米朗 MIRAN®

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

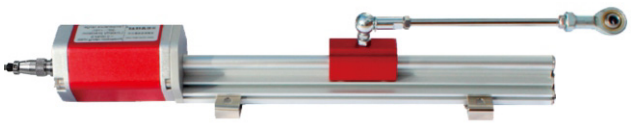
中国工业强基重点产品，中国工信部传感器一条龙应用计划示范企业

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

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• 磁致伸缩位移传感器的原理介绍及特点

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。

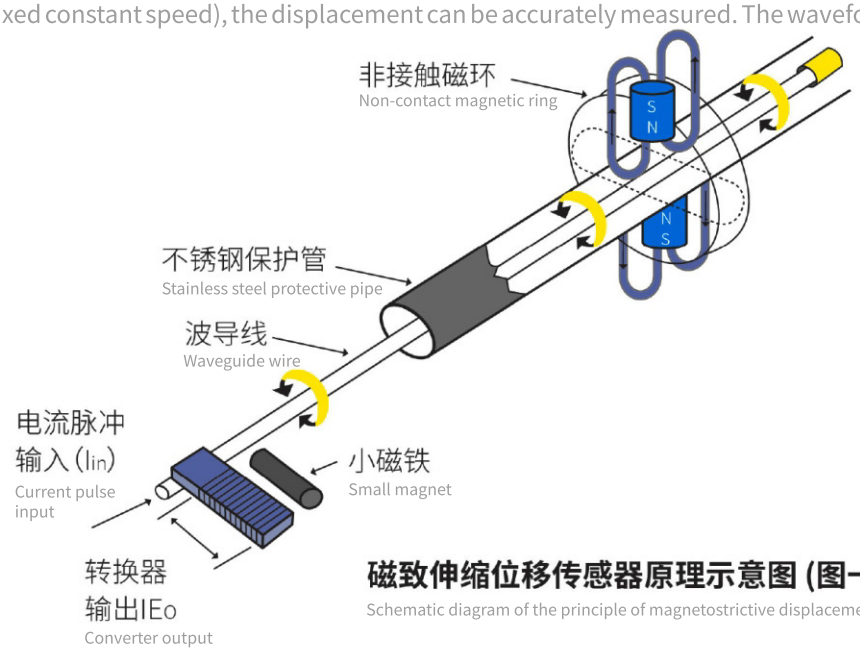
In ferromagnetic materials, a change in the direction of magnetization will cause a change in the lattice spacing of the medium, thereby resulting in changes in the length and volume of the ferromagnetic material. This phenomenon is known as the magnetostrictive effect, also called the Widman effect, and its inverse effect is called the Villari effect.

The principle of the magnetostrictive sensor is to utilize a strain pulse signal generated when two different magnetic fields intersect. Then, by calculating the time period required for this signal to be detected, the accurate position can be converted. One of the two magnetic fields comes from the permanent magnet in the magnetic ring, and the other comes from the electronic components in the sensor electronics compartment that generate an excitation pulse. The excitation pulse travels along the waveguide wire made of magnetostrictive material in the sensor at the speed of sound. When it intersects with the permanent magnetic field in the magnetic ring, due to the magnetostrictive effect, the mechanical vibration generated by the waveguide wire forms a strain pulse. The strain pulse is quickly detected by the sensing circuit in the electronic compartment. The total time from the moment the excitation pulse is generated to the detection of the strain pulse is multiplied by a fixed sound speed, and we can accurately calculate the position change of the magnet. This process is continuous, so whenever the position of the magnetic ring changes, the new position will be quickly measured. Since the output signal is a true absolute value, rather than a proportional or signal that needs to be amplified and processed, there is no signal drift or variation, and it does not need to be regularly recalibrated like other sensors.

The magnetostrictive sensor is non-contact and never wears out. It has the advantages of high resolution, high precision, high stability, high reliability, fast response time, and long working life. The sensor does not need to be recalibrated or maintained regularly.

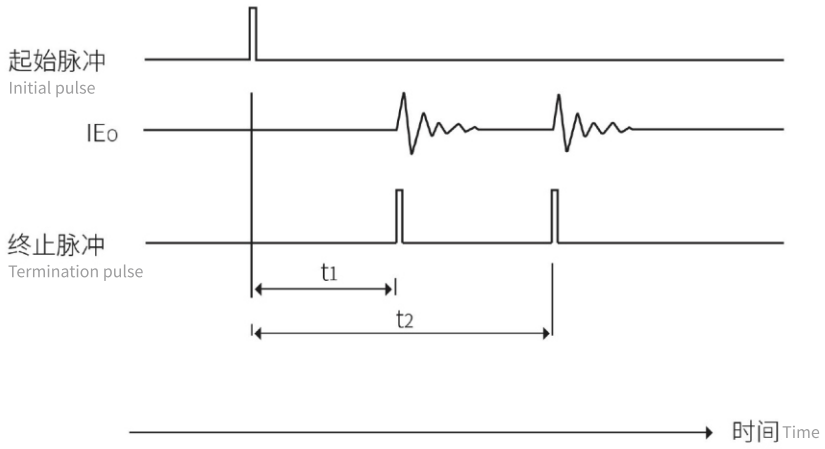
磁致伸缩位移传感器主要由磁致伸缩线(以下称波导丝)、测杆、电子仓和套在测杆上的非接触磁环(内装有永久磁铁)组成,结构如图一所示。当传感器工作时,电子仓内的电子电路产生一个“起始脉冲”,此起始脉冲沿波导丝以恒速传输,同时产生一个沿着波导丝跟随脉冲前进的旋转磁场,当该磁场与定位装置中的永久磁场相遇时,产生磁致伸缩效应,使波导丝发生扭动。这一扭动被安装在电子仓内的拾能机构感知并转换成相应的“终止脉冲”,通过计算“起始脉冲”与相应“终止脉冲”之间的时间差t1、t2再乘以脉冲在波导丝上的传播速度(固定恒速),即可精确测出其位移量,波形如图二所示。

The magnetostrictive displacement sensor is mainly composed of a magnetostrictive wire (hereinafter referred to as waveguide wire), a measuring rod, an electronic compartment, and a non-contact magnetic ring (with permanent magnets installed inside) wrapped around the measuring rod. The structure is shown in Figure 1. When the sensor is in operation, the electronic circuit in the electronic compartment generates an "initial pulse", which travels along the waveguide wire at a constant speed and simultaneously generates a rotating magnetic field following the pulse along the waveguide wire. When this magnetic field encounters the permanent magnetic field in the positioning device, a magnetostrictive effect is produced, causing the waveguide wire to twist. This twisting is sensed by the energy-sensing mechanism installed in the electronic compartment and converted into a corresponding "termination pulse". By calculating the time difference t1 and t2 between the "initial pulse" and the corresponding "termination pulse", and multiplying it by the propagation speed of the pulse on the waveguide wire (a fixed constant speed), the displacement can be accurately measured. The waveform is shown in Figure 2.



磁致伸缩位移传感器原理示意图 (图一)

Schematic diagram of the principle of magnetostrictive displacement sensor (Figure 1)



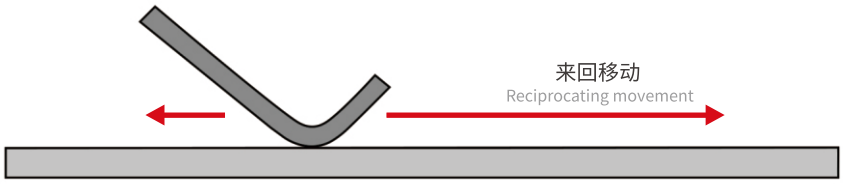
磁致伸缩位移传感器工作波形图 (图二)

The working waveform diagram of the magnetostrictive displacement sensor (Figure 2)

• 接触式原理和非接触原理 传感器特色和优点
Contact vs Non-contact Operating Principles & Features of Sensors

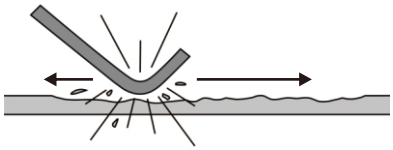
接触式电位计原理 Contact Potentiometer Principle

电刷在线路板上接触刷动，输出电信号。
The wiper slides in physical contact with the circuit board to output electrical signals.



部件和底板直接摩擦接触
The component is in direct frictional contact with the base plate

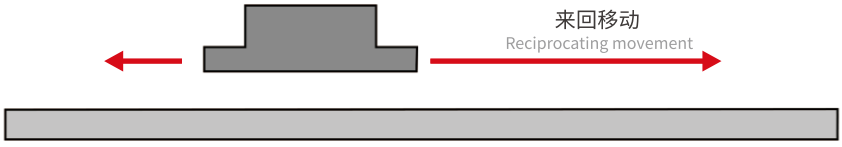
优点：精度一般，很可靠，经济实惠，抗干扰强。
Advantages: Moderate accuracy, high reliability, cost-effective, strong anti-interference capability.



缺点：有磨损，寿命有限，外观设计结构单一。
Disadvantages: Subject to wear, limited service life, limited structural design options.

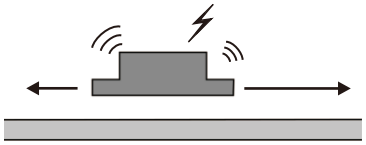
非接触感应原理 Non-contact Sensing Principle

磁致伸缩，LVDT，电涡流，电容，光栅，磁栅，光编码，磁编码，电感编码等非接触感应原理。
Includes magnetostriction, LVDT, eddy current, capacitance, optical grating, magnetic grating, optical encoding, magnetic encoding, inductive encoding and other non-contact sensing principles.



感应件和底板留有间隙，不发生物理接触
There is a gap between the sensing element and the base plate; no physical contact occurs.

优点：精度高，无磨损，寿命长，外观设计结构多样。
Advantages: High accuracy, no wear, long service life, diverse structural design options.



缺点：成本略高，部分产品抗各类干扰性能略差。
Disadvantages: Slightly higher cost; some variants have weaker anti-interference performance.

测杆耐压明细参考如下：

Refer to the following for the breakdown of measuring rod pressure resistance:

Φ10*壁厚 1.5mm	Φ10*wall thickness 1.5mm	耐压 21.9mPa	pressure resistance 21.9mPa
Φ10*壁厚 2.0mm	Φ10*wall thickness 2.0mm	耐压 29.2mPa	pressure resistance 29.2mPa
Φ10*壁厚 2.5mm	Φ10*wall thickness 2.5mm	耐压 36.6mPa	pressure resistance 36.6mPa
Φ10*壁厚 3.0mm	Φ10*wall thickness 3.0mm	耐压 43.9mPa	pressure resistance 43.9mPa
Φ 12*壁厚 1.5mm	Φ12*wall thickness 1.5mm	耐压19.21mPa	pressure resistance 19.21mPa
Φ12*壁厚 2.0mm	Φ12*wall thickness 2.0mm	耐压 25.62mPa	pressure resistance 25.62mPa
Φ12*壁厚 2.5mm	Φ12*wall thickness 2.5mm	耐压 32.03mPa	pressure resistance 32.03mPa
Φ12*壁厚 3.0mm	Φ12*wall thickness 3.0mm	耐压 38.43mPa	pressure resistance 38.43mPa
Φ 14*壁厚 1.5mm	Φ14*wall thickness 1.5mm	耐压17.08mPa	pressure resistance 17.08mPa
Φ 14*壁厚 2.0mm	Φ14*wall thickness 2.0mm	耐压 22.77mPa	pressure resistance 22.77mPa
Φ 14*壁厚 2.5mm	Φ14*wall thickness 2.5mm	耐压 28.47mPa	pressure resistance 28.47mPa
Φ 14*壁厚 3.0mm	Φ14*wall thickness 3.0mm	耐压 34.16mPa	pressure resistance 34.16mPa

接订单后一律按照客户要求的耐压数值对照上述数值匹配适合的测杆!如有更大耐压需求，请与技术人员沟通，目前可以做到耐压60mPa左右。

After receiving the order, we will always match the suitable stylus with the above values according to the pressure resistance value required by the customer! If there is a need for greater pressure resistance, please communicate with the technical staff, currently can be achieved pressure resistance of about 60mPa.

产品特点Product Features

1. 非接触式连续测量，使用寿命长。

1.Non-contact continuous measurement, with long service life.

2. 高精度、高重复性测量。

2.High-precision and high-repeatability measurement.

3. 绝对位置输出，重启无需归零。

3.Absolute position output. Restarting does not require zeroing.

4. 多种信号可选，性能稳定可靠。

4.Multiple signal options are available, with stable and reliable performance.

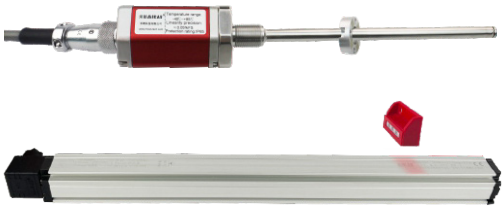
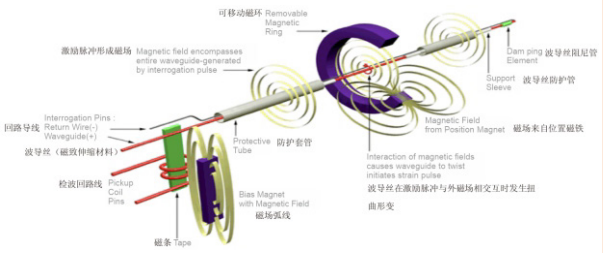
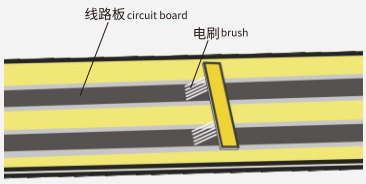
5. 零点和满度，在量程范围内100%可调。

5.Zero point and full scale are 100% adjustable within the measurement range.

6. 抗污能力强，适合恶劣的工业环境。

6.High anti-fouling ability, suitable for harsh industrial environments.

产品优势 Product Advantages

	磁致伸缩线性位移传感器（磁尺） magnetostrictive linear displacement sensors (magnetic rulers)	传统电子尺（电阻式电子尺） conventional electronic ruler (resistive electronic ruler)
		
精度 accurate	±0.05% FS (线性精度不会随使用年限变化；重复性精度也不会变化) ±0.05% FS(linearity accuracy does not change with age; repeatability accuracy also does not change)	±1%~0.05%FS不等（线性精度会随使用次数逐渐变差，导致测量误差越来越大，直至报废；重复性精度也会随之变化，磨损后会导致电刷与线路板之间接触不良，导致输出信号不稳定，跳动） ±1%~0.05% FS(linearity accuracy will gradually deteriorate with the number of times of use, resulting in increasingly large measurement errors until scrapped; repeatability accuracy will also change, wear and tear will lead to poor contact between the brushes and circuit boards, causes the output signal to be unstable and jumpy)
维护 safeguard	无需定期标定和维护，零点不变 no need for regular calibration and maintenance, no change in zero point	精度变化导致零点变动，需重新归零 zero point change due to accuracy change, need to re-zero
使用寿命 service life	使用寿命10年以上 service life 10 years or more	寿命短，高速机上使用频繁更换 short life span, frequent replacement for use on high-speed machines
信号类型 signal type	0-5V/0-10V/4-20mA/RS485/Ether CAT/CANopen/SSI	电阻值，2-20KΩ不等 resistance value, ranging from 2-20KΩ
防护性能 protective properties	防油防尘防水效果好 good oil and dust resistance and waterproof effect	大部分容易进油进尘进水 most are susceptible to oil, dust and water ingress
测量差异 measurement differences	 采用磁致伸缩原理，非接触式测量，核心测量部件之间无磨损，这是磁致伸缩尺寿命长，保持线性精度和重复性精度不变的原因 using the magnetostrictive principle, non-contact measurement, no wear and tear between the core measuring parts, which is why the magnetostrictive scale has a long life and maintains the same linearity and repeatability accuracy	 核心测量部件与电刷直接接触，长期磨损导致电子尺寿命短，线性精度变差，零点变化等问题 core measuring parts are in direct contact with the brushes, and long-term wear and tear leads to short life of the electronic ruler, deterioration of linear accuracy, zero point change and other problems

•MTL3/4C系列磁致伸缩位移传感器油缸内置型应用示意图

油缸内置式应用

MTL3/4C系列磁致伸缩位移传感器的电子仓上带有螺纹法兰和O型圈，便于将传感器固定和封装到油缸端盖开口中。此外，一些传感器的设计便于整个传感器（包括辅助电子元件）直接嵌入油缸内部。传感器的耐压外杆适合安装到一个穿过活塞头与外杆组件中间的内孔中。定位磁铁可安装到活塞头顶部或活塞头内部的浅沉孔中。

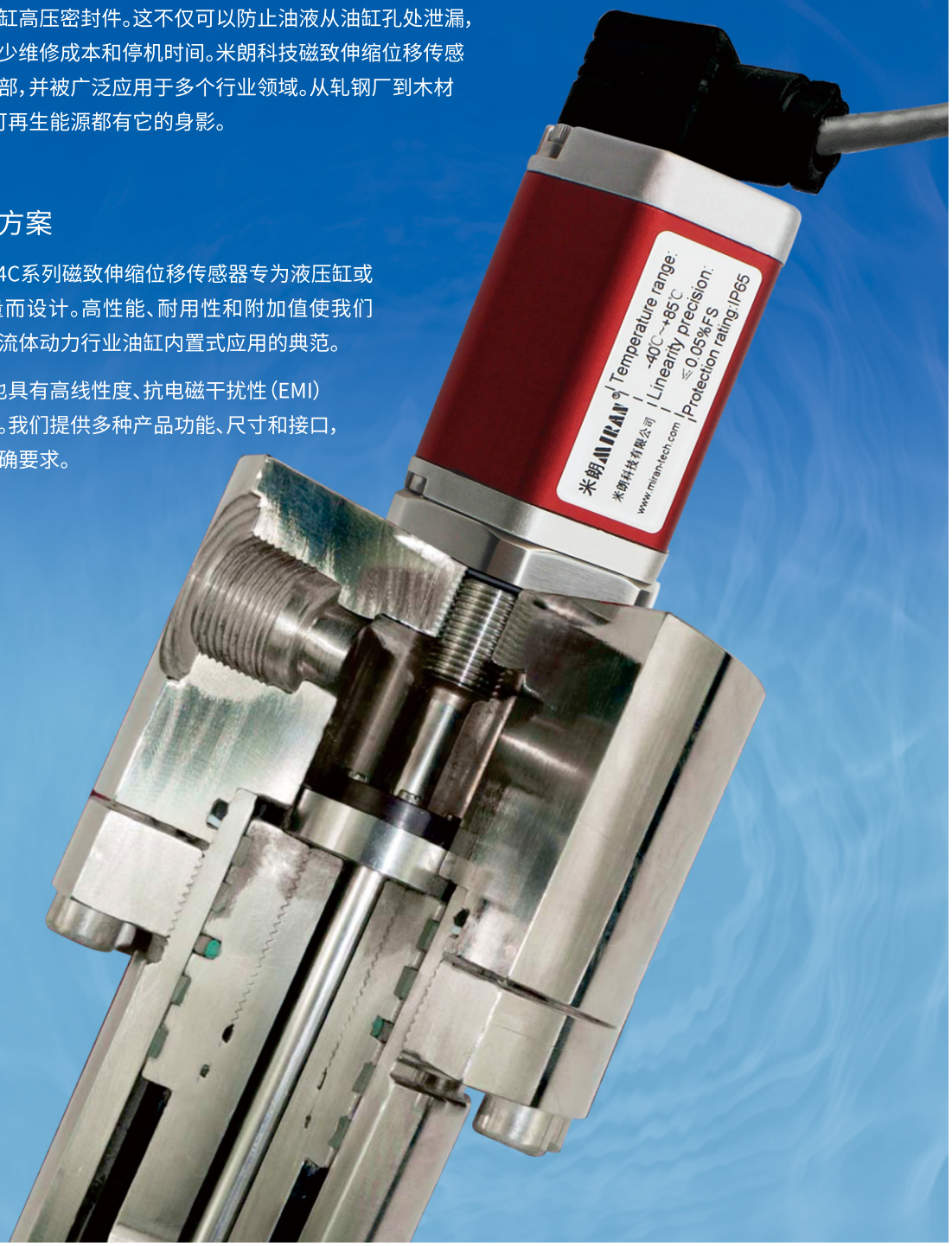
模块化环保设计

MTL3/4C系列磁致伸缩位移传感器的模块化设计便于更换传感元件和电子元件且不会破坏油缸高压密封件。这不仅可以防止油液从油缸孔处泄漏，而且还可以大大减少维修成本和停机时间。米朗科技磁致伸缩位移传感器可安装在油缸内部，并被广泛应用于多个行业领域。从轧钢厂到木材厂，从食品加工到可再生能源都有它的身影。

流体动力解决方案

米朗科技的MTL3/4C系列磁致伸缩位移传感器专为液压缸或气缸直线行程测量而设计。高性能、耐用性和附加值使我们的米朗传感器成为流体动力行业油缸内置式应用的典范。

此外，这些传感器也具有高线性度、抗电磁干扰性（EMI）和抗冲击震动性能。我们提供多种产品功能、尺寸和接口，以确保满足您的精确要求。

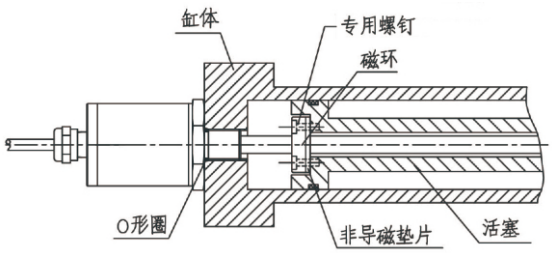


•液压缸内置安装方法

磁致伸缩传感器内置液压缸使用时,其稳定性和精确度直接受到周边磁场环境的影响。因此,在进行液压缸内置安装设计时,请参考下面的(图一、二、三)安装方法。根据液压缸实际工作压力,在磁致伸缩传感器与缸体密封面上可选用O型圈、聚四氟乙烯垫、紫铜垫作密封方式,下图A、B、C为三种密封方式尺寸图。

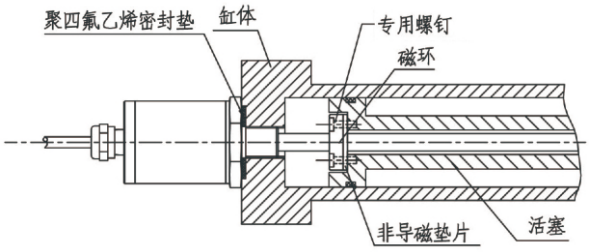
液压缸设计 Hydraulic cylinder design

方法一 磁环安装在活塞端面上,活塞与液压缸端面之间保留大于20mm距离。



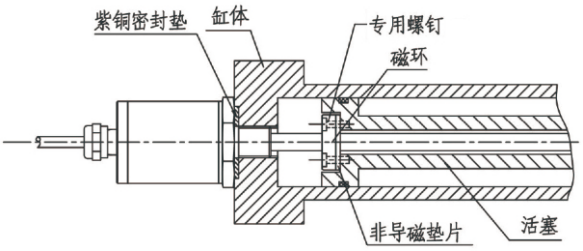
(图一)

方法二 当活塞与液压缸端面紧贴时,活塞开孔深度必须是在安装磁环后,磁环与缸体端面仍保留大于20mm距离。



(图二)

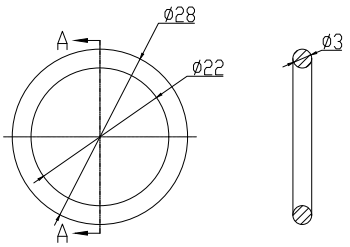
方法三 当活塞与液压缸端面靠近或紧贴时,可在缸体前端盖处开槽(其宽度要比磁环宽度稍大让磁环与缸体端面仍保留大于20mm距离。



(图三)

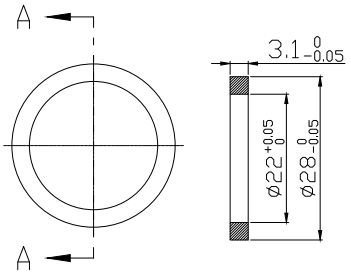
密封方式 Sealing method

如客户订货时无特殊说明,将默认随产品配O型橡胶圈作密封手段。



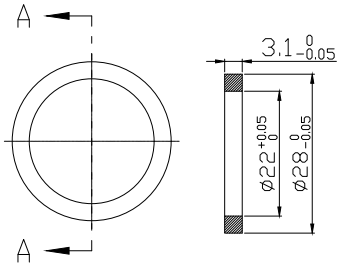
(图A:O型橡胶圈)

如客户订货时无特殊说明,将默认随产品配O型橡胶圈作密封手段。



(图B:聚四氟乙烯密封垫)

如客户订货时无特殊说明,将默认随产品配O型橡胶圈作密封手段。



(图C:紫铜密封垫)

检测证书Test Certificate

隔爆证书Explosion-proof certificate



CNEX 国家防爆

编号：CNEx23.0238X

防爆合格证

制造单位	枣阳市米朗科技有限公司 地址：湖北省枣阳市南城霍庄村八组
产品名称	磁致伸缩位移传感器
型号规格	MT-175mm-Z-U/V-Ex
防爆标志	Ex db IIC T6 Gb
产品标准	Q/ MLKJ01 -2022
总装图号	MT .00

经对上述产品图样及技术文件的审查和样品检验,确认符合下列标准：
GB/T3836.1-2021 《爆炸性环境 第 1 部分：设备 通用要求》
GB/T3836.2-2021 《爆炸性环境 第 2 部分：由隔爆外壳“d”保护的设备》

记事：
1.工作电压：24VDC
2.使用环境温度：-20℃～+60℃。
3.外壳防护等级：IP68(1m/2h)。
4.预留电缆长度大于 1 米，安装使用时，电缆自由端应接入与使用环境相适应的防爆设备内或安全区。

中心主任

颁发日期 2023年02月13日

本证有效期 2023年02月13日至2028年02月12日

南阳防爆电气研究所
国家防爆电气产品质量检验检测中心

公众号

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邮编：473008 电话：0377-63258564 传真：0377-63208175 网址：www.china-ex.com

检测证书Test Certificate

本安防爆证书Intrinsically safe explosion-proof certificate



CNEX 国家防爆

编号：CNEx26.3325X

防爆合格证

制造单位	湖北米朗科技股份有限公司 地址：湖北省枣阳市南城霍庄村八组
产品名称	磁致伸缩位移/液位传感器
型号规格	MT/mA 24VDC
防爆标志	Ex ia IIB T4 Ga
产品标准	Q/MLKJ02-2026
总装图号	MTM-00

经对上述产品图样及技术文件的审查和样品检验,确认符合下列标准:
GB/T 3836.1-2021《爆炸性环境 第1部分：设备 通用要求》
GB/T 3836.4-2021《爆炸性环境 第4部分：由本质安全型“i”保护的设备》
GB/T 3836.20-2010《爆炸性环境 第20部分：设备保护级别（EPL）为Ga级的设备》

记事:
1.产品由安全栅供电，本安参数:
电源端：Ui: 28VDC， Ii:187mA， Pi:1.3W，Ci:0.2μF，Li: 0mH;
信号端：Ui: 10.6VDC， Ii:50mA， Pi:0.13W，Ci:4.5μF，Li: 0mH;
2.产品适用环境温度-20℃~+60℃。
3.0区使用时，应采取措施防止由于冲击或摩擦火花引起的点燃危险!

