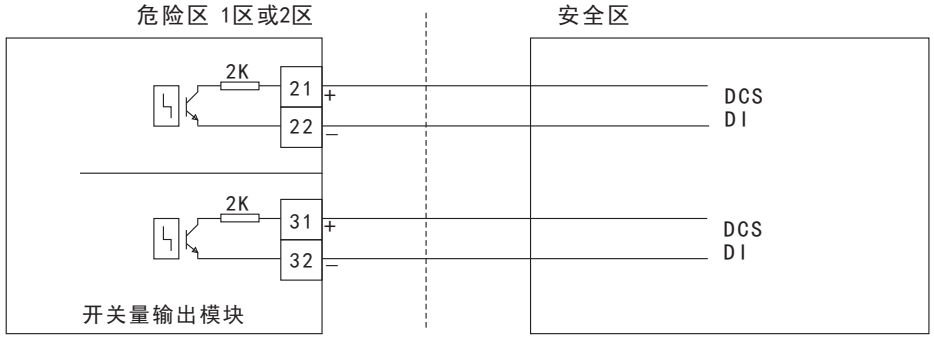


图4-10：开关量输出模块电气连接图

4.4.3.3阀位反馈模块电气连接（如图4-11所示）

反馈信号类型：两线制，4～20mA DC
温　　漂：≤100ppm/℃
工作范围： 3.6 ～ 20.5 mA DC
精　　度：≤0.1%
端口电压： 12～30V DC

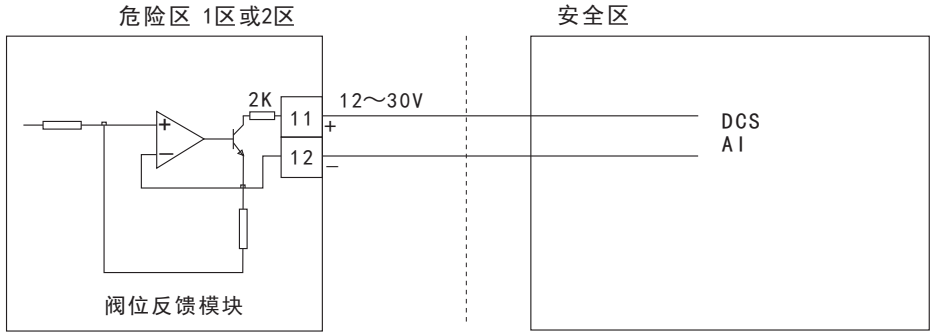


图4-11：阀位反馈模块电气连接图

5、调节操作

5.1 调试流程

1、 恢复出厂设置(参考5.3.4章节)

2、选择安装类型

在用户菜单中选择04 TYPE，根据执行机构类型进行设置，角行程选择TURN，直行程选择LINE/LINE2/LINE3/LINE4(详见该参数说明)。

3、初始化(参考5.4章节)

4、用户参数设置

初始化完成后,根据需要设置其他参数。

5、调试结果检查

长按A/M键退出用户菜单，切换到自动控制模式。调整输入4~20mA控制信号，定位器响应对应的控制动作。

5.2 操作界面说明

显示： LCD分为两行显示，

在正常状态下：

第1行显示阀位值。

第2行从左至右依次为阀位动作方向、运行状态码、阀位设定值。

在菜单状态下：

第1行显示参数值。

第2行从左至右依次为参数序号、参数名称。

i 提示	当定位器工作环境温度低于-10℃时，LCD会显示迟缓。

按键：定位器具有三个按键（如图5-1）

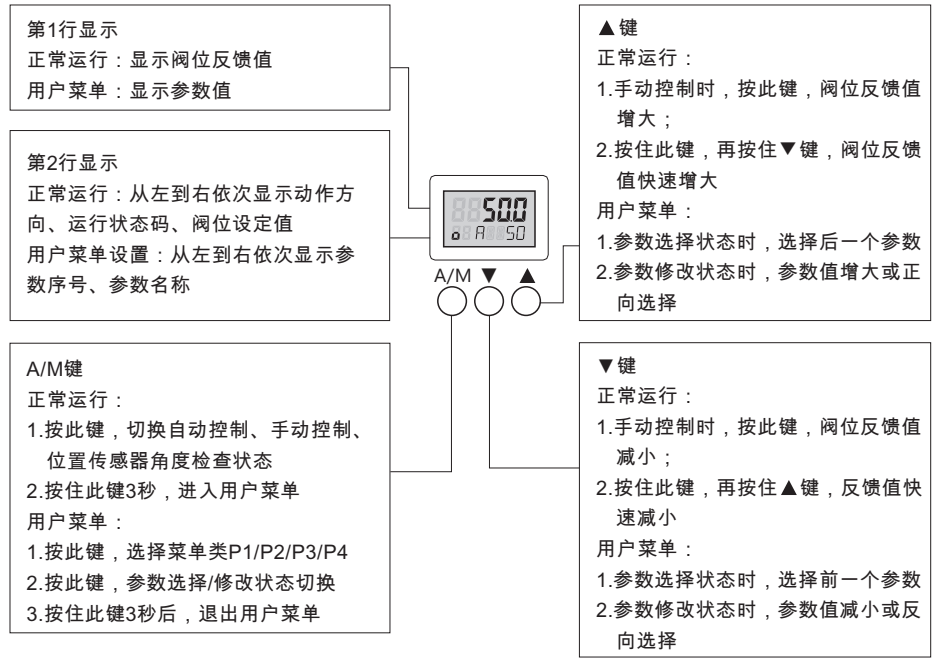


图5-1：操作界面图

i 提示	1、手动控制状态：LCD第2行运行状态码为“M”； 2、自动控制状态：LCD第2行运行状态码为“A”； 3、位置传感器角度检查状态：LCD第2行显示“SENSR”。

5.3 用户菜单

5.3.1用户菜单进入

在正常工作界面下， 按住按钮A/M键，3秒钟后进入用户菜单。

5.3.2用户菜单类选择

在用户菜单类选择状态下，用户可选择的菜单分四类：P1、P2、P3、P4、P5；

四类菜单的转换：当第1行显示P1、P2、P3、P4、P5中的任意一个时，按A/M键，可循环选择菜单类，如图5-2。

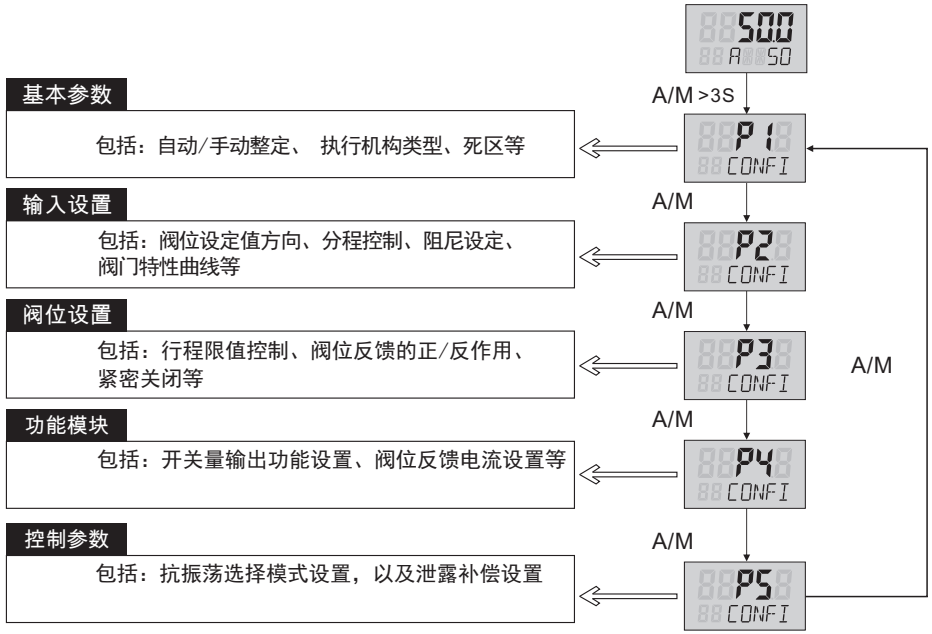


图5-2：用户菜单选择图

每一类的参数选择：按▲键，参数循环向前翻；

按▼键，参数循环向后翻；

此时第1行显示参数值： 

第2行前两个字显示参数序号，后面显示参数名称。

5.3.3用户参数修改

按A/M键，进入参数修改状态，此时屏幕上参数名开始闪烁；

对于数值型参数：

按▲键，参数值增加，长时间按住该键后，参数值快速增大；

按▼键，参数值减小，长时间按住该键后，参数值快速减小；

对于字符型参数：

按▲键，正向选择参数值；

按▼键，反向选择参数值。

5.3.4用户参数复位

1．进入PRST参数；

2．按A/M键，进入参数修改状态，第2行显示的PRST闪烁；

3．长按▲键，LCD第1行显示“ START”，3秒后，复位完成并退出用户菜单。

5.3.5用户菜单退出

长按A/M键，3秒后退出用户菜单，返回正常运行状态

i 提示	1.参数被修改后，必须按A/M键退回到正常运行状态，参数才会被保存。 2.在菜单状态下，1分钟无操作，则阀门定位器自动返回到运行状态。

5.4 初始化

智能阀门定位器安装完成后，必须进行初始化。

初始化有两种方法：自动整定和手动整定。

5.4.1初如化前检查

反馈杆的旋转角度要确保正确（参考4.2.1章节）；

检查定位器与执行机构的管路连接正常；

接通气源，气源压力应满足工艺要求；

检查当前工况条件，是否允许进行整定操作；

进入位置传感器角度检查状态，第1行显示反馈杆角度，按▲键或▼键，控制阀门运动，当阀门开一半的时候，显示的角度应该为0°左右：

按▲键或▼键，控制阀门到达阀门全开位和阀门全关位，定位器不应有FBAUP或FBADN报警、反馈连接件不应与其它物体干涉。

⚠ 注意	1、初始化开始时阀门会自动开关，注意检查工况条件，采取措施确保阀门开关不影响工艺和人身安全。 2、在执行整定命令之前，必须以手动方式从阀全开位到阀全关位之间来回运行一遍，确认安装及反馈部件正确无误后方可进行整定操作。

5.4.2自动整定

1).在正常运行状态，长按A/M键，3秒后，进入用户菜单：

2).按▲键，第1行显示“No”，第2行显示“INIA”：

3).按A/M键，第2行显示的INIA闪烁，进入参数修改状态；

4).长按▲ 键，第1行显示“START”，3秒后进入自动整定状态：

5).整定程序按“STEP1”到“STEP5”进行，并在第2行显示当前步骤：

在完成STEP2后，进入放大器整定，第1行显示10S倒计时，第2行显示“booSt”；按▼键退出放大器整定进入STEP3，按▲键启动放大器整定。整定过程请看5.4.4。

6).整定完成后，第2行会显示“END”：

7).按A/M键返回到正常运行状态。

i 提示	1、在整定过程中按A/M键，可退出整定状态, 进入正常运行状态； 2、当执行器外接放大器时，可能发生超调，可使用放大器整定避免发生； 3、不需要进行放大器整定，倒计时结束自动进入下一步或按▼键取消。

5.4.3手动整定

1).在正常运行状态，长按A/M键，3秒后进入用户菜单：

2).按▲键选择INIM参数，第1行显示“no”第2行显示“INIM”：

3).按A/M键，第2行显示的INIM闪烁，进入参数修改状态：

4).长按▲键，第1行显示显示“START”，3秒后进入手动整定状，第2行显示“ZERO”：

5).按▲或▼键选择要设置的零点：

6).按A/M键确认零点后，第2行显示“SPAN”：

7).按▲或▼键，选择要设置的量程：

8).按A/M键确认量程后，定位器自动执行整定程序，整定程序按“STEP1”到“STEP5”进行，第2行显示当前步骤（放大器整定参考5.4.2章节）：

9).整定完成后，第2行会显示“END”：

10).按A/M键，返回到正常运行状态。

i 提示	1、在整定过程中按A/M键，可退出整定状态, 进入正常运行状态; 2、只用到阀门的部分行程时，应该把紧密关闭的参数改成OFF。

5.4.4放大器整定

进入放大器整定后，定位器自动执行放大器整定程序。

开阀整定完成，第一行显示“OPOK”，第二行显示“OSOP”：

关阀整定完成，第一行显示“CLOK”，第二行显示“OSCL”：

整定结束后，第一行显示“OK”，第二行显示“booSt”：

i 提示	1、放大器灵敏度很高时，阀位整定会出现超调，这时需要调整放大器，适当降低放大器灵敏度。 2、放大器整定失败，第一行显示“FAIL”，第二行显示“booSt”。

