

中国工信部高精度传感器一条龙应用计划示范项目

国家级专精特新“小巨人”企业，国家级高新技术企业

中国工业强基重点产品，中国工信部传感器一条龙应用计划示范企业

磁致伸缩位移传感器

Magnetostrictive Displacement Sensor



磁致伸缩位移传感器

MAGNETOSTRICTIVE DISPLACEMENT SENSORS

- Demonstration project of one-stop application plan for high-precision sensors of Ministry of Industry and Information Technology of China
- National level specialized and special new "little giant" enterprise, national level high-tech enterprise
- Key products of strong industrial base in China, demonstration enterprise of sensor one-stop application plan of Ministry of Industry and Information Technology of China

产品型号选型 Product Model Selection

MTL系列 MTL Series



例如 Example: MTL3-1000mm-N/A-C

表示MTL3磁环式, 量程1000mm,磁环由电子仓向尾端移动数值变大, 4-20mA四线制信号输出, 防水接头出线。

Indicates MTL3 magnetic ring type, range 1000mm, the magnetic ring from the electronic compartment to the end of the moving value becomes larger, 4-20mA four-wire signal output, waterproof connector out.

常规系列 Conventional Series

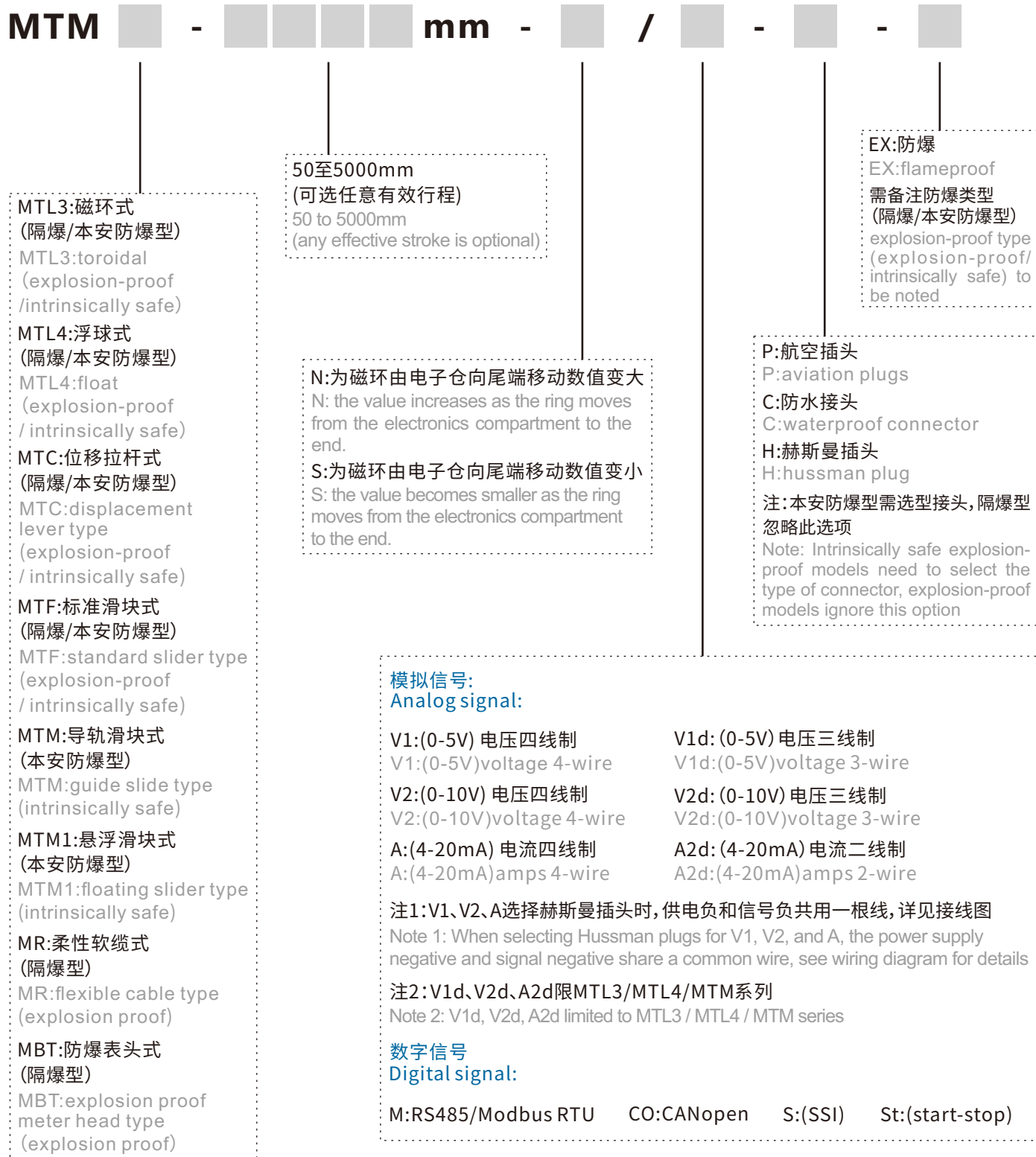


例如 Example: MTS-500mm-S/A-FS

表示MTS小电子仓式, 量程500mm,磁环由电子仓向尾端移动数值变小, 4-20mA四线制信号输出, 深水型。

MTS small electronic silo type, range 500mm, the magnetic ring from the electronic silo to the end of the movement of the value becomes smaller, 4-20mA four-wire signal output, deep water type.

防爆/本安系列 Explosion-proof/Intrinsically Safe Series



例如 Example: MTL3-2000mm-N/A-EX(隔爆)

表示MTL3磁环式,量程2000mm,磁环由电子仓向尾端移动数值变大,4-20mA四线制信号输出,隔爆型。

Indicates MTL3 magnetic ring type, range 2000mm, the magnetic ring from the electronic compartment to the end of the moving value becomes larger, 4-20mA four-wire signal output, flameproof type.

概述 Summarize

在铁磁质中磁化方向的改变会引起介质晶格间距的改变，从而使得铁磁质的长度和体积发生改变，即：磁致伸缩现象，也称为威德曼效应，其逆效应称为维拉里效应。

磁致伸缩传感器的原理是利用两个不同磁场相交时产生一个应变脉冲信号，然后计算这个信号被探测所需的时间周期，从而换算出准确的位置。这两个磁场一个来自磁环中的永磁铁，另一个来自传感器电子仓中的电子部件产生的激励脉冲。激励脉冲沿传感器内用磁致伸缩材料制造的波导丝以声速运行。当与磁环中的永磁场相交时，由于磁致伸缩现象，波导丝产生的机械振动形成一个应变脉冲。应变脉冲很快便被电子仓中的感测电路探测到。从产生激励脉冲的一刻到应变脉冲被探测到总的时间乘以固定的声速，我们便能准确的计算出磁铁的位置变化。这个过程是连续不断的，所以每当磁环位置改变时，新的位置会被迅速测量出来。由于输出信号是真正的绝对值，而不是比例的或需要再放大处理的信号，所以不存在信号漂移或变值的情况，更不必像其他传感器那样需要定期重标。

磁致伸缩传感器为非接触式，永不磨损。具有高分辨率、高精度、高稳定性、高可靠性、响应时间快、工作寿命长等优点。传感器不用重新标定，也不用定期维护。

A change in the direction of magnetization in a ferromagnetic material causes a change in the lattice spacing of the medium, which results in a change in the length and volume of the ferromagnetic material, i.e., the phenomenon of magnetostriction, also known as the Wiedemann effect, the inverse effect of which is known as the Villari effect.

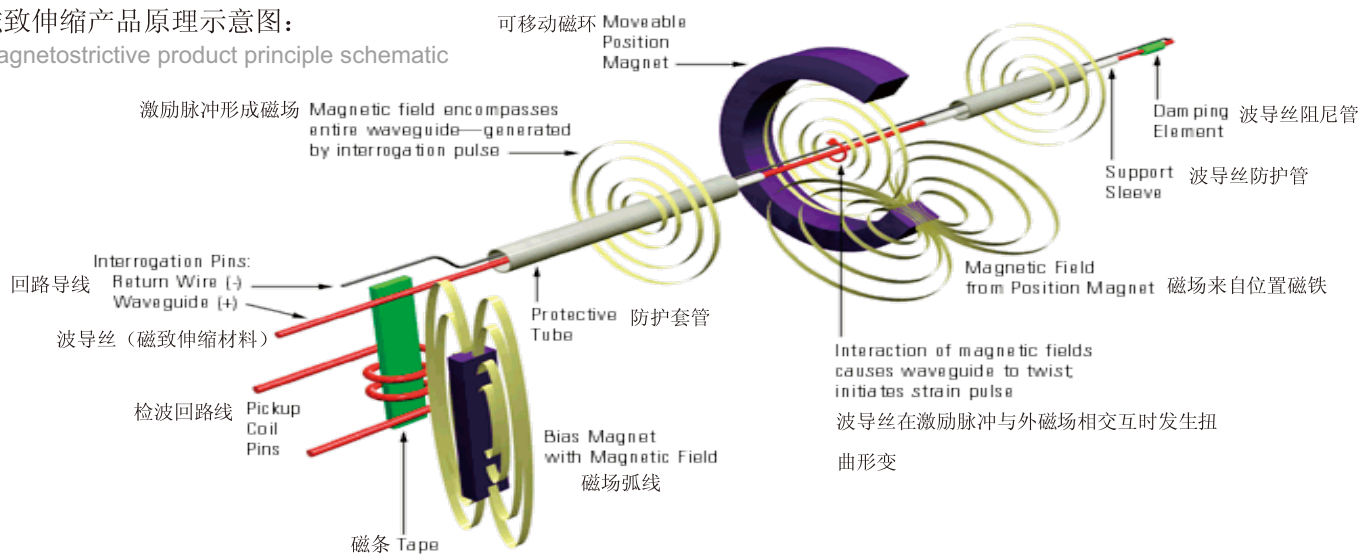
The principle of magnetostrictive sensors is to use the intersection of two different magnetic fields to generate a strain pulse signal, and then calculate the time period required for this signal to be detected, thus converting the exact position. One of these two magnetic fields comes from the permanent magnets in the magnetic ring and the otherThe two magnetic fields come from permanent magnets in the magnetic ring and from excitation pulses generated by the electronics in the sensor's electronics compartment. The excitation pulse runs at the speed of sound along a waveguide filament made of magnetostrictive material inside the sensor. When it intersects the permanent magnetic field in the magnetic ring, a strain pulse is formed by the mechanical vibration of the waveguide wire due to the magnetostrictive phenomenon. The strain pulse is quickly detected by the sensing circuitry in the electronic compartment. The total time from the moment the excitation pulse is generated until the strain pulse is detected is multiplied by the fixed speed of sound, and we can accurately calculate the change in position of the magnet. This process is continuous, so that whenever the position of the magnet ring changes, the new position is quickly

measured. Since the output signal is a true absolute value, not a proportional one or one that needs to be re-amplified and processed, there is no signal drift or change in value, not to mention the need for periodic re-calibration, as is the case with other sensors.

Magnetostrictive sensors are non-contact and never wear out. It has the advantages of high resolution, high accuracy, high stability, high reliability, fast response time and long working life. The sensors do not need to be recalibrated or regularly maintained.

磁致伸缩产品原理示意图:

Magnetostrictive product principle schematic



安装前注意事项

Precautions before installation

认真阅读全部安装说明,防止安装的环境温度、冲击、振动、压力及尺寸超出传感器的允许范围;不可使测杆弯曲;切勿使传感器的电子部件端或最末端承受大的冲击;用户应对产品的使用环境、防腐蚀、防爆及功能选择负责,无特殊要求的传感器不可用于有化学反应或其它对传感器有损害的易燃、易爆、腐蚀、蒸汽和液体等场合;安装完毕,应对电子仓进行保护处理。

Carefully read all the installation instructions to prevent the installation of the ambient temperature, shock, vibration, pressure and size beyond the permissible range of the sensor; do not make the rod bending; do not make the sensor's electronic parts end or the end of the most end of the big impact; the user should be responsible for the use of the product's environment, corrosion protection, explosion-proof and functional selection, no special requirements of the sensor can not be used for chemical reactions or other sensors have a detrimental effect on the inflammable, explosive, corrosive, vapors and liquids and other occasions; the installation is complete, should be the electronic compartment of the protection process.

电气安装Electrical installation

传感器接线前注意事项:

Precautions before wiring the sensor:

一、传感器的屏蔽电缆线必须避开大功率电源, 射频信号源和其它有噪声的传输线等。

一、The sensor's shielded cable must avoid high-power power supplies, radio frequency signal sources and other noisy transmission lines.

二、用户在接线前, 请检查供电电源是否满足: +24VDC的要求, 并且电源输出功率必须大于产品总功耗, 按不同量程每支传感器 $\leq 95\text{mA}$ 计算。如果电源不能满足要求, 请更换供电电源以保证传感器能够正常工作。

二、The user in the wiring, please check whether the power supply to meet: +24VDC requirements, and power output must be greater than the total power consumption of the product, according to the different ranges of each sensor $\leq 95\text{mA}$ calculation. If the power supply can not meet the requirements, please replace the power supply to ensure that the sensor can work properly.

三、警告! 禁止将电子仓浸入液体中!

三、Warning! It is prohibited to immerse the electronic compartment in liquid!

二线制输出接线方式 2-wire output wiring

航空插头/防水接头接线图 Airline plug/waterproof connector wiring diagram	针号 Gauge	颜色 Color	定义 Define
	1	棕 brown	电源正 power positive
	2		
	3	蓝 blue	信号输出+ signal output +
	4		
	5	屏蔽线 shield wire	壳体地 shell ground

公接头针号排列(面向传感器头)
Male connector pin number
arrangement (facing the
sensor head)

赫斯曼插头接线图 Hussman plug wiring diagram	针号 Gauge	颜色 Color	定义 Define
	1	棕 brown	电源正 power positive
	2	蓝 blue	信号输出+ signal output +
	3		
	4	屏蔽线 shield wire	壳体地 shell ground

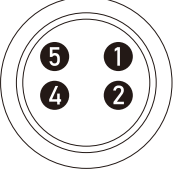
模拟信号输出接线方式 Analog signal output wiring

航空插头/防水接头接线图 Airline plug/waterproof connector wiring diagram	针号 Gauge	颜色 Color	定义 Define
	1	棕 brown	电源正 power positive
	2	黑 black	电源负 power negative
	3	蓝 blue	信号输出+ signal output +
	4	白 white	信号输出- signal output -
	5	屏蔽线 shield wire	壳体地 shell ground

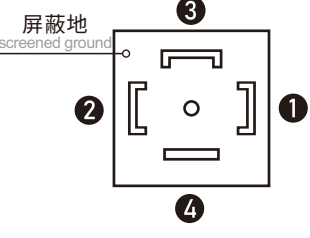
公接头针号排列(面向传感器头)
Male connector pin number
arrangement (facing the
sensor head)

赫斯曼插头接线图 Hussman plug wiring diagram	针号 Gauge	颜色 Color	定义 Define
	1	棕 brown	电源正 power positive
	2	蓝 blue	信号输出+ signal output +
	3	黑、白 black, white	电源负、信号- power negative, signal-
	4	屏蔽线 shield wire	壳体地 shell ground

数字信号输出接线方式Digital signal output wiring

航空插头/防水接头接线图 Airline plug/waterproof connector wiring diagram	针号 Gauge	颜色 Color	定义 Define
	1	棕 brown	电源正 power positive
	2	黑 black	电源负 power negative
	3	蓝 blue	RS485A
	4	白 white	RS485B
	5	屏蔽线 shield wire	壳体地 shell ground

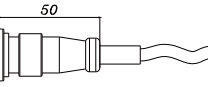
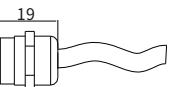
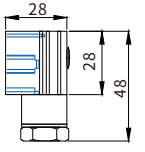
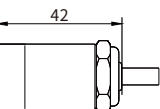
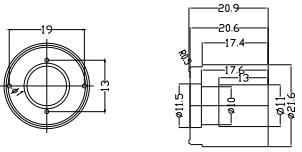
公接头针号排列(面向传感器头)
Male connector pin number
arrangement (facing the
sensor head)

赫斯曼插头接线图 Hussman plug wiring diagram	针号 Gauge	颜色 Color	定义 Define
	1	棕 brown	电源正 power positive
	2	蓝 blue	RS485A
	3	白 white	RS485B
	4	黑 black	电源负 power negative

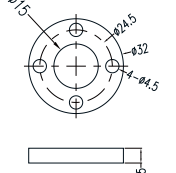
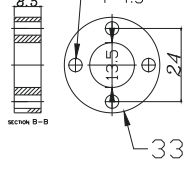
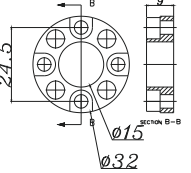
备注: 以上仅为参考, 具体接线定义以产品实物标签上的标注为准。

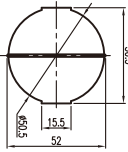
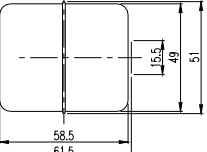
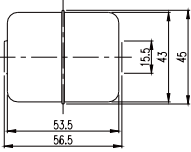
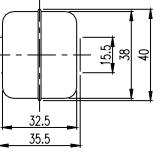
Note: The above is for reference only, the specific wiring definition is subject to the labeling on the product physical label.

接头选型Connector Selection

P:航空插头 P:aviation plug	C:防水接头 C:waterproof connector	H:赫斯曼插头 H:hussman plug	Ex:防爆栓 Ex:explosion-proof pins	最小号浮球 smallest float
				

配件图纸Accessory drawings

隔磁垫片尺寸 Magnetic isolation spacer size	MTL3/MTL5可选磁环尺寸 MTL3/MTL5 Selectable ring sizes
隔磁垫片 magnetic isolation shims 	胶磁环 ubber magnet ring  铝磁环 aluminum magnetic ring 

MTL2/MTL4/MTL6浮球尺寸图: MTL2/MTL4/MTL6 Float Dimensions:			
圆球体浮球 orb float 	圆柱体浮球:大号 cylinder float:large 	圆柱体浮球:中号 cylinder float:medium 	圆柱体浮球:小号 cylinder float:small 

安装指南 Installation Guide

常用安装方式 Common installation methods

方式一:适应于部分液罐测量,可选厂家提供的连接法兰或用户特殊订制的法兰、液位传感器直接旋入。

Mode 1: Adapted to part of the liquid tank measurement, can choose the connecting flange provided by the manufacturer or the user's special customized flange, the liquid level sensor is directly screwed in.

方式二:适用于开罐测量,可选厂家提供的传感器支架与锁紧螺母配件,将液位传感器因定在所需安装位置。

Mode 2: Applicable to open tank measurement, optional sensor bracket and lock nut fittings provided by Guangjia, the level sensor will be fixed in the required installation position.