中心主任

颁发日期 2026年08月18日

本证有效期 2026年08月18日至2031年08月17日

Ex CQST

南阳防爆电气研究所有限公司
国家防爆电气产品质量检验检测中心

公众号

注：本证书仅对与认可文件和样品一致的产品有效。查询网站或关注公众号查询真伪 6078 3665 5842 1996
地址：中国河南省南阳市仲景北路20号
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检测证书Test Certificate

本安防爆证书Intrinsically safe explosion-proof certificate



CNEX 国家防爆

编号：CNEx26.3326X

防爆合格证

制造单位	湖北米朗科技股份有限公司 地址：湖北省枣阳市南城霍庄村八组
产品名称	磁致伸缩位移/液位传感器
型号规格	MT/RS485 24VDC
防爆标志	Ex ia IIB T4 Ga
产品标准	Q/MLKJ02-2026
总装图号	MTM-00

经对上述产品图样及技术文件的审查和样品检验,确认符合下列标准：
GB/T 3836.1-2021《爆炸性环境 第1部分：设备 通用要求》
GB/T 3836.4-2021《爆炸性环境 第4部分：由本质安全型“i”保护的设备》
GB/T 3836.20-2010《爆炸性环境 第20部分：设备保护级别（EPL）为Ga级的设备》

记事：
1.产品由安全栅供电，本安参数：
电源端：Ui: 28VDC， Ii:187mA， Pi:1.3W，Ci:0.2μF，Li: 0mH；
信号端：Ui: 10.6VDC， Ii:50mA， Pi:0.13W，Ci:3.96μF，Li: 0mH；
2.产品适用环境温度-20℃~+60℃。
3.0 区使用时，应采取措施防止由于冲击或摩擦火花引起的点燃危险！

中心主任

颁发日期 2026年08月18日

本证有效期 2026年08月18日至2031年08月17日

Ex CQST

南阳防爆电气研究所有限公司
国家防爆电气产品质量检验检测中心

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邮编：473008 电话：0377-63258564 传真：0377-63208175 网址：www.china-ex.com

产品型号选型 Product Model Selection

MTL系列 MTL Series

MTL □□ - □□□□ mm - □ / □ - □

C:胶磁环
C:Magnetic tape ring
C1:铝磁环
C1: Aluminum magnetic ring
F:浮球
F: Float ball

50至5000mm
(可选任意有效行程)
50 to 5000mm
(any effective stroke is optional)

1:不锈钢电子仓
1:Stainless steel electronic compartment
2:扁款螺纹安装式
2: Flat-threaded Installation Type
3:六角电子仓标准款
3:Standard Model of Hexagonal Electronic Container
4:六角电子仓新款
4:New Hexagonal Electronic Storage Cabinet
7:方形电子仓
7:Square electronic compartment
8:扁款法兰安装式
8: Flat style flange-mounted type

N:为磁铁(磁环/浮球/拉杆/滑块)
由接线端向另一端移动时,数值变大
N: is magnet (ring/float/rod/slider) the value becomes larger when moving from one terminal to the other
S:为磁铁(磁环/浮球/拉杆/滑块)
由接线端向另一端移动时,数值变小
S: is magnet (ring/float/rod/slider) the value becomes smaller when moving from one terminal to the other

C:防水接头
C:waterproof connector
P:航空插头
P:aviation plugs
H:赫斯曼插头
H:hersman plug

模拟信号:
Analog signal:

V1:(0-5V) 电压 V1:(0-5V)voltage
V2:(0-10V) 电压 V2:(0-10V)voltage
A:(4-20mA) 电流 A:(4-20mA)current
A1:(0-20mA)电流 A1: (0-20mA) current

A2d:(4-20mA)二线电流(低功耗型)
A2d:(4-20mA)2-wire current(low-power type)

注1: V1、V2、A选择赫斯曼插头时,供电负和信号负共用一根线,详见接线图
Note 1: When selecting Hersman plugs for V1, V2, and A, the power supply negative and signal negative share a common wire, see wiring diagram for details
注2: V1、V2、A选择防水接头或者航空插头时,默认为四线制,如有需要也可以做三线制
Note 2: When choosing waterproof connector or aviation plug for V1, V2, A, the default is four-wire system, and three-wire system can also be made if needed
注3: A2d限MTL1C1/MTL1F/MTM系列,且只可做2线制电流输出
Note 3: A2d is limited to MTL1C1/MTL1F/MTM series and only 2-wire current output is available

数字信号:
Digital signal:

M:RS485/Modbus RTU
E:Ether CAT
Co:CANopen
St:(start-stop)
S1:SSI(二进制码 24位binary code 24 bits)
S2:SSI(格雷码 24位gray code 24 bits)
S3:SSI(二进制码 25位binary code 25 bits)
S4:SSI(格雷码 25位gray code 25 bits)

例如 Example:MTL1C-1000mm-N/A-C

表示MTL1C不锈钢电子仓胶磁环,量程1000mm,为磁环由接线端向另一端移动时,数值变大,4-20mA电流信号输出,防水接头出线。
Indicates MTL1C stainless steel electronic storage box magnetic ring, with a measurement range of 1000mm. When the magnetic ring moves from the terminal to the other end, the value increases, and a 4-20mA current signal is output through the waterproof connector.

常规系列 Conventional Series

MTM □ - □□□□ mm - □ / □ - □

MTM:导轨滑块式
MTM:guide slide type
MTM1:悬浮滑块式
MTM1:floating slider type
MTM2:导轨滑块式
MTM2:guide slide type
MTM3:悬浮滑块式
MTM3:floating slider type
MTM5:磁悬浮式
MTM5:magnetic levitation type
MTW:磁悬浮式
MTW:magnetic levitation type
MTC:位移拉杆式
MTC:displacement lever type
MTG:方形拉杆式
MTG:square tie-bar type
MTF:标准滑块式
MTF:standard slider type
MTF1:六角电子仓滑块式
MTF1:hexagonal electronic warehouse slider type
MTF2:方形电子仓滑块式
MTF2:square electronic warehouse slider type
MPM:铰接鱼眼式
MPM:articulated fisheye type
MPM1:拉杆式(尾部直出线)/两端鱼眼铰接式
MPM1:Lever type (tail extends straight out) / Both ends are fish-eye hinged type

50至5000mm
(可选任意有效行程)
50 to 5000mm
(any effective stroke is optional)

N:为磁铁(磁环/浮球/拉杆/滑块)
由接线端向另一端移动时,数值变大
N: is magnet (ring/float/rod/slider) the value becomes larger when moving from one terminal to the other

S:为磁铁(磁环/浮球/拉杆/滑块)
由接线端向另一端移动时,数值变小
S: is magnet (ring/float/rod/slider) the value becomes smaller when moving from one terminal to the other

C:防水接头
C:waterproof connector
P:航空插头
P:aviation plugs
H:赫斯曼插头
H:hersman plug
注:MPM、MPM1、MTW只能做防水电缆接头出线,其他出线方式都不可以
Note: MPM, MPM1, and MTW can only be used for waterproof cable connector outlets; other types of outlet methods are not allowed.

模拟信号:
Analog signal:

V1:(0-5V) 电压 V1:(0-5V)voltage
V2:(0-10V) 电压 V2:(0-10V)voltage
A:(4-20mA) 电流 A:(4-20mA)current
A1:(0-20mA)电流 A1: (0-20mA) current

A2d:(4-20mA)二线电流(低功耗型)
A2d:(4-20mA)2-wire current(low-power type)

注1: V1、V2、A选择赫斯曼插头时,供电负和信号负共用一根线,详见接线图
Note 1: When selecting Hersman plugs for V1, V2, and A, the power supply negative and signal negative share a common wire, see wiring diagram for details
注2: V1、V2、A选择防水接头或者航空插头时,默认为四线制,如有需要也可以做三线制
Note 2: When choosing waterproof connector or aviation plug for V1, V2, A, the default is four-wire system, and three-wire system can also be made if needed
注3: A2d限MTL1C1/MTL1F/MTM系列,且只可做2线制电流输出
Note 3: A2d is limited to MTL1C1/MTL1F/MTM series and only 2-wire current output is available

数字信号:
Digital signal:

M:RS485/Modbus RTU
E:Ether CAT
Co:CANopen
St:(start-stop)
S1:SSI(二进制码 24位binary code 24 bits)
S2:SSI(格雷码 24位gray code 24 bits)
S3:SSI(二进制码 25位binary code 25 bits)
S4:SSI(格雷码 25位gray code 25 bits)

例如 Example:MTM1-500mm-S/A-C

表示MTM1悬浮滑块式,量程500mm,为磁环由接线端向另一端移动时,数值变小,4-20mA电流信号输出,防水电缆接头出线。

Indicates MTM1 as a suspended slider type with a measurement range of 500mm. When the magnetic ring moves from the input end to the output end, the value decreases and a 4-20mA current signal is output. It is a submersible type.

常规系列 Conventional Series

MTS □□ - □□□□ mm - □ / □ - □

- MTS: □□
  - MTS:小电子仓式 MTS:small electronic silo type
  - MFTS:特殊分体式(仅限磁环式) MFTS:special split type (Only for magnetic ring type)
  - MFTS1:特殊分体式(仅限磁环式) MFTS1:special split type (Only for magnetic ring type)
  - MF:防腐液位式(仅限浮球式) MF:anti-corrosion liquid level type(Only for float ball type)
  - MBT:表头式 MBT: Header-type
- □□: □
  - C:胶磁环 C:Magnetic tape ring
  - C1:铝磁环 C1: Aluminum magnetic ring
  - F:浮球 F: Float ball
- □□□□: 50-20000mm (5m以上建议使用柔性测杆) (flexible stems recommended for more than 5 meters)
- □: N:为磁铁(磁环/浮球/拉杆/滑块)由接线端向另一端移动时,数值变大 N: is magnet (ring/float/rod/slider) the value becomes larger when moving from one terminal to the other
  - S:为磁铁(磁环/浮球/拉杆/滑块)由接线端向另一端移动时,数值变小 S: is magnet (ring/float/rod/slider) the value becomes smaller when moving from one terminal to the other
- □: 模拟信号: Analog signal:
  - V1:(0-5V) 电压 V1:(0-5V)voltage
  - V2:(0-10V) 电压 V2:(0-10V)voltage
  - A:(4-20mA) 电流 A:(4-20mA)current
  - A1:(0-20mA)电流 A1: (0-20mA) current
  - 注1: V1、V2、A选择赫斯曼插头时,供电负和信号负共用一根线,详见接线图 Note 1: When selecting Hersman plugs for V1, V2, and A, the power supply negative and signal negative share a common wire, see wiring diagram for details
  - 注2: V1、V2、A选择防水接头或者航空插头时,默认为四线制,如有需要也可以做三线制 Note 2: When choosing waterproof connector or aviation plug for V1, V2, A, the default is four-wire system, and three-wire system can also be made if needed
  - 数字信号: Digital signal:
  - M:RS485/Modbus RTU
  - E:Ether CAT
  - Co:CANopen
  - St:(start-stop)
  - S1:SSI(二进制码 24位binary code 24 bits)
  - S2:SSI(格雷码 24位gray code 24 bits)
  - S3:SSI(二进制码 25位binary code 25 bits)
  - S4:SSI(格雷码 25位gray code 25 bits)
- □: C:防水接头 C:waterproof connector
  - P:航空插头 P:aviation plugs
  - H:赫斯曼插头 H:hersman plug
  - FS:深水型(限MTS系列可选) FS: deep water type (optional for mts series only)

例如 Example:MTSC1-500mm-S/A-FS

表示MTS小电子仓式铝磁环,量程500mm,为磁环由接线端向另一端移动时,数值变小,4-20mA电流信号输出,深水型。

This is a small electronic compartment type aluminum magnetic ring of MTS, with a measurement range of 500mm. When the magnetic ring moves from the connection end to the other end, the value decreases, and a 4-20mA current signal is output. It is a deep-water type.

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

以下型号可以选做隔爆型或本安防爆型产品
The following models can be selected as explosion-proof or intrinsically safe products

MTC □□ - □□□□ mm - □ / □ - □ - □

C:胶磁环
C:Magnetic tape ring
C1:铝磁环
C1: Aluminum magnetic ring
F:浮球
F: Float ball
注:(限MTL1/MTL3/MTL4系列可选)
Note: (Available for MTL1/MTL3/MTL4 series only)

50至5000mm
(可选任意有效行程)
50 to 5000mm
(any effective stroke is optional)

EX1:隔爆
EX1:explosion-proof
EX2:本安防爆
EX2:intrinsically safe
EX3:隔爆+本安防爆
EX3:explosion-proof + intrinsically safe

MTL1:不锈钢电子仓
MTL1:Stainless steel electronic compartment
MTL3:六角电子仓标准款
MTL3:Standard Model of Hexagonal Electronic Container
MTL4:六角电子仓新款
MTL4:New Hexagonal Electronic Storage Cabinet
MTC:位移拉杆式
(可以选做:隔爆/本安防爆型)
MTC:displacement lever type
(optional:explosion-proof / intrinsically safe)
MTF:标准滑块式
(可以选做:隔爆/本安防爆型)
MTF:standard slider type
(optional:explosion-proof / intrinsically safe)
MTM:导轨滑块式
(可以选做:本安防爆型)
MTM:guide slide type
(optional:intrinsically safe)
MTM1:悬浮滑块式
(可以选做:本安防爆型)
MTM1:floating slider type
(optional:intrinsically safe)
MR:柔性软缆式
(可以选做:隔爆型)
MR:flexible cable type
(optional:explosion proof)
MR1:柔性软缆式
MR1:flexible cable type

N:为磁铁(磁环/浮球/拉杆/滑块)
由接线端向另一端移动时,数值变大
N: is magnet (ring/float/rod/slider) the value becomes larger when moving from one terminal to the other
S:为磁铁(磁环/浮球/拉杆/滑块)
由接线端向另一端移动时,数值变小
S: is magnet (ring/float/rod/slider) the value becomes smaller when moving from one terminal to the other

C:防水接头
C:waterproof connector
P:航空插头
P:aviation plugs
H:赫斯曼插头
H:hersman plug
注: 本安防爆型需选型接头(航空插头/防水接头/赫斯曼插头),隔爆型默认配防爆栓,因此忽略该选项
Note: Intrinsically safe explosion-proof models require optional connectors (aviation plugs/waterproof connector/hersman plug),explosion-proof models are equipped with explosion-proof pins by default, so this option is ignored.

模拟信号 Analog signal:

V1:(0-5V) 电压 V1:(0-5V)voltage
V2:(0-10V) 电压 V2:(0-10V)voltage
A:(4-20mA) 电流 A:(4-20mA)current
A1:(0-20mA)电流 A1: (0-20mA) current
A2d:(4-20mA)二线电流(低功耗型)
A2d:(4-20mA)2-wire current(low-power type)
注1: V1、V2、A选择赫斯曼插头时,供电负和信号负共用一根线,详见接线图
Note 1: When selecting Hersman plugs for V1, V2, and A, the power supply negative and signal negative share a common wire, see wiring diagram for details
注2: V1、V2、A选择防水接头或者航空插头时,默认为四线制,如有需要也可以做三线制
Note 2: When choosing waterproof connector or aviation plug for V1, V2, A, the default is four-wire system, and three-wire system can also be made if needed

数字信号 Digital signal:

M:RS485/Modbus RTU
Co:CANopen
St:(start-stop)
S1:SSI(二进制码 24位binary code 24 bits)
S2:SSI(格雷码 24位gray code 24 bits)
S3:SSI(二进制码 25位binary code 25 bits)
S4:SSI(格雷码 25位gray code 25 bits)

例如 Example:MTL1C-2000mm-N/A-EX1(隔爆flameproof)

表示MTL1C不锈钢电子仓胶磁环,量程2000mm,为磁环由接线端向另一端移动时,数值变大,4-20mA电流信号输出,隔爆型。
Indicates MTL1C stainless steel electronic compartment magnetic ring, with a measurement range of 2000mm. When the magnetic ring moves from the terminal to the other end, the value increases, and a 4-20mA current signal is output. It is explosion-proof type.

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、蒸气和液体等场合；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.

用户收货后应该马上检查包装有没有损坏，然后按合同清点数量与型号。如果有问题，应马上联系我们。如果用户自己提供电缆或自行制造带配对接头的电缆，应该按提供的接线定义做线，千万不要焊错线或电线短路，焊好后加上热缩胶套保护，线做好后请用万用表重复测量确保每条线连接正确，焊接牢固及线与线之间没有短路现象。

After receiving the goods, users should immediately check the package for any damage, and then count the quantity and model according to the contract. If there is any problem, you should contact us immediately. If users provide their own cables or manufacture their own cables with paired connectors, they should make wires according to the wiring definition provided, never weld the wrong wires or short-circuit wires, weld the wires and add the heat-shrinkable rubber sleeve for protection, after the wires are done, please repeat the measurement with a multimeter to ensure that each wire is connected correctly, welded firmly and there is no short-circuit phenomenon between the wire and the wire.

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≤80mA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。

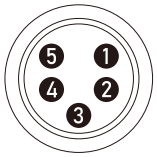
二、The user in the wiring, please check whether the power supply to meet: +24VDC requirements, and power output must be greater than the total power consumption of the product, according to the different ranges of each sensor ≤ 95mA calculation. If the power supply can not meet the requirements, please 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!

二线电流输出接线方式
2-wire current output wiring

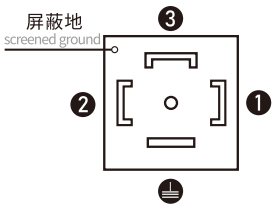
航空插头/防水接头接线图 Aviation plug/waterproof connector wiring diagram



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

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

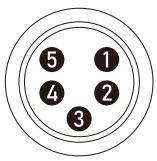
赫斯曼插头接线图 Hersman plug wiring diagram



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

三线制/四线制模拟信号输出接线方式
3-wire/4-wire analog signal output wiring method

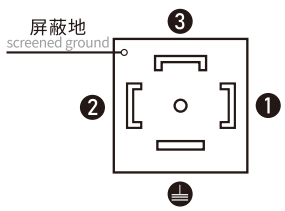
航空插头/防水接头接线图 Aviation plug/waterproof connector wiring diagram



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

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

赫斯曼插头接线图 Hersman 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

RS485信号输出接线方式
RS485 signal output wiring

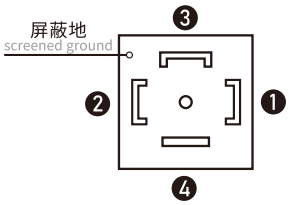
航空插头/防水接头接线图 Aviation plug/waterproof connector wiring diagram



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

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

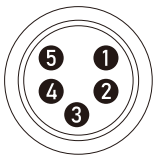
赫斯曼插头接线图 Hersman plug wiring diagram



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

CAN open输出接线方式
CAN open output wiring

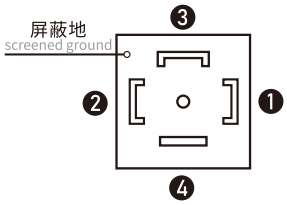
航空插头/防水接头接线图 Aviation plug/waterproof connector wiring diagram



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

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	CAN-H
4	白 white	CAN-L
5	屏蔽线 shield wire	接地 grounding

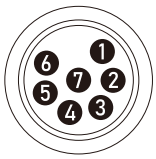
赫斯曼插头接线图 Hersman plug wiring diagram



针号 Gauge	颜色 Color	定义 Define
1	棕 brown	电源正 power positive
2	蓝 blue	CAN-H
3	白 white	CAN-L
4	黑 black	电源负 power negative

SSI信号输出接线方式
SSI signal output wiring

航空插头/防水接头接线图 Aviation plug/waterproof connector wiring diagram

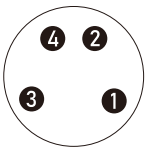


公接头针号排列(面向传感器头)
Male connector pin number arrangement (facing the sensor head)

针号 Gauge	颜色 Color	定义 Define
1	棕 brown	电源正+(DC24V) power positive
2	黑 black	电源负0V power negative
3	蓝 blue	时钟正+Clk clock positive
4	白 white	时钟负-Clk clock negative
5	绿 green	数据正+Data data positive
6	黄 yellow	数据负-Data data negative
7	屏蔽线 shield wire	壳体地GND shell ground

EtherCAT输出接线方式
EtherCAT output wiring

传感器电源接点 Sensor Power Contact



针号 Gauge	颜色 Color	定义 Define
1	棕 brown	+24V
2	空 void	空 void
3	蓝 blue	0V
4	空 void	空 void

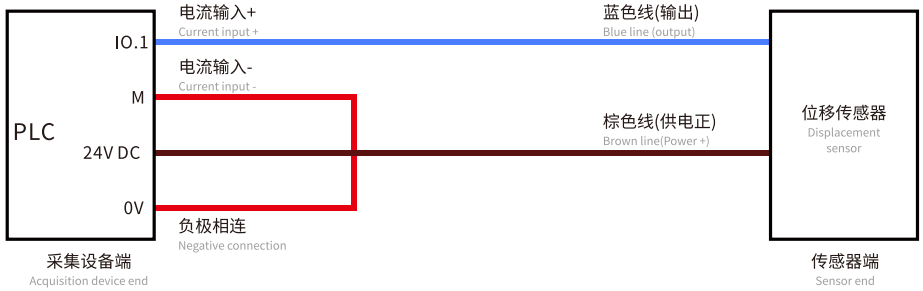
传感器EtherCAT接点 Sensor EtherCAT Contact



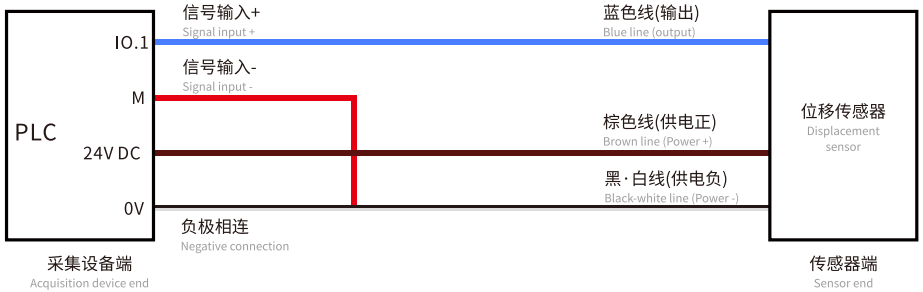
针号 Gauge	定义 Define
1	TX+
2	RX+
3	TX-
4	RX-

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.