5.5 诊断

5.5.1诊断菜单

在正常工作界面下，长按A/M键+▲键， 3秒钟后，进入诊断菜单。

第1行显示参数值，第2行显示参数名称。

按▲键，循环向前翻看参数；

按▼键，循环向后翻看参数。

5.5.2诊断菜单退出

长按A/M键，3秒后，退出诊断菜单，返回正常运行状态。

5.5.3诊断参数表

序号	参数	显示代码	功 能	内容/范围	单位
1	CURR	CURR	输入电流	4.00~20.00	mA
2	TUP	TUP	上行程时间	0~200	S
3	TDW	TDW	下行程时间	0~200	S
4	DBUP	DbUP	上行程最小死区	0.1~10.0	%
5	DBDW	DbDW	下行程最小死区	-0.1~-10.0	%
6	PUP	PUP	上行程预判值	1~100	%
7	PDW	PDW	下行程预判值	1~100	%
8	IMUP	IMUP	上行程脉冲值	2~200	mS
9	IMDW	IMDW	下行程脉冲值	2~200	mS
10	SSUP	SSUP	上行程脉冲范围	0.1~100.0	%
11	SSDW	SSDW	下行程脉冲范围	0.1~100.0	%
12	PCNT	PCNT	阀门换向次数	0~4E9	
13	TE	TE	实际工作温度	-40~+80	℃
14	SP	SP	数字量控制值	0.0~100.0	%
15	VER	VER	固件版本	出厂版本	
16	DSN	DSN	产品序列号	出厂序列号	
17	MSN	MSN	主板序列号	出厂序列号	
18	ANGLE	ANGLE	安装角度	-180~+180	°

注:安装角度功能,通过诊断菜单18号参数ANGLE进行定位器安装角度调整。

5.6 报警

5.6.1位置传感器零点位置过低

在位置传感器角度检查状态下，反馈杆角度小于-85°，显示错误代码“FBADN”：

处理方法：检查反馈连接附件是否按说明书4.2.2或4.2.3节进行了正确安装微调安装支架位置。

5.6.2位置传感器零点位置过高

在位置传感器角度检查状态下，反馈杆角度大于85°，显示错误代码“FBAUP”：

处理方法：检查反馈连接附件是否按本说明书4.2.2或4.2.3进行了正确安装微调安装支架位置。

5.6.3自整定错误报警

当定位器自动整定时，第1步异常，显示错误代码“RERR”：

处理方法：1、检查气源；
2、手动控制状态下，是否能控制阀门动作；
3、检查定位器输出口是否有气输出。

5.6.4自整定范围过窄

如果阀位反馈最小值和最大值之差小于20，显示错误代码“UPDN”：

处理方法：调节反馈杆上的滑杆，使得阀位反馈值范围大于20。

5.6.5自定义曲线设置错误报警

当用户自定义阀门特性曲线时，曲线错误的定义成非单调上升/下降，将显示错误代码“SPER”：

处理方法：重新设置菜单值；
检查阀门连接；
恢复出厂设置。

5.6.6执行器错误报警

定位器无法将阀门驱动到指定位置，显示错误代码“BKER”：

处理方法： 清洗阀门；
检查阀门连接机构。

5.6.7反馈超限报警

当定位器工作时，反馈值≥110%显示错误代码“FB_HI”；≤-10%显示错误代码“FB_LO”：

处理方法：检查反馈传感器，必要时更换传感器；
重新调校定位器。

5.6.8输入电流超低报警

当定位器输入电流值<3.6mA时，显示错误代码“SVLL”；>21mA时，显示错误代码“SV_HI”：

处理方法： 检查输入信号电流值。

6、用户参数

6.1 参数列表

序号	参数	显示代码	功能	内容/范围	出厂值	单位
P1						
01	INIA	INIA	初始化(自动)： 未启动/启动	NO/START	NO	
02	INIM	INIM	初始化(手动)： 未启动/启动	NO/SATRT	NO	
04	TYPE	TYPE	执行机构的类型： 角行程 直行程1 直行程2 直行程3 直行程4	 TURN LINE1 LINE2 LINE3 LINE4	LINE1	
06	DEBA	DEbA	控制器死区	AUTO/0.1～10.0	AUTO	%
07	HYST	HYST	控制器迟滞	AUTO/0.1～10.0	AUTO	%
08	PRST	PRST	恢复工厂设置： 未启动/工厂设置启动	NO/START	NO	

序号	参数	显示代码	功能	内容/范围	出厂值	单位
P2						
09	SDIR	SDIR	控制输入信号与阀位关系	RISE/FALL	RISE	
10	SPRA	SPRA	分程控制的起始点	0.0～100.0	0.0	%
11	SPRE	SPRE	分程控制的终点	0.0～100.0	100.0	%
12	TSUP	TSUP	阀位设定值增大方向的阻尼	AUTO/0～400	0	s
13	TSDO	TSDO	阀位设定值减小方向的阻尼	AUTO/0～400	0	s
14	SFCT	SFCT	阀门特性： 线性 1:30 30:1 自定义 3点修正 双曲线	 LINE/ 1:30/ 30:1/ FrEE/ 3 POT 2CURV	LINE	
15 ~ 35	SP00 ~ SP20	SP00 ~ SP20	自定义阀门特性曲线	0.0～100.0		%
P3						
36	YA	YA	工作阀位下限值	0.0～100.0	0.0	%
37	YE	YE	工作阀位上限值	0.0～100.0	100.0	%
38	YDIR	YDIR	阀位反馈的正/反作用	RISE/FALL	RISE	
39	YCDW	YCDW	紧密关闭值，下降	OFF/0.0～49.9	0.5	%
40	YCUP	YCUP	紧密关闭值，上升	OFF/50.1～100.0	OFF	%
41	YNRM	YNRM	操作量的量程标准	MPOS/FLOW	MPOS	
P4						
44	DO1F	DO 1F	开关量输出功能1： 故障报警 非自动 低于设定值 高于设定值	 FAULT NA LSET HSET	FAULT	
45	DO1V	DO 1V	设定值	0.0～100.0	0.0	%

序号	参数	显示代码	功能	内容/范围	出厂值	单位
P4（续）						
46	DO2F	DO2F	开关量输出功能2： 非自动 低于设定值 高于设定值	 NA LSET HSET	NA	
47	DO2V	DO2V	设定值	0.0~100.0	0.0	%
48	AOMIN	AOMIN	输出电流最小值	4.0～20.0	4.0	mA
49	AOMAX	AOMAX	输出电流最大值	4.0～20.0	20.0	mA
50	ADIR	ADIR	电流输出方向	RISE/FALL	RISE	
51	WP	WP	HART通讯写参数保护功能	ON/OFF	OFF	
52	ADDR	ADDR	通讯地址	0~63/0~126 [1]	0	
53	SPSRC	SPSRC	控制信号源:模拟量/数字量	AIN/DIG	AIN	
P5						
60	AOMOD	AOMOD	抗振荡等级	OFF/LV1~LV9/EXPRT[2]	OFF	
71	ALMD	ALMD	泄露补偿	OFF/TIME/POS[3]	OFF	

[1]:HART地址范围0~63，PA地址范围0~126;
[2]:AOMOD选择EXPRT(专家模式)时，才会显示菜单61~70，具体设置请咨询厂家;
[3]:ALMD选择TIME或POS时，才会显示菜单72~75，具体设置请咨询厂家。

6.2 参数解释

1. INIA

自动初始化，自动初始化过程请看5.4.2。

2. INIM

手动初始化 ，手动初始化过程请看5.4.3。

4.TYPE

执行机构的类型

执行机构选用:角行程执行机构(TURN)，直行程执行机构(LINE1/LINE2/LINE3/LINE4)

LINE1:在行程50%处安装且反馈杆呈水平，初始阀位显示50%或0°;

LINE2:传动销固定于定位器反馈杆上且实际行程范围包括0°;

LINE3:传动销固定于执行器输出轴上且实际行程50%对应0°;

LINE4:传动销固定于执行器输出轴上且实际行程范围包括0°。

6.DEBA

控制器死区

当DEBA =AUTO 时，死区值在运行过程会根据运行情况有所改变，当有振荡时，死区值会逐渐增大，并在振荡消除之后逐渐减小。

当DEBA为其它值，死区为设定好的固定值。

7.HYST

控制器迟滞

当HYST =AUTO 时，控制器迟滞为DEBA值，在运行过程会根据运行情况有所改变，当阀位变化导致振荡或补气（比如有管路漏气）时，适当增加控制器迟滞可缓解振荡或降低补气频率。

当HYST为其它值，控制器迟滞为设定好的固定值。

8.PRST

恢复工厂设置

i 提示	在恢复出厂设置之后，定位器需进行初始化以后才可以继续使用。

9.SDIR

阀位设定值与阀位的关系（见图6-1）

SDIR设置为RISE时，4mA对应0%设定信号，20mA对应100%设定信号；

SDIR设置为FALL时，4mA对应100%设定信号，20mA对应0%设定信号。

10.SPRA

分程控制的起始点（见图6-1）

11.SPRE

分程控制的结束点设置（见图6-1）

参数“SPRA”及“SPRE”和参数“SDIR”一起用来限制有效设定值范围。这样可以通过特性曲线来解决分程任务。

上升/下降

下降/上升

下降/下降

上升/上升

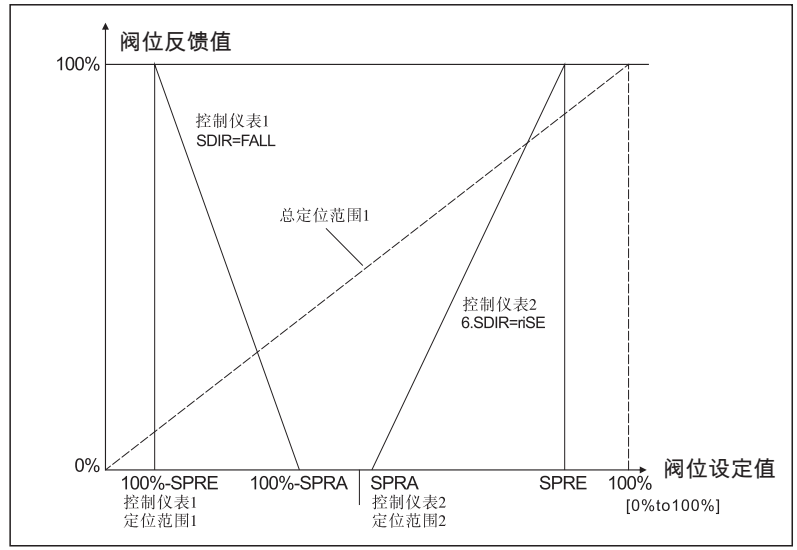


图6-1：具有两台仪表的分程操作一例

12.TSUP

设定值阻尼在自动模式和限制有效设定值变化率时起作用。当仪表从手动转换为自动模式时，通过设定值阻尼使有效设定值与仪表上的设定值相匹配。手动和自动间无扰动切换能避免在长管道中产生的过压。

13. TSDO

阀位设定值阻尼下降方向

和12 TSUP相同，出厂值为0。

14.SFCT

特性曲线

采用这一功能使阀门的非线性特性线性化，并且用户可以自定义特性曲线来模拟任何流量特性。

仪表中存储了六种阀门的特性曲线：

· 线性(出厂设置值)