方式三:适应于开罐与密封罐测量。

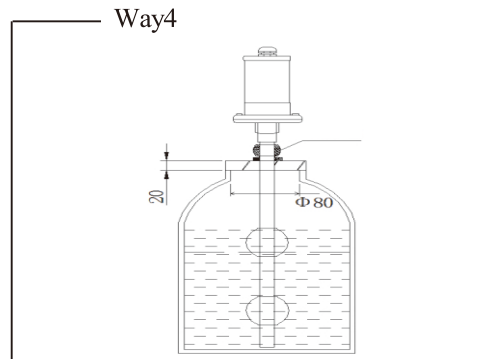
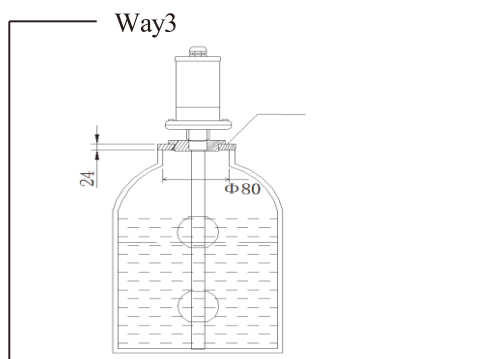
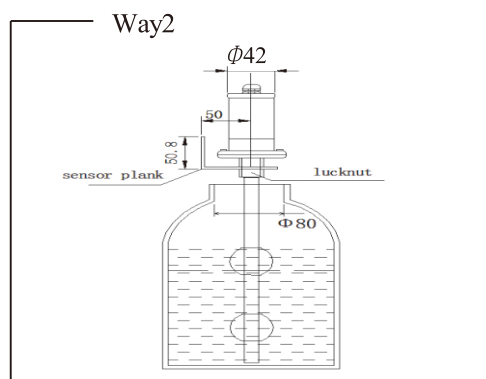
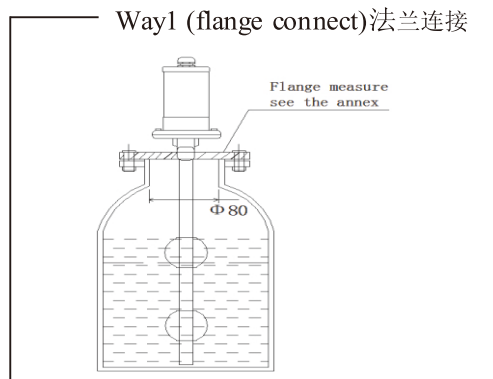
Mode 3: Adapted to open and sealed can measurements.

方式四:适应于测量高度可调整的开罐与密封罐测量。

Mode 4: Adapted to the measurement of open and sealed cans with adjustable measuring height.

注意:罐体开口大于 $\Phi 80$,便于浮子安装;法兰上的安装螺纹孔应与选用的传感器相符合。

Attention: the opening of the tank is larger than $\Phi 80$, which is convenient for float installation; the mounting thread holes on the flange should be compatible with the selected sensor.



防护管与旁通管安装方法

Protection pipe and by-pass installation

1. 对罐内介质有轻微搅拌或进出液体时有冲击的场合,可按防护管方式安装。

1. If the medium in the tank is slightly agitated or there is impact when entering or leaving the liquid, it can be installed in the way of protection pipe.

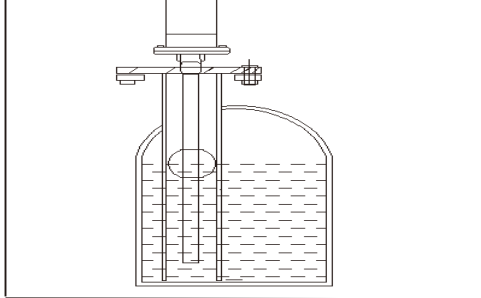
2. 对罐内介质搅拌程度比较剧烈或介质温度较高的应用场合需按旁通管方式安装。

2. For applications where the degree of agitation of the medium in the tank is more intense or the temperature of the medium is higher, it is necessary to install it in the way of bypass pipe.

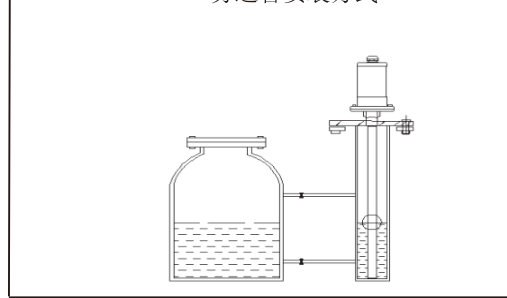
3. 加装防护管,最高处的液位导通孔一定要在液位不能达到的地方开孔,将防护管下部与液体导通,使得防护管内外的液位一致,最好是防护管的各个高度都要有孔,使得管内外的介质均匀一致。

3. Installation of protection tube, the highest level of the guide hole must be in the liquid level can not be reached in the place of the hole, the protection of the lower part of the tube and the liquid conduit, so that the protection of the level of liquid inside and outside the same, preferably the protection of the tube of all heights should have a hole. Make the medium inside and outside the tube uniform.

The install way of protection pipe
防护管安装方式



The install way of by pass pipe
旁通管安装方式



A 内置安装方法 Built-in installation method

1. 将传感器旋入 M18×1.5 安装孔, 注意“O”形圈的密封面按图示加工。

1. Screw the sensor into the M18X1.5 mounting hole and note that the sealing surface of the "O" ring is processed according to the drawing.

2. 根据磁环的位置, 在自制的活塞上钻四个螺纹孔, 将磁环用内六角螺钉 M4X10 固定好。螺钉头部朝向传感器的电子仓侧; 磁环应尽量与测杆同心, 但磁环偏心对测量精度无影响。如有振动的影响, 建议在磁环和活塞之间加四氟乙烯导向套。

2. According to the position of the magnetic ring, drill four threaded holes in the homemade piston. Fix the magnetic ring with hexagonal screw M4X10. The head of the screw faces the electronic compartment side of the sensor; the magnetic ring should be concentric with the measuring rod as much as possible, but the eccentricity of the magnetic ring has no effect on the measurement accuracy. In case of vibration effects, it is recommended to add a PTFE guide sleeve between the magnetic ring and the live cold.

3.如活塞为导磁材料制作,须在磁环和活塞之间加装非导磁垫圈。

3. If the piston is made of magnetically conductive material, a non-conductive washer must be added between the magnetic ring and the piston.

B 外置安装方法 External mounting method

对测量范围小于1000mm 的传感器,建议选用安装附件;大于1000mm 的,选用测杆支架安装。

For sensors with a measuring range of less than 1000 mm, it is recommended to use the mounting accessories; for sensors larger than 1000 mm, use the stylus bracket for mounting.

1.用传感器支架将传感器卡住,并用锁紧螺母将支架固定在传感器的螺纹上。

1.Snap the sensor in place with the sensor bracket and secure the bracket to the threads of the sensor with the lock nut.

2.将磁环用内六角螺钉M3×12 固定在磁环支架上,当将磁环装在测杆时,螺钉头部应朝向电子仓侧;磁环应尽量与测杆同心且无接触,但磁环稍有偏心不会影响传感器的性能。

2.Fix the magnetic ring with hexagon socket head cap screw M3×12 on the magnetic ring bracket, when the magnetic ring is mounted on the measuring rod, the head of the screw should be directed towards the side of the electronic compartment; the magnetic ring should be concentric with the measuring rod as far as possible and without contact, but a slight eccentricity of the ring will not affect the performance of the sensor.

3.将固定板条紧绕在测杆的最末端,并用两个 M3×8 螺钉和两个 M3 螺母固定好。

3.Wrap the fixing slat tightly around the far end of the rod and secure it with two M3 × 8 screws and two M3 nuts.

注意:安装附件只提供一根固定板条,将其固定在距测杆末端 50mm以内;测杆支架安装方式附件有三根固定板条,安装方法为:一根固定在距末端约 25mm 以内,另外两根均布在测杆上。

Note: The mounting accessory provides only one fixing slat, which is fixed within 50mm of the end of the stem; the stem mounting bracket accessory has three fixing slats, which are mounted as follows: one is fixed within 25mm of the end, and the other two are evenly distributed across the stem.

4.最后将整个初装好的传感器根据安装要求用自制螺钉固定好即可。

4. Finally, the entire initial installation of the sensor according to the installation requirements with homemade screws can be fixed.

C 安装示意图 Installation Diagram

液压缸内安装方式:

Mounting in hydraulic cylinder :

根据油缸工作压力选择合适的密封方式,常用的油缸密封安装方式有以下几种:

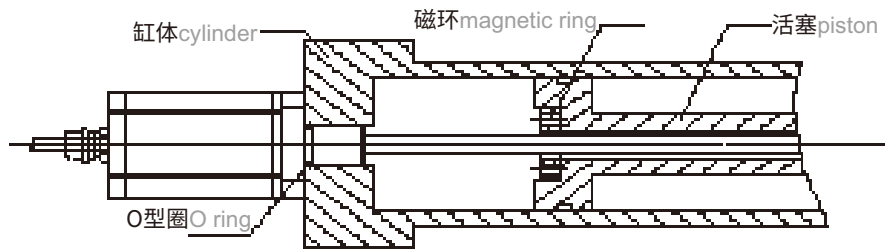
According to the working pressure of the cylinder to choose the appropriate sealing method, commonly used cylinder sealing installation methods are as follows:

注:如用户货时无特殊说明,默认安方式为方式一,配 O 型圈作为密封方式。

Note: If users do not have special instructions, the default mode is mode 1, with O-ring as a sealing method.

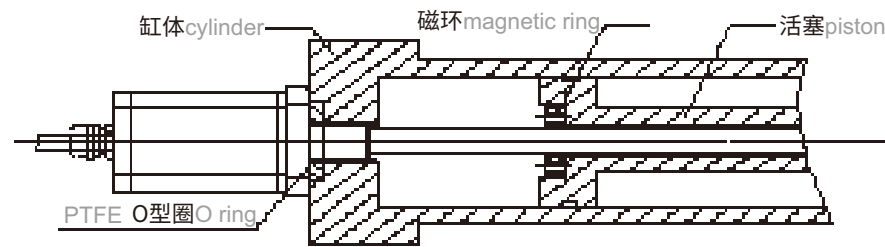
方式一:O型圈密封,一般适用于油缸压力 $\leq 1\text{MPa}$

Mode 1: O-ring seal, generally applicable to the cylinder pressure $\leq 1\text{MPa}$



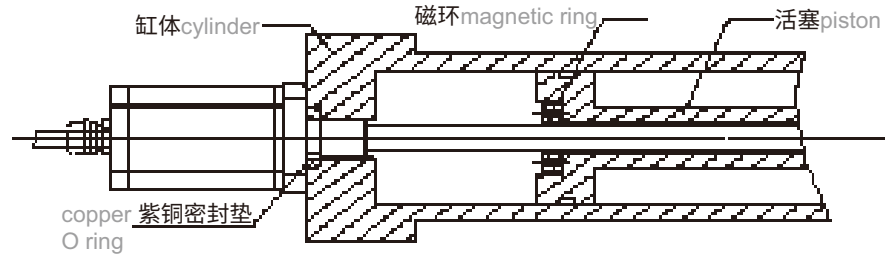
方式二:聚四氟乙烯密封垫,一般适用于油压力 $1\text{MPa}-10\text{MPa}$

Mode 2: PTFE gasket, generally applicable to oil pressure $1\text{MPa}-10\text{MPa}$



方式三:紫铜垫密封,一般适用于油缸压力 $\leq 35\text{MPa}$

Mode 3: Purple copper gasket sealing, generally applicable to the cylinder pressure $\leq 35\text{MPa}$



调校calibrate

该传感器在出厂时已经按照满量程将零点和满度调校好。由于传感器的长期稳定性很好,整个使用周期内不需要调整。由此,为了提高可靠性,传感器没留有供调校用的端口。请选用参数校准的二次仪表进行测量。如用户需要重新设定零点和满度,请与我公司联系。

The sensor is factory adjusted for zero and fullness to full scale. Due to the excellent long-term stability of the sensor, no adjustments are required throughout its life cycle. As a result, the sensor does not have a port for adjustment to increase reliability. Please use a parameter calibrated secondary instrument for measurement. If the user needs to reset the zero and fullness, please contact us. Translated with DeepL.com (free version).

常见故障及排除方法 common troubles and troubleshooting methods

传感器输出形式 sensor output form	现象 impunity	可能故障原因 possible causes of malfunction	解决办法 method settle an issue
4~20mA	输出<4mA output <4mA	传感器工作在上盲区 sensor operates in the upper blind spot	调整安装位置 adjustment of mounting position
	输出>20mA output >20mA	传感器工作在下盲区 sensor operates in the lower blind spot	调整安装位置 adjustment of mounting position
	输出0mA output 0mA	1. 磁环脱落 1. Magnetic ring detachment 2. 供电电源故障 2. Power supply failure 3. 接线不牢 3. Poor wiring	检查磁环、电源和接线 checking the toroids, power supply and wiring
	输出不稳 output instability	1. 磁环安装不牢固 1. The magnetic ring is not firmly installed 2. 电源功率不足 2. Insufficient power supply	检查磁环和电源 check the magnetic ring and power supply
0~5V输出 (有效范围 0.5~4.5V) 0~5V output (effective range 0.5~4.5V)	输出<0.5V output <0.5V	传感器工作在上盲区 sensor operates in the upper blind spot	调整安装位置 adjustment of mounting position
	输出>4.5V output >4.5V	传感器工作在下盲区 sensor operates in the lower blind spot	调整安装位置 adjustment of mounting position
	输出0mA output 0mA	1. 磁环脱落 1. Magnetic ring detachment 2. 供电电源故障 2. Power supply failure 3. 接线不牢 3. Poor wiring	检查磁环、电源和接线 checking the toroids, power supply and wiring
	输出不稳 output instability	1. 磁环安装不牢固 1. The magnetic ring is not firmly installed 2. 电源功率不足 2. Insufficient power supply	检查磁环和电源 check the magnetic ring and power supply
0~10V输出 (有效范围 1~9V) 0~10V output (effective range 1~9V)	输出<0.5V output <0.5V	传感器工作在上盲区 sensor operates in the upper blind spot	调整安装位置 adjustment of mounting position
	输出>4.5V output >4.5V	传感器工作在下盲区 sensor operates in the lower blind spot	调整安装位置 adjustment of mounting position
	输出0mA output 0mA	1. 磁环脱落 1. Magnetic ring detachment 2. 供电电源故障 2. Power supply failure 3. 接线不牢 3. Poor wiring	检查磁环、电源和接线 checking the toroids, power supply and wiring
	输出不稳 output instability	1. 磁环安装不牢固 1. The magnetic ring is not firmly installed 2. 电源功率不足 2. Insufficient power supply	检查磁环和电源 check the magnetic ring and power supply

注意:按上述方法故障排除不了,请送生产厂家检修。

Note: According to the above method of troubleshooting can not be, please send the manufacturer overhaul.

MTL2磁致伸缩位移传感器

MTL2 Magnetostrictive Displacement Sensor

产品尺寸图Product Dimension Drawing

MTL2尺寸图MTL2 Dimensional Drawing

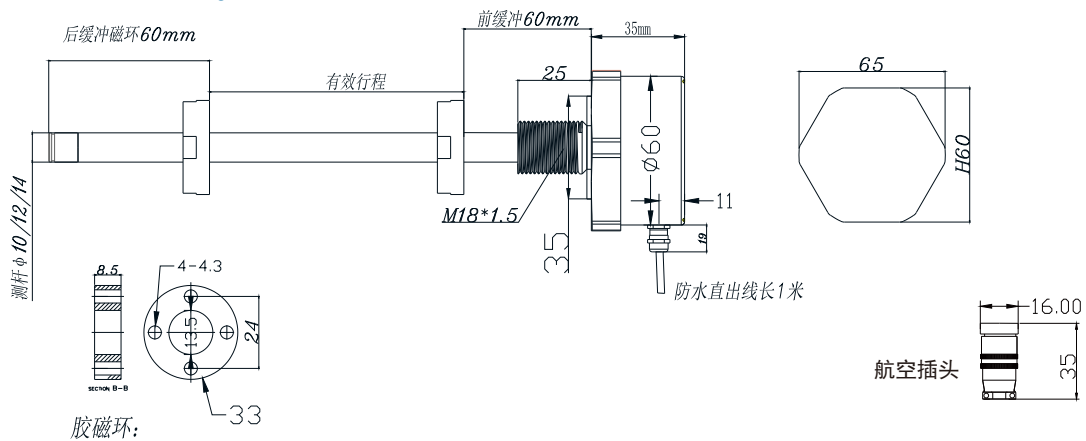
单位Unit:mm

MTL2螺牙式技术图纸

MTL2 screw-threaded technical drawing

线长标配一米

cable length standard one meter



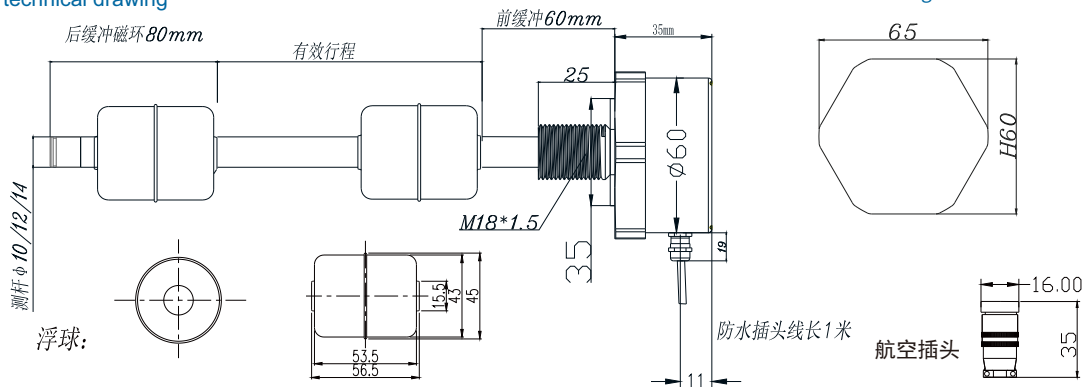
单位Unit:mm

MTL2浮球式技术图纸

MTL2 float type technical drawing

线长标配一米

cable length standard one meter



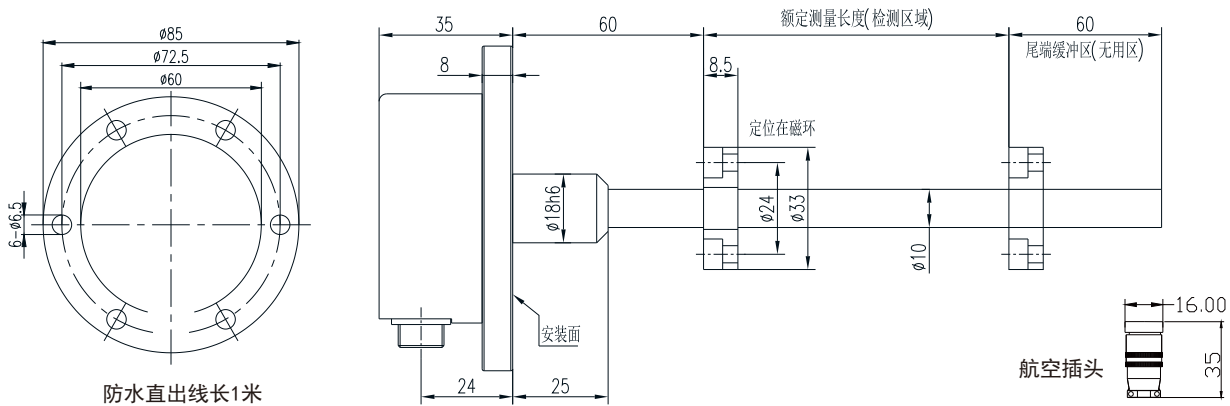
单位Unit:mm

MTL2法兰安装式技术图纸

MTL2 flange-mounted technical drawing

线长标配一米

cable length standard one meter



性能参数 Performance Parameters

电气指标 Electrical indicators

MTL2磁致伸缩位移/液位传感器 MTL2 Magnetostrictive Displacement/Level Sensor			
量程范围 Measurement range	50~5000mm	供电电压 Supply voltage	+12VDC~+24VDC
外壳防护等级 Shell protection grade	IP65	重复性误差 Repeatability error	≤0.0005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
分辨率 Resolution ratio	≤0.038mm	工作电流 Operating current	≤60mA
电子仓温度 Electronic warehouse temperature	-40°C~85°C	测杆温度 Operating temperature	-40°C~150°C
温度稳定性 Temperature stability	≤0.002%/°C		
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop		
工作压力 Work pressure	持续工作压力≤35MPa (MTL内置高压式系列) Continuous working pressure ≤ 35MPa (MTL built-in high pressure type series)		
测杆材料 Stem material	默认:0CR18NI9 (304); 可定制为:316不锈钢 Default: 0CR18NI9 (304); Can be customized to: 316 stainless steel		
电子仓外壳 Electronic silo housings	默认:0CR18NI9 (304); 可定制为:316不锈钢 Default: 0CR18NI9 (304); Can be customized to: 316 stainless steel		
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω		
引线方式 Lead wire method	耐高温双绞屏蔽电缆线 (默认长度:1m, 也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)		