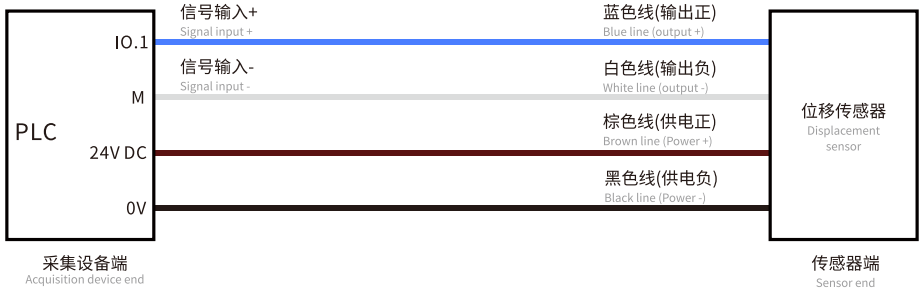
二线制输出PLC接入型接线图
2-wire output PLC access wiring diagram



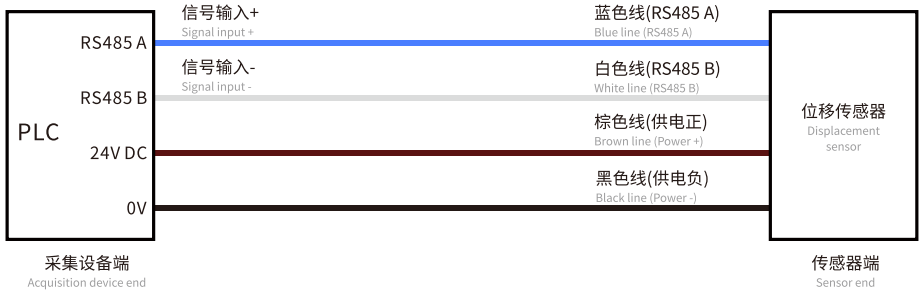
三线制输出PLC接入型接线图
3-wire output PLC access wiring diagram



四线制输出PLC接入型接线图
4-wire output PLC access wiring diagram



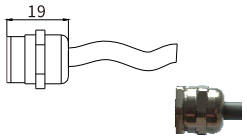
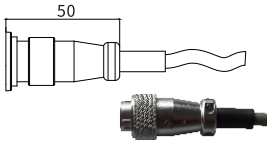
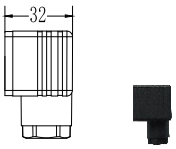
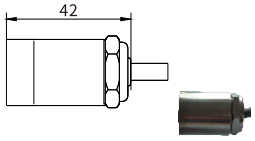
RS485输出PLC接入型接线图
RS485 output PLC access wiring diagram



注:以上仅供参考,具体供电电压及接线定义以产品实物标签上标注为准。

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

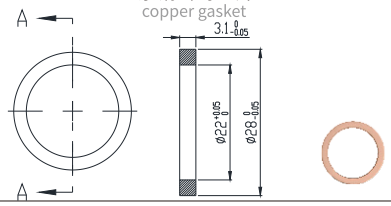
接头选型Connector Selection

C:防水接头 C:waterproof connector	P:航空插头 P:aviation plug	H:赫斯曼插头 H:hersman plug	Ex:防爆栓 Ex:explosion-proof pins
			

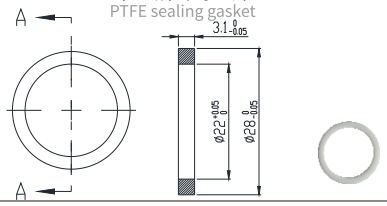
配件图纸Accessory Drawings

密封圈尺寸图
Sealing ring size diagram

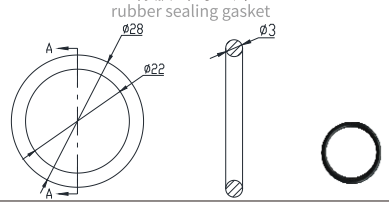
紫铜密封垫片
copper gasket



聚四氟密封垫片
PTFE sealing gasket

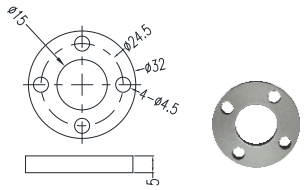


橡胶密封垫片
rubber sealing gasket



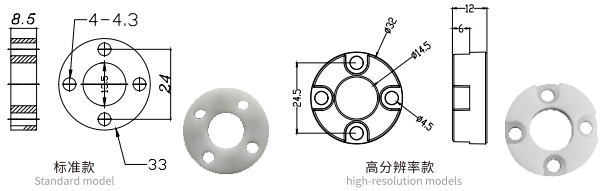
隔磁垫片尺寸
Magnetic isolation spacer size

铝合金隔磁垫片
aluminum magnetic spacer

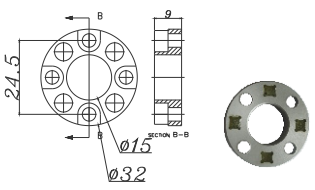


可选磁环尺寸
MTL2/MTL3/MTL5/MTS Selectable ring sizes

胶磁环
rubber magnet ring

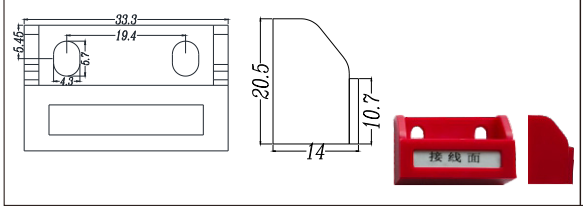


铝磁环
aluminum magnetic ring

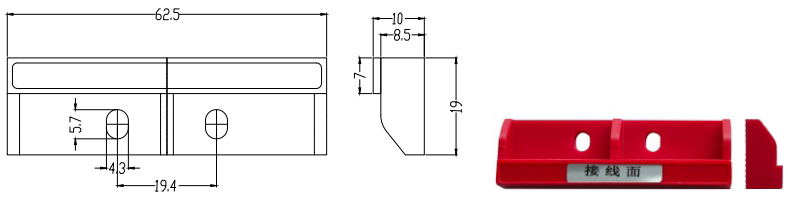


MTM1/MTM3滑块尺寸图
MTM1/MTM3 slider dimensions

磁悬浮滑块
magnetic levitation slider

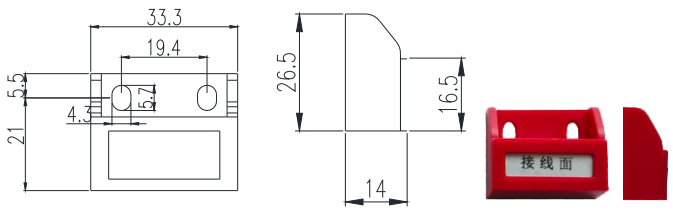


磁悬浮加长滑块
magnetic levitation extended slide

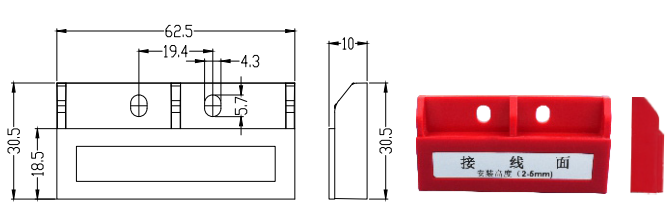


MTM1/MTM3高分辨率滑块尺寸图
MTM1/MTM3 high resolution slider dimensions

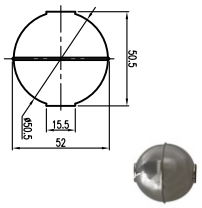
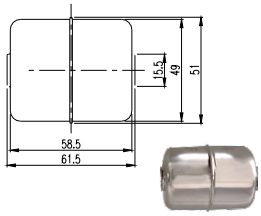
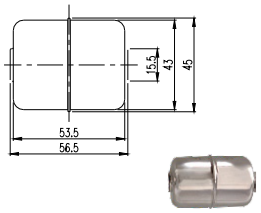
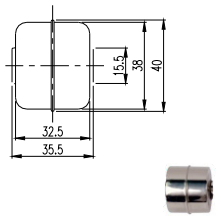
磁悬浮滑块
magnetic levitation slider



磁悬浮加长滑块
magnetic levitation extended slide



MTL6/MTL7/MTS浮球尺寸图
MTL6/MTL7/MTS Float Dimensions

圆球体浮球 spherical 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
			

浮球(内径8.3mm,外径18mm,高度14.9mm)
Float (inner diameter 8.3mm, outer diameter 18mm, height 14.9mm)







浮球(内径10.4mm,外径22mm,高度20.4mm)
Float (inner diameter 10.4mm, outer diameter 22mm, height 20.4mm)







防腐蚀浮球(内径16.7mm,外径49.7mm,高度23.2mm)
Anti-corrosive float (inner diameter 16.7mm, outer diameter 49.7mm, height 23.2mm)







防腐蚀浮球(内径15.6mm,外径58.3mm,高度49.3mm)
Anti-corrosive float (inner diameter 15.6mm, outer diameter 58.3mm, height 49.3mm)






以上仅为部分浮球尺寸,如需其他尺寸的浮球,均可联系我们定制。
The above is only part of the float size, if you need other sizes of floats, can be customized by contacting us.

安装指南Installation Guide

开罐或密封罐安装方式Open or sealed can installation method

下述安装方式主要适用于浮球式系列液位传感器。

The following installation method is mainly applicable to the float-type series liquid level sensors.

方式一:适用于部分液罐测量,可选厂家提供的连接法兰或安装螺纹,将液位传感器直接旋入。

Mode 1: For partial tanks, the level sensor can be screwed in directly with the optional connecting flange or mounting thread provided by the manufacturer.

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,将液位传感器固定在所需安装位置。

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

方式三:适用于开罐与密封罐测量。

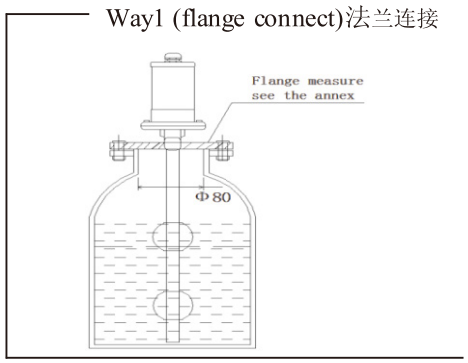
Mode 3: Suitable for open and sealed can measurements.

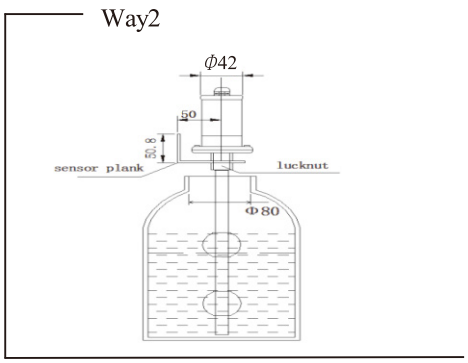
方式四:适用于测量高度可调整的开罐与密封罐测量。

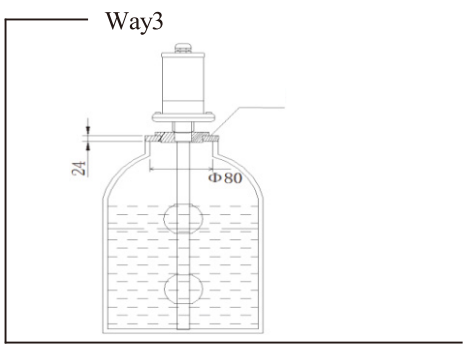
Mode 4: Suitable for measuring open and sealed cans with adjustable measuring height.

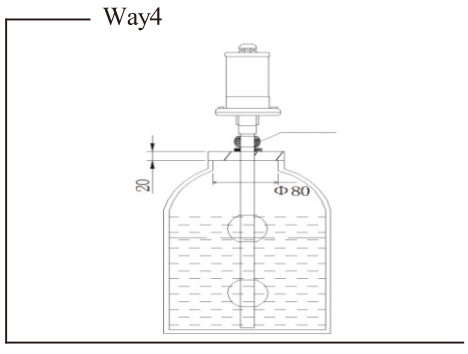
注意:罐体开口大于Φ80,便于浮子安装;法兰上的安装螺纹孔应与选用的传感器相符合。

Attention: the opening of the tank is larger than Φ80, 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。

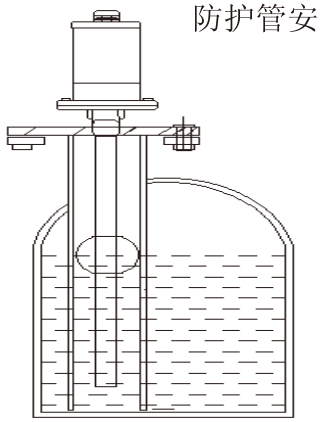
2. For applications where the degree of agitation of the medium in the tank is more intense or the temperature of the medium is higher, it is necessary to install it in the way of bypass pipe.

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.

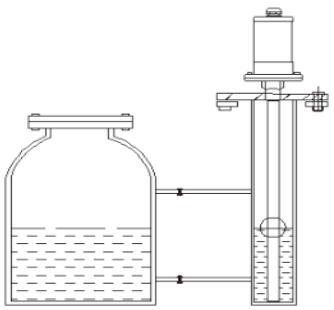
The install way of protection pipe

防护管安装方式



The install way of by pass pipe

旁通管安装方式



油缸内置安装方法
Cylinder built-in installation method

下述安装方式主要适用于磁环式系列位移传感器。

The following installation method is mainly applicable to the magnetic ring series displacement sensors.

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M4X20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 M4X20. 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 piston.

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.

油缸内置安装示意图
Cylinder built-in installation schematic

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:

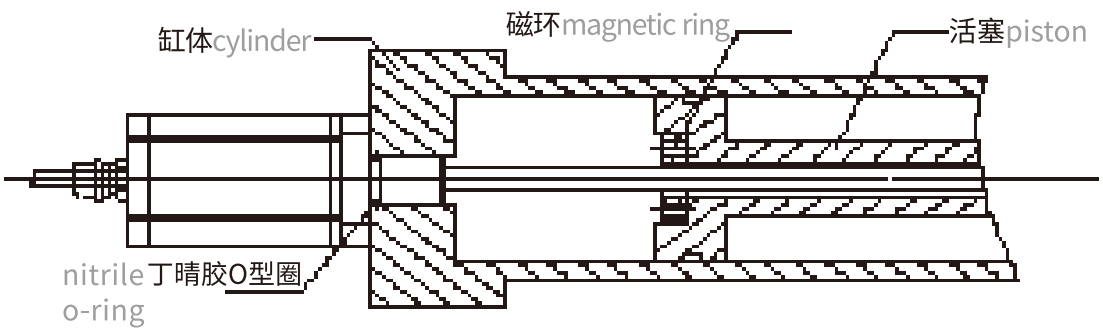
According to the working pressure of the cylinder to choose the appropriate sealing method, commonly used cylinder sealing installation methods are as follows:

注：如用户订货时无特殊说明，默认安装方式为方式一，配O型圈作为密封方式。

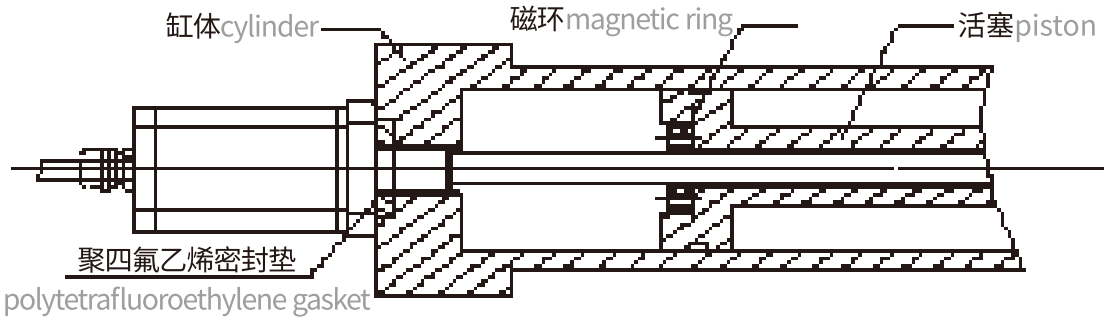
Note: If there is no special instruction when the user orders, the default installation mode is mode 1, with O-ring as the sealing mode.

方式一：丁晴胶O型圈密封，一般适用于油缸压力≤15MPa

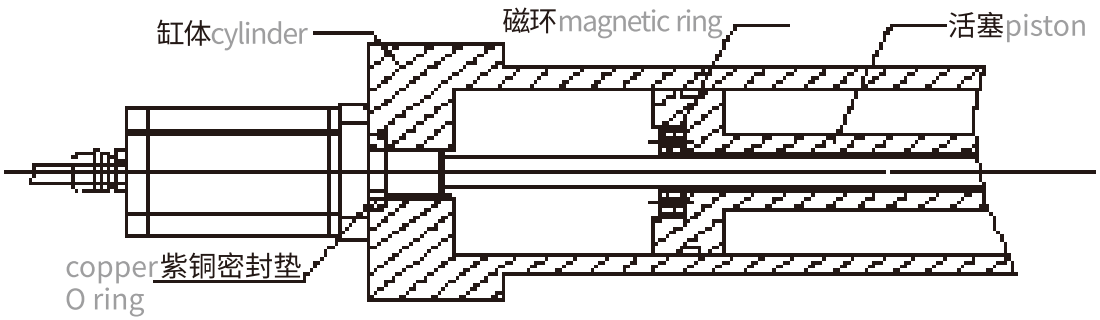
Mode 1: O-ring sealing of butyl rubber, generally applicable to the cylinder pressure ≤ 15MPa



方式二:聚四氟乙烯密封垫,一般适用于油压力15MPa-30MPa
Mode 2: PTFE gasket, generally applicable to oil pressure 15MPa-30MPa



方式三:紫铜垫密封,一般适用于油缸压力≥30MPa
Mode 3: Purple copper gasket sealing, generally applicable to the cylinder pressure ≥ 30MPa



外置支架安装方式
External bracket 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 transducer in place with the transducer support and secure the support to the transducer's threads with the locking nut.

2.将磁环用内六角螺钉M4×16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. Attach the ring to the ring support with internal hexagonal screws M4 x 16. When the ring is mounted on the stem, the head of the screw should face the electronic compartment side; the ring should be as centered on the stem as possible and have no contact with it, but a slight eccentricity of the ring will not affect the performance of the sensor.

3.将测杆固定支架紧绕在测杆的最末端。

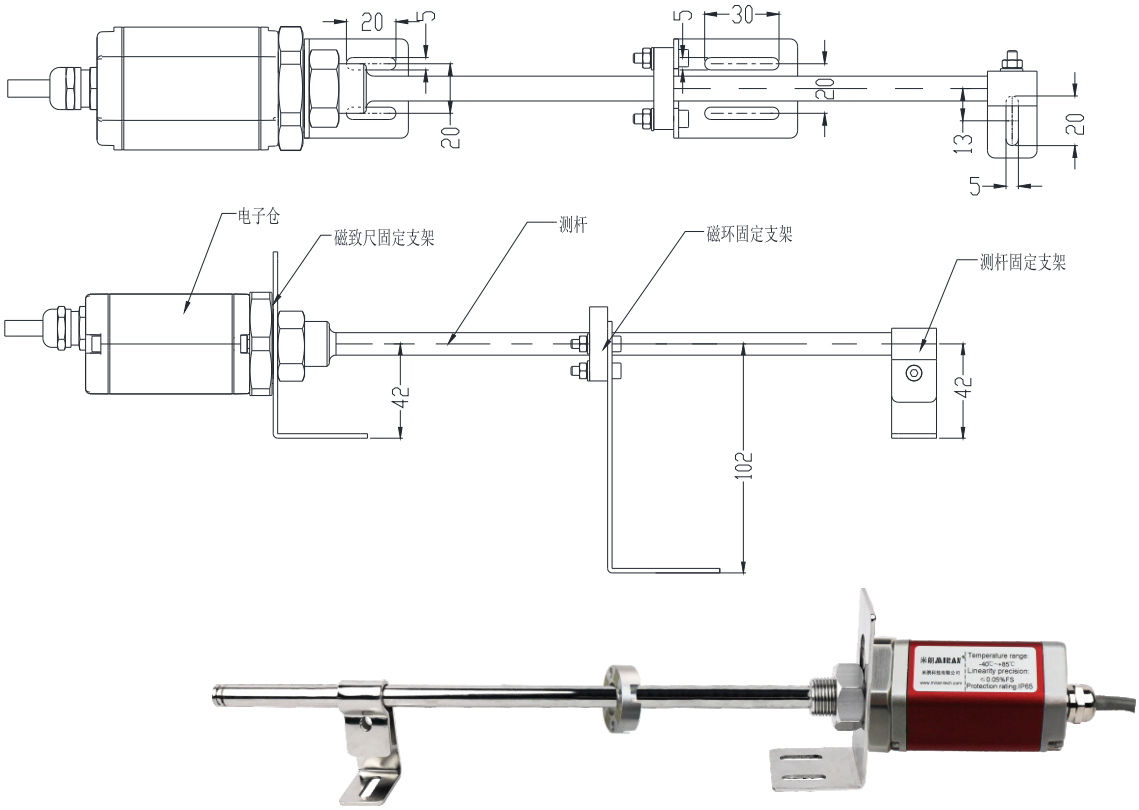
3. Wrap the stem mounting bracket tightly around the far end of the stem.

4.最后将整个组装好的传感器根据安装要求用自制螺钉固定好即可。

4. Finally, fasten the assembled sensor with customized screws according to the mounting requirements.

支架安装示意图：

Schematic diagram of bracket installation:



底部支架安装方式：

Bottom bracket mounting method：

下述安装方式主要适用于MTM、MTM1、MTM2、MTM3、MTM5、MTC、MTF、MTF1、MTF2、MTG、MPM系列位移传感器

The following mounting methods are mainly suitable for MTM, MTM1, MTM2, MTM3, MTM5, MTC, MTF, MTF1, MTF2, MTG, MPM series displacement sensors.

1.将传感器配件滑块套入磁致尺本体（仅MTM\MTM2\MTF\MTF1\MTF2系列）。

1. Slide the sensor accessory slide onto the magnetometer body (MTM\MTM2\MTF\MTF1\MTF2 series only).

2.将安装支架套入磁致尺本体安装槽内，分别用两个M4的螺栓将安装支架紧固于检测设备上。
2. Sleeve the mounting bracket into the mounting groove of the magnetostrictive scale body, and fasten the mounting bracket to the testing equipment with two M4 bolts respectively.

3.将鱼眼万向节或万向头与需要检测位移的可动部分相连结（相对于磁致尺本体可移动部分）。
3. Connect the fisheye gimbal or universal head to the movable part that needs to detect the displacement (relative to the movable part of the magnetometer body).

4.悬浮磁块在工作中离传感器表面大概2-5mm（仅MTM1\MTM3\MTM5系列）。
4. The suspended magnetic blocks are approximately 2 to 5 mm away from the sensor surface during operation (only for the MTM1, MTM3, and MTM5 series).



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.

常见问题及处理Common Problems and Handling:

以下为一般故障原因与处理方法:
The following are general causes of malfunctions and how to deal with them:

1.接线错误（最常发生）：按接线表重新接线。
1. Wiring error (the most common): according to the wiring table to rewire.

2.供电不对或反向连接，电源不稳定：提供正确稳定和纯净电源重接。

2. Incorrect power supply or reverse connection, unstable power supply: Provide correct, stable and pure power supply and reconnect.

3.不匹配零件，如配对接头错误：联系我们重订所需配件。

3. Mismatched parts, such as the wrong pair of connectors: contact us to reorder the required parts.

4.磁铁受到破坏（注意：磁铁本身为“永磁体”不会自我消磁）：更换磁铁。

4. The magnet is damaged (note: the magnet itself is a "permanent magnet" will not demagnetize itself): replace the magnet.

5.信号不稳定，接地不对（如DC电路地线和机械外壳地线接在一起）。

5. Signal instability, grounding is not right (such as DC circuit ground and mechanical shell ground connected together).

6.通讯故障，请查看控制器厂家的相关资料或联系供应商。

6. Communication failure, please check the relevant information of the controller manufacturer or contact the supplier.

7.控制器失效：如果可能的话，用户应该把传感器与控制器分开，独立检查传感器是否工作正常。

7. Controller failure: If possible, the user should separate the sensor from the controller and independently check whether the sensor is working properly.

8.外来电子EMI噪音干扰（包括对电缆的干扰）：请检查所选用电缆是否带屏蔽和符合要求。

8. External electronic EMI noise interference (including interference with the cable): Please check whether the selected cable is shielded and meet the requirements.

9.传感器受到外来破坏，如水淹、高温、电缆被切断又或受到猛烈的冲撞等事故（在一些环境恶劣如钢铁厂，木材厂等生产线上，这些事故可能经常发生，并不为奇）：可寄回修理，但如果严重的话，可能需要重新订货。

9. The sensor is subject to external damage, such as flooding, high temperature, cable is cut or subject to violent impact and other accidents (in some harsh environments, such as steel mills, timber mills and other production lines, these accidents may be frequent and not surprising): can be sent back to the repair, but if the seriousness of the case, it may be necessary to re-order.

注：按上述方法故障排除不了，请送生产厂家检修。

Note: If you are unable to solve the problem by the above method, please send it to your healthcare provider for repair.

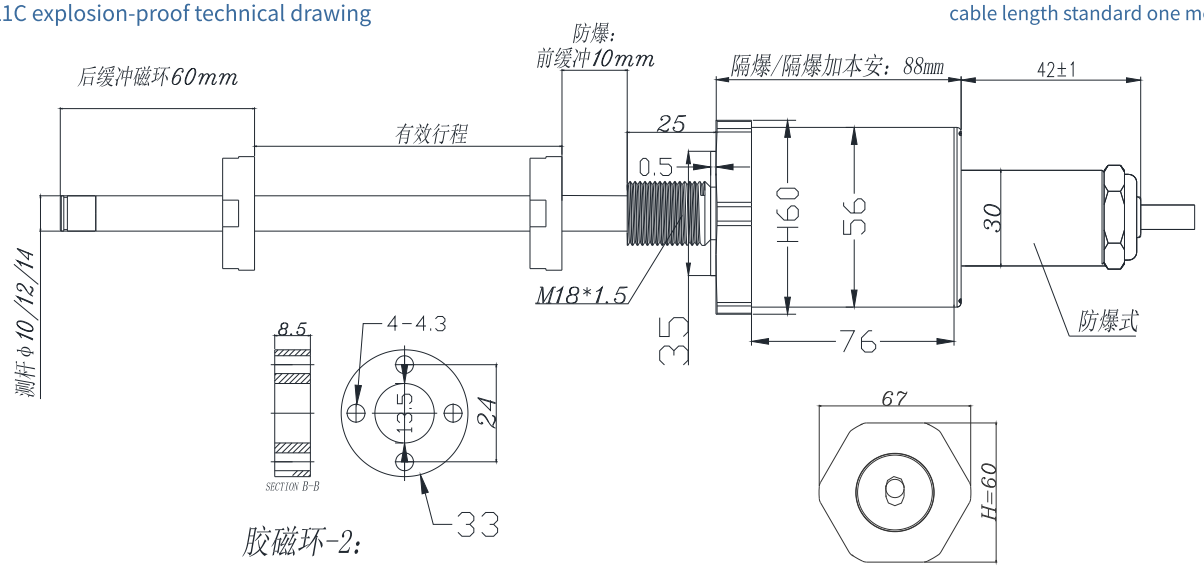
MTL1/3/4系列磁致伸缩位移传感器
MTL1/3/4 series magnetostrictive displacement sensors

产品尺寸图Product Dimension Drawing

单位Unit:mm

MTL1C防爆技术图纸
MTL1C explosion-proof technical drawing

线长标配一米
cable length standard one meter

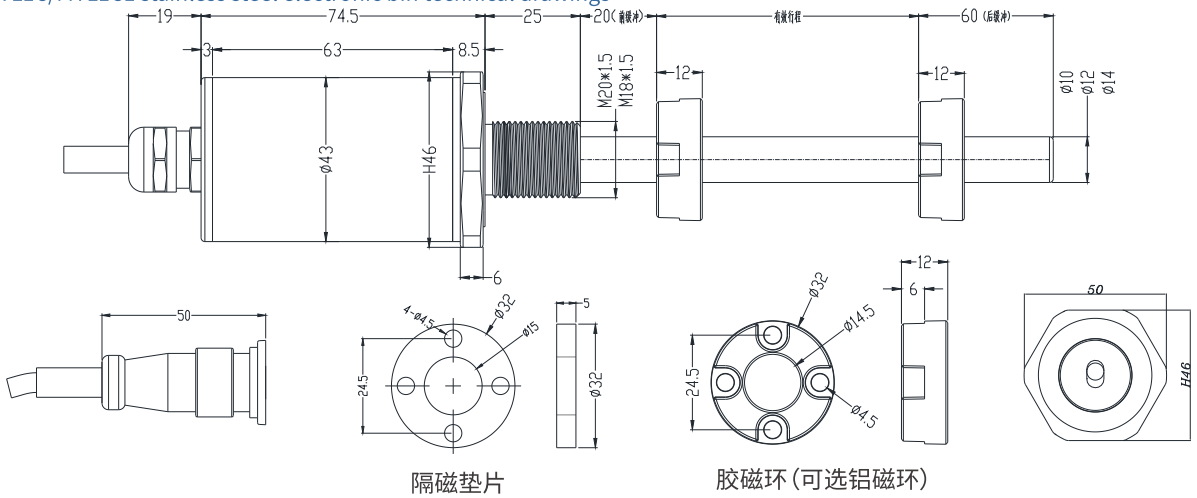




单位Unit:mm

MTL1C/MTL1C1不锈钢电子仓技术图纸
MTL1C/MTL1C1 stainless steel electronic bin technical drawings