· 1:30

· 30:1

· 自定义

· 3点修正

· 双曲线

15.SP00 至 35.SP20

阀位设定值转折点

每个阀位设定值转折点可从行程上赋予流量特性值。这些点组成一条20段的曲线，从而导出一个典型的阀门特性曲线。

阀位设定值转折点只有当SFCT=FREE 时才能输入，自设定曲线只能单调上升或单调下降。

36.YA

工作阀位下限值

37.YE

工作阀位上限值

通过设置YA与YE，可限制阀门活动范围。

YE必须大于YA的设定值。

38.YDIR

阀位反馈的正反作用

当YDIR=RISE时，定位器反馈轴顺时针旋转时，反馈值增大；

当YDIR=FALL时，定位器反馈轴顺时针旋转时，反馈值减小。

39.YCDW

阀门紧密关闭，下降方向（指阀位反馈值变化趋势而不是指的实际阀杆的方向）

利用此功能减小高速流动介质对阀芯头部冲蚀。

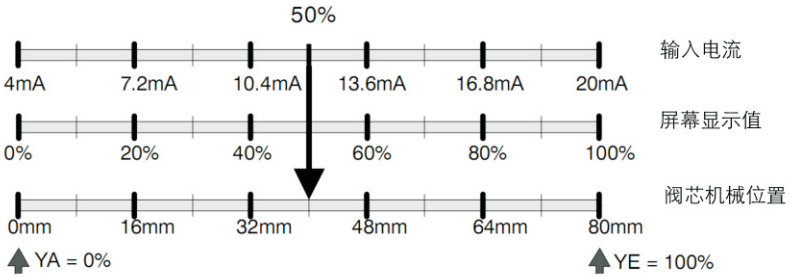
40.YCUP

阀门紧密关闭，上升方向

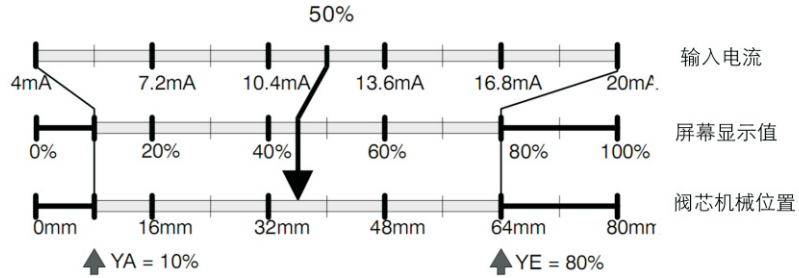
41.YNRM

控制信号的量程标准，此参数一般与36号、37号参数配合工作，用于确定控制输入信号与阀门开度的关系，具体含义请参照下面图。

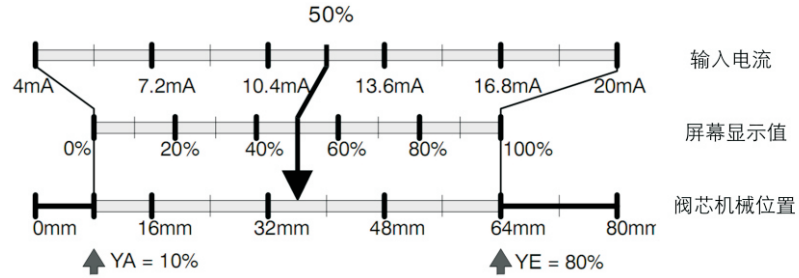
状态1：YA=0% YE=100% YNRM为任意值 MPOS 或 FLOW



状态2：YA=10% YE=80% YNRM=MPOS



状态3：YA=10% YE=80% YNRM=FLOW



44.DO1F

开关量输出功能 1

45.DO1V

报警响应阀位值1

当DO1F=LSET或DO1F=HSET时，DO1V即为DO1的报警设定值。

46.DO2F

开关量输出功能 2

47.DO2V

报警响应阀位值2

当DO2F=LSET或DO2F=HSET时，DO2V即为DO2的报警设定值。

48.AMIN

阀位反馈电流最小值

阀位为0%时阀位反馈模块的最小输出电流。

49.AMAX

阀位反馈电流最大值

阀位为100%时阀位反馈模块的最大输出电流。

50.ADIR

输出电流方向

定位器阀位反馈功能模块的输出电流方向，有RISE/FALL两种选择，当选择RISE时，阀位值为0%输出4mA、100%时输出20mA，选择FALL时则刚好相反。

51.WP

HART写保护

当WP=ON时，禁止上位机通过HART通讯修改定位器的参数；

当WP=OFF时，允许上位机修改定位器参数。

52.ADDR

通讯地址

HART通讯地址范围:0~63；

PA通讯地址范围:0~126。

53.SPSRC

控制信号源

当SPSRC=AIN时，为模拟量控制方式；

当SPSRC=DIG时，为数字量控制方式。

60.AOMOD

抗振荡等级

当AOMOD=LV1~LV9时，定位器中提供了9种抗振荡算法；

当AOMOD=EXPRT时，为专家模式。

71.ALMD

泄露补偿

当ALMD=TIME时，定位器定时为执行机构进行补气；

当ALMD=POS时，定位器在设定位置为执行机构进行补气。

7、使用异常与维护保养

7.1异常状况排除

使用定位器出现异常状况时，请按照以下步骤排除。

如果按照以下步骤还不能解决问题，请和供应商联系。

异常情况特征	产生原因	解决方法
执行机构手/自动均不动作	气源压力低	调节气源压力达到执行机构所需压力
	执行机构被卡住	解除执行机构被卡问题
执行机构自动状态下不动作或动作慢	气源压力低	调节气源压力达到执行机构所需压力
	定位器整定时中途退出	重新整定
频繁动作（补气）	气路系统漏气	检查外部气路是否漏气
		增加控制器死区1(DEBA1)的值
振荡	用户菜单设置不对	增加死区范围，增大阻尼值
	执行机构气室容积太小	增加死区范围，增大阻尼值
	回差大	检查安装支架或反馈连接件是否符合安装要求，必要时初始化
阀门不能全开或全关	气源压力太小	调节气源压力达到执行机构所需压力
	初始化数据不正确	执行初始化指令
	设置了限位值	检查用户参数
	未设置紧密关闭功能	开启用户参数中的紧密关闭功能
无显示	输入信号太小（<3.6mA）	检查输入信号
	电气连接端子螺丝松脱	拧紧端子螺丝
	主板坏	更换主板
排气不通畅	排气孔堵住	清理排气孔
无阀位反馈电流	阀位反馈模块故障	更换
	外部无配电，阀位反馈模块无工作电压	给模块提供24V工作电压
	外部接线极性反	重新正确接线
反馈电流与实际阀位不符	阀位反馈模块故障	更换
	阀位反馈模块零点，量程偏离	调整反馈模块上的零点满度电位器
LCD显示的零点，量程与标尺刻度不符	调节阀的实际行程本身与标尺不符	手动整定

⚠ 注意	不要随意改变任何关于防爆的装置。

7.2维护保养

定位器为现场仪表，应定期进行维护和保养。定位器的气源应保持干燥、清洁。定期对与定位器相应配合使用的压力调节阀进行放水和排污，以免进入定位器影响定位器的正常工作。

定位器的反馈连接附件因长期工作，可能有松动情况，应定期检查螺丝是否有松动。如发现松动，则应马上拧紧，并根据零点和量程位置处的偏差大小决定是否执行初始化。

为便于观察定位器是否正常工作，应保持气源和输出压力表的清洁。

定位器的防爆部分维护和保养，应按国家有关规定进行检查和维护。

8、运输和贮存

贮运前检查各种标志是否完整、齐全，包装箱是否牢固。最后检查包扎的可靠性和安全性。

运输时应轻装轻卸，严禁撞击和受压受潮及损坏机件。

贮存在温度为-40℃~80℃，相对湿度不大于75%，无凝结，空气中不含有腐蚀仪表的有害杂质。

按包装箱表面标记放置，不应倒置。

9、产品选型

9.1 产品选型表

产品选型	MVP380	□ □ - □ □ □ - K □ □ - □ □ □ - □□□
安全位置	复位	0
	保位	1
动作方式	直行程	L
	角行程	R
作用方式	单作用	1
	双作用	2
防爆	气体/粉尘隔爆	D
	低温型 气体/粉尘隔爆	3
	气体/粉尘本安防爆	E
	低温型 气体/粉尘本安防爆	L
通讯	无	0
	HART通讯	H
	Profibus PA总线通讯	P
	FF总线通讯	F
阀位变送输出	无	0
	4~20mA 电流输出	F
位置开关输出	无	0
	两路电子开关输出	1
电源/气源接口	M20x1.5 / G1/4	G
	M20x1.5 / 1/4NPT	N
	1/2NPT / 1/4NPT	M
	1/2NPT / G1/4	P
压力表组件	无	0
	带压力表组件	1
	带不锈钢压力表组件	2
	禁铜无压力表组件	G
	禁铜不锈钢压力表组件	S
附选	无附加选项	0
	防雷	1
	不锈钢壳体	S
	铝合金黑底银花重防腐涂层	H
	防雷+铝合金黑底银花重防腐涂层	R
	防雷+不锈钢壳体	T
销售代码		销售代码

注1：选择总线通讯选项（Profibus PA/FF）不可以选择4~20mA电流输出和两路电子开关输出。

注2：如选防雷选项必须按照相关国家标准进行接地处理，防雷指标"5kA ， 10kV"。

注3：防爆选项"D/E"最低使用温度为-30℃，"3/L"低温型最低使用温度为-40℃。

注4：若无材质要求，标准外壳为铝合金。

注5："销售代码"选项为厂家区别销售客户使用与产品防爆无关。

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Ver 202512

Maxonic

MVP SMART VALVE POSITIONER

↘ MVP3800 Series User Manual

Answers for industry

About this Guide

This instruction manual applies to the MVP3800 Smart Positioner.

The information contained in this manual, in whole or part, shall not be transcribed or copied without MAXONIC' written permission.

In no case does this manual guarantee the merchantability of the positioner or its adaptability to a specific client needs. Please report any errors or questions about the information in this manual to your local supplier or MAXONIC.

DISCLAIMER

THESE INSTRUCTIONS ASSUME THAT OPERATORS ALREADY HAVE A GENERAL UNDERSTANDING OF THE REQUIREMENTS FOR SAFE OPERATION OF MECHANICAL AND ELECTRICAL EQUIPMENT IN POTENTIALLY HAZARDOUS ENVIRONMENTS. THEREFORE, THESE INSTRUCTIONS SHOULD BE INTERPRETED AND APPLIED IN CONJUNCTION WITH THE SAFETY RULES AND REGULATIONS APPLICABLE AT THE SITE AND THE PARTICULAR REQUIREMENTS FOR OPERATION OF OTHER EQUIPMENT AT THE SITE.

THESE INSTRUCTIONS DO NOT PURPORT TO COVER ALL DETAILS OR VARIATIONS IN EQUIPMENT NOR TO PROVIDE FOR EVERY POSSIBLE CONTINGENCY TO BE MET IN CONNECTION WITH INSTALLATION, OPERATION OR MAINTENANCE. SHOULD FURTHER INFORMATION BE DESIRED OR SHOULD PARTICULAR PROBLEMS ARISE WHICH ARE NOT COVERED SUFFICIENTLY FOR THE CUSTOMER/OPERATOR'S PURPOSES THE MATTER SHOULD BE REFERRED TO MAXONIC.

THESE INSTRUCTIONS ARE FURNISHED TO THE CUSTOMER/OPERATOR SOLELY TO ASSIST IN THE INSTALLATION, TESTING, OPERATION, AND/OR MAINTENANCE OF THE EQUIPMENT DESCRIBED. THIS DOCUMENT SHALL NOT BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN APPROVAL OF MAXONIC.

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Document Changes

Version/Date	Changes
A0/02-2026	Original Release.

Contents

1、User notice

Please read this manual carefully before starting work!

1.1 Clas sification of safety related notices

Ensure that you are safe in installing, commissioning and maintaining this instrument. Please pay attention to the warning and notice texts.

⚠	WARNING	Potentially hazardous situation! Non-observance could result in serious injury!
⚠	NOTICE	Hazardous situation! Non-observance may result in minor ormoderate injury!
i	NOTE	Important information in order to understand the machine for optimized operation !

1.2 Safety and cautions

i

1. The design of this equipment meets the intrinsic safety requirements , and it is safe and effective when the factory is tested out of the factory。
2. This equipment is complied with the relevant rules and standards。
3. The equipment manufacturer reserves the right to modify technical parameters without prior notice。
4. The permitted storage transport and operating temperature must be observed。
5. The equipment must be connected in accordance with the connection diagram in the manual。
6. The information contained in the nameplate、wire connection diagram and warning icons attached to the equipment must be followed。
7. There are corresponding marks on the nameplates of equipment used in hazardous areas. When operating equipment in a hazardous area, the relevant rules must be complied with. The installation specifications, connection parameters, and safety instructions provided in the Ex flameproof document must be complied with.
8. The service temperature of power cable for field wiring shall be at least 2K than maximum ambient temperature.

1.3 Use as intended

⚠

1. Except for the application scope specified in this manual, any other application scope will pose a threat to the safety of personnel and the entire equipment system, and its use is prohibited.
2. The manufacturer is not responsible for damages caused by improper operation or non-designated use.