MTL3磁致伸缩位移传感器

MTL3 Magnetostrictive Displacement Sensors

产品尺寸图Product Dimension Drawing

MTL3尺寸图MTL3 Dimensional Drawing

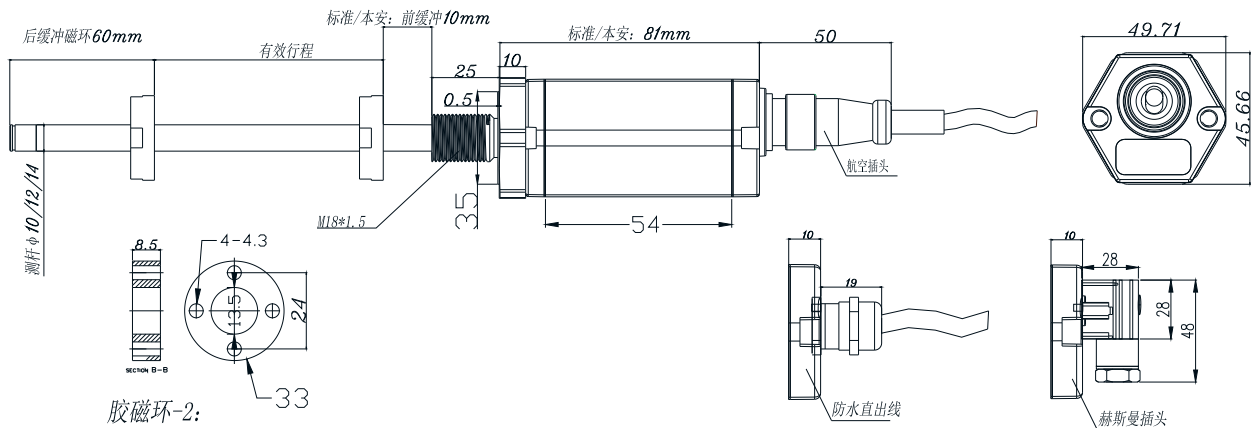
单位Unit:mm

MTL3直出线技术图纸

MTL3 straight out technical drawing

线长标配一米

cable length standard one meter



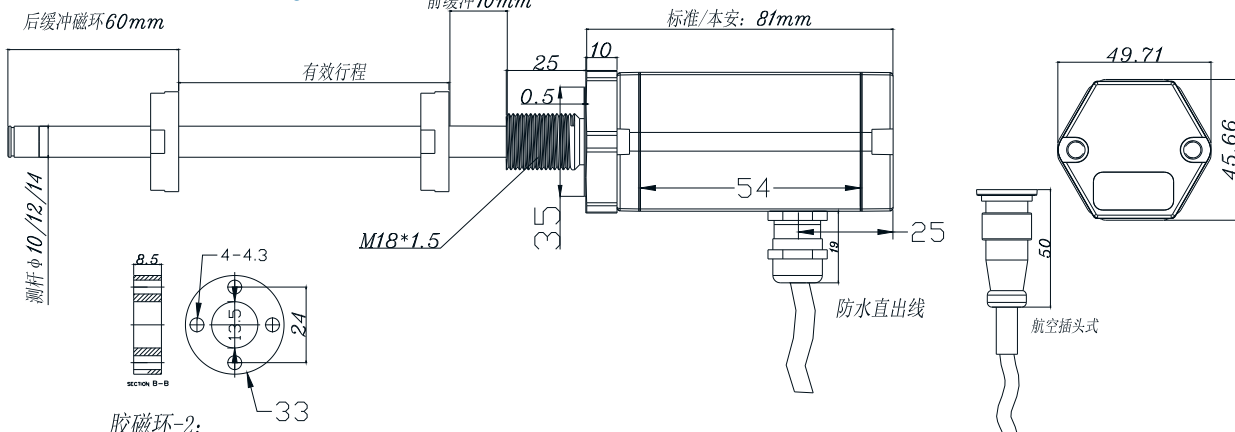
单位Unit:mm

MTL3侧出线技术图纸

MTL3 side exit technical drawing

线长标配一米

cable length standard one meter



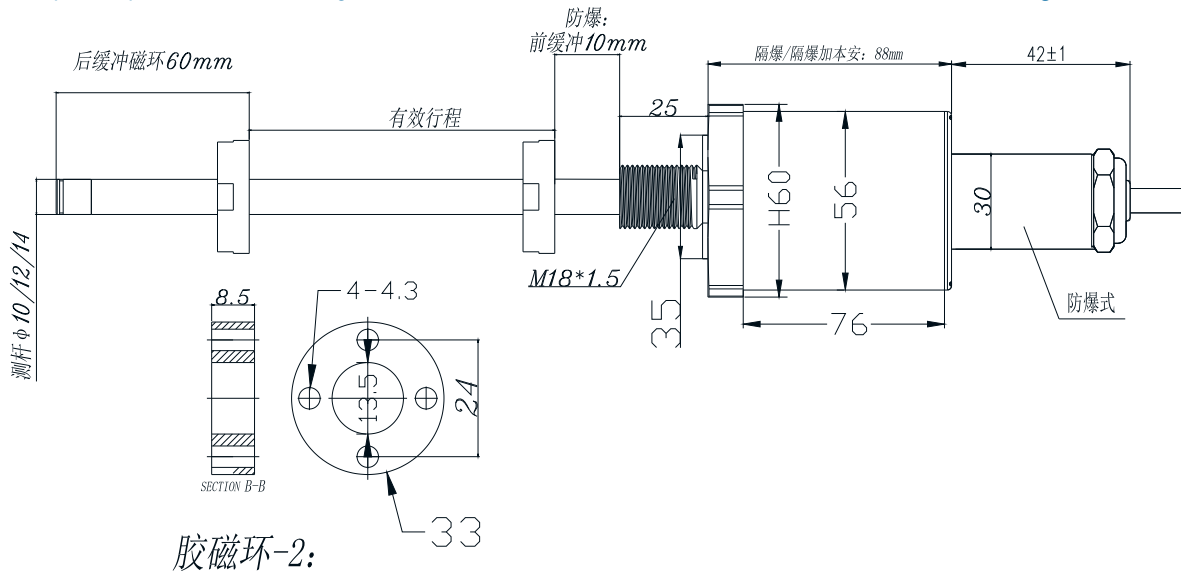
单位Unit:mm

MTL3防爆技术图纸

MTL3 explosion-proof technical drawing

线长标配一米

cable length standard one meter



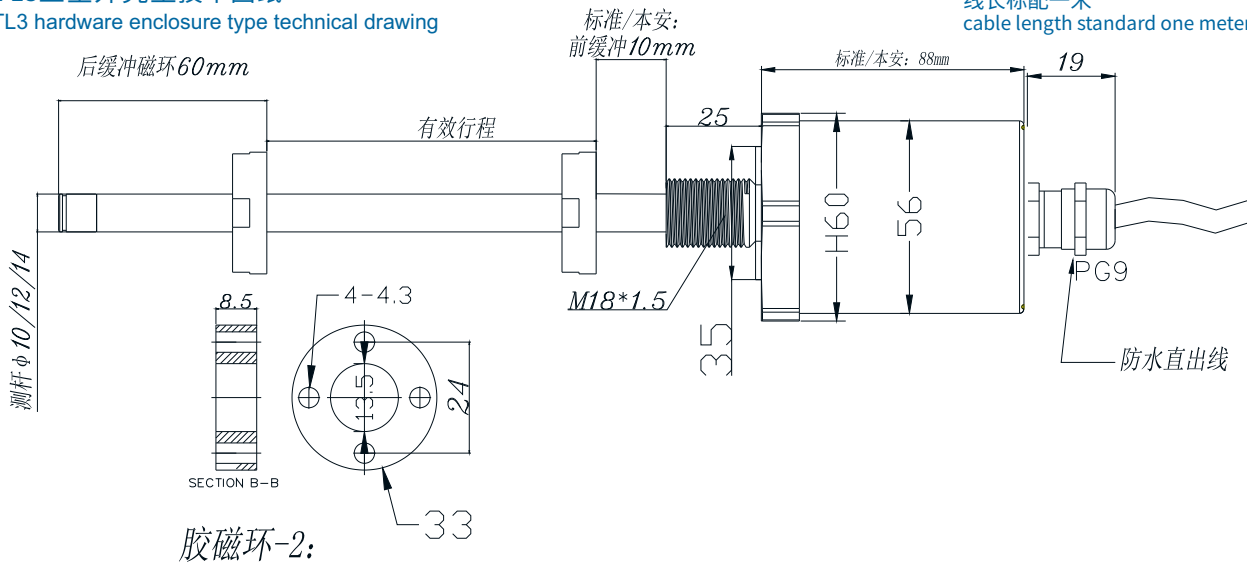
单位Unit:mm

MTL3五金外壳型技术图纸

MTL3 hardware enclosure type technical drawing

线长标配一米

cable length standard one meter



性能参数Performance Parameters

电气指标Electrical indicators

MTL3磁致伸缩位移/液位传感器 MTL3 Magnetostrictive Displacement/Level Sensor	
量程范围 Measurement range	50~5000mm
非线性误差 Nonlinear error	≤0.05%FS
分辨率 Resolution ratio	≤0.038mm
重复性误差 Repeatability error	≤0.0005%FS
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop
供电电压 Supply voltage	+12VDC~+24VDC
迟滞 Hysteresis	≤0.001%FS
工作电流 Operating current	≤60mA

性能指标Performance indicators

温度稳定性 Temperature stability	≤0.002%/°C
外壳防护等级 Shell protection grade	IP65、IP67
电子仓温度 Electronic warehouse temperature	-40°C~85°C
测杆温度 Operating temperature	-40°C~150°C
工作压力 Work pressure	持续工作压力≤35MPa (MTL内置高压式系列) Continuous working pressure ≤ 35MPa(MTL built-in high pressure type series)
测杆材料 Stem material	默认:0CR18NI9 (304) ;可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel
电子仓外壳 Electronic silo housings	默认:0CR18NI9 (304) ;可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω
引线方式 Lead wire method	耐高温双绞屏蔽电缆线(默认长度:1m,也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)
防爆标志 Explosion-proof symbol	防爆标志:Ex d IIB T5 Gb/Ex tD A21 IP65 T80°C 防爆本安标志:Ex ia IIB T4 Ga Explosion-proof Marking: Ex d IIB T5 Gb/Ex tD A21 IP65 T80°C Explosion-proof Intrinsically Safe Marking:Ex ia IIB T4 Ga

MTL4磁致伸缩位移传感器

MTL4 Magnetostrictive Displacement Sensors

产品尺寸图Product Dimension Drawing

MTL4尺寸图MTL4 Dimensional Drawing

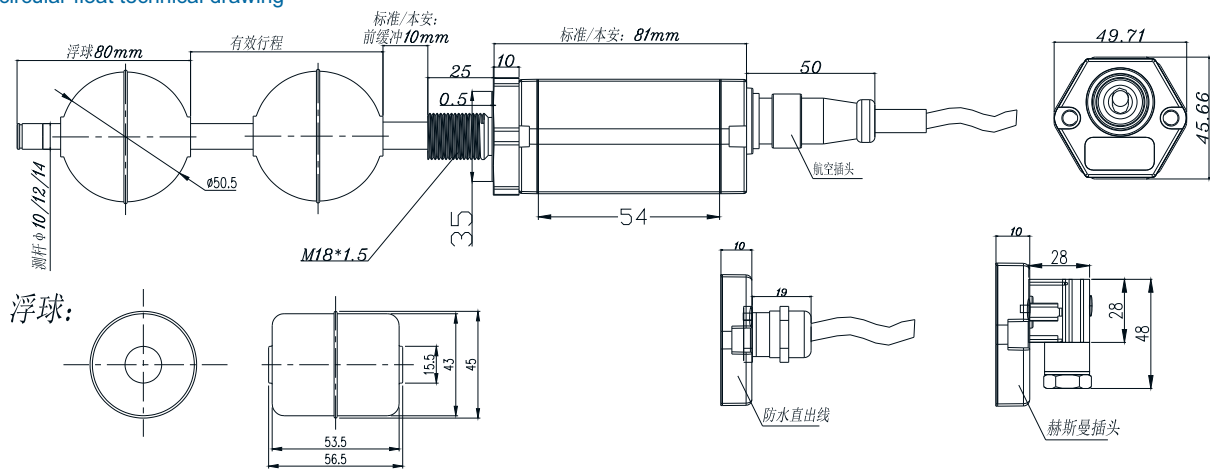
单位Unit:mm

MTL4圆形浮球技术图纸

MTL4 circular float technical drawing

线长标配一米

cable length standard one meter



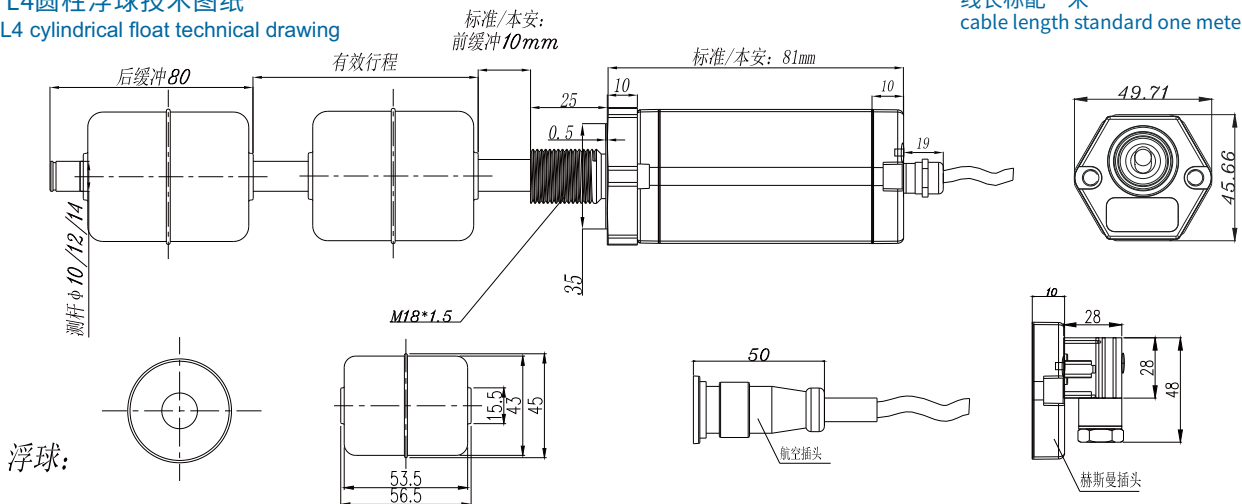
单位Unit:mm

MTL4圆柱浮球技术图纸

MTL4 cylindrical float technical drawing

线长标配一米

cable length standard one meter



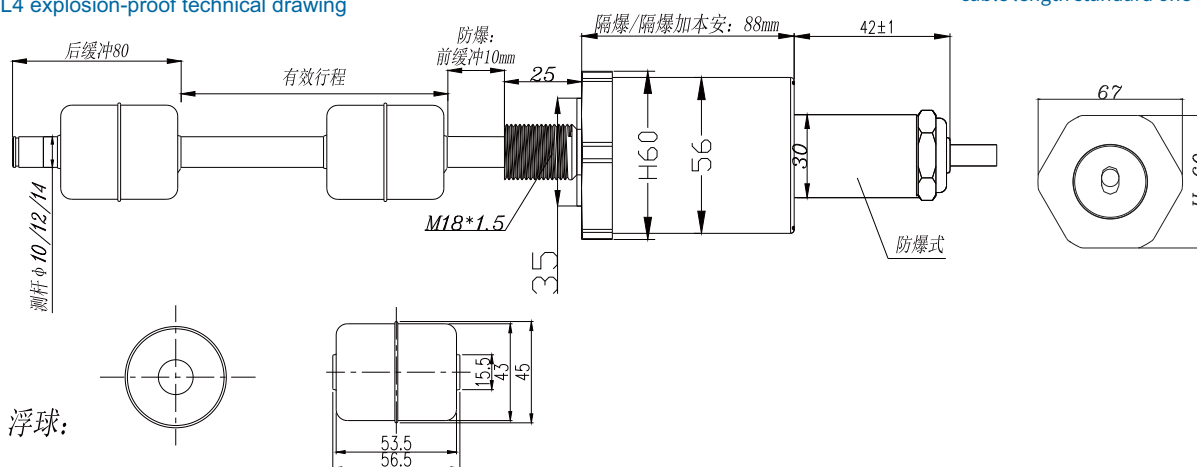
单位Unit:mm

MTL4防爆型技术图纸

MTL4 explosion-proof technical drawing

线长标配一米

cable length standard one meter



性能参数Performance Parameters

 电气指标Electrical indicators

MTL4磁致伸缩位移/液位传感器 MTL4 Magnetostrictive Displacement/Level Sensor			
量程范围 Measurement range	50~5000mm	供电电压 Supply voltage	+12VDC~+24VDC
外壳防护等级 Shell protection grade	IP65、IP67	重复性误差 Repeatability error	≤0.0005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
分辨率 Resolution ratio	≤0.038mm	工作电流 Operating current	≤60mA
温度稳定性 Temperature stability	≤0.002%/°C	工作温度 Operating temperature	T1: -20~+55°C, T2: -40~+80°C
电子仓温度 Electronic warehouse temperature	-40°C~85°C	测杆温度 Operating temperature	-40°C~150°C
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop		
工作压力 Work pressure	持续工作压力≤35MPa (MTL内置高压式系列) Continuous working pressure ≤ 35MPa(MTL built-in high pressure type series)		
测杆材料 Stem material	默认:0CR18NI9 (304) ;可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel		
电子仓外壳 Electronic silo housings	默认:0CR18NI9 (304) ;可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel		
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω		
引线方式 Lead wire method	耐高温双绞屏蔽电缆线 (默认长度:1m, 也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)		
防爆标志 Explosion-proof symbol	防爆标志:Ex d IIB T5 Gb/Ex tD A21 IP65 T80°C 防爆本安标志:Ex ia IIB T4 Ga Explosion-proof Marking: Ex d IIB T5 Gb/Ex tD A21 IP65 T80°C Explosion-proof Intrinsically Safe Marking: Ex ia IIB T4 Ga		