线长标配一米
cable length standard one meter





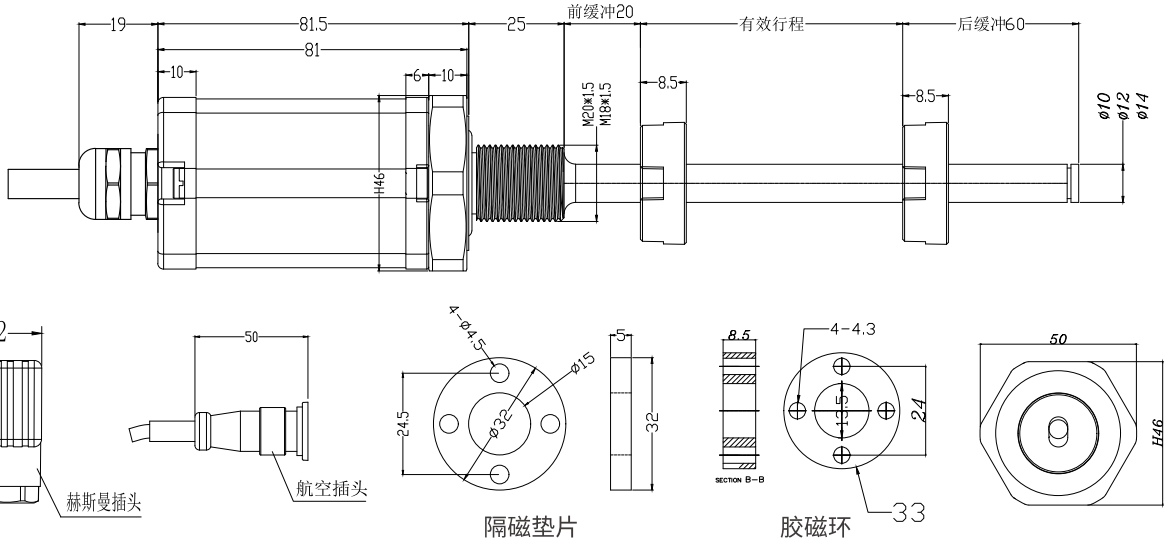
单位Unit:mm

MTL3C六角电子仓技术图纸(替代以前老款MTL3)

MTL3C hexagonal electronic compartment technical drawing (Replacement for the previous model MTL3)

线长标配一米
cable length standard one meter

该款图纸可做EX2本安防爆，前缓冲为10(赫斯曼插头除外)
This drawing can be made for EX2 explosion-proof version. The front buffer is 10 (except for the Hirschmann plug)



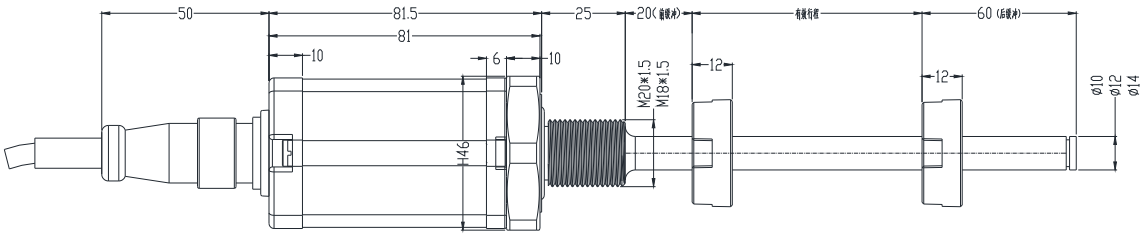


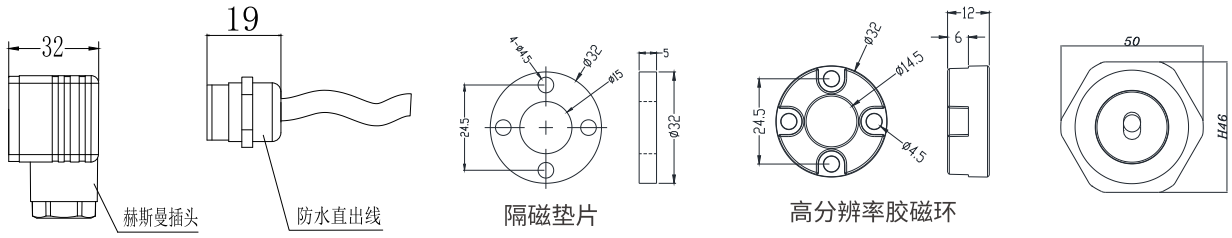
单位Unit:mm

MTL4C/MTL4C1六角电子仓技术图纸(高分辨率款，可选胶磁环、铝磁环)

MTL4C/MTL4C1 Hexagonal Electronic Enclosure Technology Drawing
(High-resolution version, with optional rubber magnetic rings or aluminum magnetic rings)

线长标配一米
cable length standard one meter



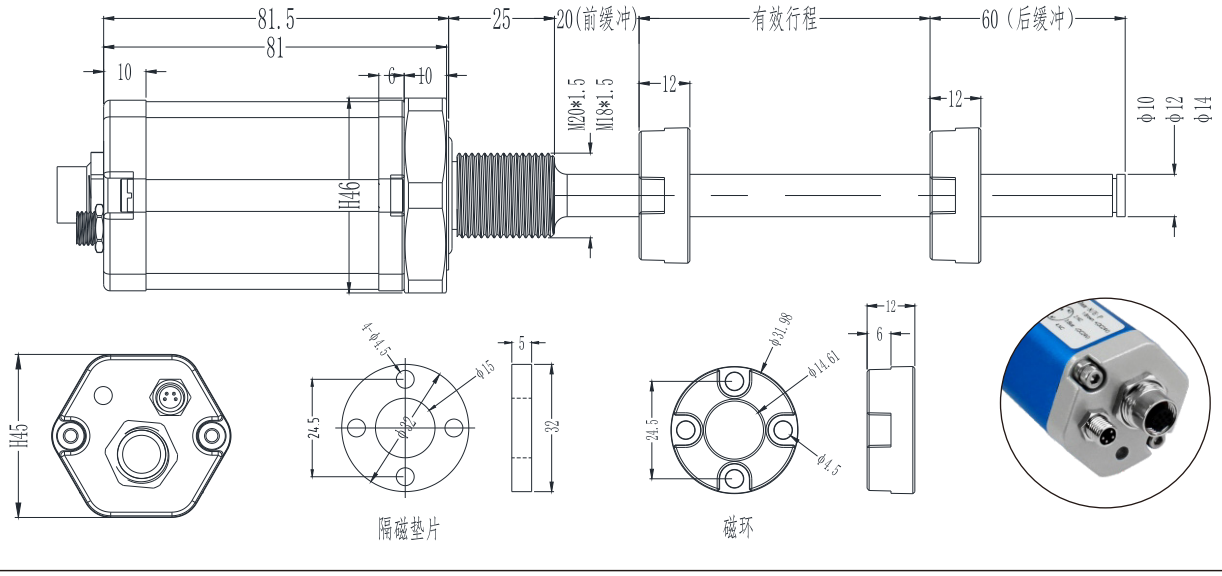




单位Unit:mm

MTL4C系列Ether CAT(IN)技术图纸
MTL4C series Ether CAT(IN) technical drawings

线长标配一米
cable length standard one meter

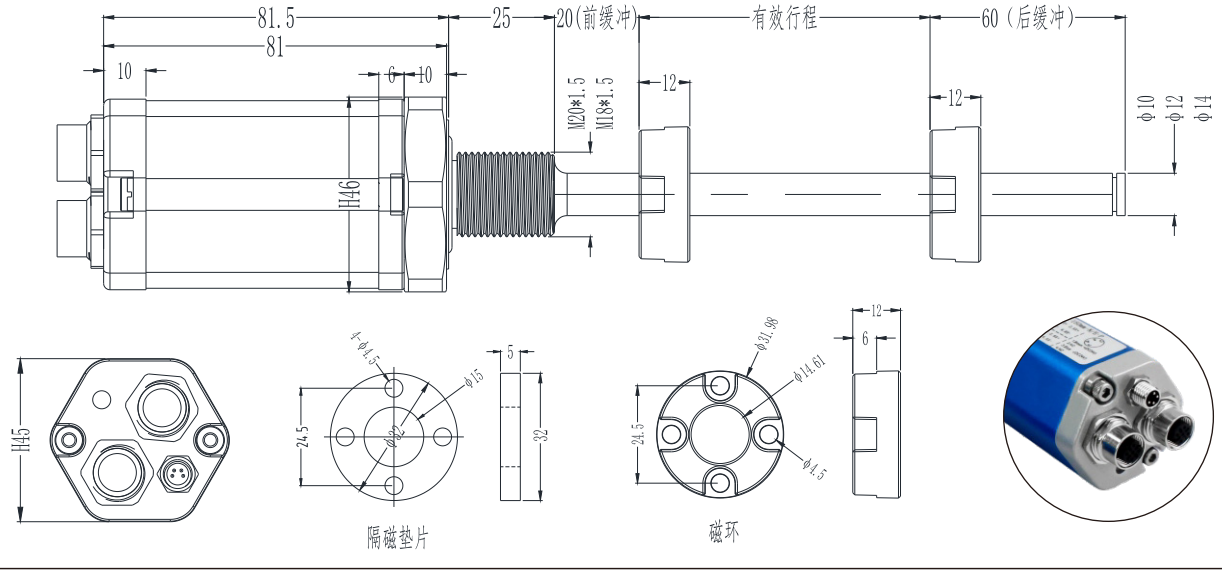




单位Unit:mm

MTL4C系列Ether CAT(IN+OUT)技术图纸
MTL4C series Ether CAT(IN+OUT) technical drawings

线长标配一米
cable length standard one meter





性能参数Performance Parameters

电气指标Electrical indicators

MTL1/MTL3/MTL4系列磁致伸缩位移/液位传感器 MTL1/MTL3/MTL4 series magnetostrictive displacement/liquid level sensors	
量程范围 Measurement range	50～5000mm
非线性误差 Nonlinear error	≤0.05%FS
重复性误差 Repeatability error	≤0.005%FS
供电电压 Supply voltage	DC24V (±2V)
迟滞 Hysteresis	≤0.001%FS
绝缘电阻 Insulation resistance	＞10MΩ
绝缘强度 Dielectric strength	500V
工作电流 Operating current	≤60mA
抗震动性 Vibration resistance	30m/s²
极性保护 Polarization protection	最大-30VDC maximum -30VDC
超压保护 Overpressure protection	最大36VDC maximum 36VDC
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard:0.01mm, Explosion-proof:0.25mm, SSI:0.001mm
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
输出信号 Output signal	0-5V/0-10V/4-20mA/0-20mA/RS485/MODBUS RTU/CANopen/SSI/ start-stop/Ether CAT

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
测杆温度 Rod temperature	-40°C~150°C
电子仓温度 Electronic warehouse temperature	-40°C~85°C
工频磁场抗干扰强度 Work frequency magnetic field anti-interference strength	1000A/m
测杆材料 Rod material	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel
电子仓外壳 Electronic warehouse shell	默认:铝合金/0CR18NI9(304不锈钢);可定制为:316不锈钢 default: aluminum alloy/0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel
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 mark	防爆合格证见第12页(Ex db IIC T6 Gb)第13、14页(Ex ia IIB T4 Ga) The explosion-proof certificate can be found on page 12 (Ex db IIC T6 Gb) and pages 13 and 14 (Ex ia IIB T4 Ga)

产品特点Product Features

1.增加产品抗干扰功能,在复杂的电磁环境中,产品能保持稳定的工作状态不会因外界干扰而出现异常波动或故障。

1.Increase the anti-interference function of the product, in the complex electromagnetic environment, the product can maintain a stable working condition will not be due to external interference and abnormal fluctuations or failure.

2.分辨率为标准:0.01mm,本安:0.25mm,SSI:0.001mm。

2. Resolution standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm.

3.自带保护电路,过压或过流时,能迅速保护电路在安全范围内,确保产品电子元件不受损坏。

3.With its own protection circuit, over-voltage or over-current, can quickly protect the circuit within the safety range, to ensure that the product electronic components are not damaged.

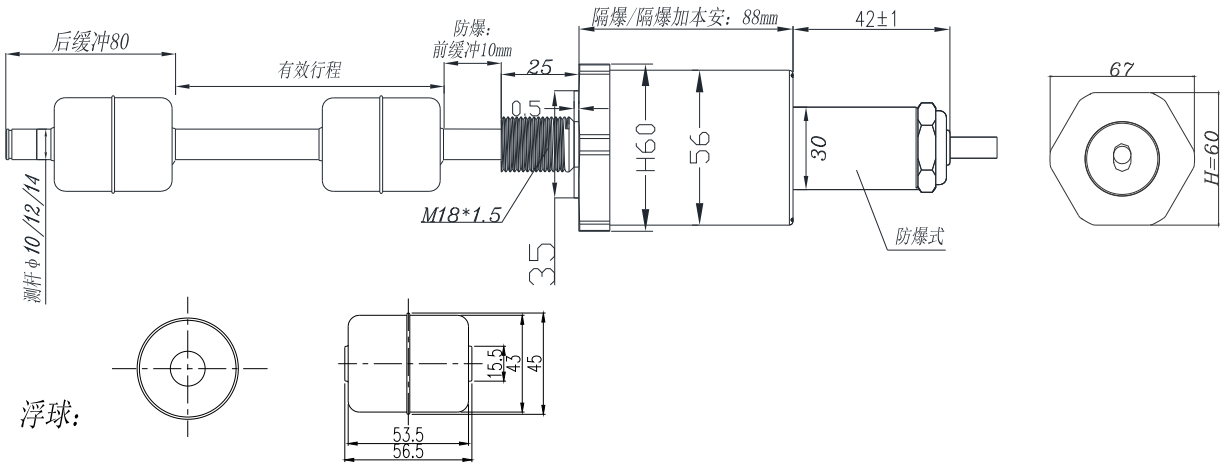
MTL1F/MTL4F系列磁致伸缩位移传感器
MTL1F/MTL4F series magnetostrictive displacement sensors

产品尺寸图Product Dimension Drawing

单位Unit:mm

MTL1F防爆型技术图纸
MTL1F explosion-proof technical drawing

线长标配一米
cable length standard one meter

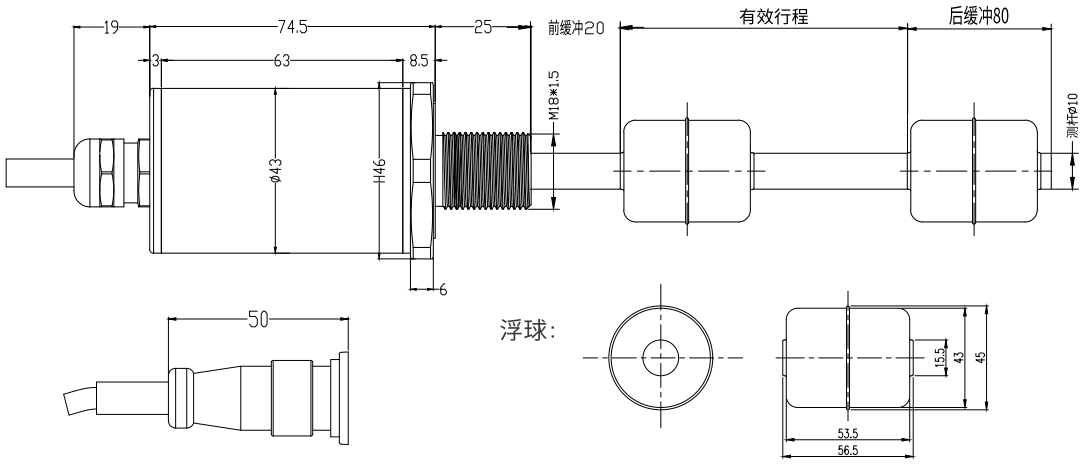




单位Unit:mm

MTL1F不锈钢电子仓技术图纸
MTL1F stainless steel electronic bin technical drawings

线长标配一米
cable length standard one meter

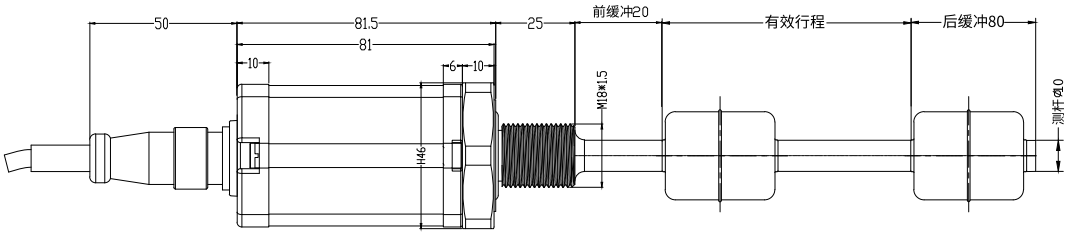


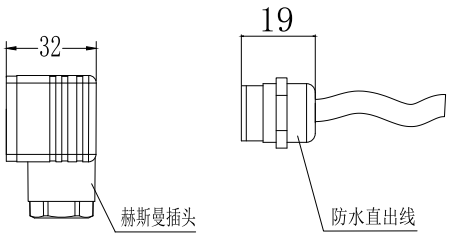


单位Unit:mm

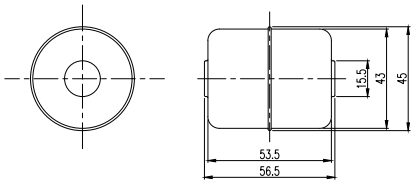
MTL4F六角电子仓技术图纸
MTL4F hexagonal electronic silo technical drawings

线长标配一米
cable length standard one meter





浮球:

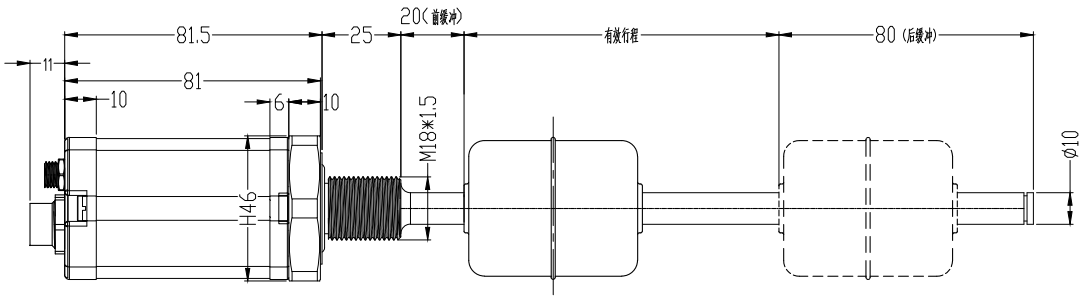


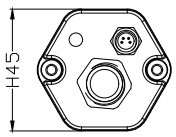


单位Unit:mm

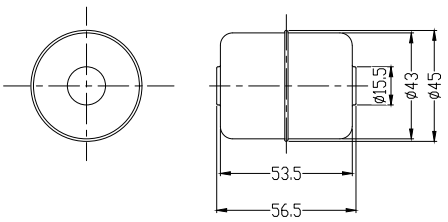
MTL4F系列Ether CAT(IN)技术图纸
MTL4F series Ether CAT(IN) technical drawings

线长标配一米
cable length standard one meter





浮球:



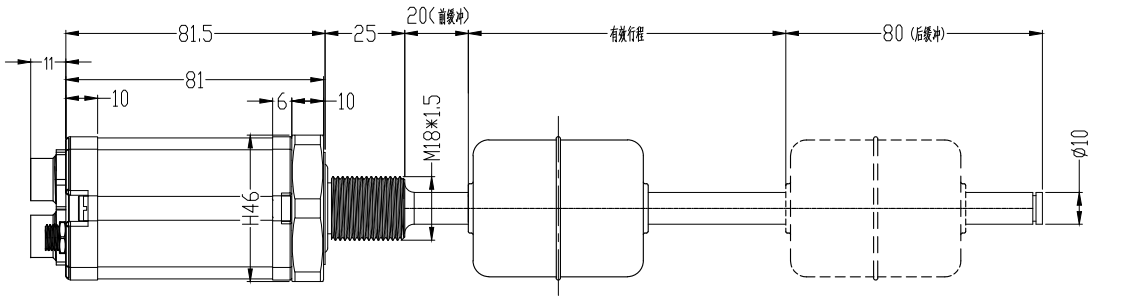


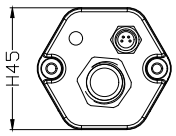


单位Unit:mm

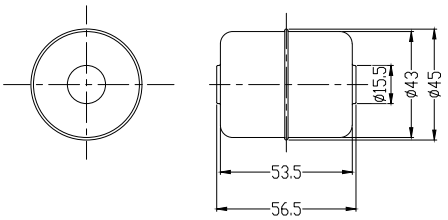
MTL4F系列Ether CAT(IN+OUT)技术图纸
MTL4F series Ether CAT(IN+OUT) technical drawings

线长标配一米
cable length standard one meter





浮球：







性能参数Performance Parameters

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%/℃
测杆温度 Rod temperature	-40℃~150℃
电子仓温度 Electronic warehouse temperature	-40℃~85℃
工频磁场抗干扰强度 Work frequency magnetic field anti-interference strength	1000A/m
测杆材料 Rod material	默认：0CR18NI9（304不锈钢）；可定制为：316不锈钢 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel
电子仓外壳 Electronic warehouse shell	默认：铝合金/0CR18NI9（304不锈钢）；可定制为：316不锈钢 default: aluminum alloy/0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel
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 mark	防爆合格证见第12页(Ex db IIC T6 Gb)第13、14页(Ex ia IIB T4 Ga) The explosion-proof certificate can be found on page 12 (Ex db IIC T6 Gb) and pages 13 and 14 (Ex ia IIB T4 Ga)

电气指标Electrical indicators

MTL1F/MTL4F系列磁致伸缩位移/液位传感器 MTL1F/MTL4F series magnetostrictive displacement/liquid level sensors	
量程范围 Measurement range	50～5000mm
非线性误差 Nonlinear error	≤0.05%FS
重复性误差 Repeatability error	≤0.005%FS
供电电压 Supply voltage	DC24V (±2V)
迟滞 Hysteresis	≤0.001%FS
绝缘电阻 Insulation resistance	＞10MΩ
绝缘强度 Dielectric strength	500V
工作电流 Operating current	≤60mA
抗震动性 Vibration resistance	30m/s²
极性保护 Polarization protection	最大-30VDC maximum -30VDC
超压保护 Overpressure protection	最大36VDC maximum 36VDC
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm
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
输出信号 Output signal	0-5V/0-10V/4-20mA/0-20mA/RS485/MODBUS RTU/CANopen/SSI/ start-stop/Ether CAT

产品特点Product Features

1.增加产品抗干扰功能,在复杂的电磁环境中,产品能保持稳定的工作状态不会因外界干扰而出现异常波动或故障。

1.Increase the anti-interference function of the product, in the complex electromagnetic environment, the product can maintain a stable working condition will not be due to external interference and abnormal fluctuations or failure.

2.分辨率为标准:0.01mm,本安:0.25mm,SSI:0.001mm。

2. Resolution standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm.

3.自带保护电路,过压或过流时,能迅速保护电路在安全范围内,确保产品电子元件不受损坏。

3.With its own protection circuit, over-voltage or over-current, can quickly protect the circuit within the safety range, to ensure that the product electronic components are not damaged.