1.4 Install and maintain operation

1. Installation, commissioning, operation, maintenance and repair of the instrument requires special knowledge and should be performed only by qualified personnel.
2. For installing this instrument, the operator must read the user's manual and comply with the rules.
3. When theinstrument is installed, it should be in the state of power off and no external load is overstressed.
4. The instrumentmust not be modified or repaired unless the user is according to the manual.
5. Repairs that are not described in the supplied operation manual may only be carried out directly by the manufacturer or by the service organization.
6. If the welding operation is carried out near the equipment, the grounding of the welding equipment must not be carried out through this equipment.

1.5 List of delivery

MVP smart valve positioner
User's manual
Ordered spare parts (Optional)

2、Summary

MVP smart valve positioner is a two-wire system instrument made by Maxonic. The positioner is a control accessory of pneumatic valve. It is widely used in automatic control systems of petroleum, chemical, electricity, metallurgy, paper and pulp industry and other fields.

MVP smart valve positioner accepts the 4~20mA valve setting analog signal from the control system. This valve setting value will be converted by an analog to digital converter (ADC) to digital signal then input to CPU. At the same time, instrument gets the actual valve position from location sensors. The two signals are compared by the instrument software so as to control the intake and exhaust of the pneumatic actuator, and drive the valve to reach setpoint (refer to Figure2-1)

MVP smart valve positioned is based on microprocessor technology. It can overcome friction and the imbalance power on the control valve well, and improve the response speed of control valve, which makes the position set rapidly and accurately. It is not only able to completely substitute conventional valve positioner, but also is able to directly access HART network, exchanging information between control system and positioner.

MVP smart valve positioner is complied with the:
GB/T 3836.1-2021 Explosive atmospheres - Part 1: Equipment - General requirements;
GB/T 3836.2-2021 Explosive atmospheres - Part 2: Equipment protection by flameproof enclosures "d";

GB/T 3836.31-2021 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosures "t";
It has been inspected and approved by a nationally recognized certification body for explosion-proof electrical products, and has obtained the China Compulsory Certification (CCC) for explosion protection.
The explosion-proof marking is Ex db IIC T4...T6 Gb, suitable for explosive gas atmospheres; the explosion-proof marking is Ex tb IIIC T80°C...T130°C Db, suitable for explosive dust atmospheres.

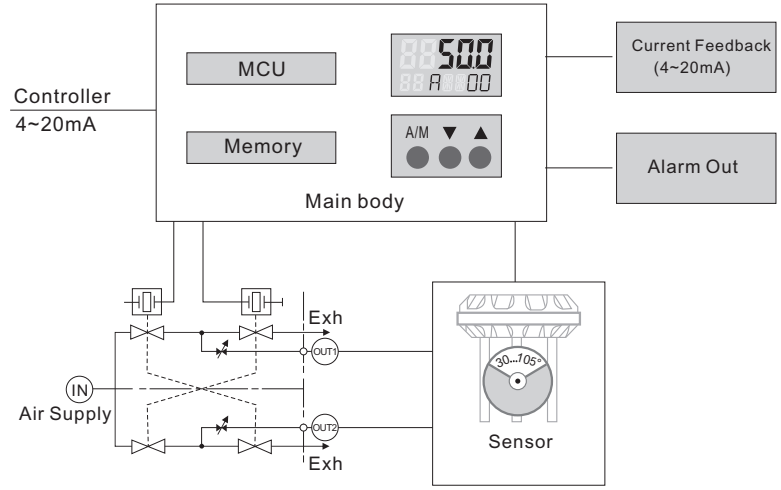


Fig 2-1：MVP Valve Positioner Principle

2.1 Functions

Self-adaption function: automatically set the Zero and Span of control valve, and optimize the control parameters to improve the control precision.

Configuration function: valve characteristic curve, action mode, dead band, stroke range, shut-off value, and alarm events.

Self-diagnosis function: show the value of setpoint current, travel time, and dead band.

Fault mode function: fail safe (function open/close) or fail freeze (function hold).

Communication function: HART communication protocol.

Feedback function: 4~20mADC valve position feedback signal, switch valve feedback signal.

2.2 Main Features

- Positioning precision: 0.5%F.S.
- The operation does not need to open the cover.
- Simple and compact design, modular construction.
- Automatic initialization, automatic diagnosis, dynamic setting of valve characteristic curve.
- Less components, better anti-vibration performance.
- Local or remote parameters configuration.
- Less power and air consumption, less operation cost for customers.
- Two-wire supply in 4-20mA standard.
- The integrated lightning protection module can be selected to reduce the damage probability of the locator due to the surge of lightning.

2.3 Integrated lightning protection

With the development of technologies, the smart valve positioner becomes more smart with communication bus technology. Therefore, it is inevitable to use a number of highly integrated components, which will depress the performance of overcoming overvoltage, over current and anti-surge. When lightning coming, these components can be easily damaged, which will lead to positioner failure. If the control valve is usefor critical process control or on high reliability position, the lightning may cause production out of control or accident because of the sudden failure of the positioner. Normal smart valve positioner is easy to be damaged by lightning. It is dangerous for production activities. In order to solve this problem, MVP has surge protection function by a built-in surge discharge circuit.

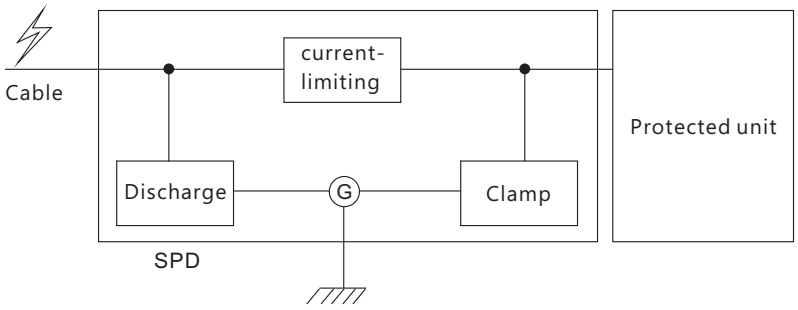


Fig 2-2：MVP Block diagram of lightning protection

⚠	1. The lightning protection function is an optional function; 2. It must be grounded according to relevant standards, when installing the lightning protection positioner.

2.4 Parts and Assembly

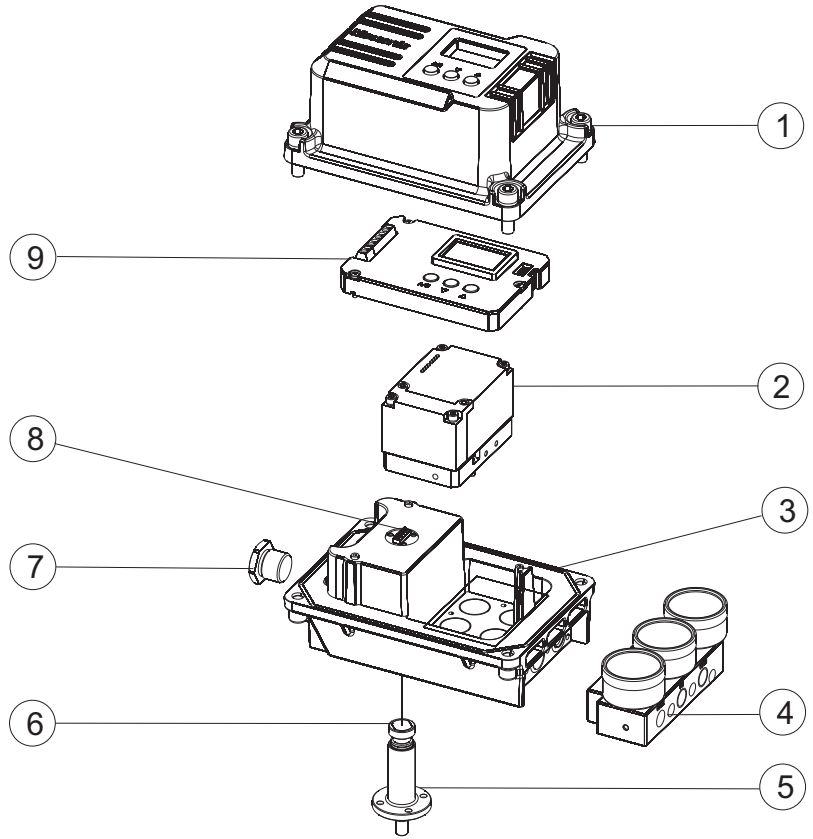


Fig 2-3：Exploded view

1. Base Cover
2. I/P Module
3. Base body
4. Gauge block
5. Main shaft
6. Magnet
7. Cable glands
8. Feedback sensor
9. Main Control Board

3、Technical Data

Pneumatic	Supply Air Pressure	0.14~0.7 MPa
	Valve Leakage	< 0.6L / H
	Air Consumption	< 36L / H
	Air Supply	According to ISO8573-1,Size and density of particlates: Class 4 Oil concentration：Class 4 Dew point：Class 4 or 10K below operating temperature
	Actuator	Single acting,Double acting
	Travel Range[1]	Linear:10~130mm Rotation angle: 30~160°
Input/Output	Input Current	4~20mA DC，Minimum input current>3.8mA DC; Split range start and end pont adjustable
	Feedback Output	4~20mA DC
	Digital Output	Electronic switch:2 channel
	Piezo Valves Switch Time	Average failure free time > 2 Billion
	Output Characteristic	Linear，1:30，30:1，User defined(20points)
	Communication	HART(HART7)
Display	LCD	2x7 digitals, dimension:22x38mm
	Pressure Gauge	Optional,displaying the and out pressure
Operate	Self Tuning	Automatic calibrate the Zero and Span,dead band
	Self Diagnose	Show the value of input current,travel time,dead band,etc
	Manual	3 Keys on the front panel
Precision	Dead Zone	0.1 ~ 10% adjustable
	Linearity	≤±0.5%F.S
	Hysteresis	≤0.5%F.S
Environment	Ambient Temperature	-40～+65℃(T6)/70℃(T5)/80℃(T4)
	Relative Humidity	5 ~ 95%RH
	Vibration Resistance	15 ~ 150Hz@2g
	IP Protection Level	IP66（According to customer needs）
	Explosion-Proof Type (Intrinsicall Safety)	Ex db IIC T4···T6 Gb Ex tb IIIC T80℃···T105℃ Db
Appearance	Weight	≥ 3 .2 kg(Pressure gauge assembly included)
	Dimension	206. 5×117. 4×107 mm
	HousingMaterial	AluminiumDiecasting / Stainless steel（Optional）

The default minimum operating ambient temperature is -30 ° C, and for the low-temperature type, it is -40 ° C.

4、Installation

4.1 Dimensions

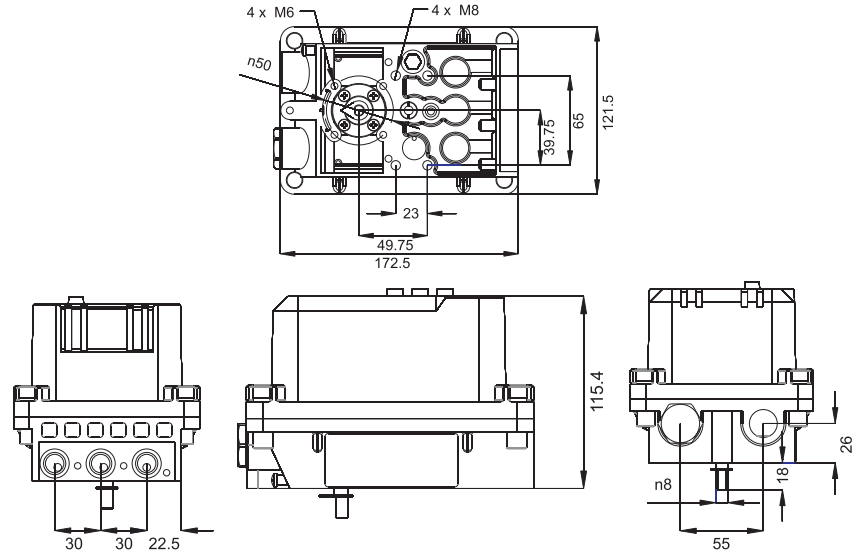


Fig 4-1：Product Dimension

4.2 Installation

4.2.1 General

Fig. 4-2 shows the positioner feedback indicator and the arrow which indicate the rotating range. The shown position is the middle position of the rotating range. Without initialization, the LCD feedback value should be about 50.0 and the bottom row displays NOINI. The two dotted lines are the limit positions of the feedback rotating range in normal status. The position sensor was adjusted before out of factory.

Fig.4-3 is the image which shows that positioner is mounted on a linear actuator with standard feedback lever. The recommended feedback angle is from 40° to 60°on a linear actuator.