MTL5/MTL6磁致伸缩位移传感器

MTL5/MTL6 Magnetostrictive Displacement Sensors

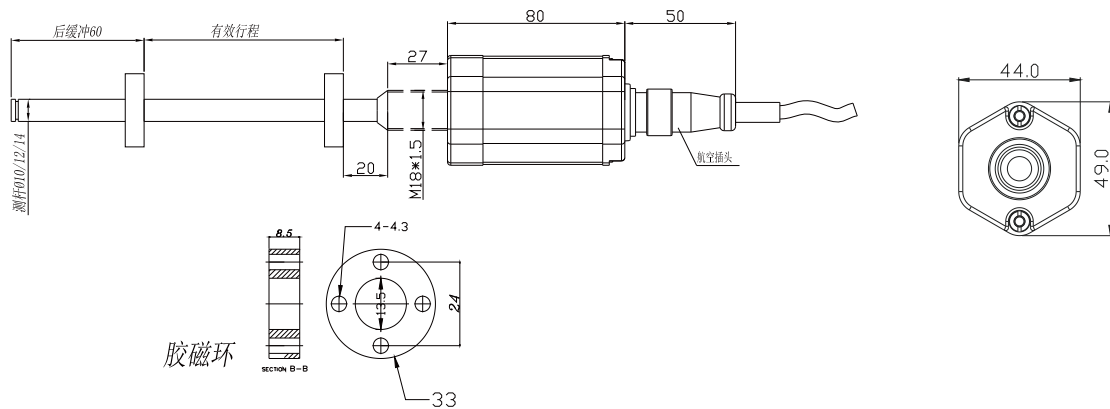
产品尺寸图Product Dimension Drawing

MTL5/MTL6尺寸图MTL5/MTL6Dimensional Drawing

单位Unit:mm

MTL5加强密封型技术图纸
MTL5 reinforced sealed technical drawing

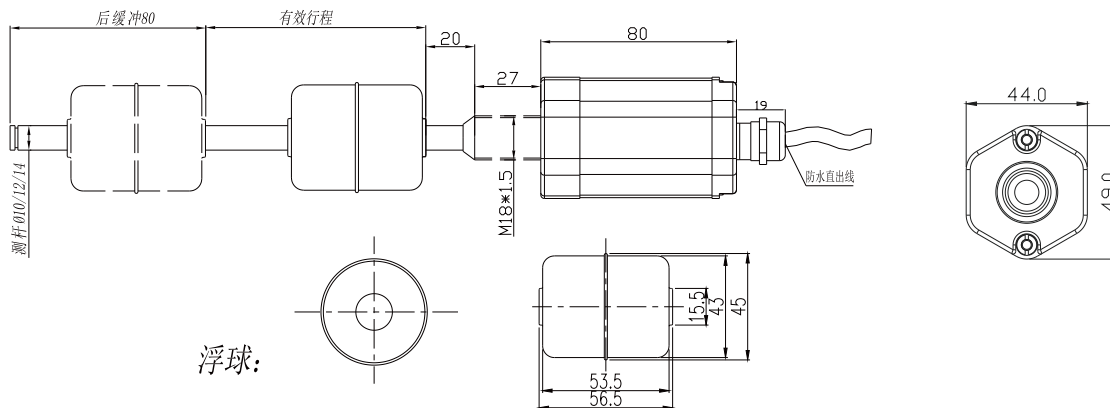
线长标配一米
cable length standard one meter



单位Unit:mm

MTL6加强密封型技术图纸
MTL6 reinforced sealed technical drawing

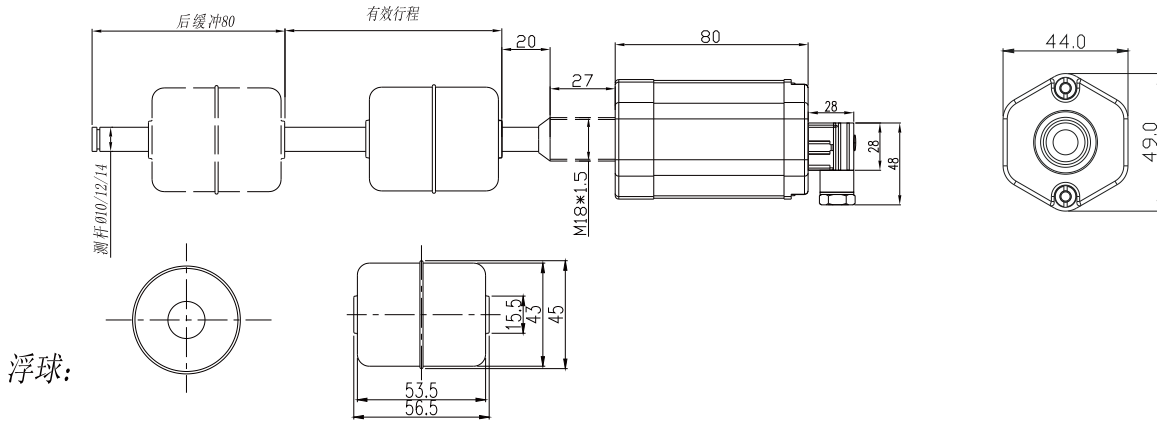
线长标配一米
cable length standard one meter



单位Unit:mm

MTL6加强密封型技术图纸
MTL6 reinforced sealed technical drawing

线长标配一米
cable length standard one meter



性能参数Performance Parameters

电气指标Electrical indicators

MTL5/MTL6磁致伸缩位移/液位传感器 MTL5/MTL6 Magnetostrictive Displacement/Level Sensor			
量程范围 Measurement range	50~5000mm	供电电压 Supply voltage	+12VDC~+24VDC
外壳防护等级 Shell protection grade	IP65	重复性误差 Repeatability error	≤0.0005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
分辨率 Resolution ratio	≤0.038mm	工作电流 Operating current	≤60mA
电子仓温度 Electronic warehouse temperature	-40℃~85℃	测杆温度 Operating temperature	-40℃~150℃
温度稳定性 Temperature stability	≤0.002%/℃		
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop		
工作压力 Work pressure	持续工作压力≤35MPa (MTL内置高压式系列) Continuous working pressure ≤ 35MPa(MTL built-in high pressure type series)		
测杆材料 Stem material	默认:0CR18NI9 (304); 可定制为:316不锈钢 Default: 0CR18NI9 (304); Can be customized to: 316 stainless steel		
电子仓外壳 Electronic silo housings	默认:0CR18NI9 (304); 可定制为:316不锈钢 Default: 0CR18NI9 (304); Can be customized to: 316 stainless steel		
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω		
引线方式 Lead wire method	耐高温双绞屏蔽电缆线 (默认长度:1m, 也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)		

MTL7磁致伸缩位移传感器

MTL7 Magnetostrictive Displacement Sensors

产品尺寸图Product Dimension Drawing

MTL7尺寸图MTL7 Dimensional Drawing

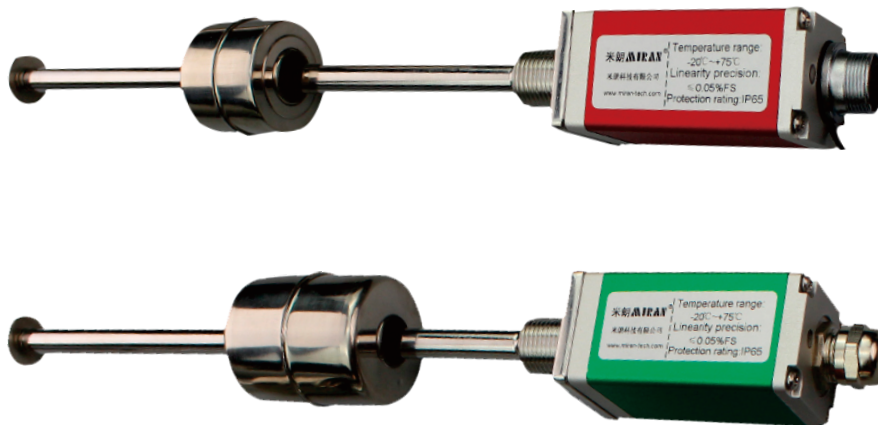
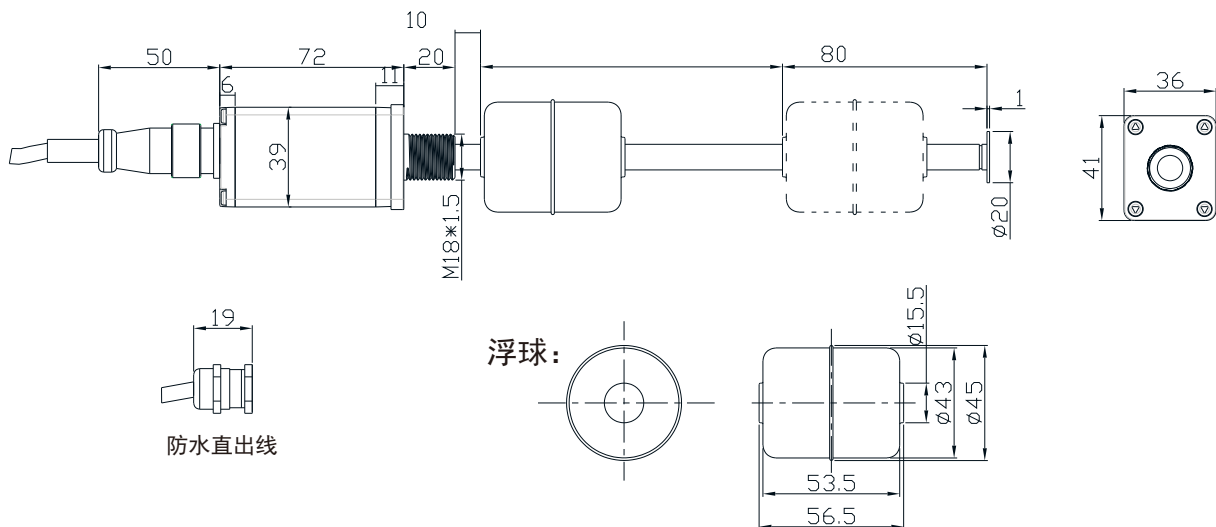
单位Unit:mm

MTL7加强密封型技术图纸

MTL7 reinforced sealed technical drawing

线长标配一米

cable length standard one meter



性能参数 Performance Parameters

电气指标 Electrical indicators

MTL7磁致伸缩位移/液位传感器 MTL7 Magnetostrictive Displacement/Level Sensor	
量程范围 Measurement range	50~5000mm
供电电压 Supply voltage	+12VDC~+24VDC
非线性误差 Nonlinear error	≤0.05%FS
分辨率 Resolution ratio	≤0.038mm
迟滞 Hysteresis	≤0.001%FS
工作电流 Operating current	≤60mA
重复性误差 Repeatability error	≤0.0005%FS
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop

性能指标 Performance indicators

外壳防护等级 Shell protection grade	IP65、IP67
电子仓温度 Electronic warehouse temperature	-40°C~85°C
测杆温度 Operating temperature	-40°C~150°C
温度稳定性 Temperature stability	≤0.002%/°C
工作压力 Work pressure	持续工作压力≤35MPa (MTL内置高压式系列) Continuous working pressure ≤ 35MPa(MTL built-in high pressure type series)
测杆材料 Stem material	默认:0CR18NI9 (304);可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel
电子仓外壳 Electronic silo housings	默认:0CR18NI9 (304);可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω
引线方式 Lead wire method	耐高温双绞屏蔽电缆线(默认长度:1m,也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)

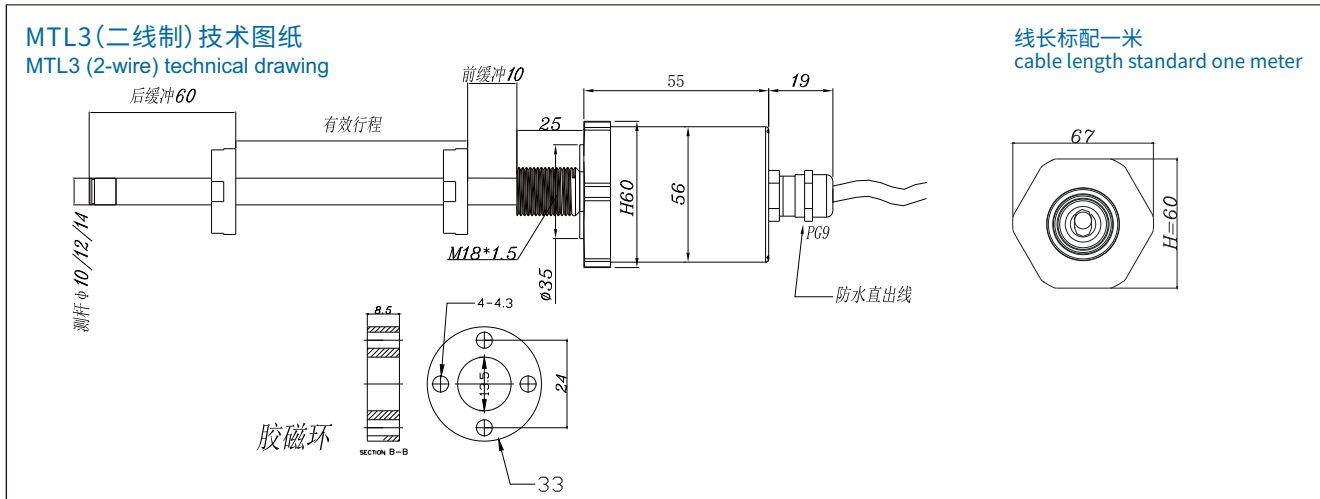
MTL3/MTL4 (二线制) 磁致伸缩位移传感器

MTL3/MTL4(2-wire) Magnetostrictive Displacement Sensors

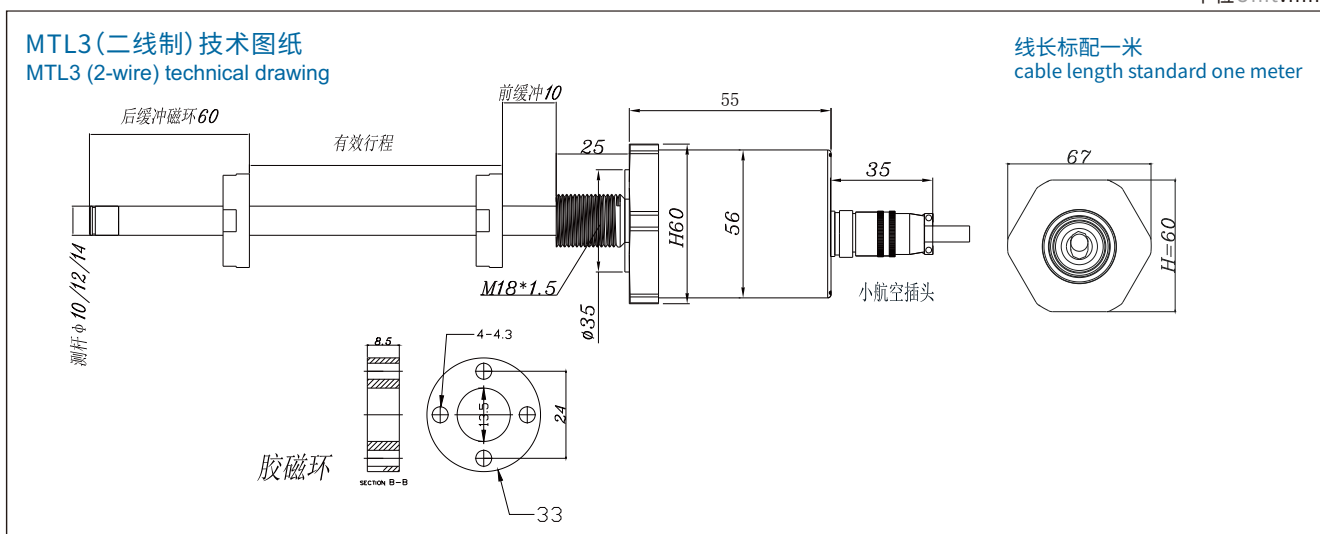
产品尺寸图 Product Dimension Drawing

MTL3/4 (二线制) 尺寸图 MTL3/4 (2-wire) Dimensional Drawing

单位 Unit: mm



单位 Unit: mm



MTL4(二线制)技术图纸
MTL4 (2-wire) technical drawing



 电气指标Electrical indicators

MTL3/MTL4(二线制) 磁致伸缩位移/液位传感器 MTL3/MTL4 (2-wire) Magnetostrictive Displacement/Level Sensor			
量程范围 Measurement range	30~5000mm	供电电压 Supply voltage	+13VDC~+26.5VDC
线性精度 linear accuracy	±1mm	迟滞 Hysteresis	优于0.002%FS Better than 0.002% FS
电子仓温度 Electronic warehouse temperature	-40℃~85℃	测杆温度 Operating temperature	-40℃~150℃
分辨率 Resolution ratio	1mm	外壳防护等级 Shell protection grade	IP65、IP67
输出信号 Output signal	二线制电流4-20mA DC(低功耗) 2-wire current 4-20mA DC (low power)		
测杆材料 Stem material	默认:0CR18NI9 (304) ;可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel		
电子仓外壳 Electronic silo housings	默认:0CR18NI9 (304) ;可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel		
负载能力 Load capacity	电流信号输出负载≤500Ω Current signal output load ≤500Ω		
引线方式 Lead wire method	耐高温双绞屏蔽电缆线 (默认长度:1m, 也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)		

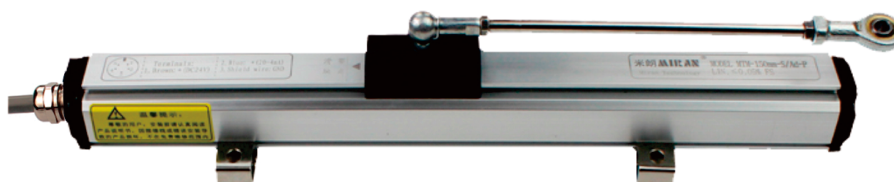
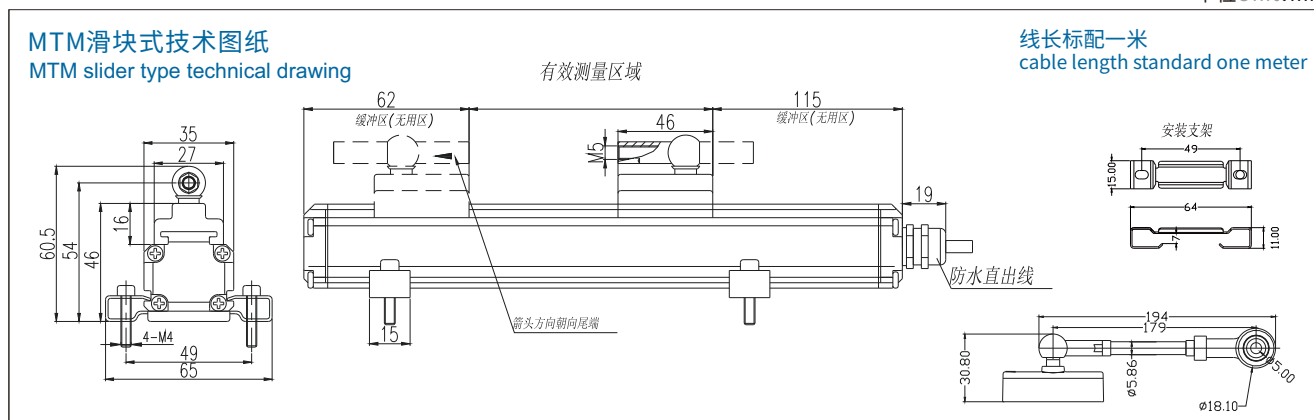
MTM (二线制) 磁致伸缩位移传感器

MTM (2-wire) Magnetostrictive Displacement Sensors

产品尺寸图Product Dimension Drawing

MTM (二线制) 尺寸图MTM (2-wire) Dimensional Drawing

单位Unit:mm



性能参数Performance Parameters

电气指标Electrical indicators

MTM (二线制) 磁致伸缩位移/液位传感器 MTM(2-wire) Magnetostrictive Displacement/Level Sensor			
量程范围 Measurement range	50~5000mm	供电电压 Supply voltage	+13VDC~+26.5VDC
输出信号 Output signal	二线制电流4-20mA DC(低功耗) 2-wire current 4-20mA DC (low power)	迟滞 Hysteresis	优于0.002%FS Better than 0.002% FS
线性精度 linear accuracy	±1mm	工作温度 Operating temperature	-40°C~85°C
分辨率 Resolution ratio	1mm	外壳防护等级 Shell protection grade	IP65
负载能力 Load capacity	电流信号输出负载≤500Ω Current signal output load ≤500Ω		
引线方式 Lead wire method	PVC屏蔽电缆线(默认长度:1m, 也可根据用户要求提供) PVC shielded cable (default length: 1m, also available upon request)		