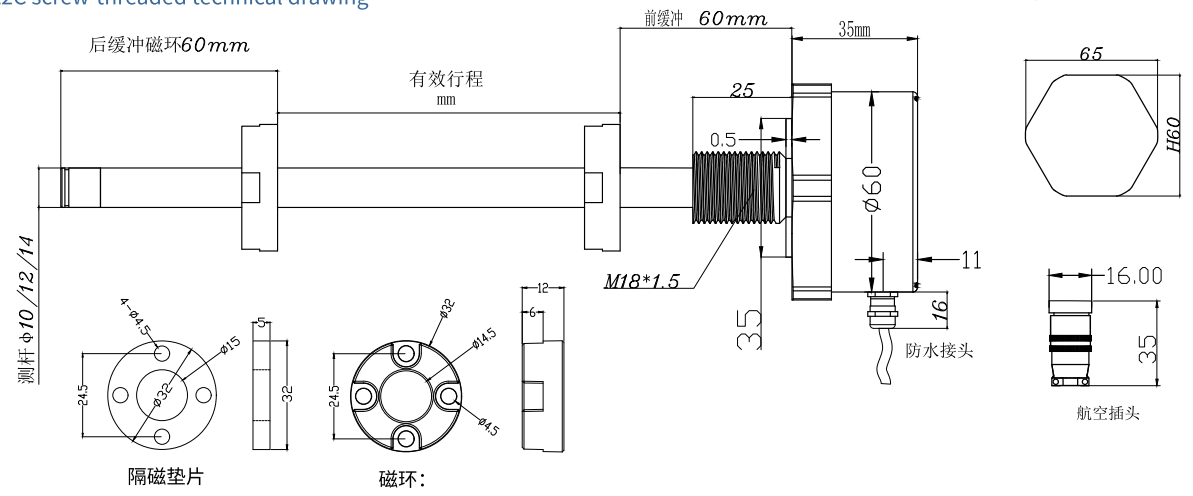
MTL2/8系列磁致伸缩位移传感器
MTL2/8 Series Magnetostrictive Displacement Sensors

产品尺寸图Product Dimension Drawing

单位Unit:mm

MTL2C螺牙式技术图纸
MTL2C screw-threaded technical drawing

线长标配一米
cable length standard one meter

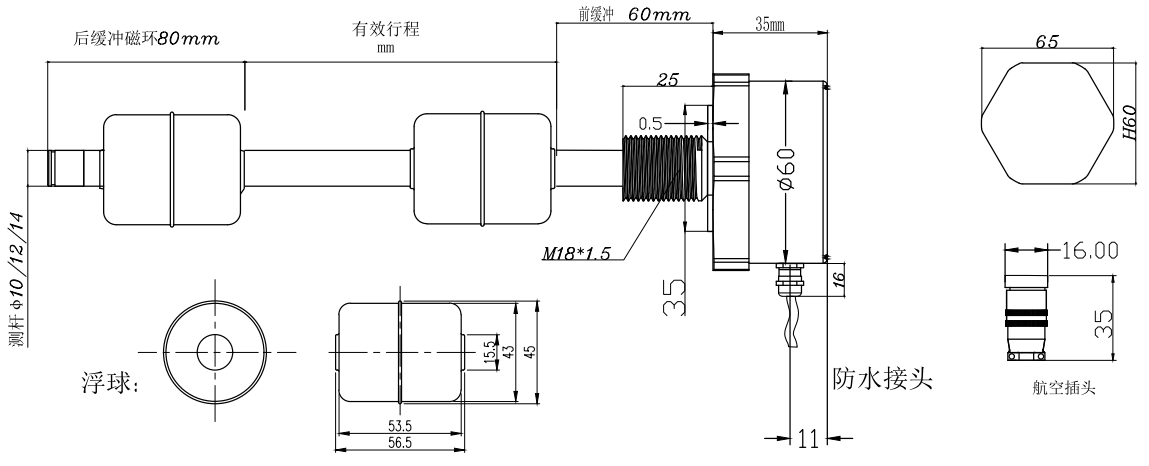




单位Unit:mm

MTL2F螺牙式技术图纸
MTL2F screw-threaded technical drawing

线长标配一米
cable length standard one meter

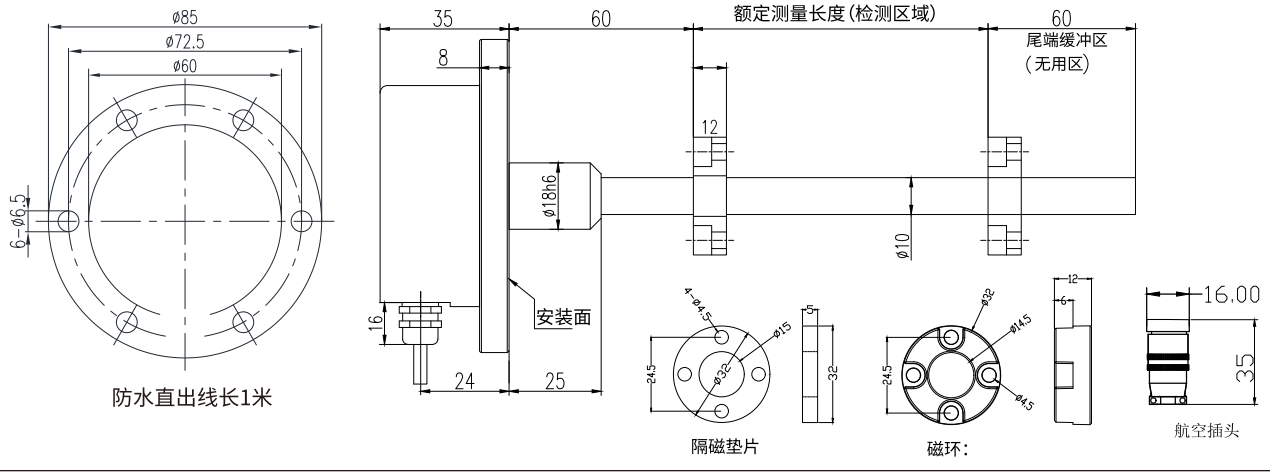




单位Unit:mm

MTL8C法兰安装式技术图纸
MTL8C 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/MTL8系列磁致伸缩位移/液位传感器 MTL2/MTL8 series magnetostrictive displacement/liquid level sensors			
量程范围 Measurement range	50～5000mm	供电电压 Supply voltage	DC24V (±2V)
外壳防护等级 Shell protection grade	IP65	重复性误差 Repeatability error	≤0.005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
温度稳定性 Temperature stability	≤0.002%/℃	工作电流 Operating current	≤60mA
电子仓温度 Electronic warehouse temperature	-40℃~85℃	测杆温度 Rod temperature	-40℃~150℃
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm		
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 Rod material	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel		
电子仓外壳 Electronic warehouse shell	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); 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)		

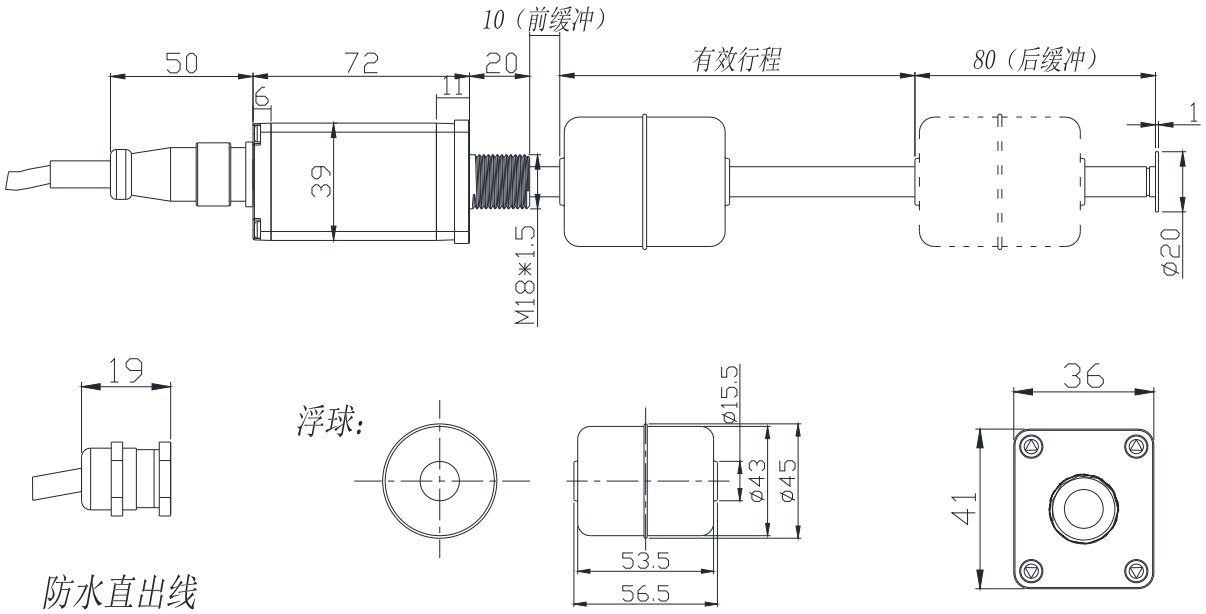
MTL7磁致伸缩位移传感器
MTL7 magnetostrictive displacement sensors

产品尺寸图Product Dimension Drawing

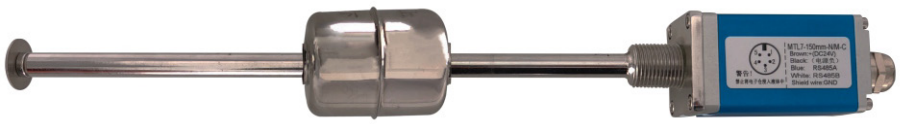
单位Unit:mm

MTL7方形电子仓技术图纸
MTL7 Square Electronic Container 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	DC24V (±2V)
非线性误差 Nonlinear error	≤0.05%FS
迟滞 Hysteresis	≤0.001%FS
工作电流 Operating current	≤60mA
重复性误差 Repeatability error	≤0.005%FS
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm
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 Rod 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 Rod material	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel
电子仓外壳 Electronic warehouse shell	默认:铝合金 default: aluminum alloy
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)

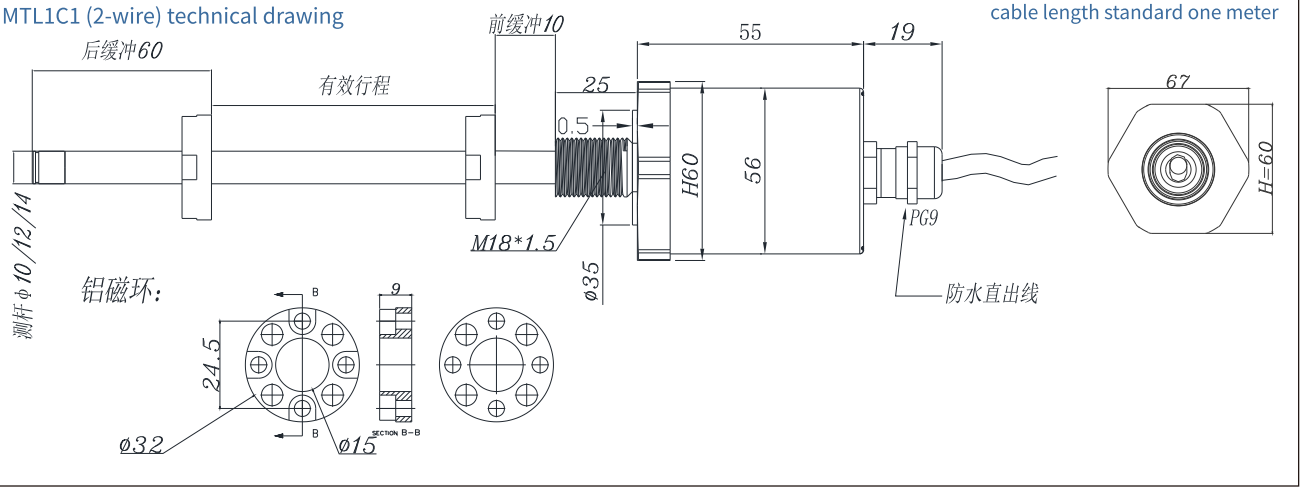
MTL1C1/MTL1F(二线制)磁致伸缩位移传感器
MTL1C1/MTL1F(2-wire) magnetostrictive displacement sensors

产品尺寸图Product Dimension Drawing

单位Unit:mm

MTL1C1(二线制)技术图纸
MTL1C1 (2-wire) technical drawing

线长标配一米
cable length standard one meter

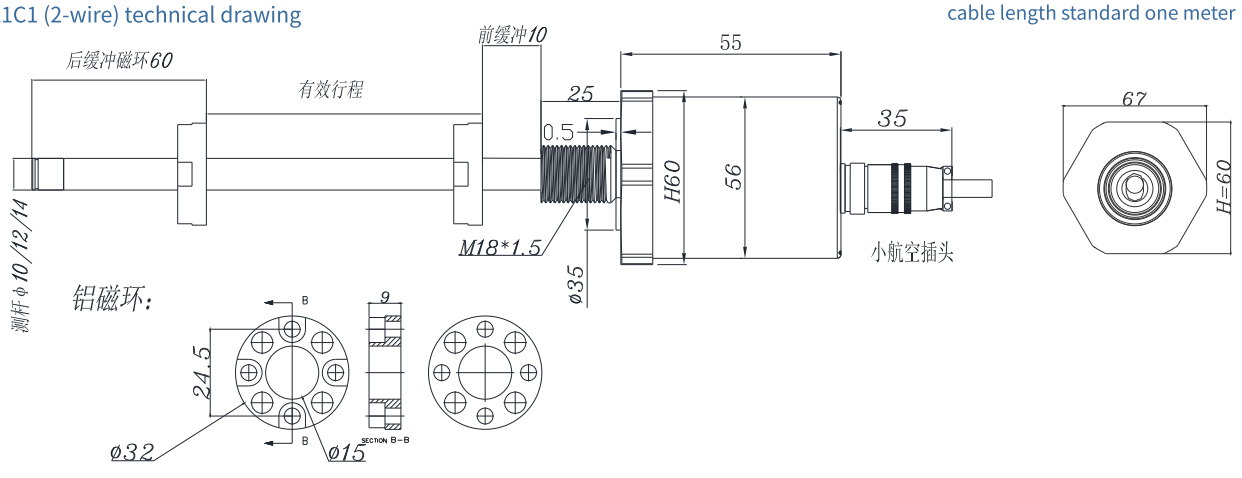




单位Unit:mm

MTL1C1(二线制)技术图纸
MTL1C1 (2-wire) technical drawing

线长标配一米
cable length standard one meter

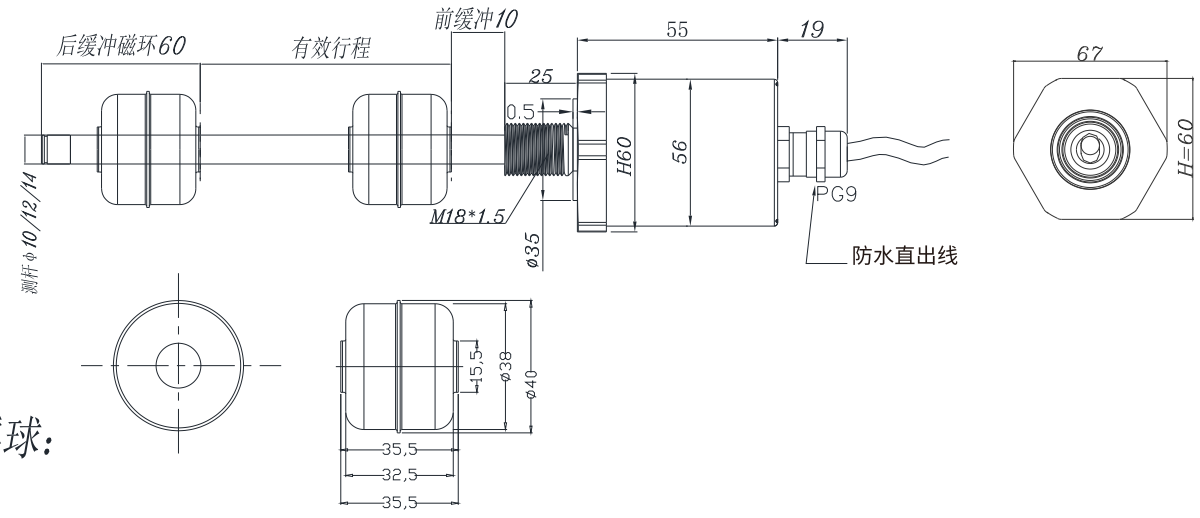




单位Unit:mm

MTL1F(二线制)技术图纸
MTL1F (2-wire) technical drawing

线长标配一米
cable length standard one meter





性能参数Performance Parameters

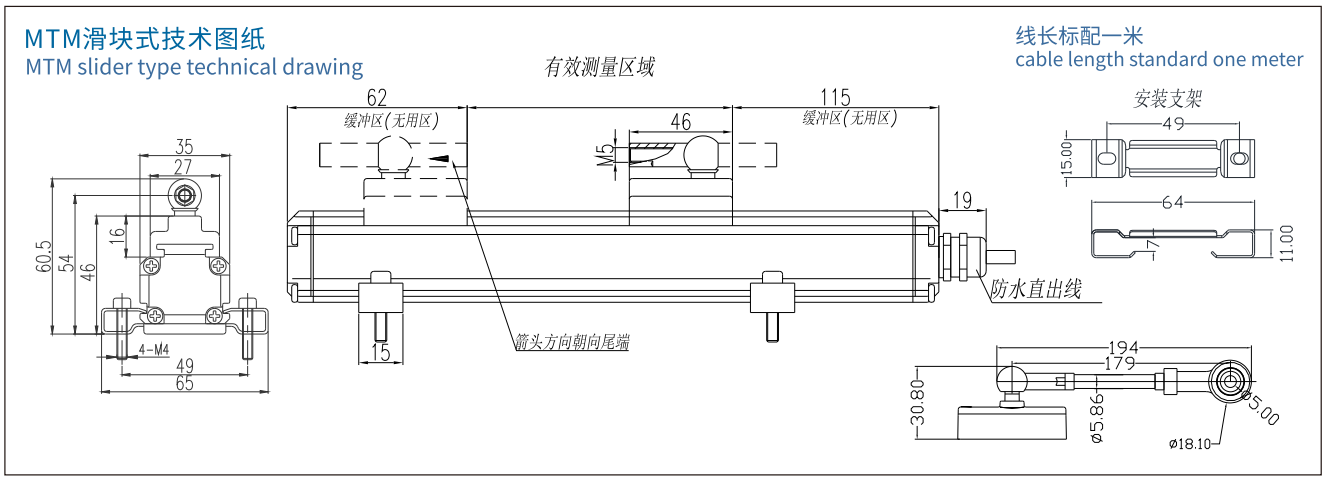
电气指标Electrical indicators

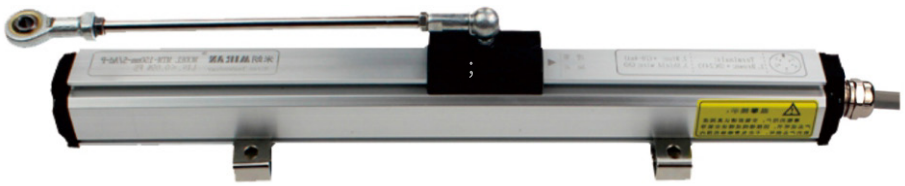
MTL1C1/MTL1F(二线制)磁致伸缩位移/液位传感器 MTL1C1/MTL1F (2-wire) Magnetostrictive Displacement/Level Sensor			
量程范围 Measurement range	30～1500mm	供电电压 Supply voltage	15～24VDC
线性精度 linear accuracy	±1mm	迟滞 Hysteresis	优于0.002%FS better than 0.002% FS
电子仓温度 Electronic warehouse temperature	-40°C~85°C	测杆温度 Rod temperature	-40°C~150°C
负载能力 Load capacity	电流信号输出负载≤500Ω current signal output load ≤500Ω	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)		
分辨率 Resolution ratio	1mm		
测杆材料 Rod material	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel		
电子仓外壳 Electronic warehouse shell	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel		
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

单位Unit:mm





性能参数Performance Parameters

电气指标Electrical indicators

MTM（二线制）磁致伸缩位移传感器 MTM(2-wire) Magnetostrictive Displacement Sensor			
量程范围 Measurement range	30～1500mm	供电电压 Supply voltage	15～24VDC
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
电子仓外壳 Electronic warehouse shell	默认:铝合金 default: aluminum alloy	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)		
分辨率 Resolution ratio	1mm		

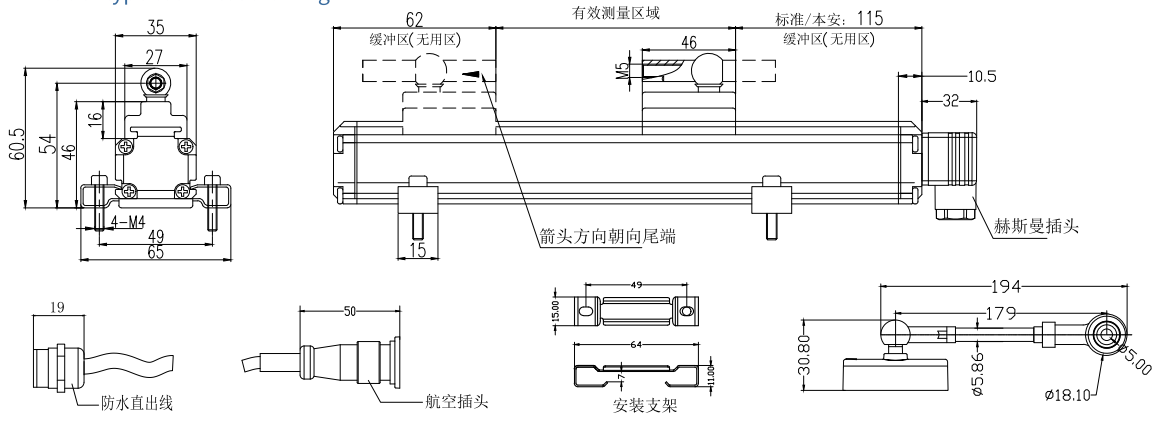
MTM/1/2/3系列磁致伸缩位移传感器
MTM/1/2/3 series magnetostrictive displacement sensors

产品尺寸图Product Dimension Drawing

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

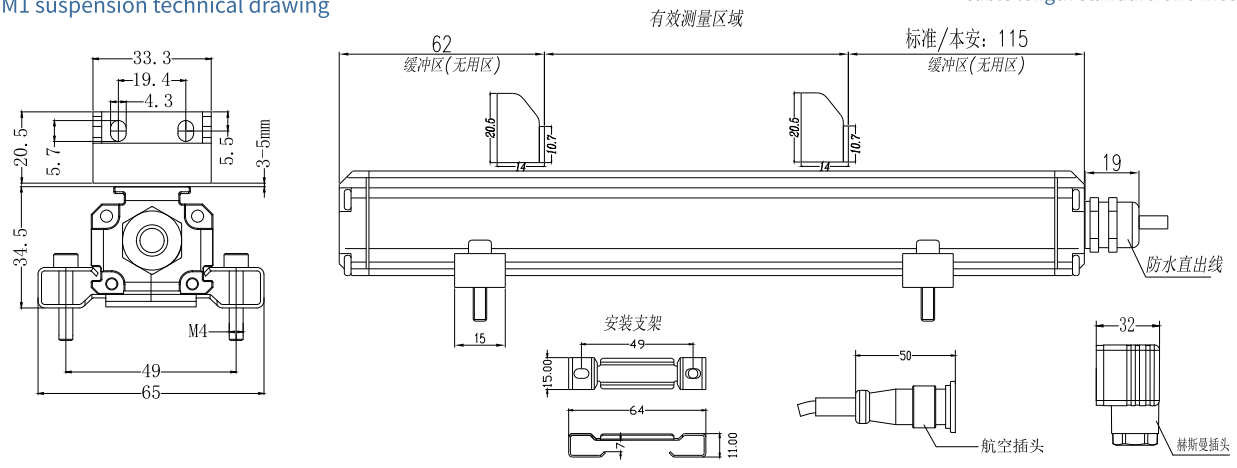




单位Unit:mm

MTM1悬浮式技术图纸
MTM1 suspension technical drawing

线长标配一米
cable length standard one meter

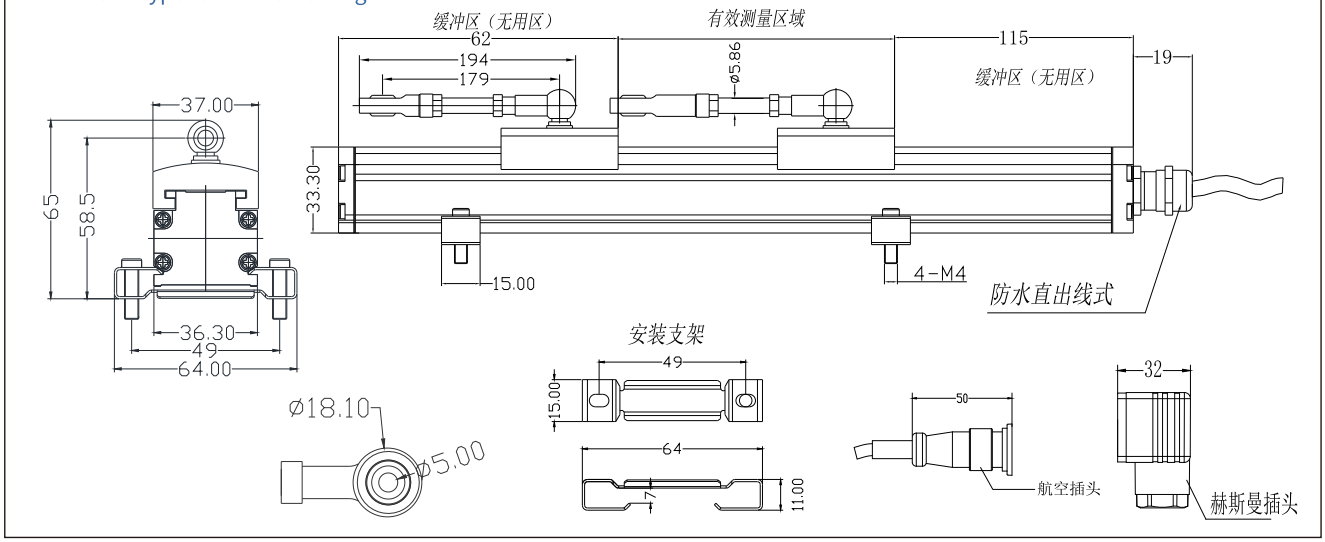




单位Unit:mm

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

线长标配一米
cable length standard one meter

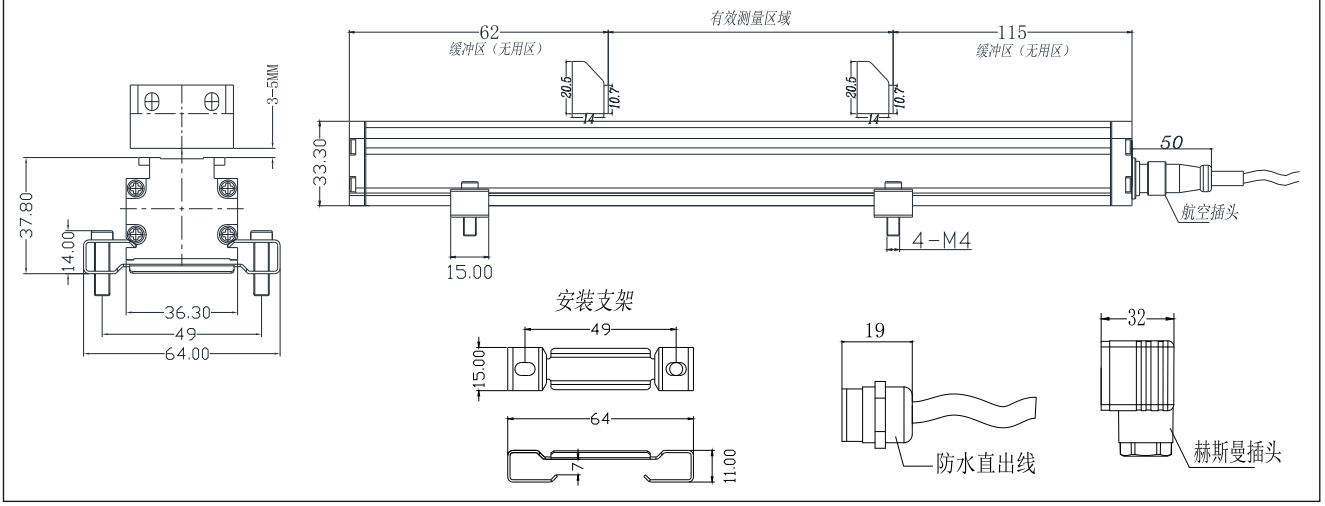




单位Unit:mm

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磁致伸缩位移传感器 MTM/MTM1/MTM2/MTM3 Magnetostrictive Displacement Sensor	
量程范围 Measurement range	50～5000mm
供电电压 Supply voltage	DC24V (±2V)
非线性误差 Nonlinear error	≤0.05%FS
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm
迟滞 Hysteresis	≤0.001%FS
工作电流 Operating current	≤60mA
重复性误差 Repeatability error	≤0.005%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	≤0.002%/℃
工作温度 Operating temperature	-40℃~85℃
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 warehouse shell	默认:铝合金 default: aluminum alloy
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)