Fig. 4-4 is the image which shows that positioner is mounted on a rotary actuator with standard feedback lever.

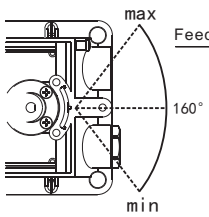


Fig 4-2

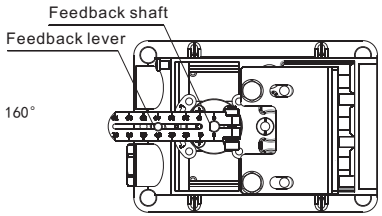


Fig 4-3

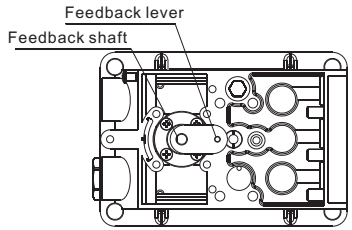


Fig 4-4

4.2.2 Installation on a linear actuator

No.	QTY	Name	Spec
1	6	Screw	M8×12
2	6	Spring washer	D8
3	6	Flat washer	D8
4	1	Actuator bracket	
5	1	Positioner bracket	
6	2	Screw	M6×12
7	2	Spring washer	D6
8	2	Flat washer	D6
9	1	Feedback bracket	
10	1	Feedback lever	
11	2	Screw	M5×10

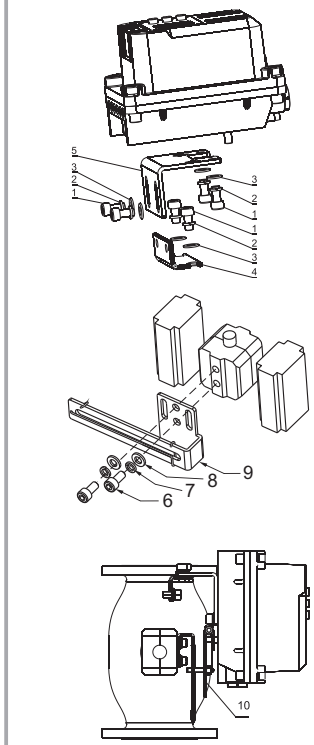


Fig 4-5: Installarion on a linear actuator

The positioner mounting on the front of the actuator, with the adjustable connection by the feedback lever and feedback bracket(Fig. 4-5),The installation steps as followings:

Fix the positioner bracket (Fig. 4-5/⑤) to the positioner with inner-hexagon head screws(Fig. 4-5/①), spring washers(Fig. 4-5/②) and washers (Fig. 4-5/③).

Fix the actuator bracket (Fig. 4-5/④) to the actuator with inner-hexagon head screws(Fig. 4-5/①), spring washers (Fig. 4-5/②) and washers (Fig. 4-5/③).

Fix the feedback bracket (Fig. 4-5/⑨) to the actuator with inner-hexagon head screws(Fig. 4-5/⑥), spring washers (Fig. 4-5/⑦) and washers (Fig. 4-5/⑧).

Fix the feedbacklever(Fig. 4-5/⑩) to the feedback shaft of positioner through fasten screw.

Fix the positioner to the actuator with inner-hexagon head screws(Fig. 4-5/①), spring washers (Fig. 4-5/②) and washers (Fig. 4-5/③).

After installation, please fine-tune the position of the actuator bracket (Fig. 4-5/④) and feedback bracket(Fig. 4-5/⑨) to make sure that the feedback lever(Fig. 4-5/⑩) is horizontal when the valve is 50% opened. See the solid line in Fig. 4-5.

For a linear actuator, the travel angle of the feedback lever should be from 40° to 60°. If beyond this range, it will cause significant nonlinearity errors.

4.2.3 Installation on a rotary actuator

No.	QTY	Name	Spec
1	4	Flat washer	D6
2	4	Spring washer	D6
3	4	Screw	M6×12
4	1	Feedback lever	
5	1	Screw	M4×5
6	1	Positioner bracket	
7	2	Actuator bracket	
8	1	Feedback bracket	
9	1	Nut	M6
10	4	Screw	M5×12
11	4	Spring washer	D5
12	4	Flat washer	D5
13	4	Screw	M5×12
14	4	Spring washer	D5
15	4	Flat washer	D5

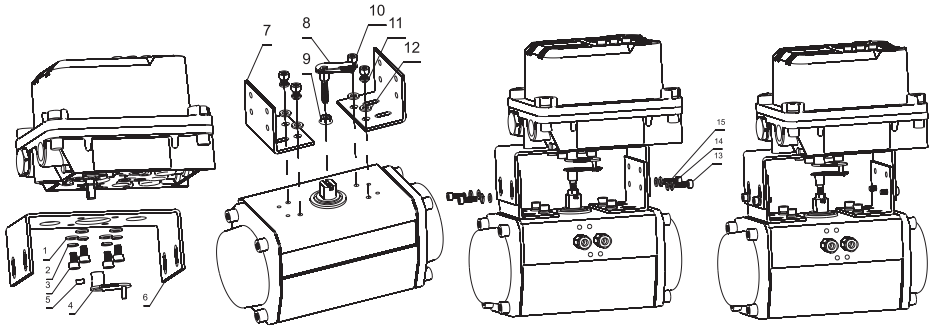


Fig 4-6 Installarion on a rotary actuator

The installation steps as followings ((Fig. 4-6):

Fix the positioner bracket (Fig. 4-6/⑥) to the positioner with hexagon head screw(Fig. 4-6/③), spring washers (Fig. 4-6/②) and washers (Fig. 4-6/①).

Fix the feedback lever (Fig. 4-6/④) to the shaft of actuator through hexagon head nut(Fig. 4-6/⑤).

Fix the actuator bracket (Fig.4-6/⑦) to the actuator with hexagon head screw (Fig.4-6/⑩), spring washers (Fig.4-6/⑪) and washers (Fig.4-6/ ⑫).

Screw inhexagon head nut(Fig.4-6/⑨) to feedback lever (Fig. 4-6/⑧),screw in the feedback lever to the actuator and fasten it with the hexagon head nut(Fig.4-6/⑨).

Put the positioner carefully on the actuator. The pin of the feedback lever (Fig. 4-6/④) should be in the slot of the feedback lever (Fig. 4-6/⑧). Adjust the height of the positioner, fasten the screw on the pin of the feedback lever (Fig. 4-6/④) and fix the positioner with hexagon head screw(Fig. 4-6/⑬), spring washers (Fig. 4-6/⑭) and washers (Fig. 4-6/⑮). Adjust the rotate angle of the feedback lever to comply to the requirements in §4.2.1.

i	1、Do not cover the exhaust with the mounting bracket. 2、The feedback lever should comply to the requirements in §4.2.1 for the rotary actuator. 3、The feedback lever is horizontal when the valve is 50% opened for the linear actuator.

4.3 **Pneumatic connection**

Pneumatic connection is on the right side of the positioner. Positioner provides two kinds of connection type: G1/4 or NPT 1/4 (refer to ordering data). See the specific marks on the housing and choose correct type according to the marks.

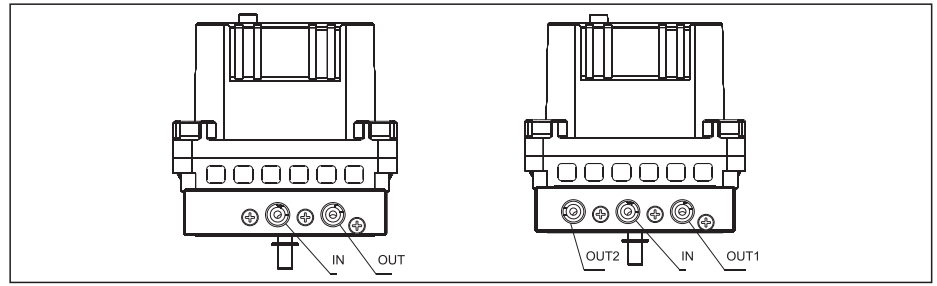


Fig 4-7：Pneumatic connection

Installation Steps:Connect the output of the MVP smart positioner to the input of the actuator according to Fig. 4-7.

i	1、Junction leakage is strictly prohibited. Use soapy water to inspect air tightness of connection interfaces. 2、When the actuator is too small in size, oscillation may occur. It can be avoided by using a throttling vane.

Connect the IN port of the MVP smart positioner to the air source. The compressed air must be filtered and regulated by the pressure release valve.

Air requirements:

- ☞ Air pressure must be 0.14 ~ 0.7MPa, depending on the actuator.
- ☞ Air supply should be clean dry air without visible oil steam, oil or other liquids.
- ☞ Air supply should be no significant corrosion air, steam and solvents.
- ☞ Size and density of particulates is Class 4,Oil concentration is Class 4.
- ☞ The air dew point under work pressure should be at least 10 K lower than positioner working environment temperature.

4.4 Electrical connection

4.4.1 Electrical connection terminal

Terminal name	Signal name	Function
1+	Current input signal(+)	Connect the 4–20 mA control signal to this terminal to supply power and signal to the positioner.
2-	Current input signal(-)	
11+	Current output signal(+)	4–20 mA analog feedback signal indicating the current valve position.
12-	Current output signal(-)	
21+	Switch output signal1(+)	Alarm output 1: When the valve operates to the set alarm position, Output switch signals that comply with the NUMAR standard.
22-	Switch output signal1(-)	
31+	Switch output signal2(+)	Alarm output 2: When the valve operates to the set alarm position, Output switch signals that comply with the NUMAR standard.
32-	Switch output signal2(-)	

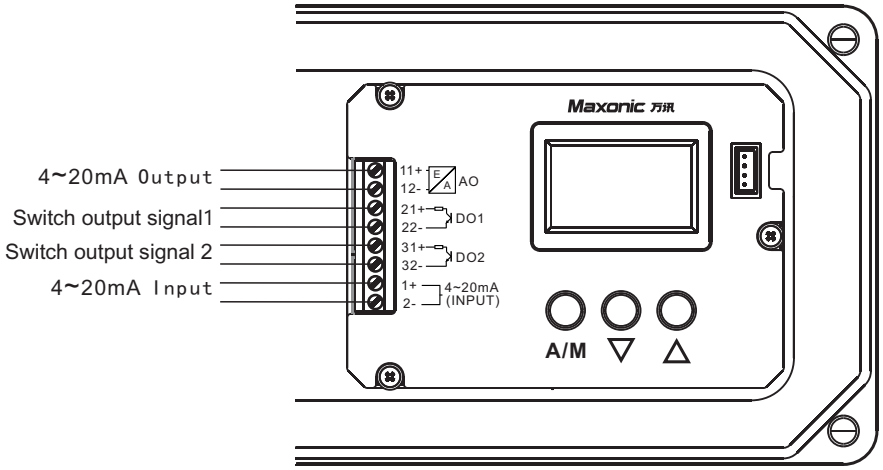


Fig 4-8：Electrical connection

4.4.2 Basic requirements

The electrical connections should be strictly in accordance with the connection diagram, and firmly fixed, and not be loose.

1.When the positioner is installed in a hazardous gas atmosphere, its cable entries must be fitted with cable glands or blanking elements that are certified by a nationally accredited inspection body, comply with the requirements of GB/T 3836.1-2021 and GB/T 3836.2-2021, and are marked Ex db IIC; only then may the apparatus be used in explosive atmospheres.

2.When the positioner is installed in a combustible-dust atmosphere, its cable entries must be fitted with cable glands or blanking elements certified by a nationally accredited inspection body, complying with GB/T 3836.1-2021 and GB/T 3836.31-2021 and marked Ex tb IIIC; only then may the apparatus be used in explosive dust hazardous locations.

3.Enclosure protection rating: Ip66.

4.Users are not permitted to replace any components on their own. Any malfunction that occurs during operation must be resolved jointly with the manufacturer to prevent damage.

5.During installation, operation and maintenance, users must strictly follow both the instruction manual and the standards listed below:

- GB/T 3836.13-2021 Explosive atmospheres – Part 13: Equipment repair, overhaul, reclamation and modification
- GB/T 3836.15-2017 Explosive atmospheres – Part 15: Design, selection and erection of electrical installations
- GB/T 3836.16-2022 Explosive atmospheres – Part 16: Inspection and maintenance of electrical installations
- GB 50257-2014 Code for construction and acceptance of electrical installations in explosive and fire-hazardous locations
- GB 15577-2018 Safety regulations for dust explosion prevention and protection

6.When the equipment is assigned temperature class T4 with a maximum surface temperature of 105 °C, high-temperature cables rated for at least 85 °C must be used.