MTM/1/2/3系列磁致伸缩位移传感器

MTM/1/2/3 Series Magnetostrictive Displacement Sensors

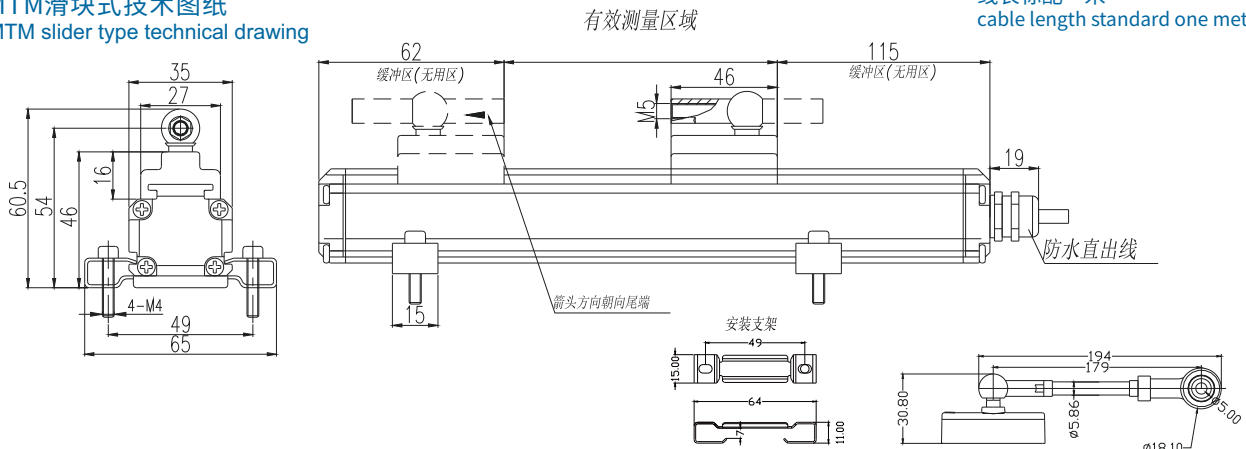
产品尺寸图Product Dimension Drawing

MTM/1/2/3尺寸图MTM/1/2/3 Dimensional Drawing

单位Unit:mm

MTM滑块式技术图纸
MTM slider type technical drawing

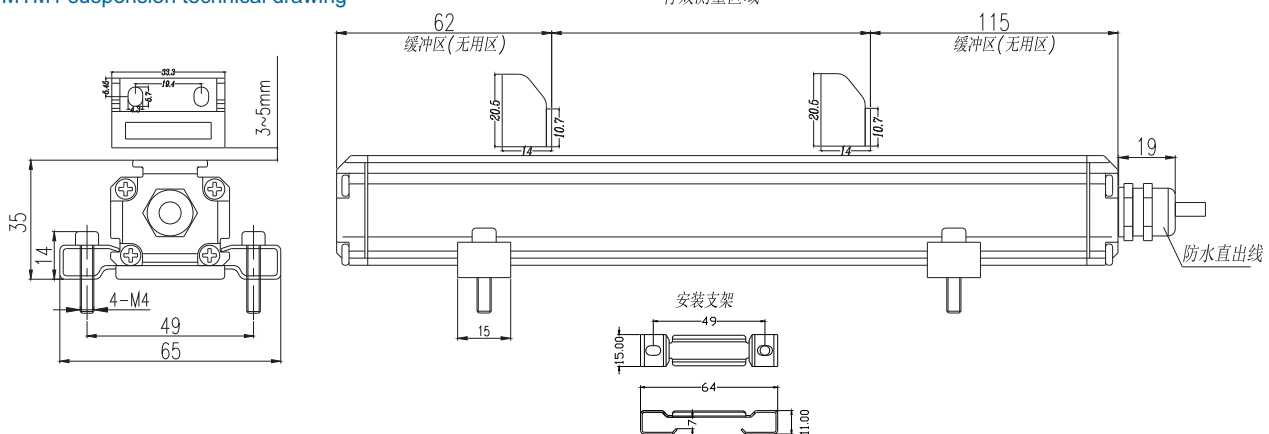
线长标配一米
cable length standard one meter



单位Unit:mm

MTM1悬浮式技术图纸
MTM1 suspension technical drawing

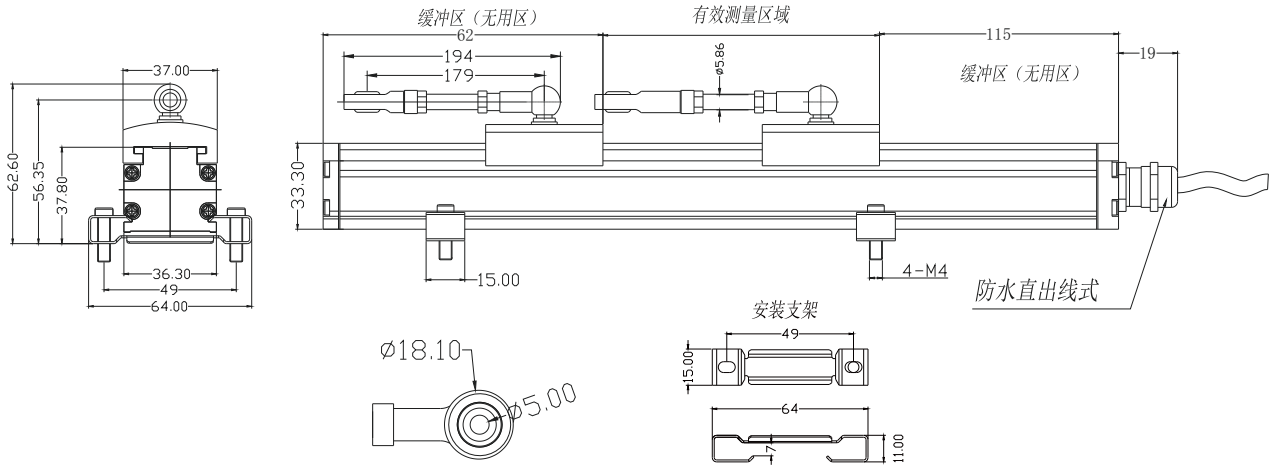
线长标配一米
cable length standard one meter



单位Unit:mm

MTM2滑块式技术图纸
MTM2 slide type technical drawing

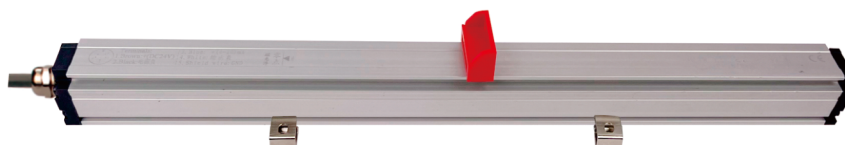
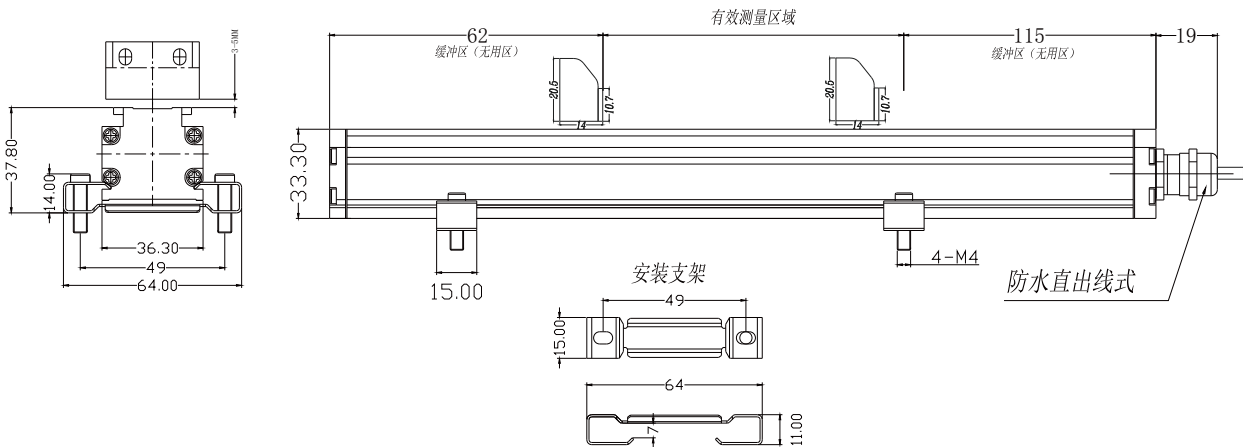
线长标配一米
cable length standard one meter



单位Unit:mm

MTM3悬浮式技术图纸
MTM3 suspension technical drawing

线长标配一米
cable length standard one meter



性能参数Performance Parameters

电气指标Electrical indicators

MTM/MTM1/MTM2/MTM3磁致伸缩位移/液位传感器 MTM/MTM1/MTM2/MTM3 Magnetostrictive Displacement/Level Sensor	
量程范围 Measurement range	50~5000mm
供电电压 Supply voltage	+12VDC~+24VDC
非线性误差 Nonlinear error	$\leq 0.05\%FS$
分辨率 Resolution ratio	$\leq 0.038mm$
迟滞 Hysteresis	$\leq 0.001\%FS$
工作电流 Operating current	$\leq 60mA$
重复性误差 Repeatability error	$\leq 0.0005\%FS$
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop

性能指标Performance indicators

外壳防护等级 Shell protection grade	IP65
温度稳定性 Temperature stability	$\leq 0.002\%/^{\circ}C$
工作温度 Operating temperature	-40 $^{\circ}C$ ~85 $^{\circ}C$
工作压力 Work pressure	持续工作压力 $\leq 35MPa$ (MTL内置高压式系列) Continuous working pressure $\leq 35MPa$ (MTL built-in high pressure type series)
电子仓外壳 Electronic silo housings	默认: 0CR18NI9 (304); 可定制为: 316不锈钢 Default: 0CR18NI9 (304); Can be customized to: 316 stainless steel
负载能力 Load capacity	电压信号输出负载 $\geq 4K\Omega$ 电流信号输出负载 $\leq 500\Omega$ Voltage signal output load $\geq 4K\Omega$ Current signal output load $\leq 500\Omega$
引线方式 Lead wire method	耐高温双绞屏蔽电缆线 (默认长度: 1m, 也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)
防爆标志 Explosion-proof symbol	防爆本安标志: Ex ia IIB T4 Ga Explosion-proof Intrinsically Safe Marking: Ex ia IIB T4 Ga

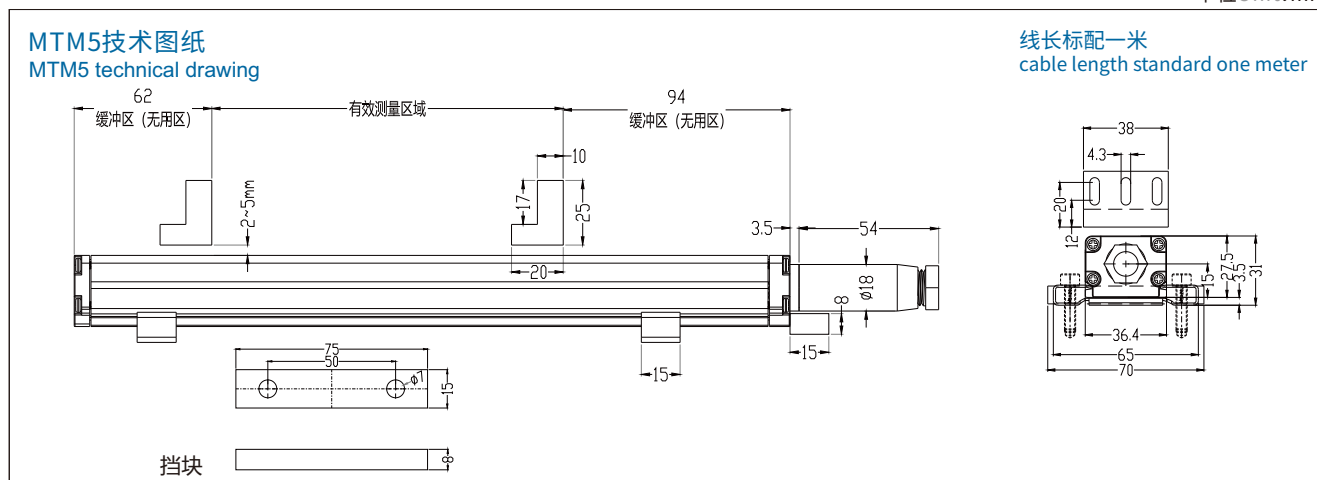
MTM5硫化机专用磁致伸缩位移传感器

MTM5 Magnetostrictive Displacement Sensor for Curing Machines

产品尺寸图Product Dimension Drawing

MTM5尺寸图MTM5 Dimensional Drawing

单位Unit:mm



性能参数Performance Parameters

电气指标Electrical indicators

MTM5硫化机专用磁致伸缩位移/液位传感器 MTM5 magnetostrictive displacement/level sensor for curing machines			
量程范围 Measurement range	30~4800mm	重复性误差 Repeatability error	优于0.005%FS Better than 0.005% FS
供电电压 Supply voltage	+24VDC	迟滞 Hysteresis	优于0.002%FS Better than 0.002% FS
分辨率 Resolution ratio	优于0.038mm Better than 0.038mm	工作温度 Operating temperature	-40°C~85°C
电子仓外壳 Electronic silo housings	6063-T6铝管(特殊定制) 6063-T6 aluminum tube (special order)	外壳防护等级 Shell protection grade	IP65
非线性误差 Nonlinear error	±0.05%FS, 200mm以下最大误差100μm ±0.05%FS, maximum error 100μm under 200mm		
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω		
输出信号 Output signal	0-5V/1-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen		
引线方式 Lead wire method	耐高温双绞屏蔽电缆线(默认长度:1m,也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)		

MTC磁致伸缩位移传感器

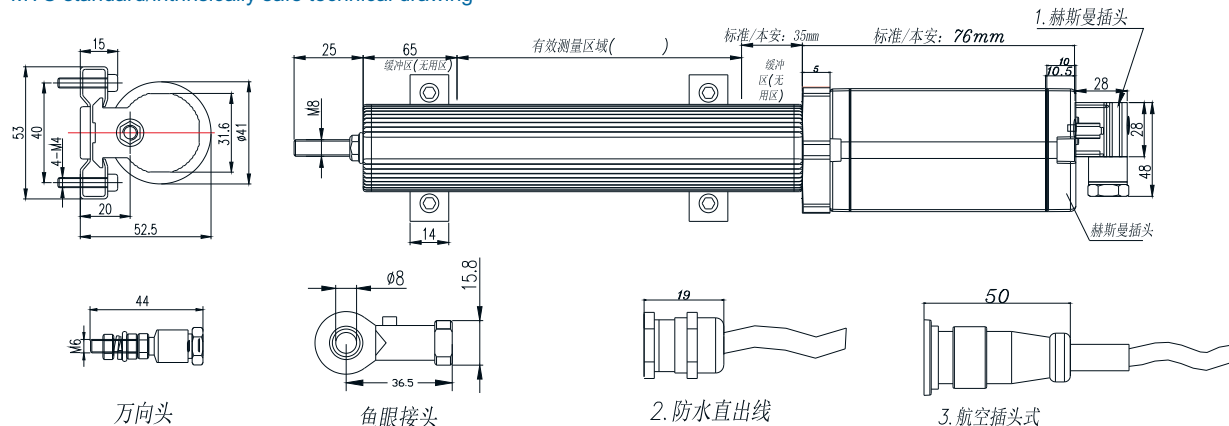
产品尺寸图Product Dimension Drawing

MTC尺寸图MTC Dimensional Drawing

单位Unit:mm

MTC标准/本安技术图纸
MTC standard/intrinsically safe technical drawing

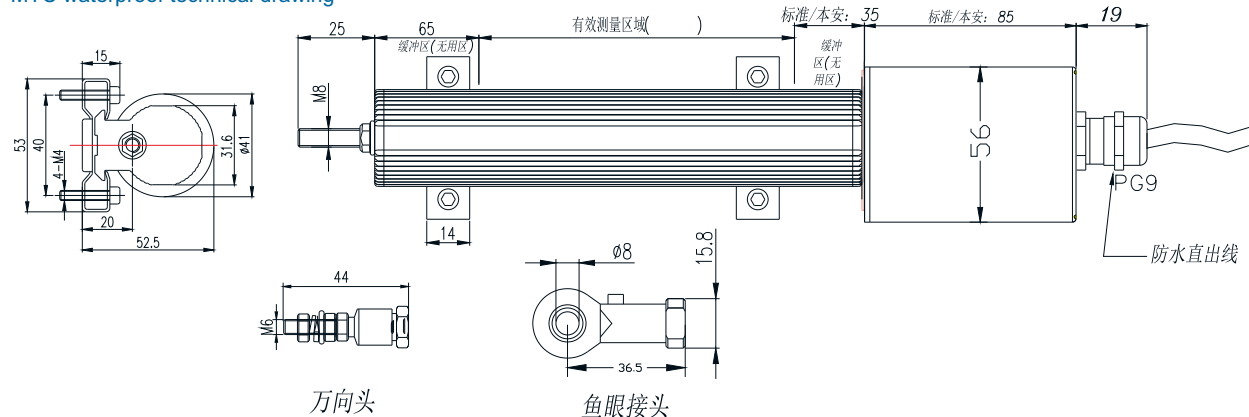
线长标配一米
cable length standard one meter



单位Unit:mm

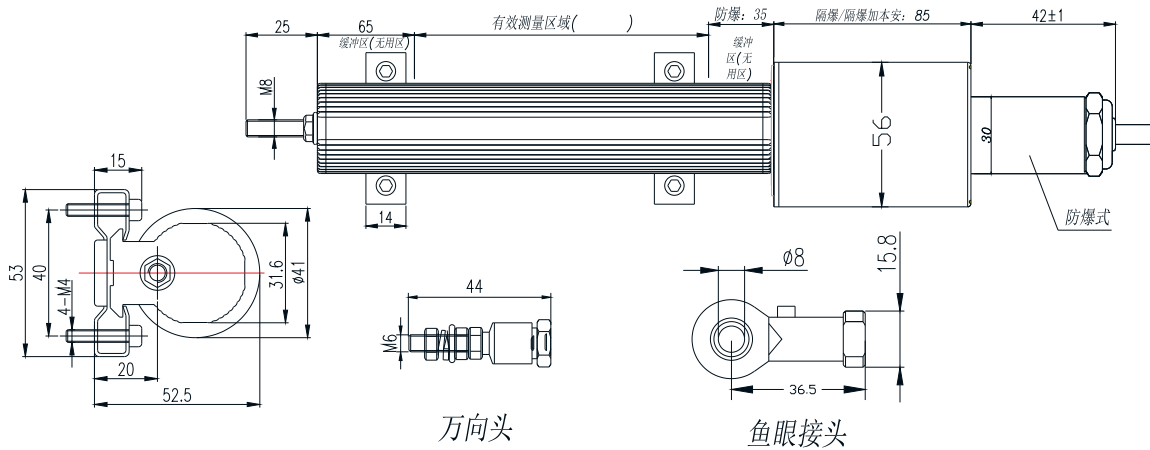
MTC防水型技术图纸
MTC waterproof technical drawing

线长标配一米
cable length standard one meter



MTC防爆/本安型技术图纸
MTC ex/intrinsically safe technical drawing

线长标配一米
cable length standard one meter



性能参数Performance Parameters

电气指标Electrical indicators

MTC磁致伸缩位移/液位传感器 MTC Magnetostrictive Displacement/Level Sensor			
量程范围 Measurement range	50~5000mm	供电电压 Supply voltage	+12VDC~+24VDC
外壳防护等级 Shell protection grade	IP65、IP67	重复性误差 Repeatability error	≤0.0005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
分辨率 Resolution ratio	≤0.038mm	工作电流 Operating current	≤60mA
温度稳定性 Temperature stability	≤0.002%/°C	工作温度 Operating temperature	-40°C~85°C
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop		
工作压力 Work pressure	持续工作压力≤35MPa (MTL内置高压式系列) Continuous working pressure ≤ 35MPa (MTL built-in high pressure type series)		
电子仓外壳 Electronic silo housings	默认: 0CR18NI9 (304); 可定制为: 316不锈钢 Default: 0CR18NI9 (304); Can be customized to: 316 stainless steel		
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω		
引线方式 Lead wire method	耐高温双绞屏蔽电缆线 (默认长度: 1m, 也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)		
防爆标志 Explosion-proof symbol	防爆标志: Ex d IIB T5 Gb/Ex tD A21 IP65 T80°C 防爆本安标志: Ex ia IIB T4 Ga Explosion-proof Marking: Ex d IIB T5 Gb/Ex tD A21 IP65 T80°C Explosion-proof Intrinsically Safe Marking: Ex ia IIB T4 Ga		