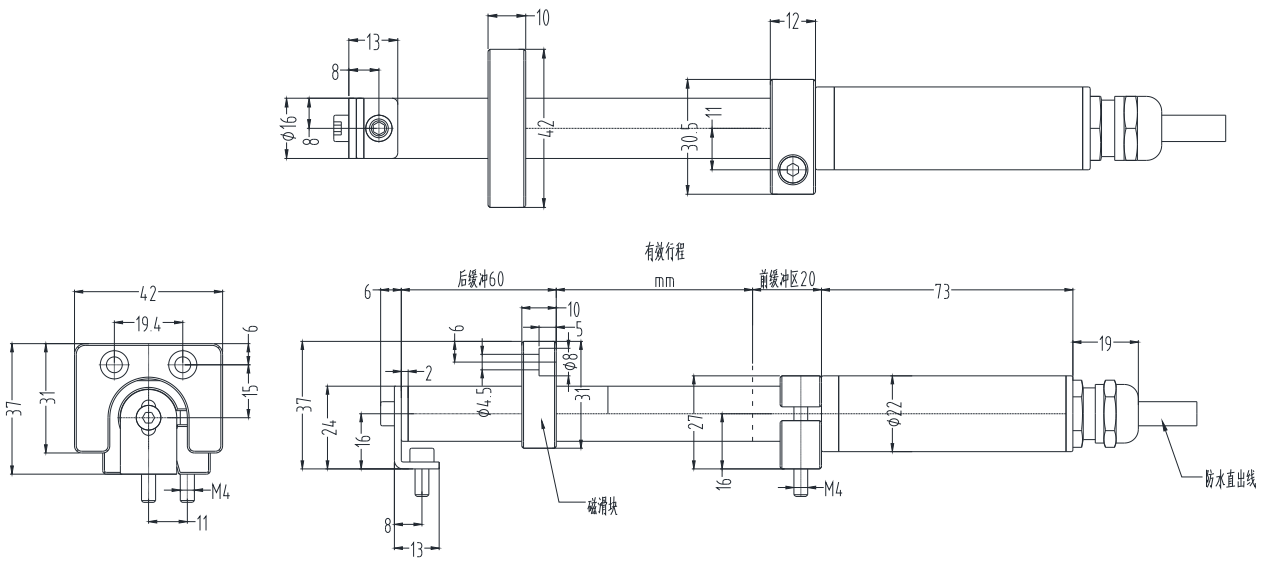
MTW磁悬浮式磁致伸缩位移传感器
MTW Magnetic Levitation Type Magnetostrictive Displacement Sensor

产品尺寸图Product Dimension Drawing

单位Unit:mm

MTW防水接头出线技术图纸
MTW 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

MTW磁悬浮式磁致伸缩位移传感器 MTW Magnetic Levitation Type Magnetostrictive Displacement Sensor	
量程范围 Measurement range	50~1500mm
分辨率 Resolution ratio	≤0.1mm
非线性误差 Nonlinear error	≤±0.05%FS
重复性 Repetition	≤±0.005%FS
供电电压 Supply voltage	DC24V
迟滞 Hysteresis	≤0.001%FS
温度稳定性 Temperature stability	≤0.002%/℃
输出信号 Output signal	4-20mA，0-20mA，0-5V，0-10V，RS485（MODBUS-RTU）
出线方式 wiring method	防水电缆接头 Waterproof cable connector
工作电流 Working current	＜60mA（随量程大小而变化） ＜60mA (varies with the range)
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
工作环境温度 Work environment temperature	-40℃~85℃
防护等级 Protection level	IP67
极限保护 Limit protection	最大-30VDC Maximum -30VDC
超压保护 Overpressure protection	最大36VDC Maximum 36VDC
绝缘电阻 Insulation resistance	＞10MΩ
绝缘强度 Insulation strength	500V

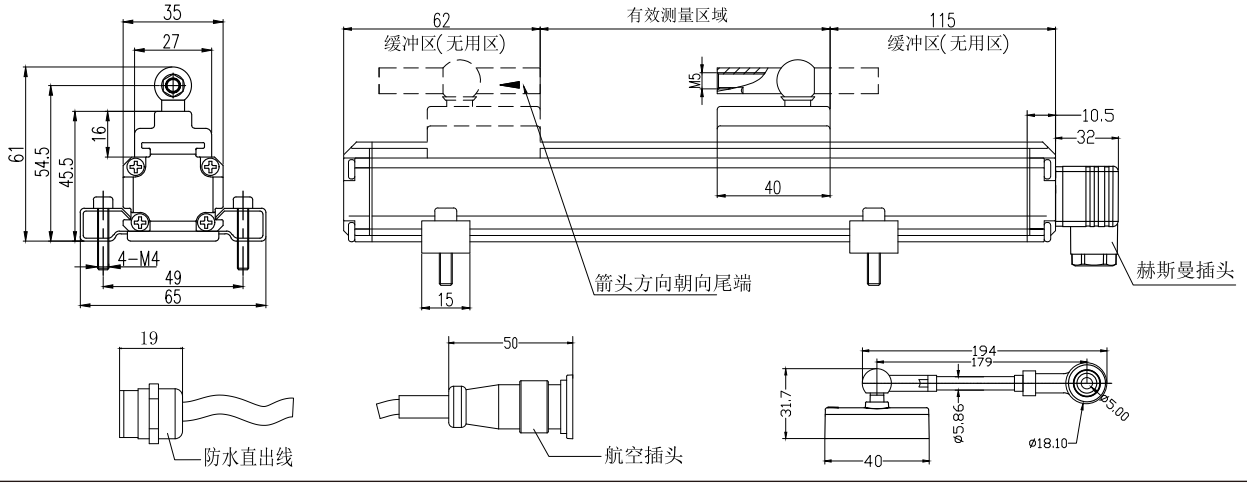
MTM系列高分辨率磁致伸缩位移传感器
MTM series high resolution magnetostrictive displacement transducers

产品尺寸图Product Dimension 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

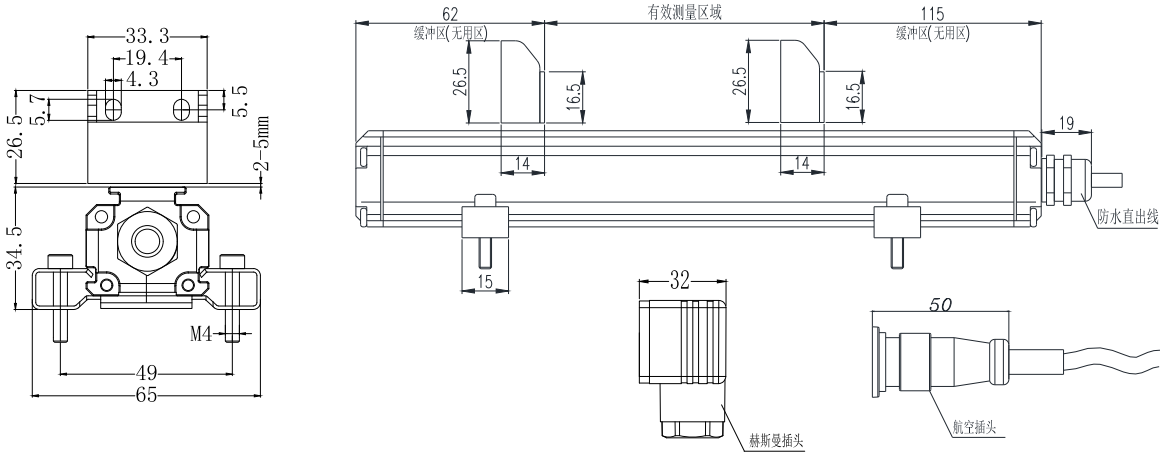




单位Unit:mm

MTM1悬浮式技术图纸
MTM1 suspension technical drawing

线长标配一米
cable length standard one meter

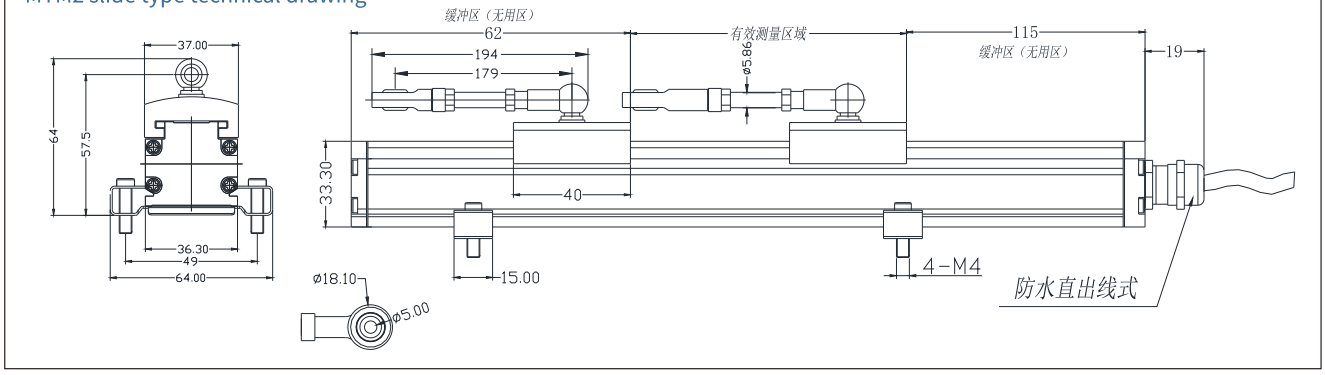




单位Unit:mm

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

线长标配一米
cable length standard one meter

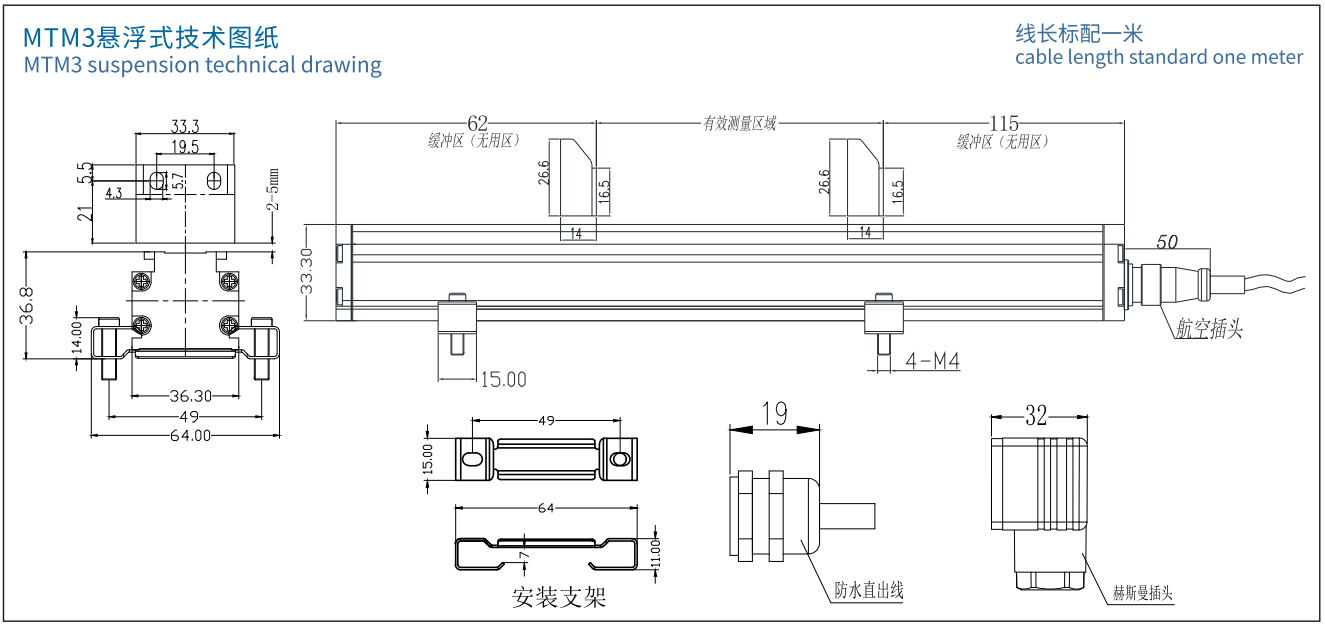




单位Unit:mm

MTM3悬浮式技术图纸
MTM3 suspension technical drawing

线长标配一米
cable length standard one meter





产品特点Product Features

1.增加产品抗干扰功能，在复杂的电磁环境中，产品能保持稳定的工作状态不会因外界干扰而出现异常波动或故障。

1.Increase the anti-interference function of the product, in the complex electromagnetic environment, the product can maintain a stable working condition will not be due to external interference and abnormal fluctuations or failure.

2.分辨率为标准：0.01mm，本安：0.25mm，SSI：0.001mm。

2. Resolution standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm.

3.自带保护电路，过压或过流时，能迅速保护电路在安全范围内，确保产品电子元件不受损坏。

3.With its own protection circuit, over-voltage or over-current, can quickly protect the circuit within the safety range, to ensure that the product electronic components are not damaged.

性能参数Performance Parameters

电气指标Electrical indicators

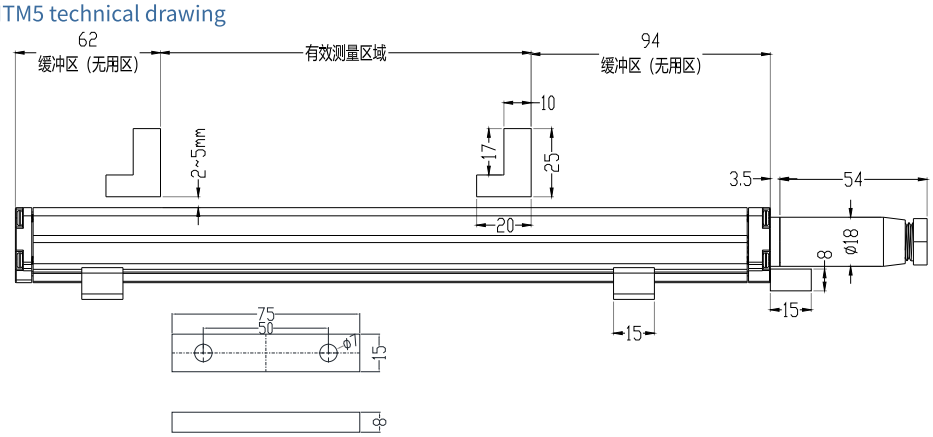
MTM/MTM1/MTM2/MTM3高分辨率磁致伸缩位移传感器 MTM/MTM1/MTM2/MTM3 High-resolution Magnetostrictive Displacement Sensor	
量程范围 Measurement range	30～4500mm
供电电压 Supply voltage	DC24V (±2V)
电子仓外壳 Electronic warehouse shell	默认:铝合金 default: aluminum
极限保护 Limit protection	最大-30VDC maximum -30VDC
绝缘电阻 Insulation resistance	＞10MΩ
抗震动性 Vibration resistance	30m/s²
工频磁场抗干扰强度 Work frequency magnetic field anti-interference strength	1000A/m
重复性误差 Repeatability error	优于0.005%FS better than 0.005% FS
迟滞 Hysteresis	优于0.002%FS better than 0.002% FS
工作温度 Operating temperature	-40°C~85°C
外壳防护等级 Shell protection grade	IP65
超压保护 Overpressure protection	最大36VDC
绝缘强度 Dielectric strength	500W
分辨率 Resolution ratio	标准:0.01mm，本安:0.25mm，SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm
非线性误差 Nonlinear error	±0.05%FS，200mm以下最大误差100μm ±0.05% FS, maximum error of 100 μm for measurements below 200 mm
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/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI
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 mark	防爆合格证见第13、14页（Ex ia IIB T4 Ga） The explosion-proof certificate can be found on pages 13 and 14 (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

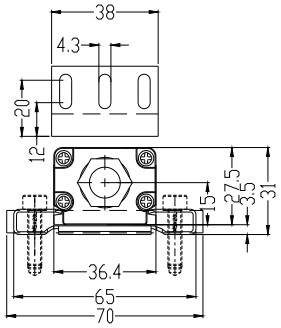
产品尺寸图Product Dimension Drawing

单位Unit:mm

MTM5技术图纸
MTM5 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

MTM5硫化机专用磁致伸缩位移传感器 MTM5 magnetostrictive displacement 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	DC24V (±2V)	迟滞 Hysteresis	优于0.002%FS better than 0.002% FS
电子仓外壳 Electronic warehouse shell	默认:铝合金 default: aluminum	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	工作温度 Operating temperature	-40°C~85°C
分辨率 Resolution ratio	标准:0.01mm，本安:0.25mm，SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm		
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/0-10V/4-20mA/0-20mA/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)		

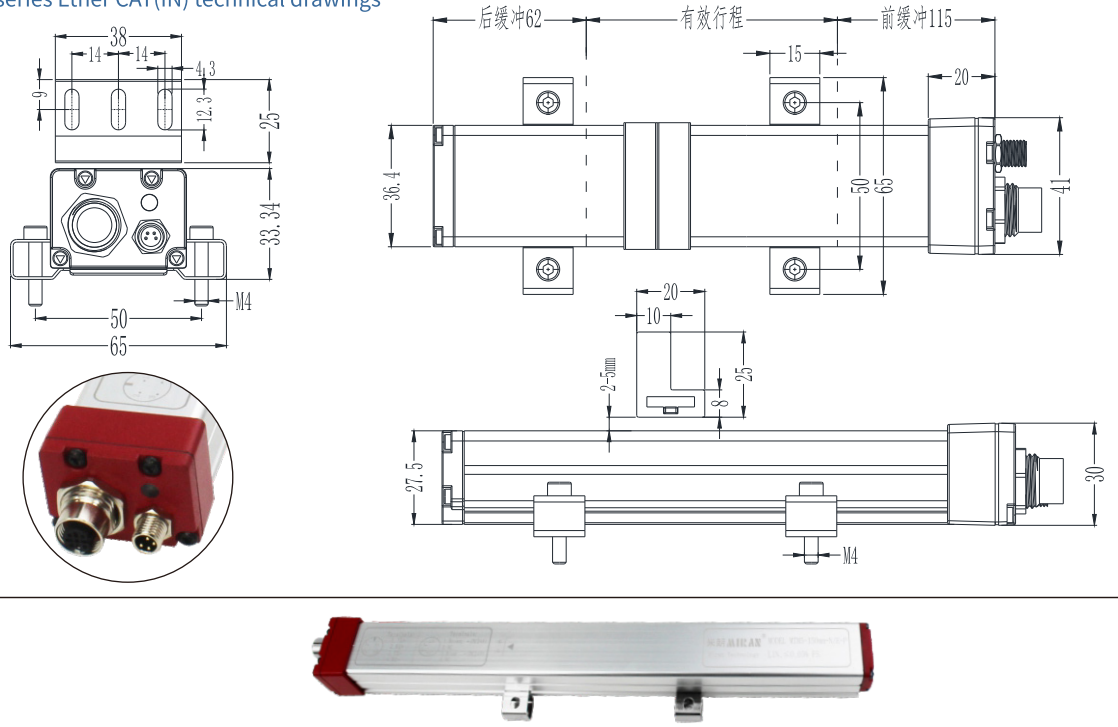
MTM5高分辨率磁悬浮位移传感器
MTM5 high resolution magnetic levitation displacement sensor

产品尺寸图Product Dimension Drawing

单位Unit:mm

MTM5系列Ether CAT(IN)技术图纸
MTM5 series Ether CAT(IN) technical drawings

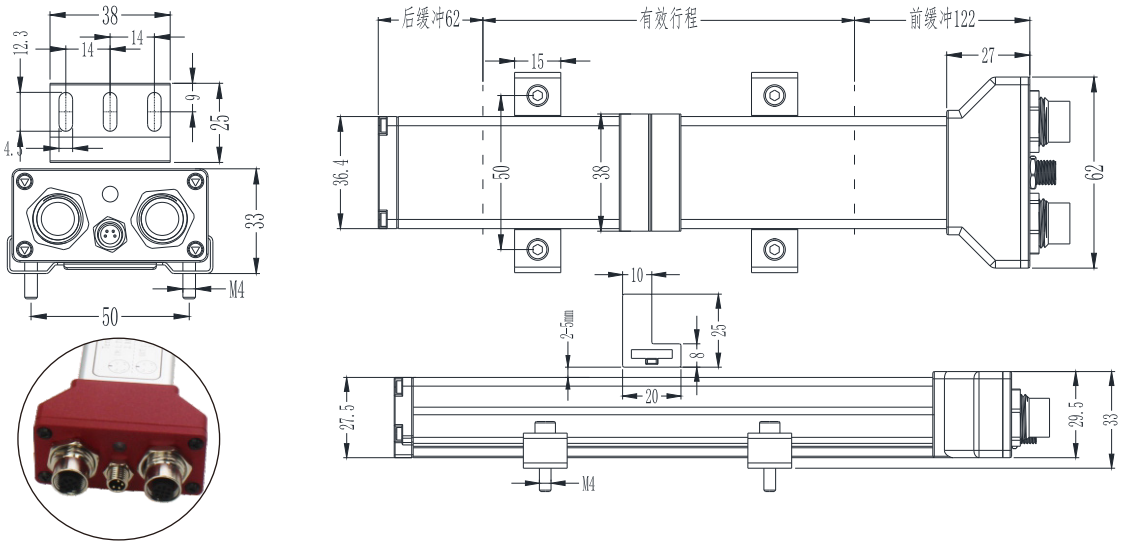
线长标配一米
cable length standard one meter



单位Unit:mm

MTM5系列Ether CAT(IN+OUT)技术图纸
MTM5 series Ether CAT(IN+OUT) technical drawings

线长标配一米
cable length standard one meter





性能参数Performance Parameters

电气指标Electrical indicators

MTM5高分辨率磁悬浮式位移传感器 MTM5 High Resolution Magnetic Levitation Displacement Sensor			
量程范围 Measurement range	30～4800mm	供电电压 Supply voltage	DC24V
工作电流 Operating current	<60mA（随量程大小而变化） <60mA (varies with range size)	重复性误差 Repeatability error	≤±0.005%FS
非线性误差 Nonlinear error	≤±0.05%FS	迟滞 Hysteresis	≤0.001%FS
绝缘强度 Dielectric strength	500V	绝缘电阻 Insulation resistance	>10MΩ
极限保护 limit protection	最大-30VDC maximum -30VDC	超压保护 Overpressure protection	最大36VDC maximum 36VDC
分辨率 Resolution ratio	标准：0.01mm，本安：0.25mm，SSI：0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm		
输出信号 Output signal	0-5V/0-10V/4-20mA/0-20mA/RS485/MODBUS RTU/ CANopen/SSI/start-stop/Ether CAT		

性能指标Performance indicators

外壳防护等级 Shell protection grade	IP65
温度稳定性 Temperature stability	≤0.002%/℃
工作温度 Operating temperature	-40℃~85℃
电子仓材质 E-compartment material	6063-T6铝管（特殊定制） 6063-T6 aluminum tube (special order)
出线连接 Outlet connection	航空插头/防水电缆接头 aviation plugs/waterproof cable glands
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)

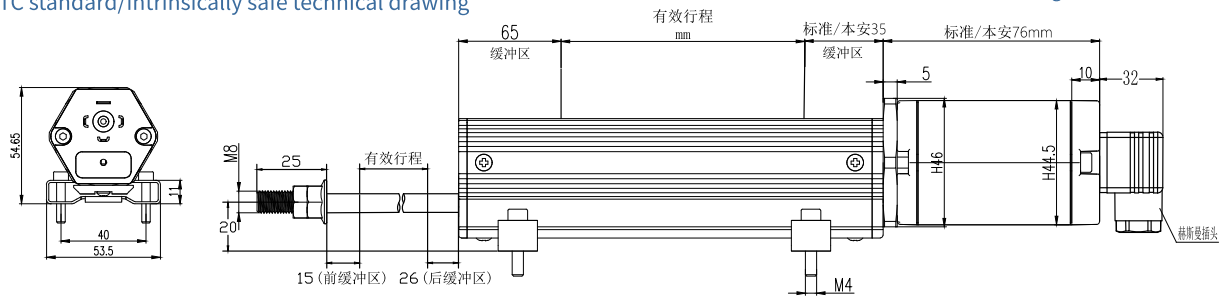
MTC磁致伸缩位移传感器
MTC magnetostrictive displacement sensor

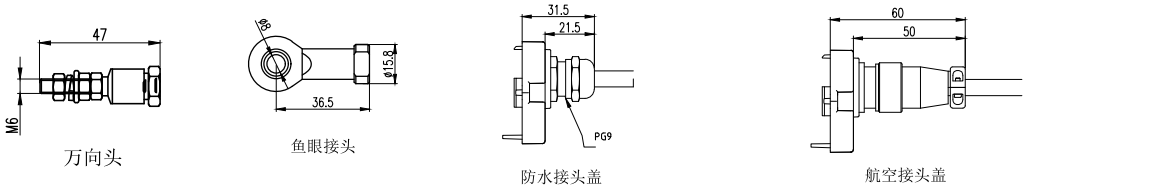
产品尺寸图Product Dimension Drawing

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



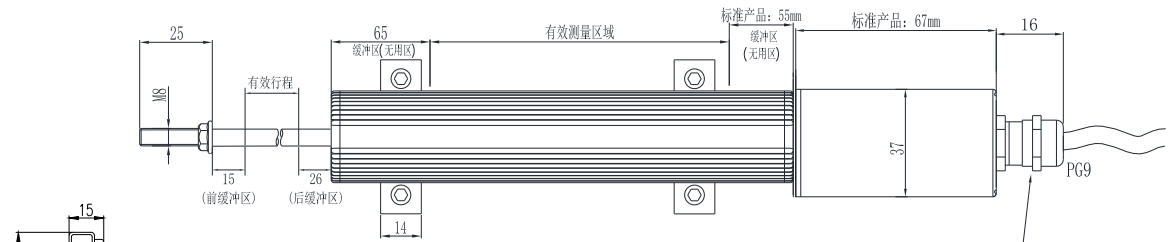


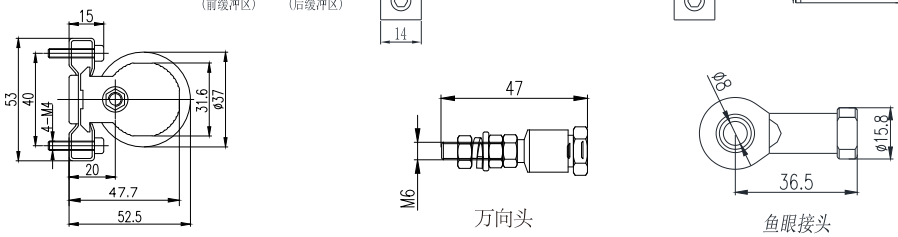


单位Unit:mm

MTC防水型技术图纸
MTC waterproof technical drawing

线长标配一米
cable length standard one meter



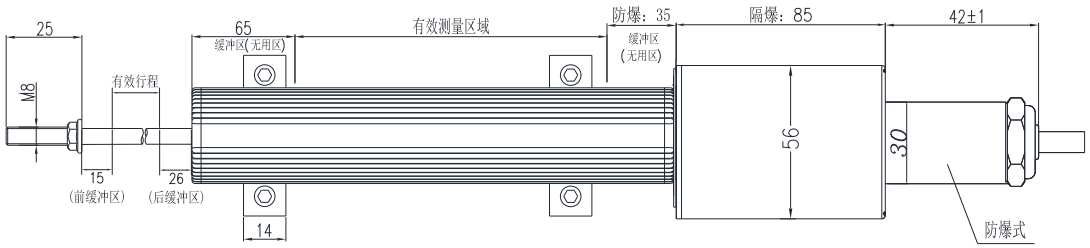


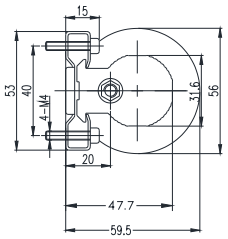


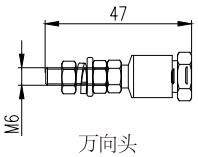
单位Unit:mm

MTC防爆/隔爆型技术图纸
MTC Explosion-proof/ Flameproof Type Technical Drawing

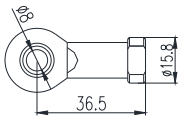
线长标配一米
cable length standard one meter







万向头



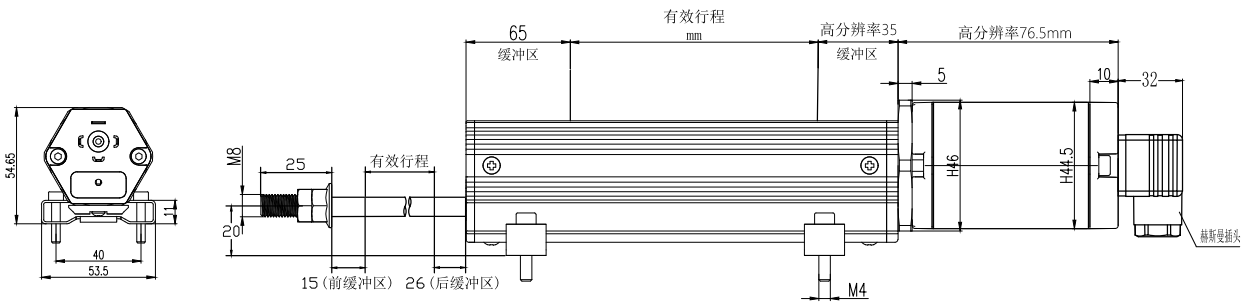
鱼眼接头

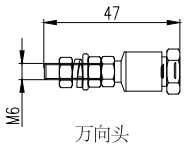


单位Unit:mm

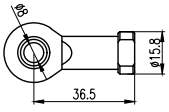
MTC高分辨率技术图纸
MTC High-Resolution Technical Drawings