⚠	1.Do NOT connect power to the input (4–20 mA DC) terminals; doing so will damage the main PCBA. 2.Use shielded cable to protect against electromagnetic fields and noise, and ensure the positioner is solidly grounded. 3.Do not run cables near strong interference sources such as VFDS, high-power transformers, or motors. 4.Keep the product well away from strong magnetic materials; otherwise malfunctions may occur.

4.4.3 Connection of flameproof version

4.4.3.1 Input electrical connection

Type: Two-wire system
Input:4~20mADC
Min. current:3.8mADC
Impedance :455Ω@20mA(no HART), 575Ω@20mA(with HART)

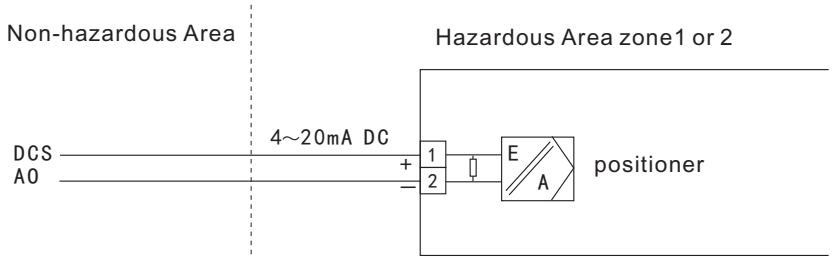


Fig 4-9：Input electrical connection

4.4.3.2 Digital output module electrical connection

Working Voltage：18~35V DC

Output signal:

Digital feedback module	Explosion-proof
Signal status"high"(trigger)	≥2.1 mA
Signal status"low"(No trigger)	≤1.2 mA

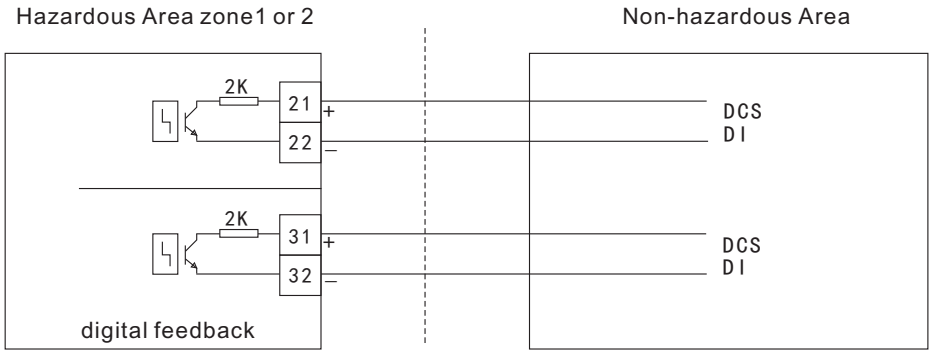


Fig.4-10 Digital output module electricalconnection

4.4.3.3 Analog feedback module electrical connection

Feedback signal type: Two-wire system,4~20mA DC
Temperature drift：≤100ppm/℃
Working range： 3.6 ~ 20.5 mA DC
Precision：≤0.1%
voltage:12 ~ 30VDC

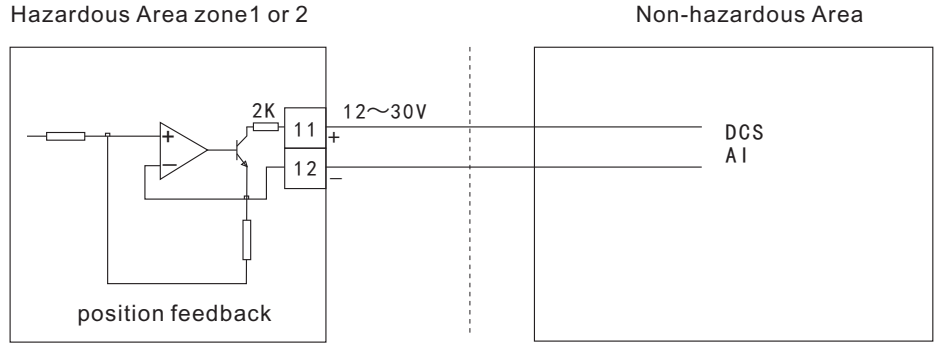


Fig.4-11 Analog feedback output module electronic connection

5、Adjustments operation

5.1 Adjustments steps

1、 Factory data reset(Refer §5.3.4)

2、Select the type of actuator

In the user menu, select 04 TYPE, Set according to the actuator type, choose Turn for rotary actuator and LINE/LINE2/LINE3/LINE4/LINE5/LINE6 for linear actuator (Refer to the parameter description).

3、Initialization(Refer §5.4)

4、User parameter Settings

After initialization is completed, set other parameters as needed.

5、Debugging result inspection

Press and hold the A/M key to exit the user menu and switch to the automatic control mode. Adjust the input 4-20mA control signal, and the positioner responds to the corresponding control action.

5.2 Configuration and Operation

Display： The LCD display has two lines

In the normal mode：

The 1st line shows the position.

The 2nd line from left to righyt shows "Direction of the valve-action","The state of running", and "The setpoint".

In the Configuration menu state：

The 1st line shows the parameter value.

The 2nd line from left to right shows "Parameter"and "The parameter name".

i	If the positioner is operatedin ranges with temperatures below -10°C the LCD display becomes sluggish and the display refresh rate is reduced obviously.

Buttons：The positioner has three buttons (Fig 5-1)

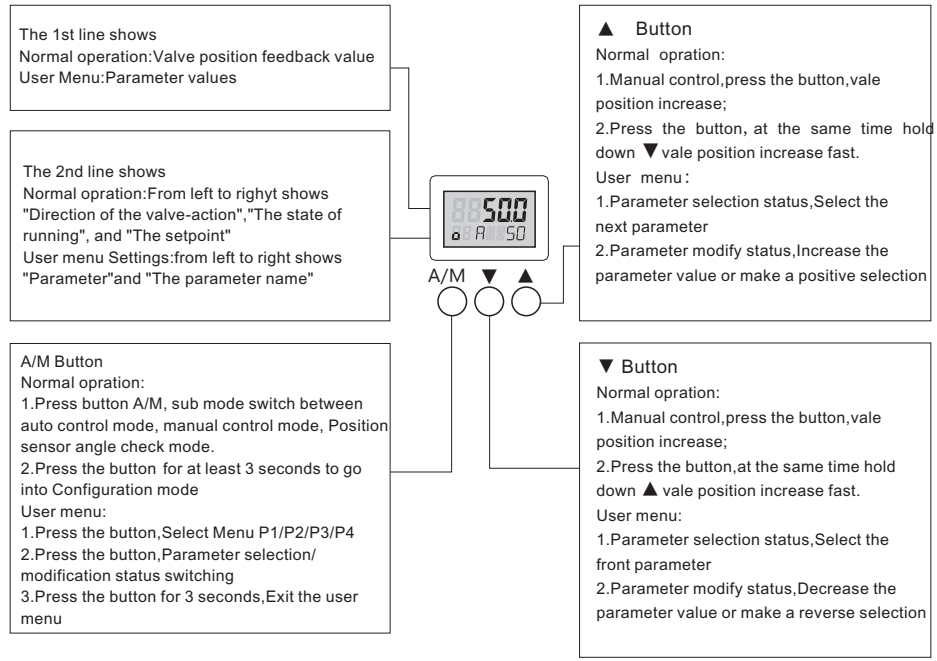


Fig 5-1：Operation interface diagram

i	1. Auto control mode:The 2nd line of LCD show "A" 2. Manual control mode:The 2nd line of LCD show "M" 3. Position sensor angle check mode:The 2nd line of LCD show " SENS"

5.3 User memu

5.3.1 Entering configuration mode

In the normal mode,press the button A/M for at least 3 seconds to go into configuraton mode.

5.3.2 Choosing a parameter for configuration

In the user menu category selection state, the menus that users can choose from are divided into four categories: P1, P2, P3, P4, and P5.

Conversion of four types of menus: When any one of P1, P2, P3, P4, or P5 is displayed on the first line, press the A/M key to convert Loop through the menu class, as shown in Fig 5-2.

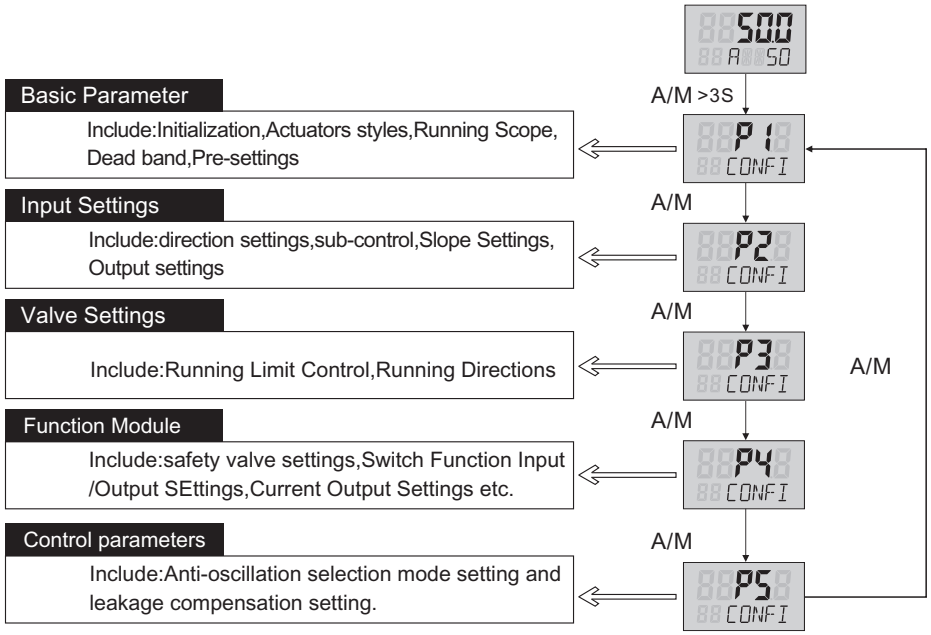


Fig 5-2:Choosing a parameter group

Parameter selection:Press ▲,The menu turns forward circularly

Press ▼,The menu turns backward circularly

The first line displays the parameter values: 

The first two characters of the second line show the parameter serial number, followed by the parameter name.

5.3.3 Changing a parameter

Press the button A/M to enter the parameter configure mode, the parameters on the screen will be blinking;

For numerical parameters:

Press ▲ parameter value will increase,Press the button for longer time, the parameter value increases quickly.

Press ▼ parameter value will decrease,Press the button for longer time, the parameter value decreases quickly.

For character parameters:

Press ▲ parameter value move forward.

Press ▼ parameter value move reverse.

5.3.4 Reset user parameters

1．Choosing the PRST parameter;

2．Press the button A/M to enter the parameter configure mode,the parameters on the screen will be blinking;

3．Press ▲,LCD shows "STRT" on the 1st line, after 3 seconds, user parameters are reset and exit configure mode.

5.3.5 Exiting configure mode

Press the button A/M, for 3 seconds to exit the configure mode and return to normal.

i 提示	1. The parameter is modified, you must press button A/M to exit the configure mode and the parameters will be saved. 2. The configure mode, if there is no operation in 1 minutes, the positioner will return to normal state.

5.4 **Initialization**

When the installation is completed, it must be initialized.

There are two ways to initialize: automatic tuning and manual tuning.

5.4.1 Check before initialization

Feedback lever's working angle must ensure correct (Refer to chapter 4.2.1).

Check that the pipeline connecting the positioner and actuator is correct.

Connect the air supply, the air supply pressure should meet the on-site operating conditions.

Confirming on-site conditions that allow operation of positioner to perform tuning action.

Into the position sensor angle check mode, the 1st shows the feedback lever angle, press▲ or▼ to control the valve movement, when the valve is opened to half, the displayed angle value is about 0 degrees.

Press▲ or▼ to control the valve to reach the fully open and fully closed position of the value, the positioner should not have an UP or DOWN alarm. The feedback lever should not interfere with other objects.

⚠	1. During tuning, the valve will be fully open and fully closed. Check on-site conditions and take measures to ensure that valve movement does not affect personal safety and production process safety. 2. Before performing tuning, the valve must be manually controlled from the fully open position to the fully close position to ensure that the installation is correct and the feedback lever does not interfere.