MTF磁致伸缩位移传感器

MTF Magnetostrictive Displacement Sensor

产品尺寸图Product Dimension Drawing

MTF尺寸图MTF Dimensional Drawing

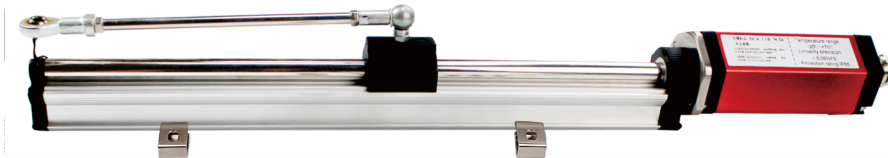
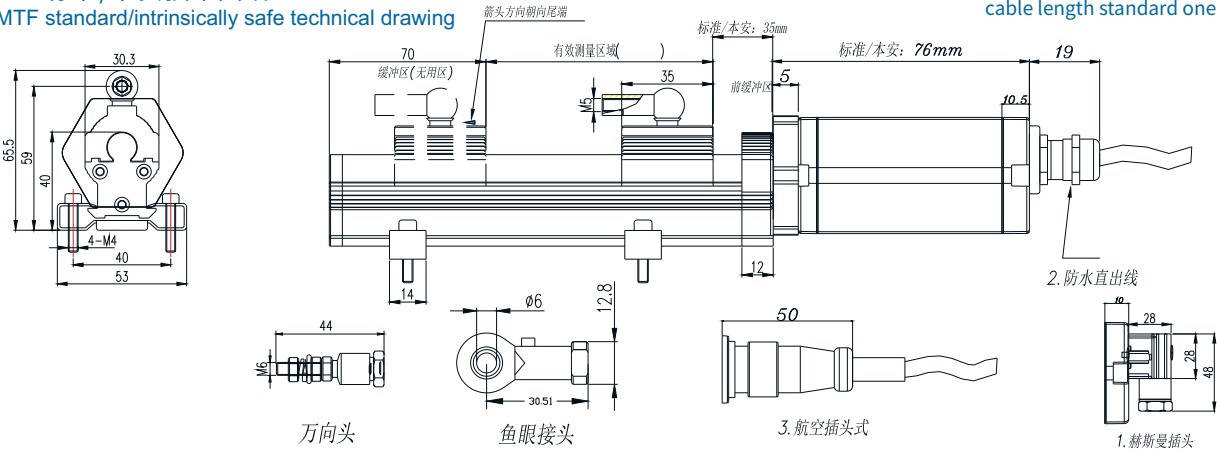
单位Unit:mm

MTF标准/本安技术图纸

MTF standard/intrinsically safe technical drawing

线长标配一米

cable length standard one meter



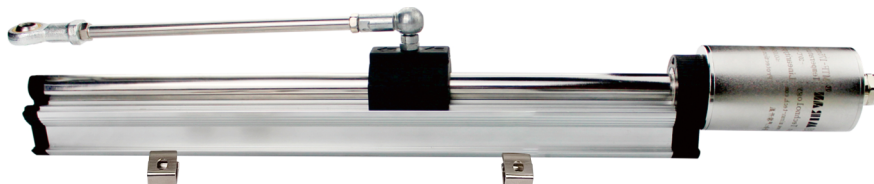
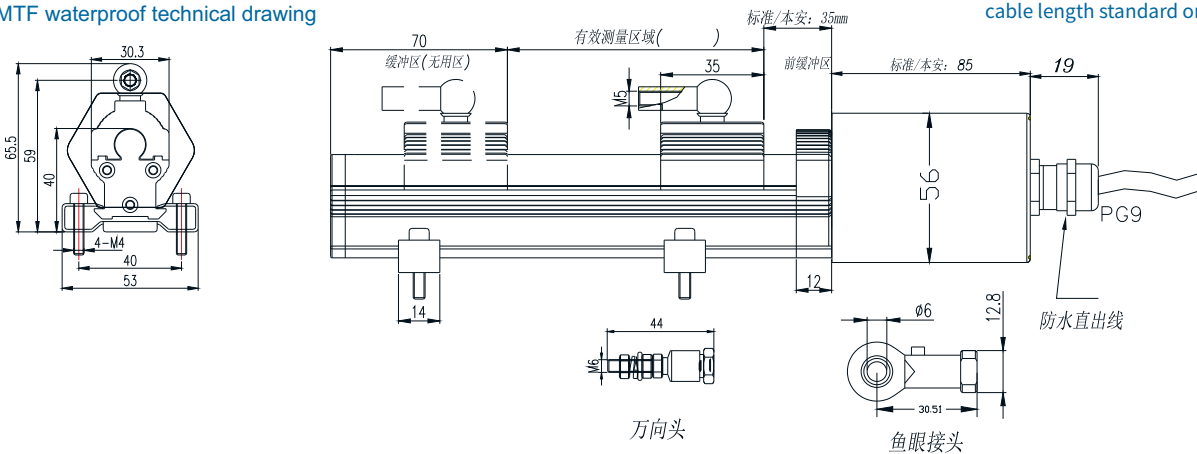
单位Unit:mm

MTF防水型技术图纸

MTF waterproof technical drawing

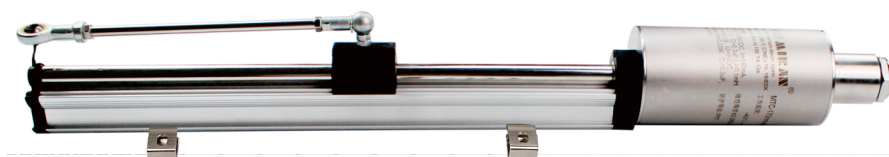
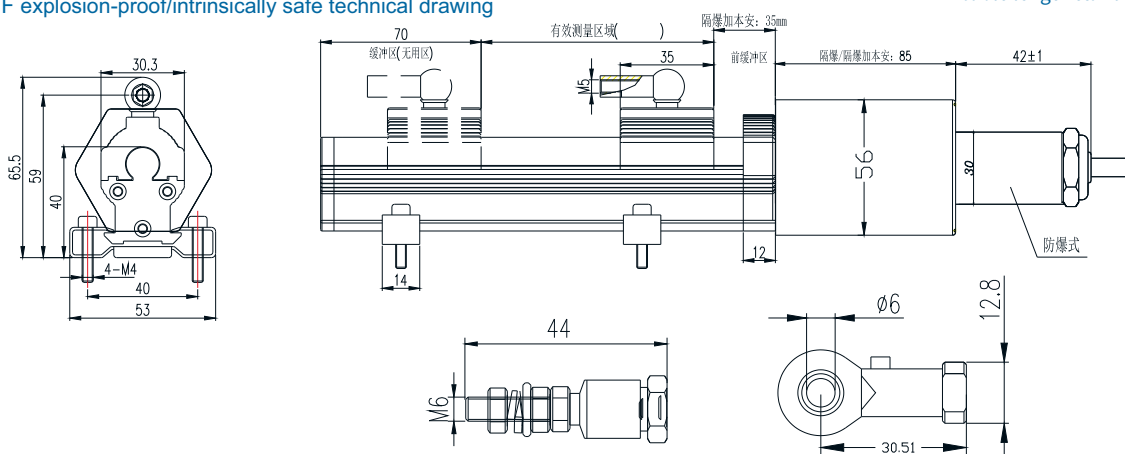
线长标配一米

cable length standard one meter



MTF防爆/本安型技术图纸
MTF explosion-proof/intrinsically safe technical drawing

线长标配一米
cable length standard one meter



性能参数Performance Parameters

电气指标Electrical indicators

MTF磁致伸缩位移/液位传感器 MTF Magnetostrictive Displacement/Level Sensor			
量程范围 Measurement range	50~5000mm	供电电压 Supply voltage	+12VDC~+24VDC
外壳防护等级 Shell protection grade	IP65、IP67	重复性误差 Repeatability error	≤0.0005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
分辨率 Resolution ratio	标准: ≤0.038mm Standard: ≤0.038mm	工作电流 Operating current	≤60mA
温度稳定性 Temperature stability	≤0.002%/°C	工作温度 Operating temperature	-40°C~85°C
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop		
工作压力 Work pressure	持续工作压力≤35MPa (MTL内置高压式系列) Continuous working pressure ≤ 35MPa (MTL built-in high pressure type series)		
电子仓外壳 Electronic silo housings	默认: 0CR18NI9 (304); 可定制为: 316不锈钢 Default: 0CR18NI9 (304); Can be customized to: 316 stainless steel		
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω		
引线方式 Lead wire method	耐高温双绞屏蔽电缆线 (默认长度: 1m, 也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)		
防爆标志 Explosion-proof symbol	防爆标志: Ex d IIB T5 Gb/Ex tD A21 IP65 T80°C 防爆本安标志: Ex ia IIB T4 Ga Explosion-proof Marking: Ex d IIB T5 Gb/Ex tD A21 IP65 T80°C Explosion-proof Intrinsically Safe Marking: Ex ia IIB T4 Ga		

MTF1/2磁致伸缩位移传感器

MTF1/2 Magnetostrictive Displacement Sensor

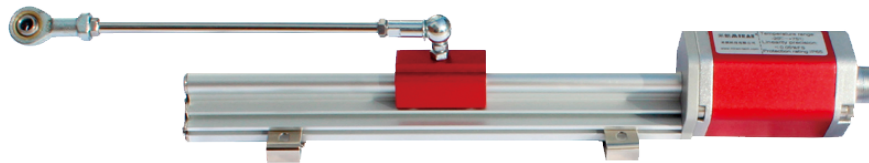
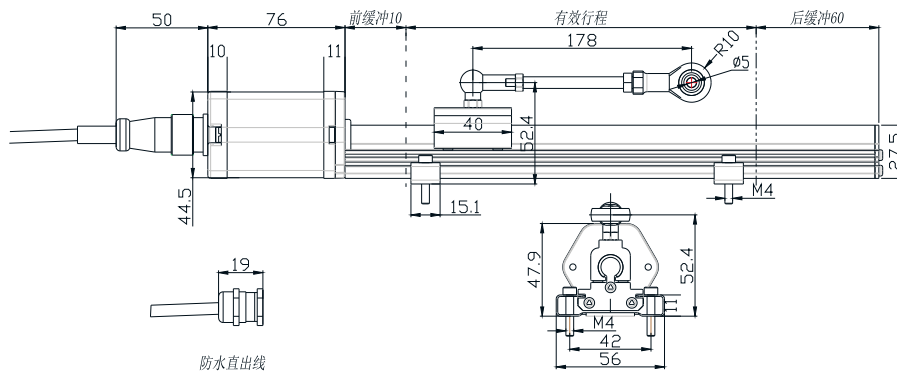
产品尺寸图Product Dimension Drawing

MTF1/2尺寸图MTF1/2 Dimensional Drawing

单位Unit:mm

MTF1滑块式技术图纸
MTF1 slider type technical drawing

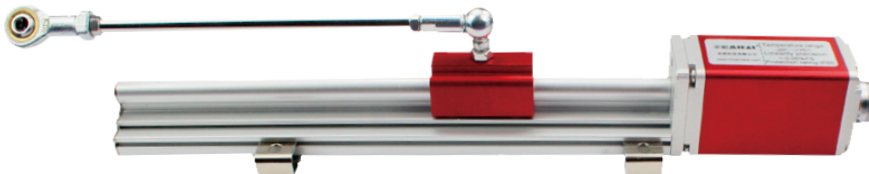
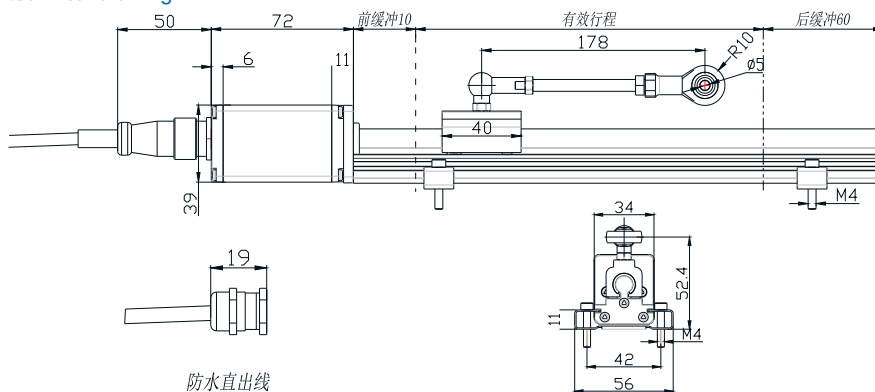
线长标配一米
cable length standard one meter



单位Unit:mm

MTF2滑块式技术图纸
MTF2 slider type technical drawing

线长标配一米
cable length standard one meter



性能参数 Performance Parameters

电气指标 Electrical indicators

MTF1/MTF2磁致伸缩位移/液位传感器 MTF1/MTF2 Magnetostrictive Displacement/Level Sensor	
量程范围 Measurement range	50~5000mm
供电电压 Supply voltage	+12VDC~+24VDC
非线性误差 Nonlinear error	≤0.05%FS
分辨率 Resolution ratio	标准: ≤0.038mm Standard: ≤0.038mm
迟滞 Hysteresis	≤0.001%FS
工作电流 Operating current	≤60mA
重复性误差 Repeatability error	≤0.0005%FS
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop

性能指标 Performance indicators

外壳防护等级 Shell protection grade	IP65、IP67
温度稳定性 Temperature stability	≤0.002%/°C
工作温度 Operating temperature	-40°C~85°C
工作压力 Work pressure	持续工作压力≤35MPa (MTL内置高压式系列) Continuous working pressure ≤ 35MPa (MTL built-in high pressure type series)
电子仓外壳 Electronic silo housings	默认: 0CR18NI9 (304); 可定制为: 316不锈钢 Default: 0CR18NI9 (304); Can be customized to: 316 stainless steel
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω
引线方式 Lead wire method	耐高温双绞屏蔽电缆线 (默认长度: 1m, 也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)
防爆标志 Explosion-proof symbol	防爆标志: Ex d IIB T5 Gb/Ex tD A21 IP65 T80°C 防爆本安标志: Ex ia IIB T4 Ga Explosion-proof Marking: Ex d IIB T5 Gb/Ex tD A21 IP65 T80°C Explosion-proof Intrinsically Safe Marking: Ex ia IIB T4 Ga

MTG磁致伸缩位移传感器

MTG Magnetostrictive Displacement Sensor

产品尺寸图Product Dimension Drawing

MTG尺寸图MTG Dimensional Drawing

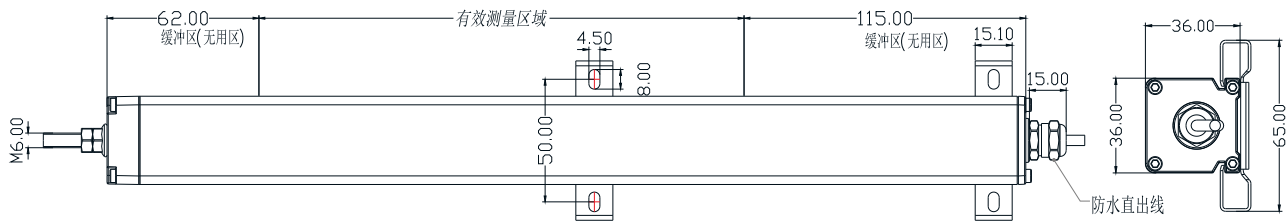
单位Unit:mm

MTG防水接头技术图纸

MTG waterproof joints technical drawing

线长标配一米

cable length standard one meter



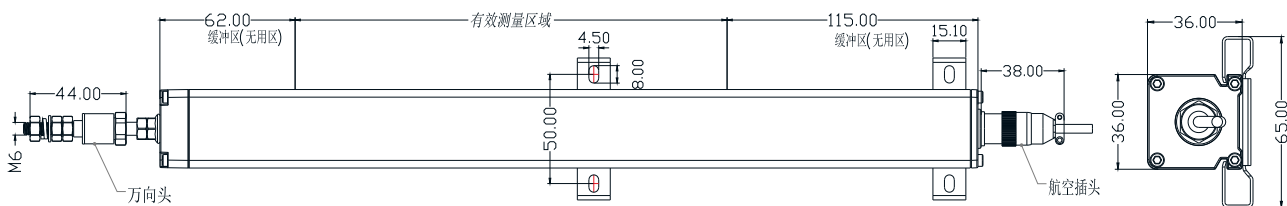
单位Unit:mm

MTG航空插头技术图纸

MTG aviation plugs technical drawing

线长标配一米

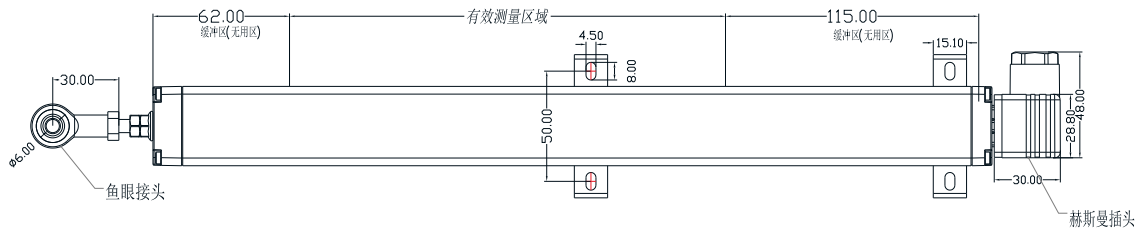
cable length standard one meter



单位Unit:mm

MTG赫斯曼插头技术图纸
MTG hirschmann plug technical drawing

线长标配一米
cable length standard one meter



性能参数Performance Parameters

电气指标Electrical indicators

MTG磁致伸缩位移/液位传感器 MTG magnetostrictive displacement/level sensors			
供电电压 Supply voltage	+12VDC~+24VDC	量程范围 Measurement range	50~5000mm
重复性误差 Repeatability error	≤0.0005%FS	迟滞 Hysteresis	≤0.001%FS
非线性误差 Nonlinear error	≤0.05%FS	工作电流 Operating current	≤60mA
分辨率 Resolution ratio	≤0.038mm	工作温度 Operating temperature	-40℃~85℃
温度稳定性 Temperature stability	≤0.002%/℃	外壳防护等级 Shell protection grade	IP65
电子仓外壳 Electronic silo housings	默认:阳极氧化铝;可特殊定制 Default: anodized aluminum; Special order available		
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop		
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω		
引线方式 Lead wire method	耐高温双绞屏蔽电缆线(默认长度:1m,也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)		