线长标配一米
cable length standard one meter

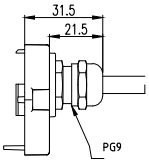




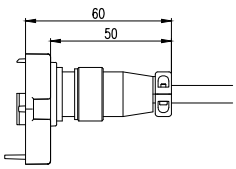
万向头



鱼眼接头



防水接头盖



航空接头盖



性能参数Performance Parameters

电气指标Electrical indicators

MTC磁致伸缩位移传感器 MTC Magnetostrictive Displacement Sensor	
量程范围 Measurement range	50～5000mm
外壳防护等级 Shell protection grade	IP65、IP67
非线性误差 Nonlinear error	≤0.05%FS
工作电流 Operating current	≤60mA
供电电压 Supply voltage	DC24V (±2V)
重复性误差 Repeatability error	≤0.005%FS
迟滞 Hysteresis	≤0.001%FS
工作温度 Operating temperature	-40°C~85°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
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm
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 warehouse shell	默认:铝合金/0CR18NI9(304不锈钢);可定制为:316不锈钢 Default: aluminum alloy/0CR18NI9 (304 stainless steel); 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 mark	防爆合格证见第12页(Ex db IIC T6 Gb)第13、14页(Ex ia IIB T4 Ga) The explosion-proof certificate can be found on page 12 (Ex db IIC T6 Gb) and pages 13 and 14 (Ex ia IIB T4 Ga)

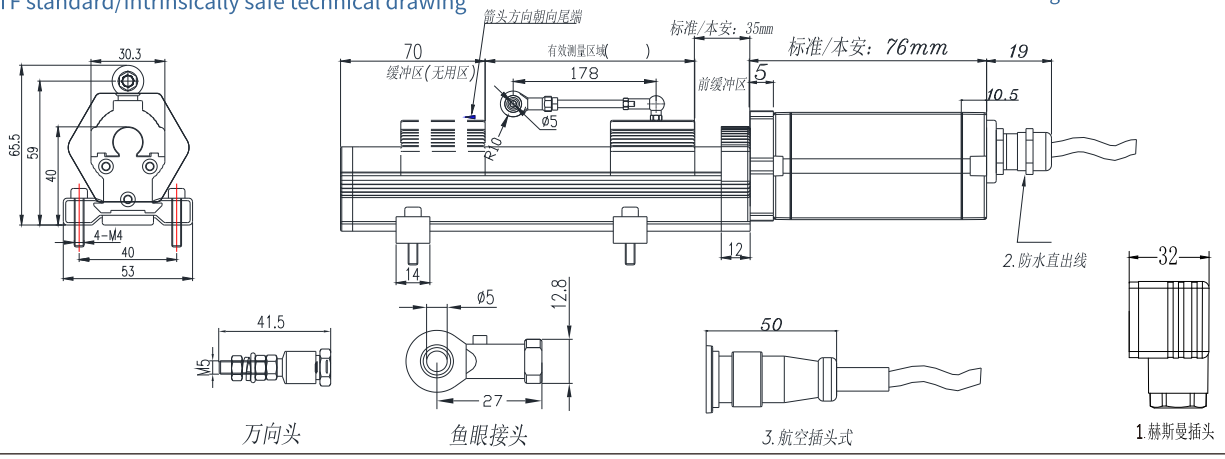
MTF磁致伸缩位移传感器
MTF magnetostrictive displacement sensor

产品尺寸图Product Dimension Drawing

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

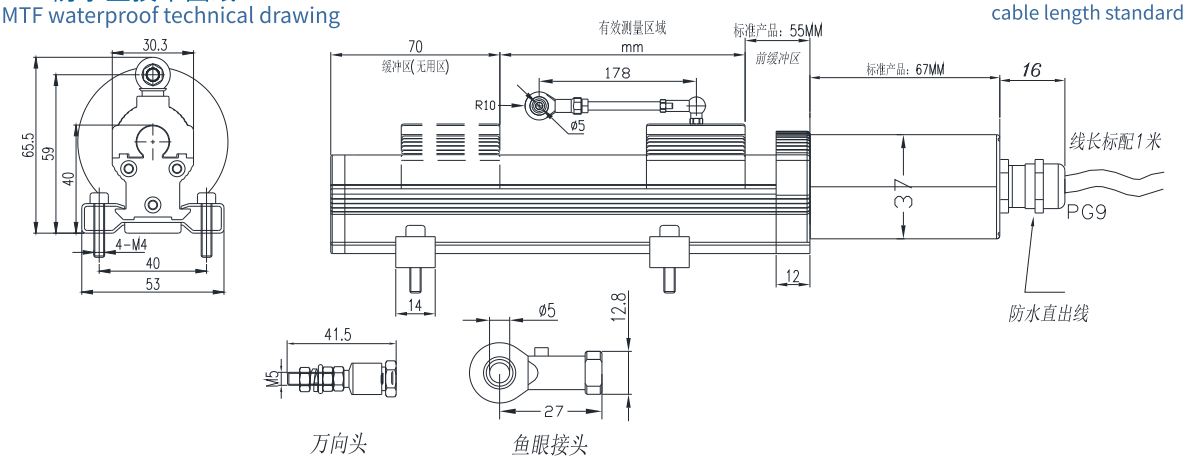


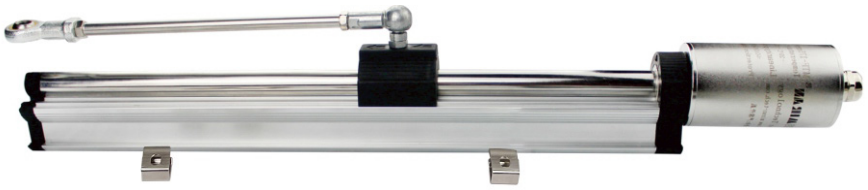


单位Unit:mm

MTF防水型技术图纸
MTF waterproof technical drawing

线长标配一米
cable length standard one meter

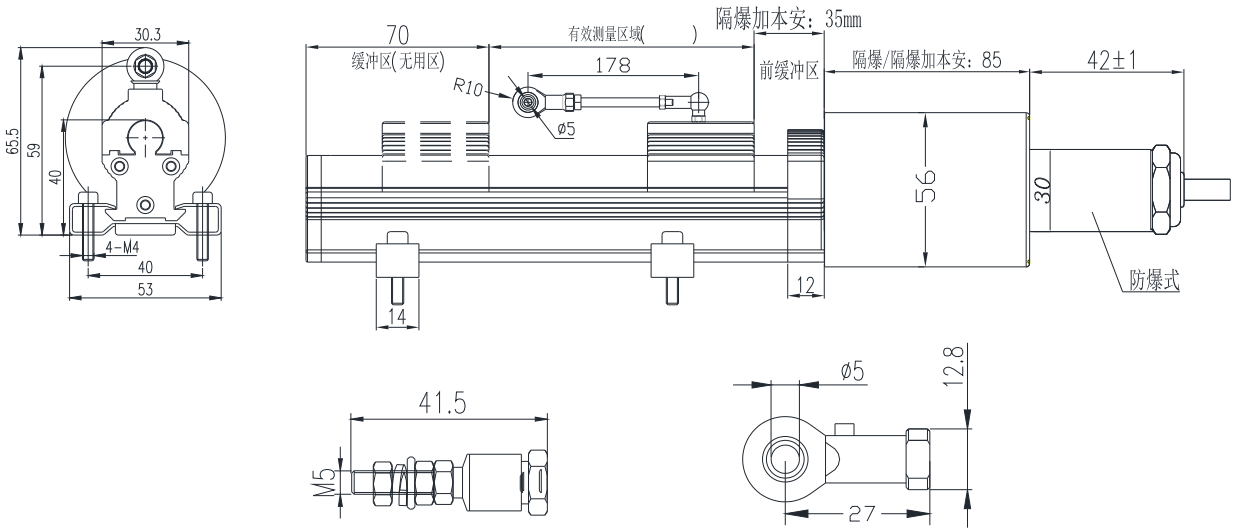


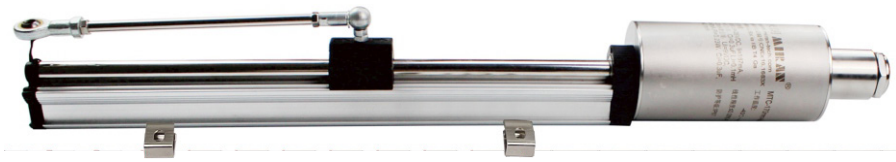


单位Unit:mm

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

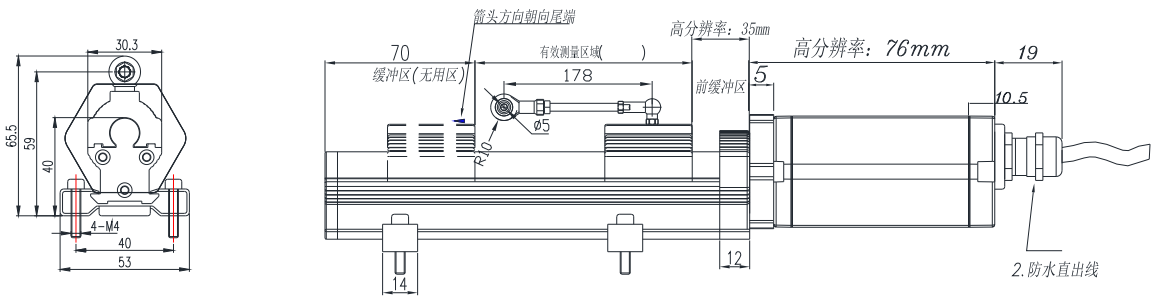


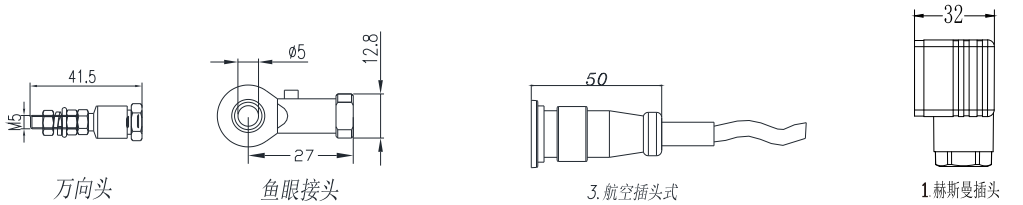


单位Unit:mm

MTF高分辨率技术图纸
MTF High Resolution Technology Drawing

线长标配一米
cable length standard one meter





万向头　鱼眼接头　3.航空插头式　1.赫斯曼插头



性能参数Performance Parameters

电气指标Electrical indicators

MTF磁致伸缩位移传感器 MTF Magnetostrictive Displacement Sensor	
量程范围 Measurement range	50～5000mm
外壳防护等级 Shell protection grade	IP65、IP67
非线性误差 Nonlinear error	≤0.05%FS
工作电流 Operating current	≤60mA
供电电压 Supply voltage	DC24V (±2V)
重复性误差 Repeatability error	≤0.005%FS
迟滞 Hysteresis	≤0.001%FS
工作温度 Operating temperature	-40°C~85°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
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm
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 warehouse shell	默认:铝合金/0CR18NI9(304不锈钢);可定制为:316不锈钢 Default: aluminum alloy/0CR18NI9 (304 stainless steel); 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 mark	防爆合格证见第12页(Ex db IIC T6 Gb)第13、14页(Ex ia IIB T4 Ga) The explosion-proof certificate can be found on page 12 (Ex db IIC T6 Gb) and pages 13 and 14 (Ex ia IIB T4 Ga)

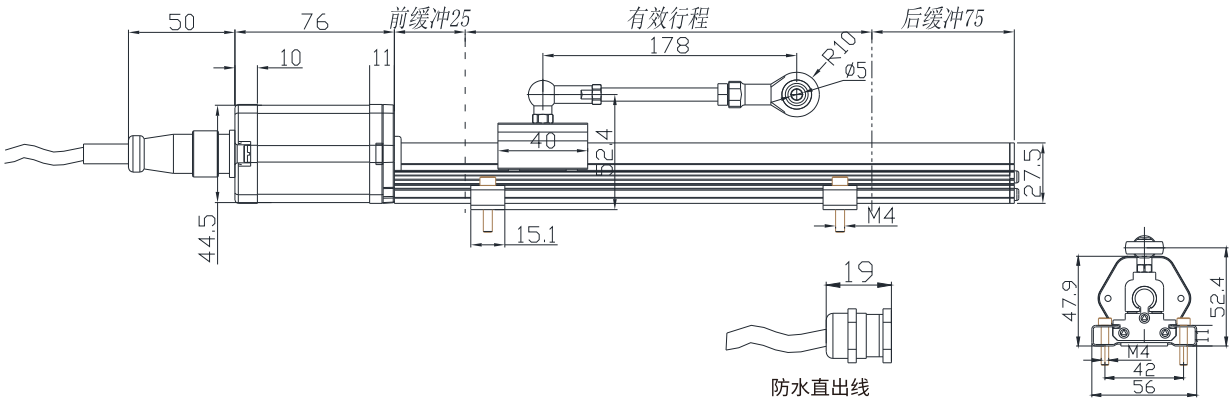
MTF1/2磁致伸缩位移传感器
MTF1/2 magnetostrictive displacement sensor

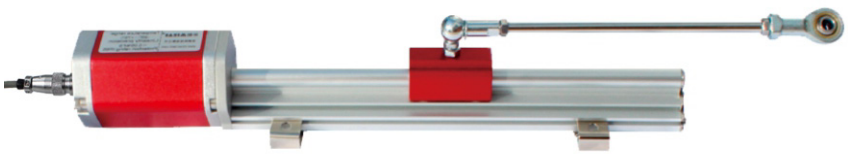
产品尺寸图Product Dimension Drawing

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

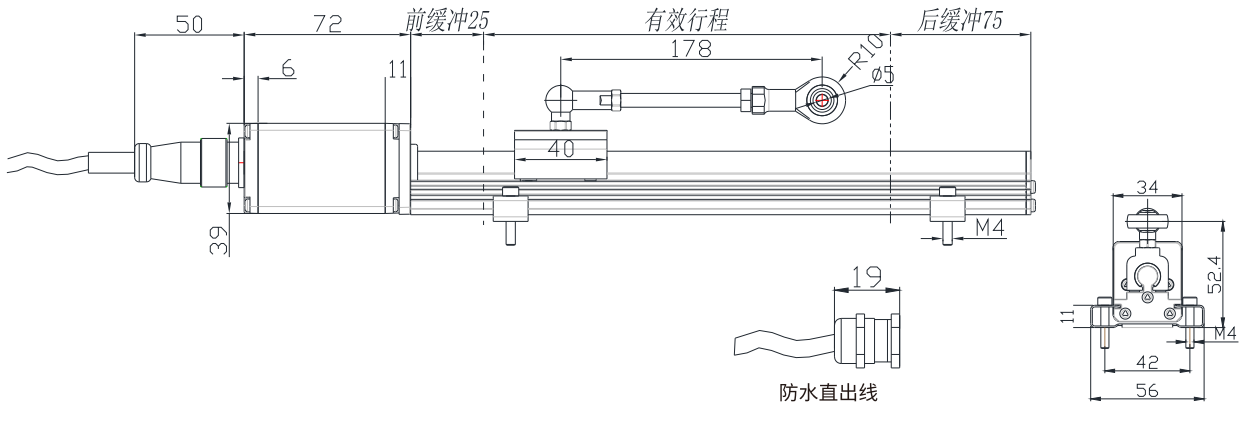




单位Unit:mm

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

线长标配一米
cable length standard one meter

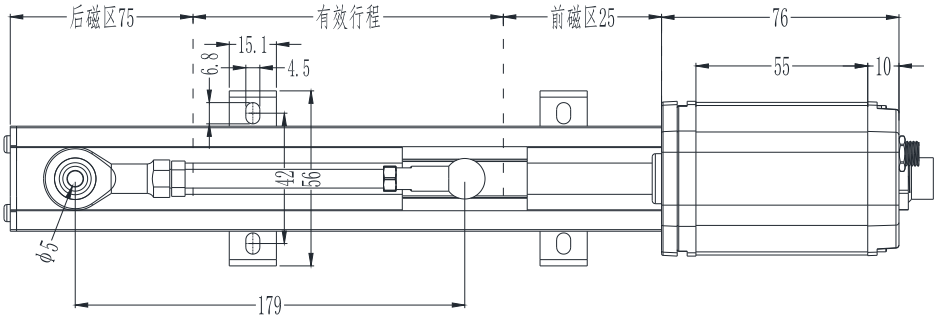


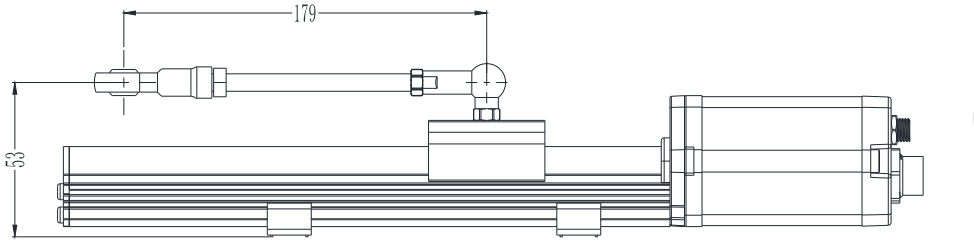


单位Unit:mm

MTF1系列Ether CAT(IN)技术图纸
MTF1 series Ether CAT(IN) technical drawings

线长标配一米
cable length standard one meter





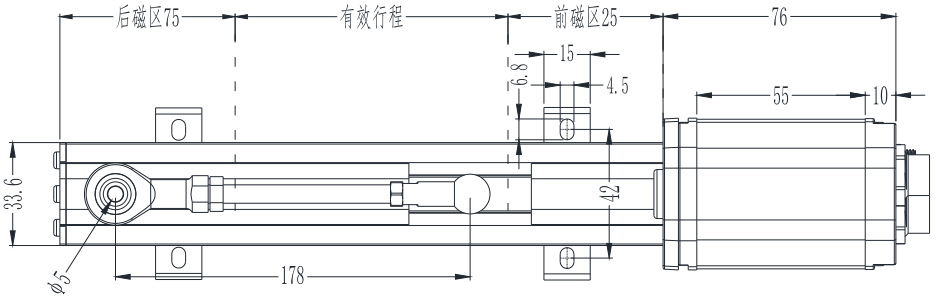


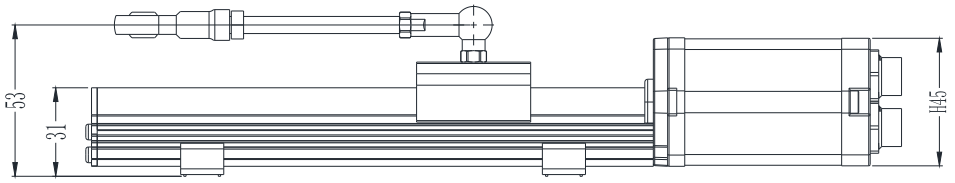


单位Unit:mm

MTF1系列Ether CAT(IN+OUT)技术图纸
MTF1 series Ether CAT(IN+OUT) technical drawings

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磁致伸缩位移传感器 MTF1/MTF2 Magnetostrictive Displacement Sensor	
量程范围 Measurement range	50～4800mm
供电电压 Supply voltage	DC24V (±2V)
非线性误差 Nonlinear error	≤0.05%FS
迟滞 Hysteresis	≤0.001%FS
工作电流 Operating current	≤60mA
重复性误差 Repeatability error	≤0.005%FS
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI /start-stop/Ether CAT

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 warehouse shell	默认:铝合金 default: aluminum alloy
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)

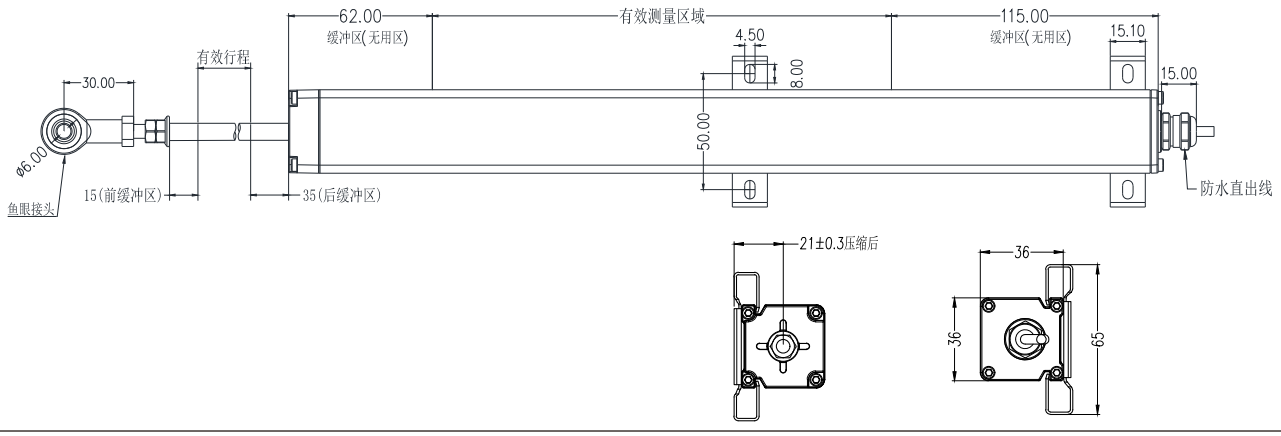
MTG磁致伸缩位移传感器
MTG magnetostrictive displacement sensor

产品尺寸图Product Dimension 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

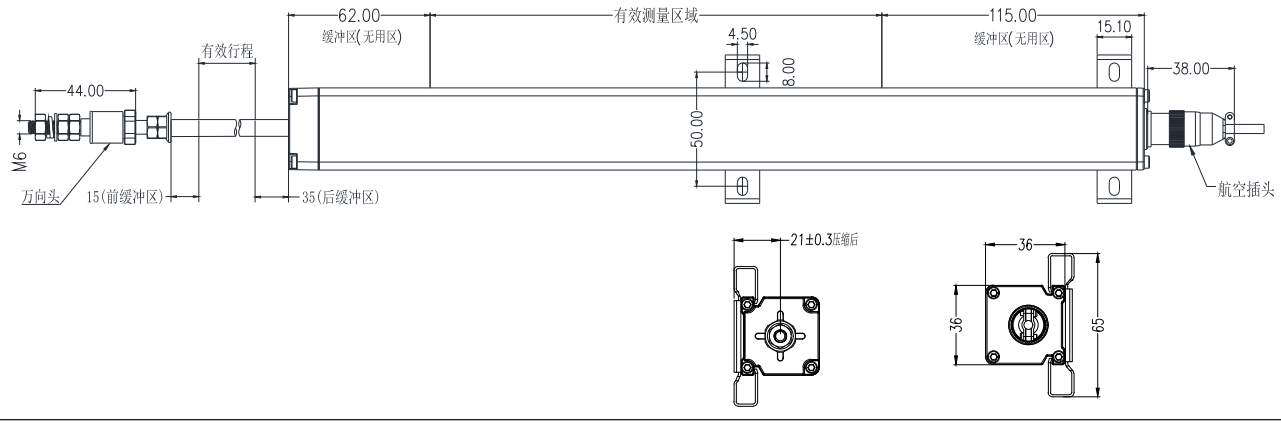




单位Unit:mm

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

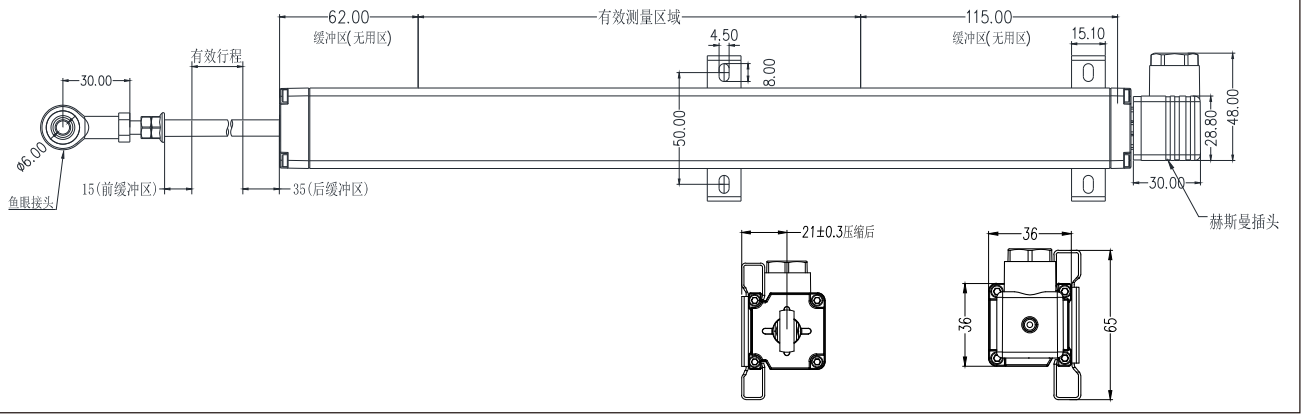




单位Unit:mm

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磁致伸缩位移传感器 MTG magnetostrictive displacement sensors			
供电电压 Supply voltage	DC24V (±2V)	量程范围 Measurement range	50～5000mm
重复性误差 Repeatability error	≤0.005%FS	迟滞 Hysteresis	≤0.001%FS
非线性误差 Nonlinear error	≤0.05%FS	工作电流 Operating current	≤60mA
电子仓外壳 Electronic warehouse shell	默认:铝合金 default: aluminum	工作温度 Operating temperature	-40°C~85°C
温度稳定性 Temperature stability	≤0.002%/°C	外壳防护等级 Shell protection grade	IP65
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm		
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)		