5.4.2 Auto tuning

1).Press and hold A/M more than 3 seconds to enter the configuration mode:

2).Press ▲,up shows "No",down shows "INIA":

3).Press function key A/M, the down showing will be blinking, enter the parameter configure sate.

4).Press ▲ for more than 3 seconds, up shows"STRT",enter the auto-tuning.

5).The whole procedure goes from"STEP1"to"STEP5",the second line shows the current step:

After completing STEP2, enter the amplifier setting. The first line shows a 10-second countdown, and the second line shows "booSt". Press the ▼ key to exit the amplifier setting and enter STEP3, and press the ▲ key to start the amplifier setting. For the setting process, please refer to 5.4.4.

6).After the tuning is completed, the second line displays "END" :

7).Press button A/M to return to normal mode.

i	1.During the setting process, press the A/M key to exit the setting state and enter the normal operation state. 2. When an external amplifier is connected to the actuator, overshoot may occur. This can be avoided by setting the amplifier. 3. No amplifier adjustment is required. The countdown will automatically proceed to the next step or the ▼ key can be pressed to cancel.

5.4.3 Manual tuning

1).Positioner is in normal state after power-up. Press and hold A/M for more than 3 seconds to enter the configuration mode:

2).Press ▲ to choose the parameter, till the second row shows “INIM”

3).Press the button A/M, the down line will be blinking , enter the parameter amending state:

4).Press ▲ for more than 3 seconds, up shows "STRT", then it enter the manual tuning. Down shows “ZERO”:

5).Press ▲ or ▼to choose the start point:

6).Press A/M to confirm, At this time the down line shows “SPRN”:

7).Press ▲ or ▼ to choose the end point:

8).The whole procedure goes from"STEP1"to"STEP5",the second line shows the current step(For amplifier tuning, refer to Section 5.4.2):

9).After the tuning is completed, the second line displays "END" :

10).Press button A/M to return to normal mode.

i	1. During the setting process, press the A/M key to exit the tuning state and enter the normal operation state. 2. When only part of the valve stroke is used, the parameter for tight closure should be changed to OFF.

5.4.4 Pneumatic Amplifier tuning

After entering the amplifier setting, the positioner automatically executes the amplifier setting program. The valve opening setting is completed. The first line shows "OPOK", and the second line shows "OSOP":

The valve closing setting is completed. The first line shows "CLOK", and the second line shows "OSCL":

Tuning is completed, the first line shows "OK" and the second line shows "booSt”:

i	1. When the sensitivity of the amplifier is very high, the valve position setting will overshoot. At this time, the amplifier needs to be adjusted. Reduce the sensitivity of the amplifier appropriately. 2. The amplifier setting failed. The first line shows "FAIL" and the second line shows "booSt".

5.5 Diagnosis

5.5.1 Diagnosis menu

On the normal working interface, long press the A/M key + ▲ key for 3 seconds to enter the diagnosis menu.

The first line shows the parameter value, and the second line shows the parameter name.

Press the ▲ key to loop forward and view the parameters.

Press the ▼ key to loop through the parameters backward.

5.5.2 Exiting the diagnosis

In the state of diagnosis: Press the button A/M for 3 seconds to exit the diagnosis mode and return to normal mode.

5.5.3 The diagnostic parameter

NO.	parameter	Display code	Function	Content/Scope	Unit
1	CURR	CURR	Input current	4.00~20.00	mA
2	TUP	TUP	Travel time up	0~200	S
3	TDW	TDW	Travel time down	0~200	S
4	DBUP	DbUP	Dead band up	0.1~10.0	%
5	DBDW	DbDW	Dead band down	-0.1~-10.0	%
6	PUP	PUP	Prediction up	1~100	%
7	PDW	PDW	Prediction down	1~100	%
8	IMUP	IMUP	Impulse length up	2~200	mS
9	IMDW	IMDW	Impulse length down	2~200	mS
10	SSUP	SSUP	Short step zone up	0.1~100.0	%
11	SSDW	SSDW	Short step zone down	0.1~100.0	%
12	PCNT	PCNT	Valve reversing frequency	0~4E9	
13	TE	TE	Working temperature	-40~+80	℃
14	SP	SP	Digital quantity control	0.0~100.0	%
15	VER	VER	Firmware version		
16	DSN	DSN	Product serial number		
17	MSN	MSN	Mainboard serial number		

NO.	parameter	Display code	Function	Content/Scope	Unit
18	ANGLE[1]	ANGLE	Installation Angle	-180~+180	°

[1] For the installation angle function, adjust the positioner mounting angle via Parameter ANGLE (No.18) in the diagnostic menu.

5.6 Alarm

The MVP3800 performs internal self-diagnostics and hardware checks. When the local display indicates that there are error messages, then use the following sections to support troubleshooting.

Measure Status Diagnostics

NO.	Display code	Cause	Recommended Actions	
1	SVL	Set current < 3.6mA	Increase input current ≥3.8mA	
2	SVH	Set current > 21mA	Reduce input current ≤20.5mA	
3	FbL	Feedback < -10%	Adjust the feedback connection institutions	Feedback ≥-1.25%
4	FbH	Feedback > 110%		Feedback ≤103.125%
5	FbAN	Feedback angle < -85°		Feedback angle≥-82.5°
6	FbAP	Feedback angle > 85°		Feedback angle≤82.5°
8	TEL	Working environment temperature < 45℃	Check and adjust the ambient temperature	
9	TEH	Working environment temperature > 85℃		

Control Status Diagnostics

NO.	Display code	Cause	Recommended Actions
1	bVER	> 30 seconds valve still not actuated properly	Cleaning valve; Check the valve connected institutions.

System Status Diagnostics

NO.	Display code	Cause	Recommended Actions
1	EPER	Control timeout (Valve jam)	Reset parameters or factory reset
2	ADER	ADC sampling overflow	Check and debug the motherboard

Tuning Status Diagnostics

NO.	Display code	Cause	Recommended Actions
1	RERR	Tuning timeout	1. Check the air supply pressure; 2. In manual control mode, check whether the valvecan be moved up and down; 3. Check if the pneumatic output have gas.
2	DOWN	Zero point of position sensor too low , < -85°	Adjust the feedback connection institutions
3	UP	Span point of position sensor too low , > 85°	
4	UPDW	The feedback range < 10%	
5	SET	0° < Feedback angle < 85° or -85° < Feedback angle < 0°	

6、User Parameter

6.1 Parameter list

Item	Parameter	Display code	Function	Content/Scope	Default	Unit
P1						
01	INIA	INIA	Automatic initialization: Not started/Start	NO/START	NO	
02	INIM	INIM	Manual initialization: Not started/Satrt	NO/SATRT	NO	
04	TYPE[1]	TYPE	Type of actuator: TURN LINE1 LINE2 LINE3 LINE4	TURN LINE1 LINE2 LINE3 LINE4	LINE1	
06	DEBA	DEbA	Dead band of the controller	AUTO/0.1 ~ 10.0	AUTO	%
07	DEBA1	DEbA1	Dead band of the controller 1	AUTO/0.1 ~ 10.0	AUTO	%
08	PRST	PRST	Preset(Factory setting): Not started/Factory settings started	NO/START	NO	

Item	Parameter	Display code	Function	Content/Scope	Default	Unit
P2						
09	SDIR	SDIR	Setpoint direction	RISE/FALL	RISE	
10	SPRA	SPRA	Split range start	0.0 ~ 100.0	0.0	%
11	SPRE	SPRE	Split range end	0.0 ~ 100.0	100.0	%
12	TSUP	TSUP	Setpoint ramp up	AUTO/0 ~ 400	0	s
13	TSDO	TSDO	Setpoint ramp down	AUTO/0 ~ 400	0	s
14	SFCT	SFCT	Setpoint function: Valve characteristics linear 1:30 30:1 21 points freely adjustable 3 points freely adjustable Hyperbola	LINE/ 1:30/ 30:1/ FrEE/ 3 POT 2CURV	LINE	
15 ~ 35	SP00 ~ SP20	SP00 ~ SP20	Setpoint turning points	0.0 ~ 100.0		%
P3						
36	YA	YA	Start of manipulated variable limiting	0.0 ~ 100.0	0.0	%
37	YE	YE	End of manipulated variable limiting	0.0 ~ 100.0	100.0	%
38	YDIR	YDIR	Direction of manipulated variable for display	RISE/FALL	RISE	
39	YCDW	YCDW	Value for tight closing,bottom	OFF/0.0 ~ 49.9	0.5	%
40	YCUP	YCUP	Value for tight closing,top	OFF/50.1 ~ 100.0	OFF	%
41	YNRM	YNRM	Standardization of manipulated variable	MPOS/FLOW	MPOS	
P4						
44	DO1	DO1	Digit output function 1: Fault alarm Non-auto Less than setting value Greater than the setting value	FAULT NA LSET HSET	FAULT	

Item	Parameter	Display code	Function	Content/Scope	Default	Unit
P4(Continue)						
45	SW1	SW1	Setting value	0.0 ~ 100.0	0.0	%
46	DO2	DO2	Digit output function 2: Non-auto Less than setting value Greater than setting value	 NA LSET HSET	NA	
47	SW2	SW2	Setting value	0.0~100.0	0.0	%
48	AMIN	AMIN	Min output current	4.0 ~ 20.0	4.0	mA
49	AMAX	AMAX	Max output current	4.0 ~ 20.0	20.0	mA
50	ADIR	ADIR	Current output direction	RISE/FALL	RISE	
51	PROT	PROT	Write potect for HART	ON/OFF	OFF	
52	ADDR	ADDR	Communication Address	0~63/0~126 [2]	0	
53	SPSRC	SPSRC	Control signal:Analog /Digital	AIN/DIG	AIN	
54	HTDVA	HTDVA	HART dynamic veriable: PV:SP(mA)/SV:SP(%)/TV:FB(%)/QV:TE(℃) PV:SP(%)/SV:FB(%)/TV:DEV(%)/QV:TE(℃) PV:SP(mA)/SV:FB(%)/TV:TE(℃)/QV:FB(%) PV:FB(%)/SV:SP(%)/TV:FB(%)/QV:TE(℃) PV:SP(%)/SV:SP(%)/TV:FB(%)/QV:TE(℃)	 0 1 2 3 4	0	
P5						
60	AOMOD	AOMOD	Anti-oscillation grade	OFF/LV1~LV9/EXPRT[3]	OFF	
71	ALMD	ALMD	Leakage compensation	OFF/TIME/POS[4]	OFF	

[1] HART address range: 0–63; PA address range: 0–126.

[2] Menus 61–70 are visible only when AOMOD is set to EXPRT (Expert mode); consult the factory for detailed settings.

[3] Menus 72–75 are visible only when ALMD is set to TIME or POS; consult the factory for detailed settings.

6.2 **Parameters description**

1. INIA

Automatic initialization(Chap.5.4.2 Choosing a parameter for configuration).

2. INIM

Manual initialization(Chap.5.4.3 Choosing a parameter for configuration).

4.TYPE

Type of actuator

The actuator is a rotary actuator(TURN)，The actuator is a linear actuator(LINE1/LINE2/LINE3/LINE4)

LINE1:When installed at 50% of the stroke and the feedback rod is horizontal, the initial valve position shows 50% or 0°.

LINE2:The transmission pin is fixed on the feedback rod of the positioner and the actual stroke range includes 0°.

LINE3:The drive pin is fixed on the output shaft of the actuator and 50% of the actual stroke corresponds to 0°.

LINE4:The drive pin is fixed on the output shaft of the actuator and the actual stroke range includes 0°.

6.DEBA

Dead band of the controller

At DEBA = AUTO the dead zone in automatic operation is adapted continuously to the requirements of the control circuit. The dead zone is gradually increased on detecting a control oscillation. The reverse adaptation takes place by a time criterion.

In the other discrete settings the fixed value is used for the dead zone.

7.DEBA1

Dead band of the controller

When DEBA1 = AUTO, the DEBA1is equal to the DEBA value, which will change according to the operating conditions during the running process. When the valve position changes cause oscillation (such as pipeline leakage), the appropriate increase of the DEBA1 can be alleviated. oscillation.

When DEBA1 has other values, the controller dead zone 1 is a fixed value set.

8.PRST

Establishing the factory setting and resetting the initialization.

i	The positioner must be re-initialized after Preset. All previously determined maintenance parameters are cleared.

9.SDIR

Setpoint direction (see Fig.6-1)

SDIR is set to RISE, 4mA corresponds to the 0% setting signal, and 20mA corresponds to the 100% setting signal.