MPM磁致伸缩位移传感器

MPM Magnetostrictive Displacement Sensor

产品尺寸图Product Dimension Drawing

MPM尺寸图MPM Dimensional Drawing

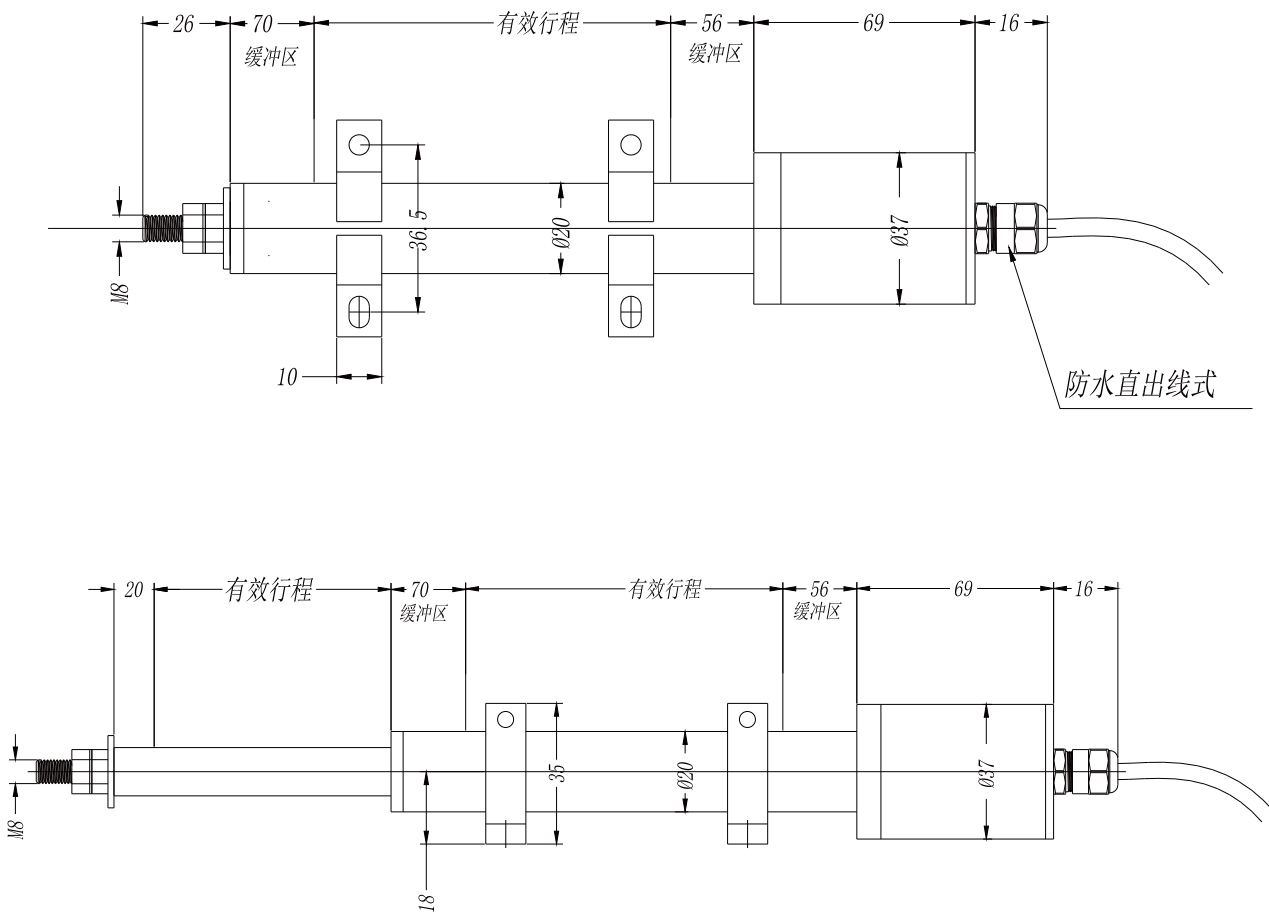
单位Unit:mm

MPM直出线技术图纸

MPM straight out of the line technical drawing

线长标配一米

cable length standard one meter



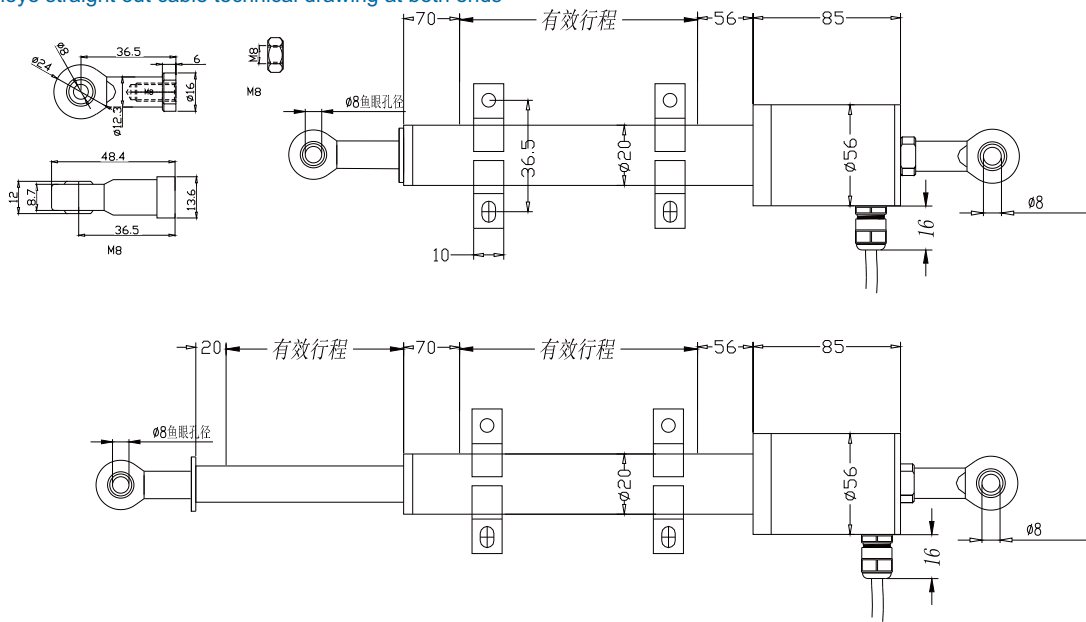
单位Unit:mm

MPM两端鱼眼直出线技术图纸

MPM fisheye straight out cable technical drawing at both ends

线长标配一米

cable length standard one meter



性能参数Performance Parameters

电气指标Electrical indicators

MPM磁致伸缩位移/液位传感器 MPM Magnetostrictive Displacement/Level Sensor			
量程范围 Measurement range	50~5000mm	供电电压 Supply voltage	+12VDC~+24VDC
外壳防护等级 Shell protection grade	IP67	重复性误差 Repeatability error	≤0.0005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
分辨率 Resolution ratio	≤0.038mm	工作电流 Operating current	≤60mA
温度稳定性 Temperature stability	≤0.002%/°C	工作温度 Operating temperature	-40°C~85°C
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop		
电子仓外壳 Electronic silo housings	默认:0CR18NI9(304);可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel		
工作压力 Work pressure	持续工作压力≤35MPa(MTL内置高压式系列) Continuous working pressure ≤ 35MPa(MTL built-in high pressure type series)		
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω		
引线方式 Lead wire method	耐高温双绞屏蔽电缆线(默认长度:1m,也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)		

MTS磁致伸缩位移传感器

MTS Magnetostrictive Displacement Sensor

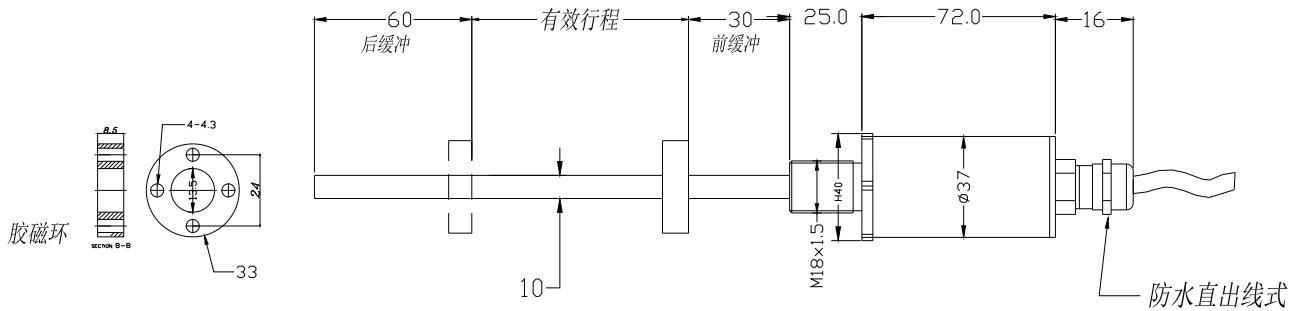
产品尺寸图Product Dimension Drawing

MTS尺寸图MTS Dimensional Drawing

单位Unit:mm

MTS磁环式技术图纸
MTS toroidal technical drawing

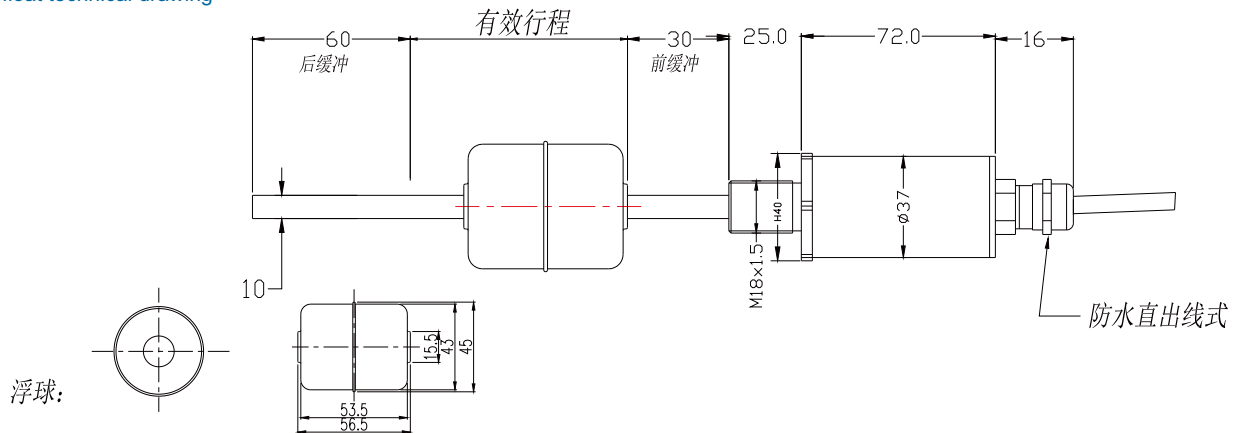
线长标配一米
cable length standard one meter



单位Unit:mm

MTS浮球式技术图纸
MTS float technical drawing

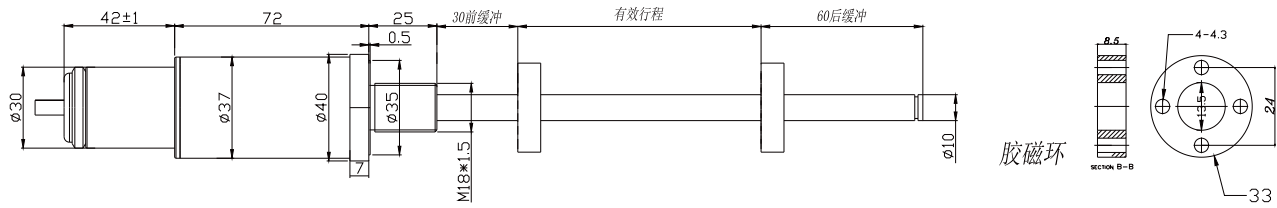
线长标配一米
cable length standard one meter



单位Unit:mm

MTS深水型技术图纸
MTS deepwater technical drawing

线长标配一米
cable length standard one meter



性能参数Performance Parameters

电气指标Electrical indicators

MTS磁致伸缩位移/液位传感器 MTS Magnetostrictive Displacement/Level Sensor			
量程范围 Measurement range	50~5000mm	供电电压 Supply voltage	+12VDC~+24VDC
温度稳定性 Temperature stability	≤0.002%/°C	重复性误差 Repeatability error	≤0.0005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
分辨率 Resolution ratio	≤0.038mm	工作电流 Operating current	≤60mA
电子仓温度 Electronic warehouse temperature	-40°C~85°C	测杆温度 Operating temperature	-40°C~150°C
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop		
外壳防护等级 Shell protection grade	IP65、IP68(防爆格兰头, 深水型可耐压10MPa) IP65、IP68(Explosion-proof glands, deep water type can withstand pressure 10MPa)		
工作压力 Work pressure	持续工作压力≤35MPa (MTL内置高压式系列) Continuous working pressure ≤ 35MPa(MTL built-in high pressure type series)		
测杆材料 Stem material	默认:0CR18NI9 (304); 可定制为:316不锈钢 Default: 0CR18NI9 (304); Can be customized to: 316 stainless steel		
电子仓外壳 Electronic silo housings	默认:0CR18NI9 (304); 可定制为:316不锈钢 Default: 0CR18NI9 (304); Can be customized to: 316 stainless steel		
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω		
引线方式 Lead wire method	耐高温双绞屏蔽电缆线(默认长度:1m, 也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)		

注: MTS磁环式、MTS浮球式外壳防护等级为IP65, MTS深水型外壳防护等级为IP68。

Note: MTS magnetic ring type, MTS float type shell protection grade for IP65, MTS deep water type shell protection grade for IP68.

MFTS磁致伸缩位移传感器

MFTS Magnetostrictive Displacement Sensor

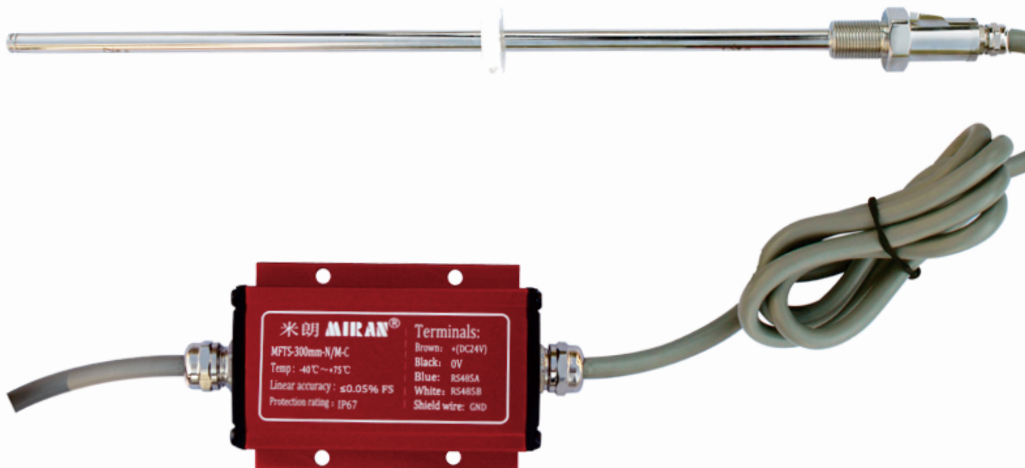
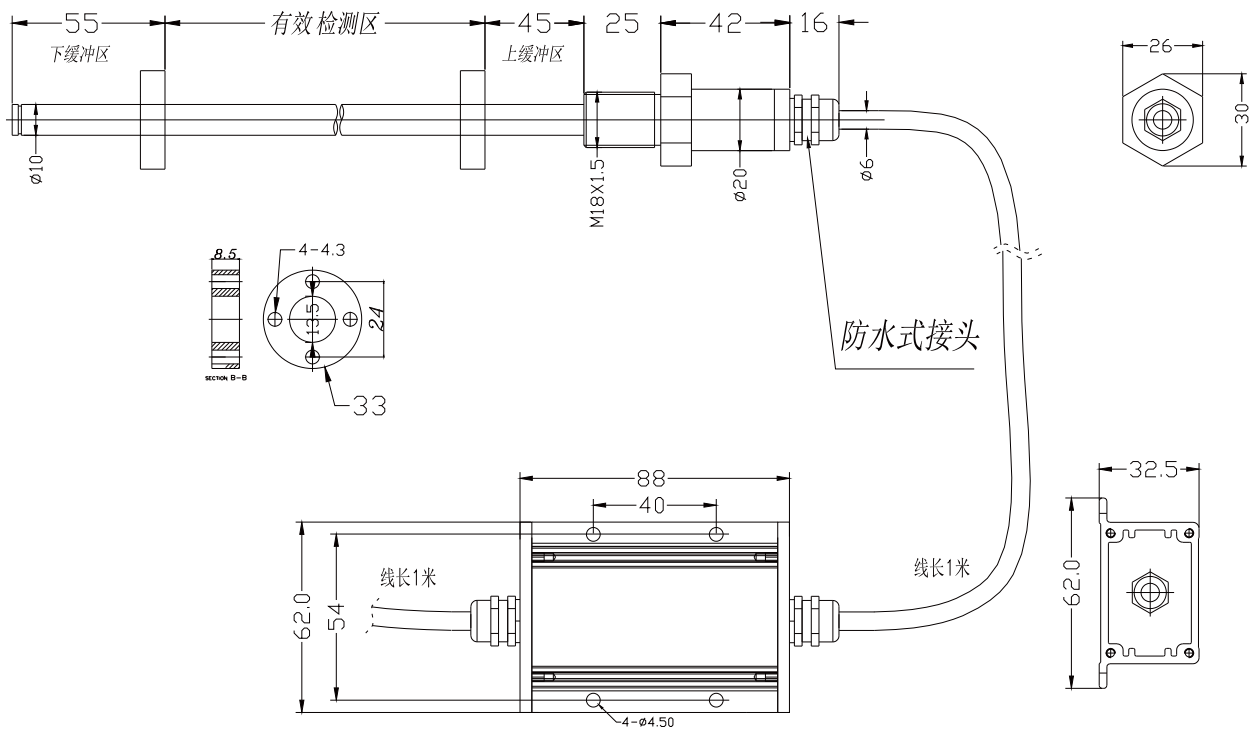
产品尺寸图Product Dimension Drawing

MFTS尺寸图MFTS Dimensional Drawing

单位Unit:mm

MFTS防水接头出线技术图纸
MFTS waterproof connector outlet technical drawing

线长标配一米
cable length standard one meter



性能参数 Performance Parameters

电气指标 Electrical indicators

MFTS磁致伸缩位移/液位传感器 MFTS Magnetostrictive Displacement/Level Sensor	
量程范围 Measurement range	50~5000mm
迟滞 Hysteresis	≤0.001%FS
非线性误差 Nonlinear error	≤0.05%FS
分辨率 Resolution ratio	≤0.038mm
工作电流 Operating current	≤60mA
供电电压 Supply voltage	+12VDC~+24VDC
重复性误差 Repeatability error	≤0.0005%FS
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop

性能指标 Performance indicators

外壳防护等级 Shell protection grade	IP65
电子仓温度 Electronic warehouse temperature	-40°C~85°C
测杆温度 Operating temperature	-40°C~150°C
测杆材料 Stem material	默认:0CR18NI9(304);可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel
电子仓外壳 Electronic silo housings	默认:0CR18NI9(304);可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel
工作压力 Work pressure	持续工作压力≤35MPa (MTL内置高压式系列) Continuous working pressure ≤ 35MPa(MTL built-in high pressure type series)
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω
引线方式 Lead wire method	耐高温双绞屏蔽电缆线(默认长度:1m,也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)