SDIR is set to FALL, 4mA corresponds to the 100% setting signal, and 20mA corresponds to the 0% setting signal.

10.SPRA

Split range start (see Fig.6-1)

11.SPRE

Split range end (see Fig.6-1)

The parameters "SPRA" and "SPRE" and "SDIR" restrict the active setpoint range. In this way, split range tasks can be done by the following characteristics.

Rising/Falling

Falling/Rising

Falling/Falling

Rising/Rising

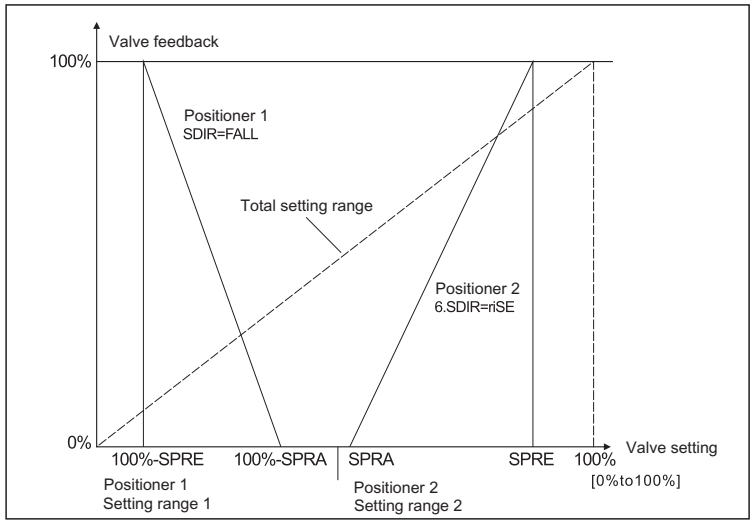


Fig.6-1：Split range-operation with two positioners

12.TSUP

The setpoint ramp is effective in automatic operation and limits the speed of alteration of the active setpoint. When switching over from manual operation to automatic the active setpoint is adjusted to the setpoint on the positioner with the setpoint ramp. This bumpless manual/automatic switchover avoids excessive pressure increases on long pipelines.

13. TSDO

The damping direction of the valve position setting value.

The factory value is 0, the same as 12 TSUP.

14.SFCT

Setpoint function

Non--linear valve characteristics can be linearized with this function and any flow characteristics simulated in linear valve characteristics.

Six valve characteristics are stored in the positioner:

· Linear(Factory setting)

· 1:30

· 30:1

· 21 points freely adjustable

· 3 points freely adjustable

· Hyperbola

15.SP00 to 35.SP20

Setpoint turning points

A flow parameter can be assigned to the respective setpoint turning value at an interval of 5 %. These points lead to a polygon chain with 20 straight lines which therefore represents a projection of the valve characteristic.

The setpoint vertex values can only be input at 14.SFCT=FrEE. You may only enter a strictly monotonous characteristic, and two consecutive vertex values must differ by at least 0.2 %.

36.YA

Manipulated variable limiting start

37.YE

Manipulated variable limiting end

By setting YA and YE, the range of movement of the valve can be restricted.

YE must be greater than the set value of YA.

38.YDIR

Positive and negative effects of valve position feedback

YDIR=RISE,Feedback axis of the positioner rotates clockwise, the feedback value increases.

YDIR=FALL,Feedback axis of the positioner rotates clockwise, the feedback value decrease.

39.YCDW

Valve is tightly closed, and the downward direction (referring to the changing trend of the valve position feedback value rather than the actual direction of the valve stem) , This function is utilized to reduce the erosion of the valve core head by high-speed flowing media.

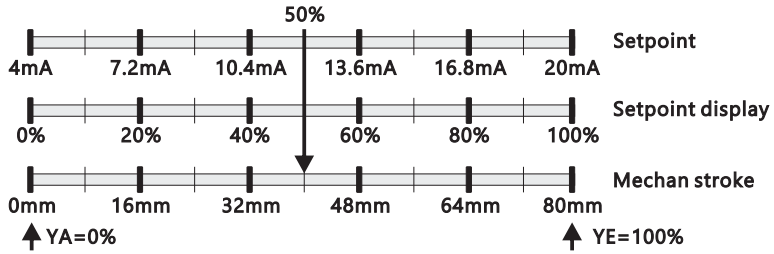
40.YCUP

Valve is tightly closed in the upward direction

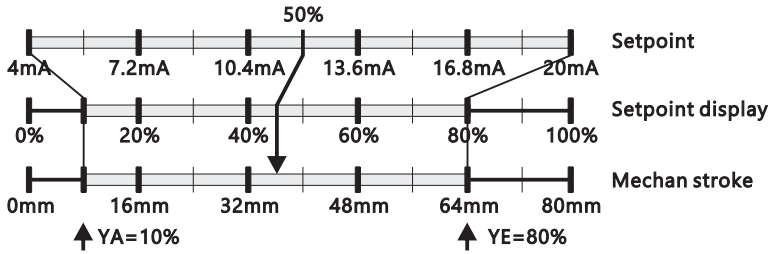
41.YNRM

The range standard of the control signal, this parameter is generally used in conjunction with parameters 36 and 37 to determine the control input signal The relationship between the number and the valve opening degree, for specific meanings, please refer to the following figure.

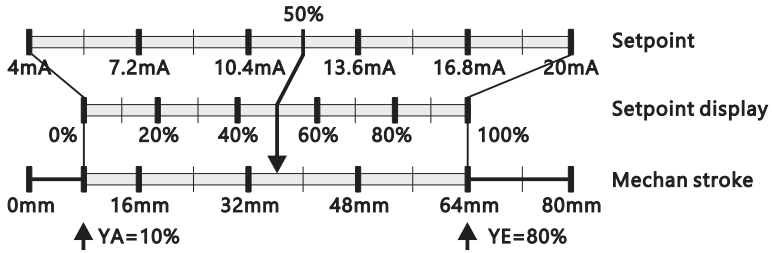
Status 1：YA=0% YE=100% YNRM=MPOS or FLOW



Status 2：YA=10% YE=80% YNRM=MPOS



Status 3：YA=10% YE=80% YNRM=FLOW



44.DO1

Digit output function 1

45.SW1

DO1 set value

DO1=LSET or DO1=HSET，SW1 is the alarm setting value of DO1.

46.DO2

Digit output function 2

47.SW2

DO2 set value

DO2=LSET or DO2=HSET，SW2 is the alarm setting value of DO2.

48.AMIN

Min output current

Min output current for the 0% position.

49.AMAX

Max output current

Max output current for the 100% position.

50.ADIR

Relation between the output current of position feedback module and valve position

There are two choices: RISE and FALL. When choosing RISE, output current will be 4mA when valve position is 0%; Output current will be 20mA when valve position is 100%. When choosing FALL, the result will be opposite.

51.PROT

Write protect for HART

PROT=ON: Write parameter is allowed by field communicator with HART protocol.

PROT=OFF: Write parameter is not allowed by field communicator with HART protocol.

52.ADDR

Communication address

HART address : 0~63;

PA address : 0~126.

53.SPSRC

Control signal source

SPSRC=AIN : It is the analog control mode;

SPSRC=DIG : It is the digital control mode.

54.HTDVA

HART dynamic veriabl

0	PV:Setpoint(mA)	SV:Setpoint(%)	TV:Feedback(%)	QV:Temperature(℃)
1	PV:Setpoint(%)	SV:Feedback(%)	TV:Deviation(%)	QV:Temperature(℃)
2	PV:Setpoint(mA)	SV:Feedback(%)	TV:Temperature(℃)	QV:Feedback(%)
3	PV:Feedback(%)	SV:Setpoint(%)	TV:Feedback(%)	QV:Temperature(℃)
4	PV:Setpoint(%)	SV:Setpoint(%)	TV:Feedback(%)	QV:Temperature(℃)

60.AOMOD

Anti-oscillation

AOMOD=LV1~LV9 : The posirioner offers 9 anti-oscillation

AOMOD=EXPRT : It is in the expert mode.

71.ALMD

Leakage compensation

ALMD=TIME : The positioner will supply air to the actuator at regular;

ALMD=POS : The positioner will supply air to the actuator at the preset position.

7、Fault and Maintenance

7.1 Trouble shooting

When positioner failed, follow these steps to eliminate fault.

If you cannot solve the fault according to steps as bellow, please contact Maxonic.

Fault	Reason	Solution
Actuator has no action both in manual and auto state	Air pressure low	Adjust the pressure of air source to actuator pressure
	Actuator jammed	Solve problem of actuator jammed
Actuator does not move or moves slowly	Air pressure low	Adjust the pressure of air source to actuator pressure
	Exit initialization before finish	Re-initialize
Move frequently	Leakage in air loop	Check whether the gas path leaks
		Increase the value of DEBA1
Oscillation	User configuration incorrect	Set larger dead band, larger setpoint ramp
	Volume of actuator is too small	
	Return difference is large	Check the installation of bracket and feedback connection,Re-initialize if need
Valve cannot be fully opened or closed	Air pressure low	Adjust the pressure of air source to actuator pressure
	Initialization data incorrect	Re-initialize
	Position limit is set	Check user Menu
	Tighten closing not set	Set tighten closing function
No display	Signal too small<3.6mA	Check input signal
	Terminal screws loose	Tighten the terminal screws
	Main board failed	Change the mainboard
Exhaust not smooth	The exhaust plug	Cleaning the exhaust
No position feedback current	Position feedback module failed	Change the module
	No external power, position feedback module not work	Provide 24V power to the module
	Polarity reversal of external connection	Rewire
Feedback current mismatch actual position	Position feedback module failed	Change the module
	Zero or Span drift	Tune the Zero or Span trimmer of module
Position display on LCD mismatch actual position	Actuator travel range mismath the scale	Manual initialize

⚠	Do not change any explosion proof device.

7.2 Maintenance

Positioner is an instrument which should be regularly maintained. The air supply of positioner should be kept dry and clean. Regularly exhaust water and pollution of the regulator connecting the positioner in order to keep the positioner normally.

Feedback connection may be loose due to long term work. Check the feedback connection regularly. If loose, tighten at once and decide whether to initialize or not according to valve zero and span position deviation.

In order to see whether the air pressure is normal, keep the pressure gauge clear.

Inspection and maintenance of explosion proof parts should according to location laws.

8、Transportation and storage

Check whether the signs are complete before storage, and the packing cases are firm. Finally check the reliability and safety of the bandage.

During transportation, light loading and unloading should be carried out, and the impact and pressure dampness and damage of the machine should be strictly prohibited.

Stored in the temperature was minus -40 ~ 80 ℃, relative humidity is not more than 75%, no condensation, corrosion instrument does not contain harmful impurities in the air.

Place on the surface of the packing box.

9、Ordering Information

9.1 The detail product models is in the following

Ordering data	MVP38	□ □ □ - □ □ □ - K □ □ - □ □ □
Type	Normal type	0
	Without pipe	7
Fail mode	Fail reset	0
	Fail freeze	1
Actuator type	Linear actuator	L
	Rotary actuator	R
For actuator	Single-acting	1
	Double-acting	2
Explosion-proof type	NEPSI- EX d	D
	NEPSI - Ex d& Ex t	P
	Low temperature- EX d	4
	Low temperature- Ex d& Ex t	5
Communications	None	0
	HART	H
	Profibus PA	P
	FF	F
Position feedback	None	0
	4~20mA Output	F
Limit monitor	None	0
	Two electronic switch outputs	1
Connection thread electric / pneumatic	M20x1.5 / G1/4	G
	M20x1.5 / 1/4NPT	N
	1/2NPT / 1/4NPT	M
	1/2NPT / G1/4	P
Pressure gauge blocks	None	0
	Nomal	1
	Stainless steel	2
	None-Copper free	G
	Copper-free and Stainless steel	S
Additional options	None	0
	Lighting protection(LP)	1
	Stainless steel(SS)	S
	LP+SS	T

Notes:

1. If the Fieldbus communication option (Profibus PA / FF) is selected, the 4–20 mA current output and two electronic switch outputs are not available.
2. When the lightning protection option is selected, grounding must be carried out in accordance with the relevant national standards.
   Lightning protection rating: 5 kA, 10 kV.
3. For explosion-proof options "D" and "P", the minimum ambient operating temperature is –30 °C.For low-temperature versions "4" and "5", the minimum ambient operating temperature is –40 °C.
4. If no material requirement is specified, the standard enclosure material is aluminum alloy.
5. The "Sales Code" option is used by the manufacturer to identify different customers and is not related to product explosion protection.