MF磁致伸缩位移传感器

MF Magnetostrictive Displacement Sensor

产品尺寸图Product Dimension Drawing

MF尺寸图MF Dimensional Drawing

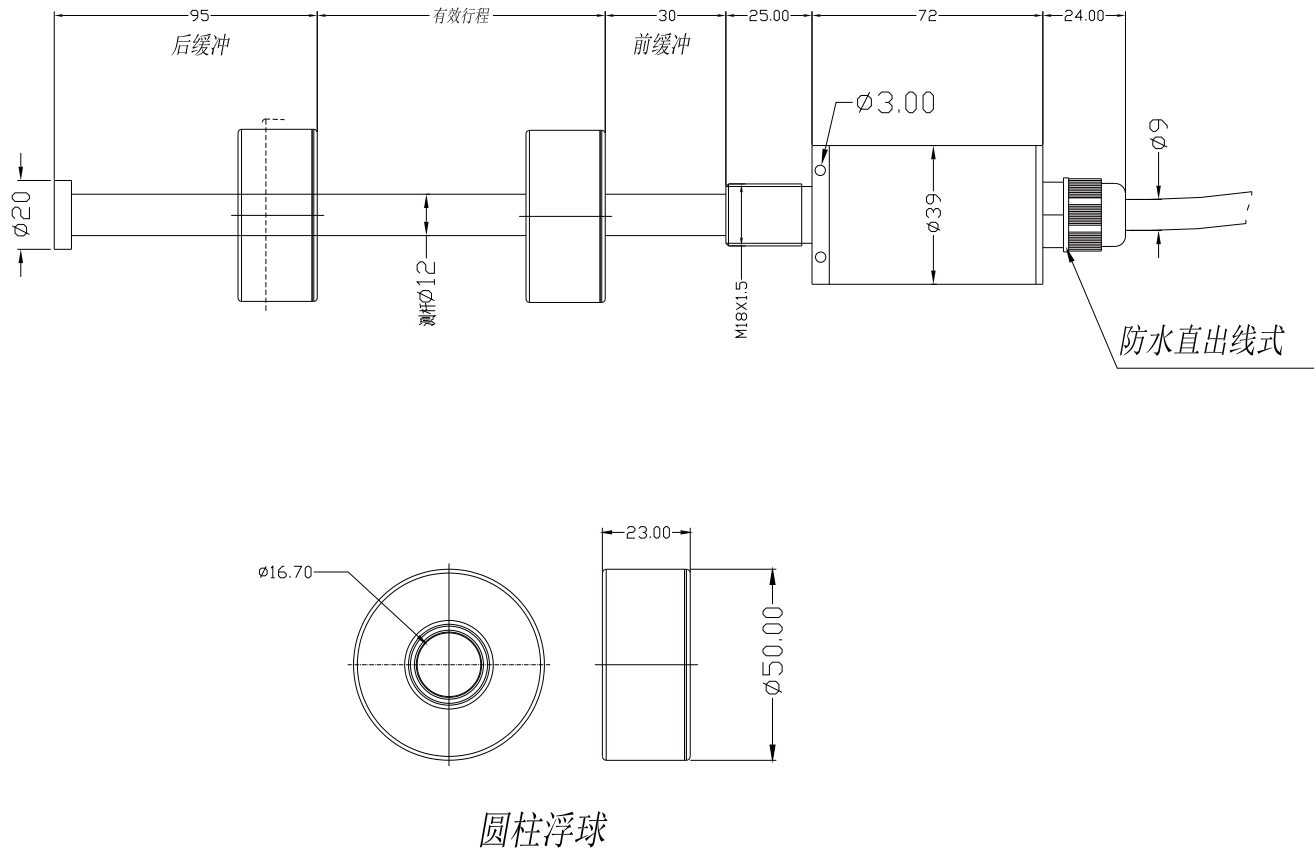
单位Unit:mm

MF圆柱浮球技术图纸

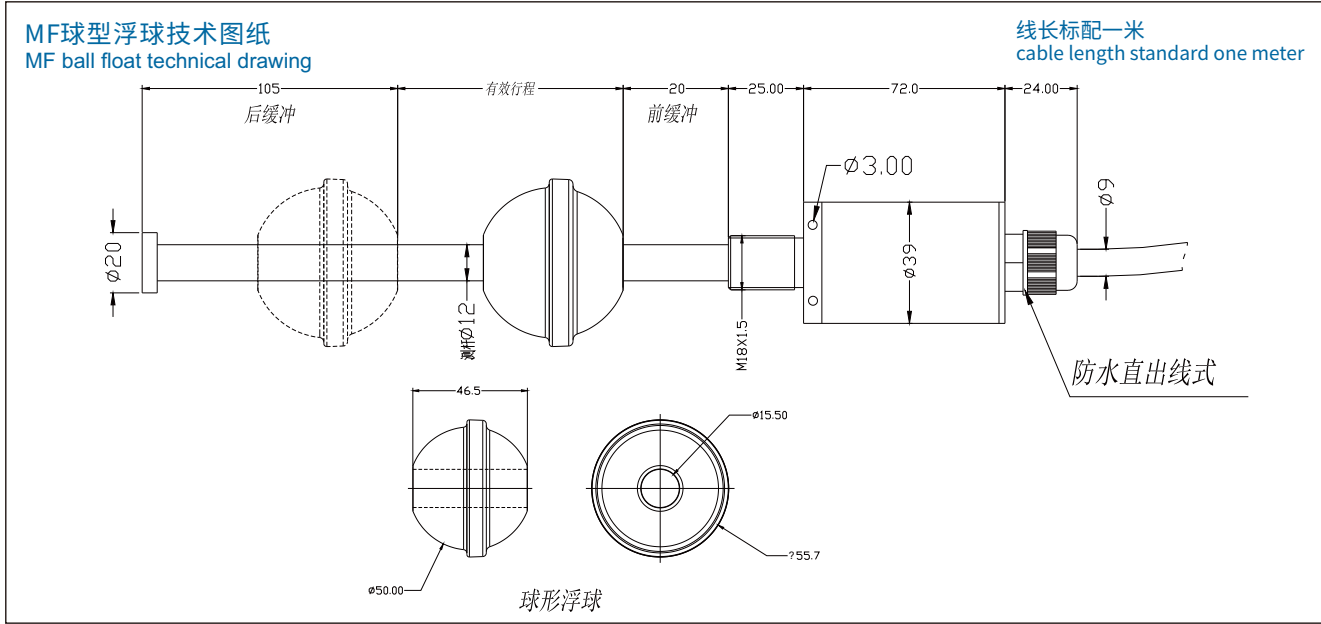
MF cylindrical float technical drawing

线长标配一米

cable length standard one meter



单位Unit:mm



性能参数Performance Parameters

电气指标Electrical indicators

MF磁致伸缩位移/液位传感器 MF Magnetostrictive Displacement/Level Sensor			
量程范围 Measurement range	50~5000mm	供电电压 Supply voltage	+12VDC~+24VDC
外壳防护等级 Shell protection grade	IP65	重复性误差 Repeatability error	≤0.0005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
分辨率 Resolution ratio	≤0.038mm	工作电流 Operating current	≤60mA
温度稳定性 Temperature stability	≤0.002%/°C	电子仓外壳 Electronic silo housings	聚四氟乙烯 Polytetrafluoroethylene
电子仓温度 Electronic warehouse temperature	-40°C~85°C	测杆温度 Operating temperature	-40°C~150°C
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop		
工作压力 Work pressure	持续工作压力≤5MPa (MTL内置高压式系列) Continuous working pressure ≤ 5MPa (MTL built-in high pressure type series)		
测杆材料 Stem material	默认: 聚四氟乙烯/0CR18NI9 (304) ; 可定制为: 316不锈钢 Default: PTFE/0CR18NI9 (304); Can be customized to: 316 stainless steel		
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω		
引线方式 Lead wire method	耐高温双绞屏蔽电缆线 (默认长度: 1m, 也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)		

注: 测杆材料内部为不锈钢材质, 外部为聚四氟乙烯材质。

Note: Stem material is stainless steel internally and PTFE externally.

MR磁致伸缩位移传感器

MR Magnetostrictive Displacement Sensor

产品尺寸图Product Dimension Drawing

MR尺寸图MR Dimensional Drawing

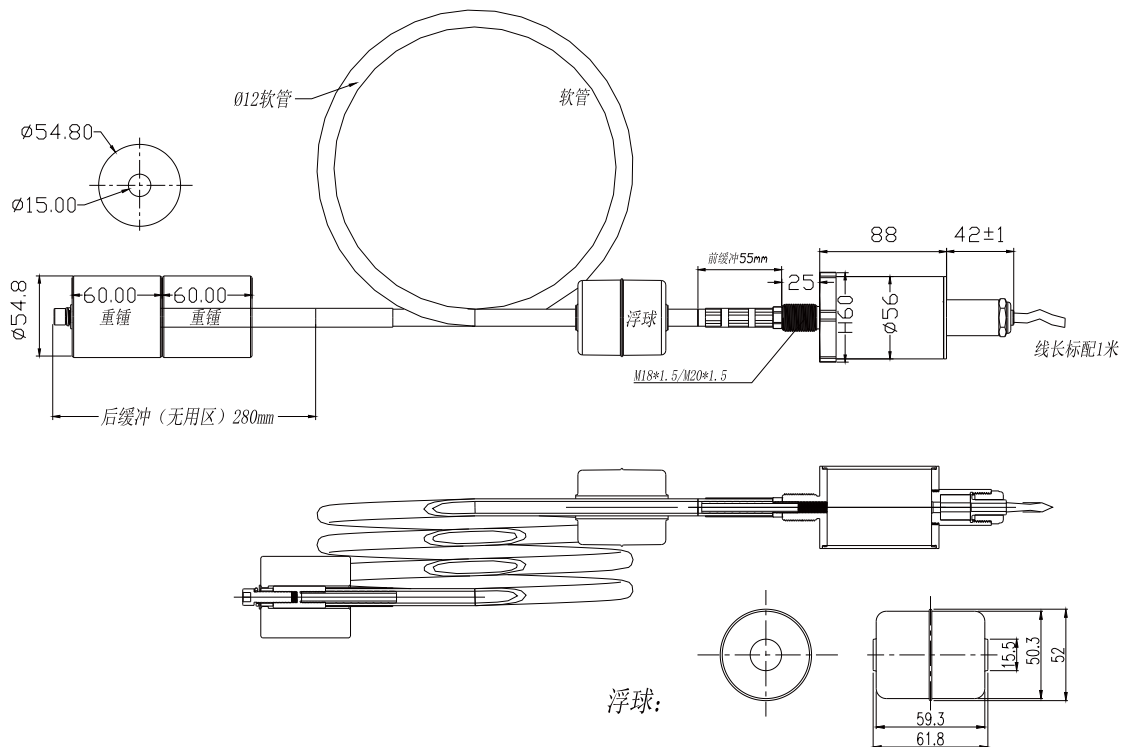
单位Unit:mm

MR浮球软缆式技术图纸

MR float flex cable type technical drawing

线长标配一米

cable length standard one meter



性能参数 Performance Parameters

电气指标 Electrical indicators

MR磁致伸缩位移/液位传感器 MR Magnetostrictive Displacement/Level Sensor	
量程范围 Measurement range	50~11000mm
供电电压 Supply voltage	+12VDC~+24VDC
非线性误差 Nonlinear error	≤0.05%FS
分辨率 Resolution ratio	≤0.038mm
迟滞 Hysteresis	≤0.001%FS
工作电流 Operating current	≤60mA
重复性误差 Repeatability error	≤0.0005%FS
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop

性能指标 Performance indicators

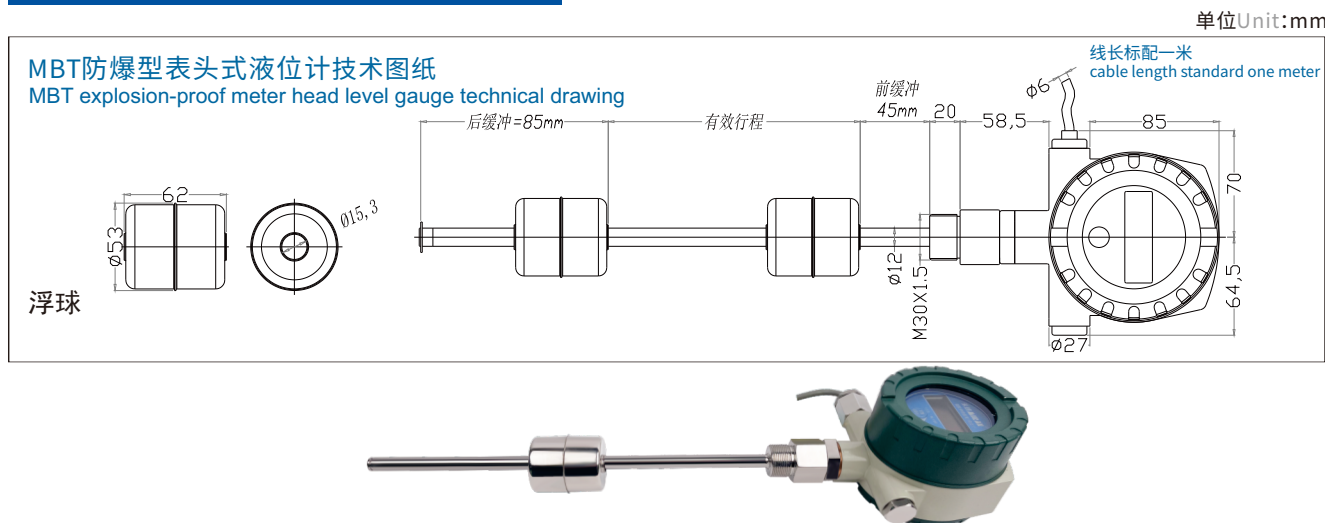
温度稳定性 Temperature stability	≤0.002%/°C
工作压力 Work pressure	持续工作压力≤5MPa Continuous working pressure ≤ 5MPa
电子仓温度 Electronic warehouse temperature	-40°C~85°C
测杆温度 Operating temperature	-40°C~150°C
外壳防护等级 Shell protection grade	IP65、IP67
软缆材料 Flexible cable material	默认:0CR18NI9 (304) ;可定制为:316不锈钢编织网 Default: 0CR18NI9 (304); Can be customized to: 316 stainless steel woven wire mesh
电子仓外壳 Electronic silo housings	默认:0CR18NI9 (304) ;可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω
引线方式 Lead wire method	耐高温双绞屏蔽电缆线(默认长度:1m,也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)
防爆标志 Explosion-proof symbol	防爆标志:Ex d IIB T5 Gb Explosion-proof marking: Ex d IIB T5 Gb

MBT防爆型温度/液位磁致伸缩传感器

MBT Explosion-proof Temperature/level Magnetostrictive Sensors

产品尺寸图Product Dimension Drawing

MBT尺寸图MBT Dimensional Drawing

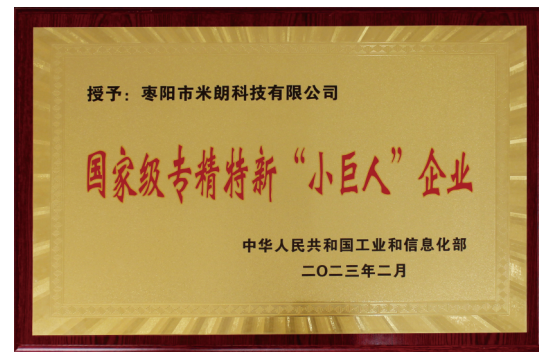
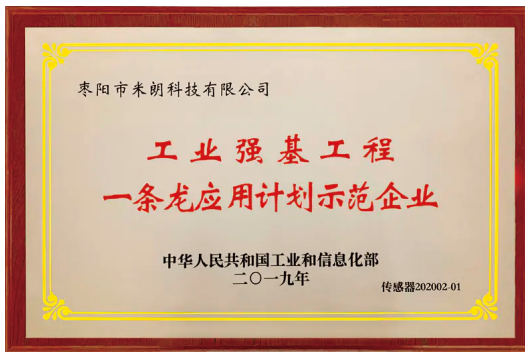
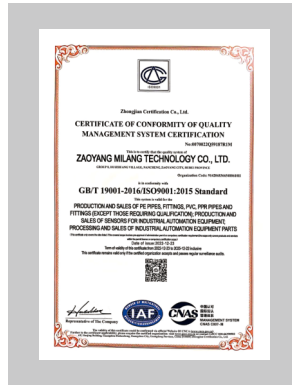
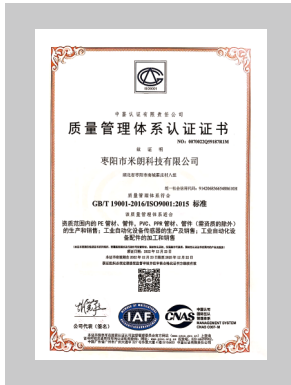


性能参数Performance Parameters

电气指标Electrical indicators

MBT防爆型温度/液位磁致伸缩传感器 MBT Explosion-Proof Magnetostrictive Sensors for Temperature/Liquid Levels			
量程范围 Measurement range	30~5000mm	供电电压 Supply voltage	+24VDC
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/SSI/ MODBUS RTU/CANopen/start-stop	重复性误差 Repeatability error	≤0.0005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
分辨率 Resolution ratio	≤0.038mm	工作电流 Operating current	≤60mA
温度稳定性 Temperature stability	≤0.002%/°C	外壳防护等级 Shell protection grade	IP65、IP67
电子仓温度 Electronic warehouse temperature	-40°C~85°C	测杆温度 Operating temperature	-40°C~150°C
工作压力 Work pressure	持续工作压力≤35MPa (MTL内置高压式系列) Continuous working pressure ≤ 35MPa(MTL built-in high pressure type series)		
测杆材料 Stem material	默认:0CR18NI9 (304);可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel		
电子仓外壳 Electronic silo housings	默认:0CR18NI9 (304);可定制为:316不锈钢 Default: 0CR18NI9 (304);Can be customized to: 316 stainless steel		
负载能力 Load capacity	电压信号输出负载≥4KΩ 电流信号输出负载≤500Ω Voltage signal output load ≥4KΩ Current signal output load ≤500Ω		
引线方式 Lead wire method	耐高温双绞屏蔽电缆线(默认长度:1m,也可根据用户要求提供) High temperature resistant twisted shielded cable (default length: 1m, also available upon request)		
防爆标志 Explosion-proof symbol	防爆标志:Ex d IIB T5 Gb/Ex tD A21 IP65 T80°C 防爆本安标志:Ex ia IIB T4 Ga Explosion-proof Marking: Ex d IIB T5 Gb/Ex tD A21 IP65 T80°C Explosion-proof Intrinsically Safe Marking: Ex ia IIB T4 Ga		

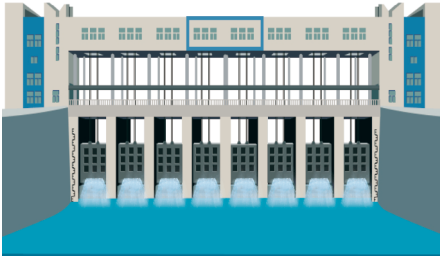
荣誉证书Certificate of Honor



检测证书Test Certificate



应用领域Areas of application



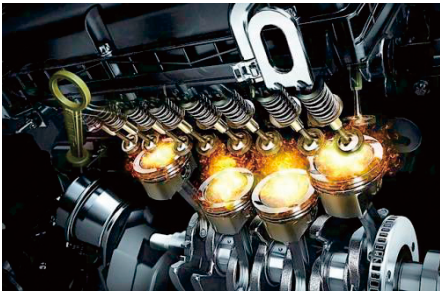
• 闸门开度控制
Gate Opening Control



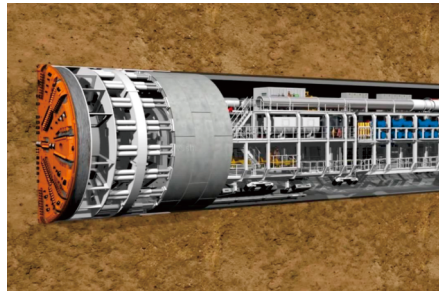
• 吹瓶机油缸位置反馈
Blowing Machine Cylinder Position Feedback



• 液压机升降位置监测
Hydraulic Press Lift Position Monitoring



• 活塞位置检测
Piston Position Detection



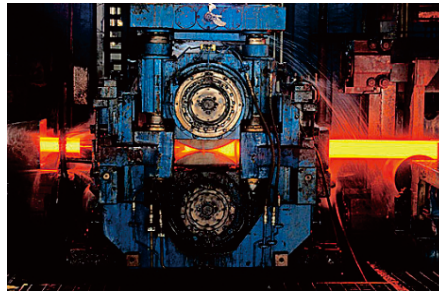
• 盾构机位移检测
Shield Displacement Detection



• 桥梁与大坝位移监测
Bridge & Dam Displacement Monitoring



• 石油钻井设备位移反馈
Oil Drilling Equipment Displacement Feedback



• 轧钢机油缸位置检测
Rolling Mill Cylinder Position Detection

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磁致伸缩位移传感器应用场所极多,随着核心技术的发展,磁致伸缩位移传感器得到越来越广泛的应用。

Magnetostrictive displacement sensors are used in an extremely large number of places, with the development of core technology, magnetostrictive displacement sensors are more and more widely used.

适合应用于工厂、山体、铁路、隧道、船业、机械、建筑业、医疗事业、桥梁铺设、水坝建设、汽车行业、核工业和航空航天事业等。

Suitable for application in factories, mountains, railroads, tunnels, shipping industry, machinery, construction industry, medical business, bridge laying, dam construction, automotive industry, nuclear industry and aerospace business, etc.



辐射全国 放眼世界

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质量第一
Quality First

用户至上
Customer First

诚信为本
Credit First

将致力于位移、物位、角度等测控领域

Will be committed to the field of displacement, level, angle measurement and control

为客户提供一站式解决方案的产品与服务

Products and services that provide one-stop solutions for our customers

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主要著作人：李工

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