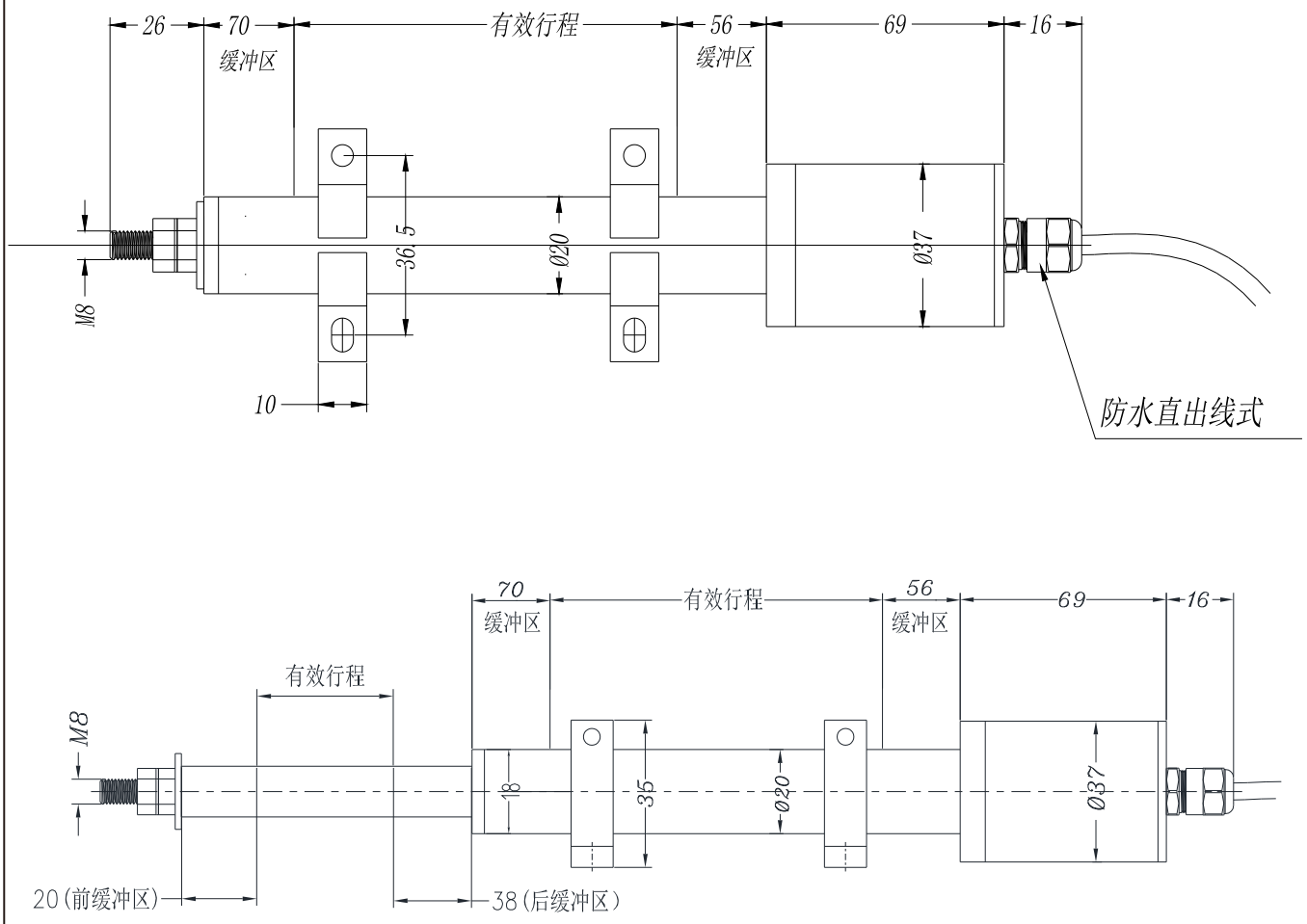
MPM磁致伸缩位移传感器
MPM magnetostrictive displacement sensor

产品尺寸图Product Dimension Drawing

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

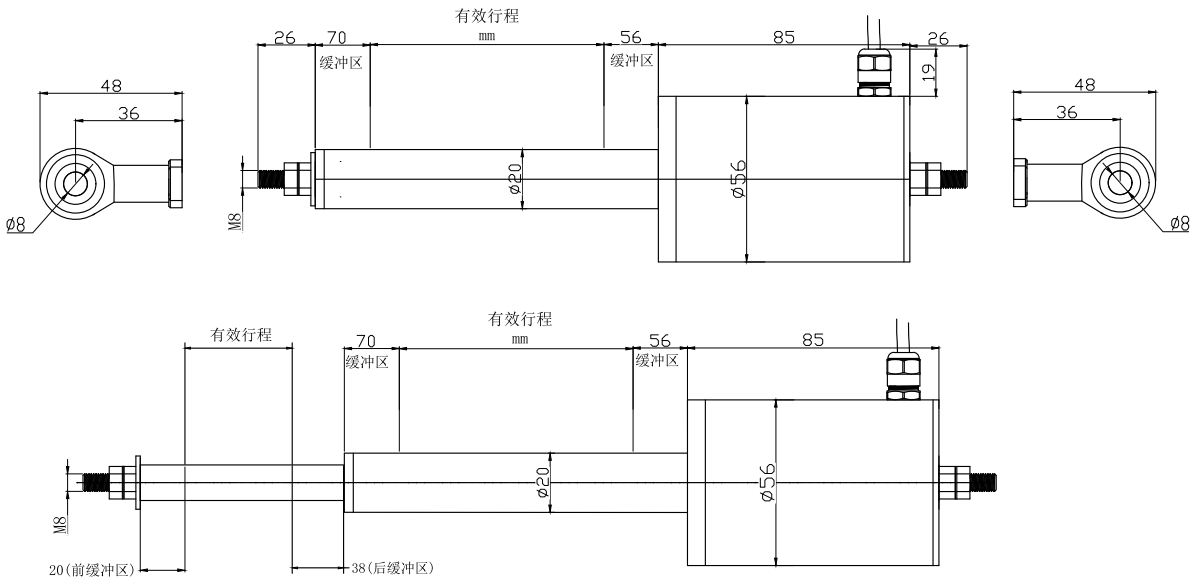




单位Unit:mm

MPM两端鱼眼侧出线技术图纸
MPM fisheye lateral 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磁致伸缩位移传感器 MPM Magnetostrictive Displacement Sensor			
量程范围 Measurement range	50～5000mm	供电电压 Supply voltage	DC24V (±2V)
外壳防护等级 Shell protection grade	IP67	重复性误差 Repeatability error	≤0.005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
工作温度 Operating temperature	-40°C~85°C	工作电流 Operating current	≤60mA
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		
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm		
电子仓外壳 Electronic warehouse shell	默认:0CR18NI9(304 不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); 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)		

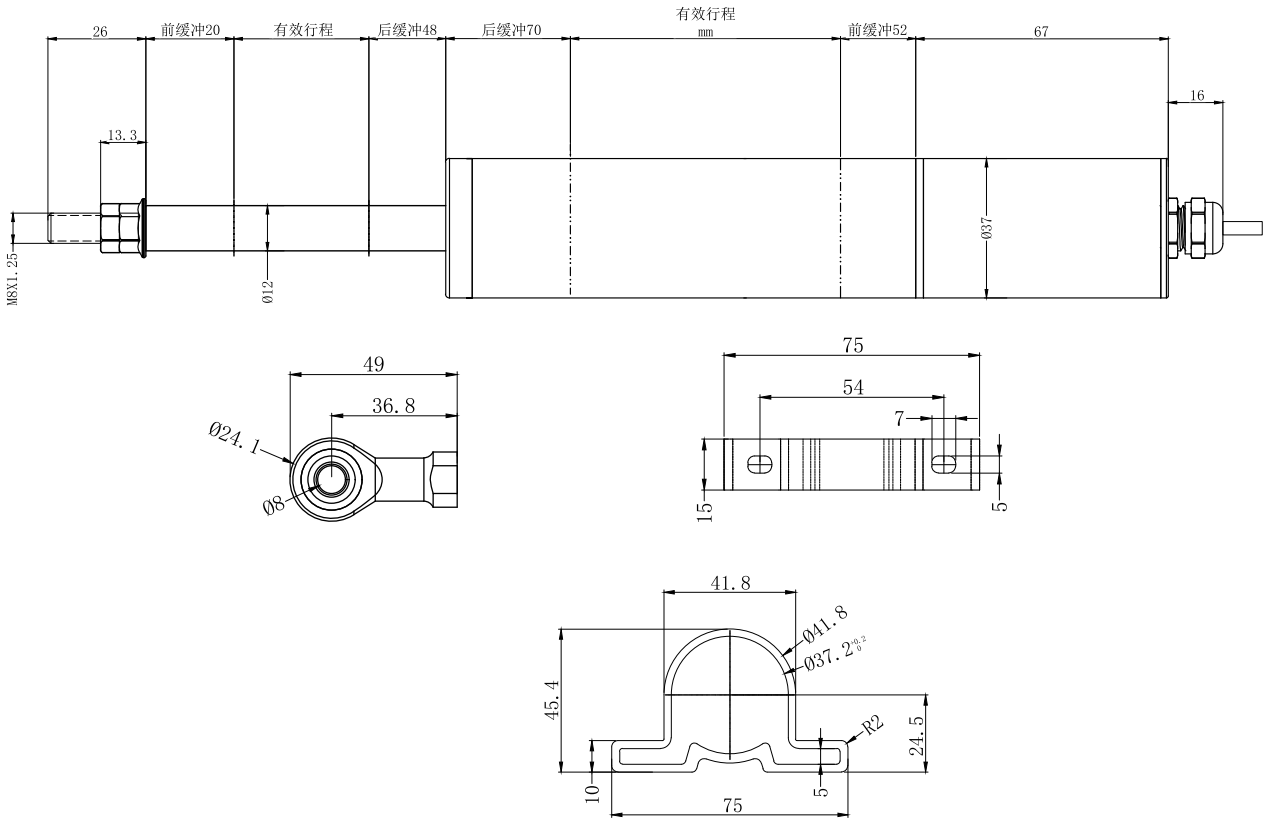
MPM1磁致伸缩位移传感器
MPM1 magnetostrictive displacement sensor

产品尺寸图Product Dimension Drawing

单位Unit:mm

MPM1拉杆式(尾部直出线)技术图纸
MPM1 Lever-Type (Tail-Extruded Line) Technical Drawing

线长标配一米
cable length standard one meter

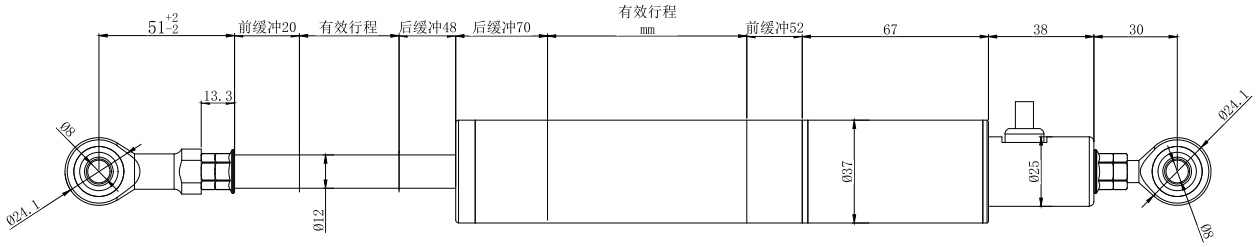




单位Unit:mm

MPM1两端鱼眼铰接式侧出线技术图纸
MPM1 end-to-end fish-eye hinged side-outline technology drawing

线长标配一米
cable length standard one meter





性能参数Performance Parameters

电气指标Electrical indicators

MPM1磁致伸缩位移传感器 MPM1 Magnetostrictive Displacement Sensor			
量程范围 Measurement range	80～1000mm	供电电压 Supply voltage	DC24V
防护等级 Protection level	IP67	重复性误差 Repeatability error	≤±0.005%FS
非线性误差 Nonlinear error	≤±0.05%FS	迟滞 Hysteresis	≤0.001%FS
极限保护 Limit protection	最大-30VDC Maximum - 30VDC	超压保护 Overpressure protection	最大36VDC Maximum 36VDC
绝缘电阻 Insulation resistance	＞10MΩ	绝缘强度 Insulation strength	500V
温度稳定性 Temperature stability	≤0.002%/℃		
输出信号 Output signal	4-20mA, 0-20mA, 0-5V, 0-10V,RS485(MODBUS-RTU), CANopen, SSI, Start-stop		
分辨率 Resolution ratio	≤0.01mm～0.001mm		
工作电流 Operating current	＜60mA (随量程大小而变化) 60mA (varies with the range size)		
测杆材质 Measurement rod material	默认:0CR18NI9 (304 不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel		
工作环境温度 Operating temperature	-40℃～85℃		
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		
出线连接 Connection outlet	防水电缆接头 Waterproof cable connector		

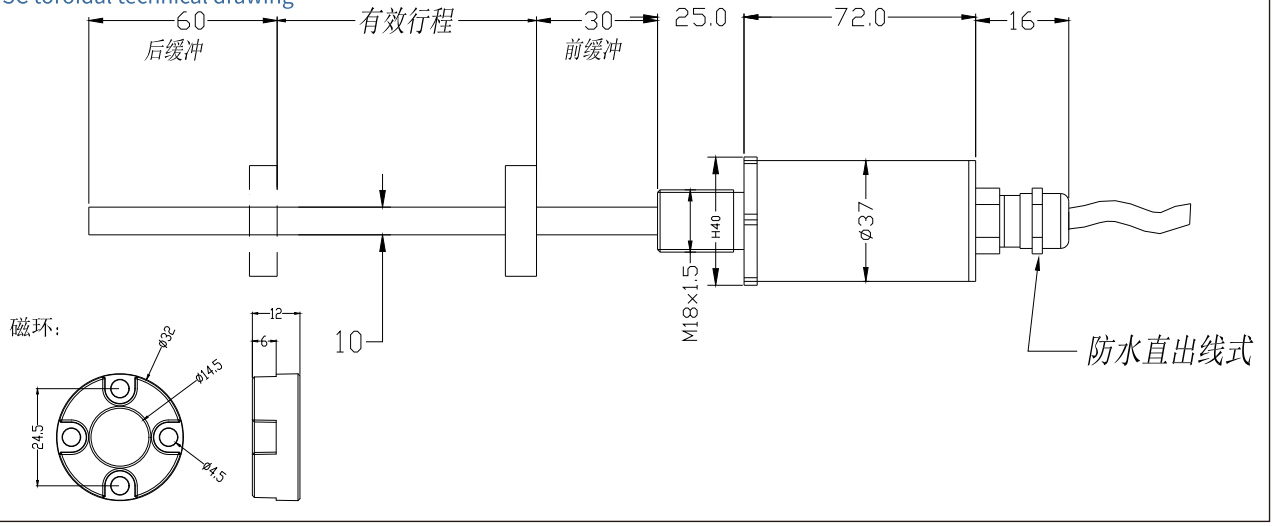
MTS磁致伸缩位移传感器
MTS magnetostrictive displacement sensor

产品尺寸图Product Dimension Drawing

单位Unit:mm

MTSC磁环式技术图纸
MTSC toroidal technical drawing

线长标配一米
cable length standard one meter

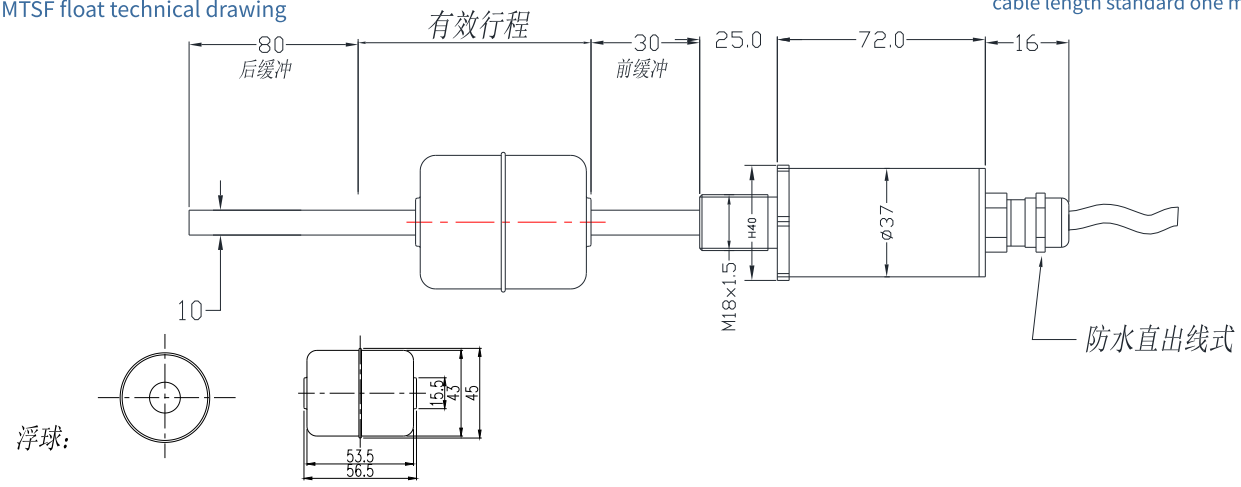




单位Unit:mm

MTSF浮球式技术图纸
MTSF float technical drawing

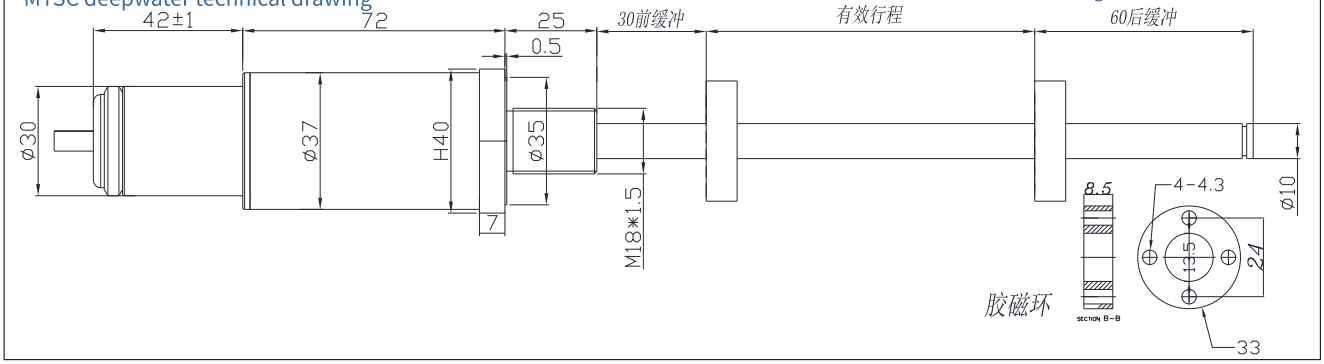
线长标配一米
cable length standard one meter





单位Unit:mm

MTSC深水型技术图纸
MTSC deepwater technical drawing





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	DC24V (±2V)
温度稳定性 Temperature stability	≤0.002%/°C	重复性误差 Repeatability error	≤0.005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
工作电流 Operating current	≤60mA	测杆温度 Rod temperature	-40°C~150°C
电子仓温度 Electronic warehouse temperature	-40°C~85°C		
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop		
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm		
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 Rod material	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel		
电子仓外壳 Electronic warehouse shell	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); 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:MTSC/MTSC1磁环式、MTSF浮球式外壳防护等级为IP65,MTSC深水型外壳防护等级为IP68。
Note: The MTSC/MTSC1 magnetic ring type and MTSF float type enclosures have an IP65 protection rating, while the MTSC deep-water type enclosure has an IP68 protection rating.

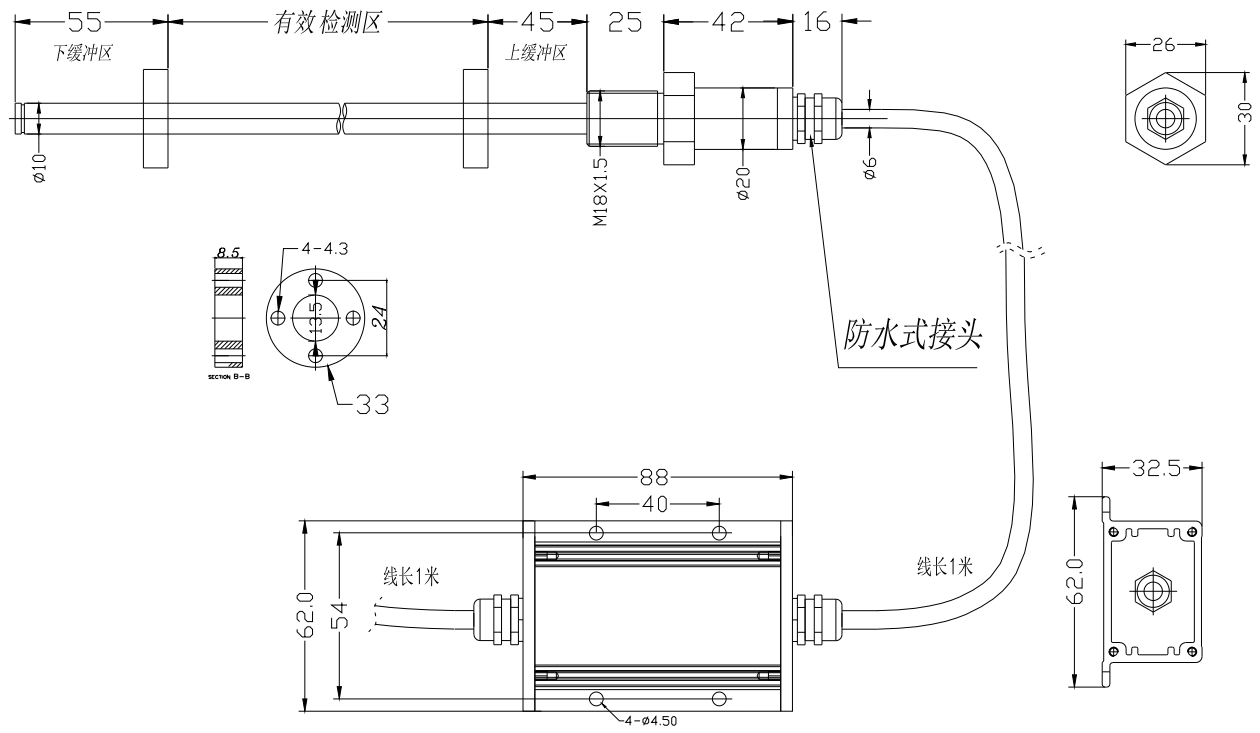
MFTS磁致伸缩位移传感器
MFTS magnetostrictive displacement sensor

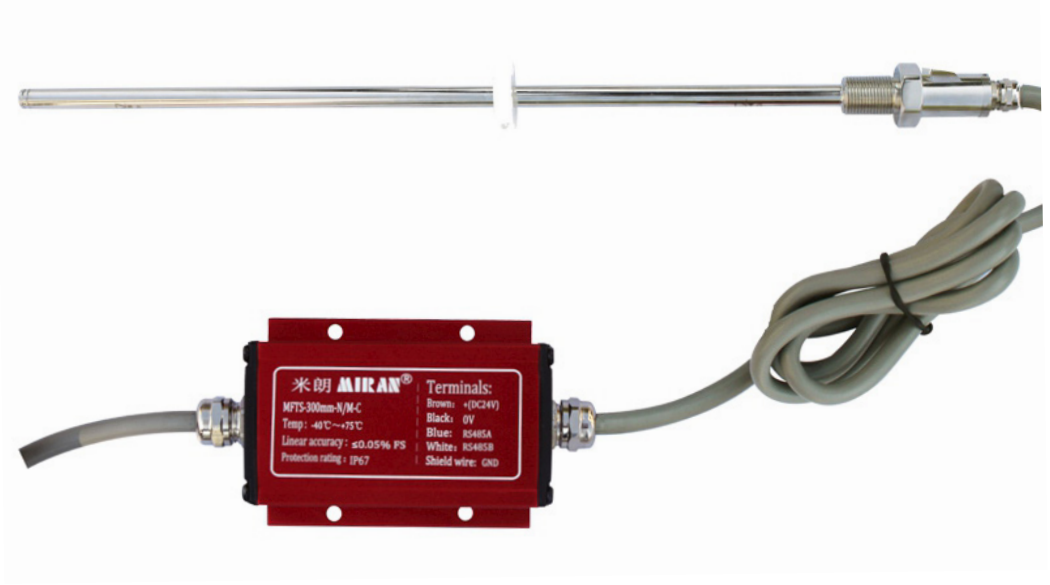
产品尺寸图Product Dimension Drawing

单位Unit:mm

MFTSC防水接头出线技术图纸
MFTSC 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
工作电流 Operating current	≤60mA
供电电压 Supply voltage	DC24V (±2V)
重复性误差 Repeatability error	≤0.005%FS
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm
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 Rod temperature	-40°C~150°C
测杆材料 Rod material	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel
电子仓外壳 Electronic warehouse shell	默认:铝合金 default: aluminum alloy
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)

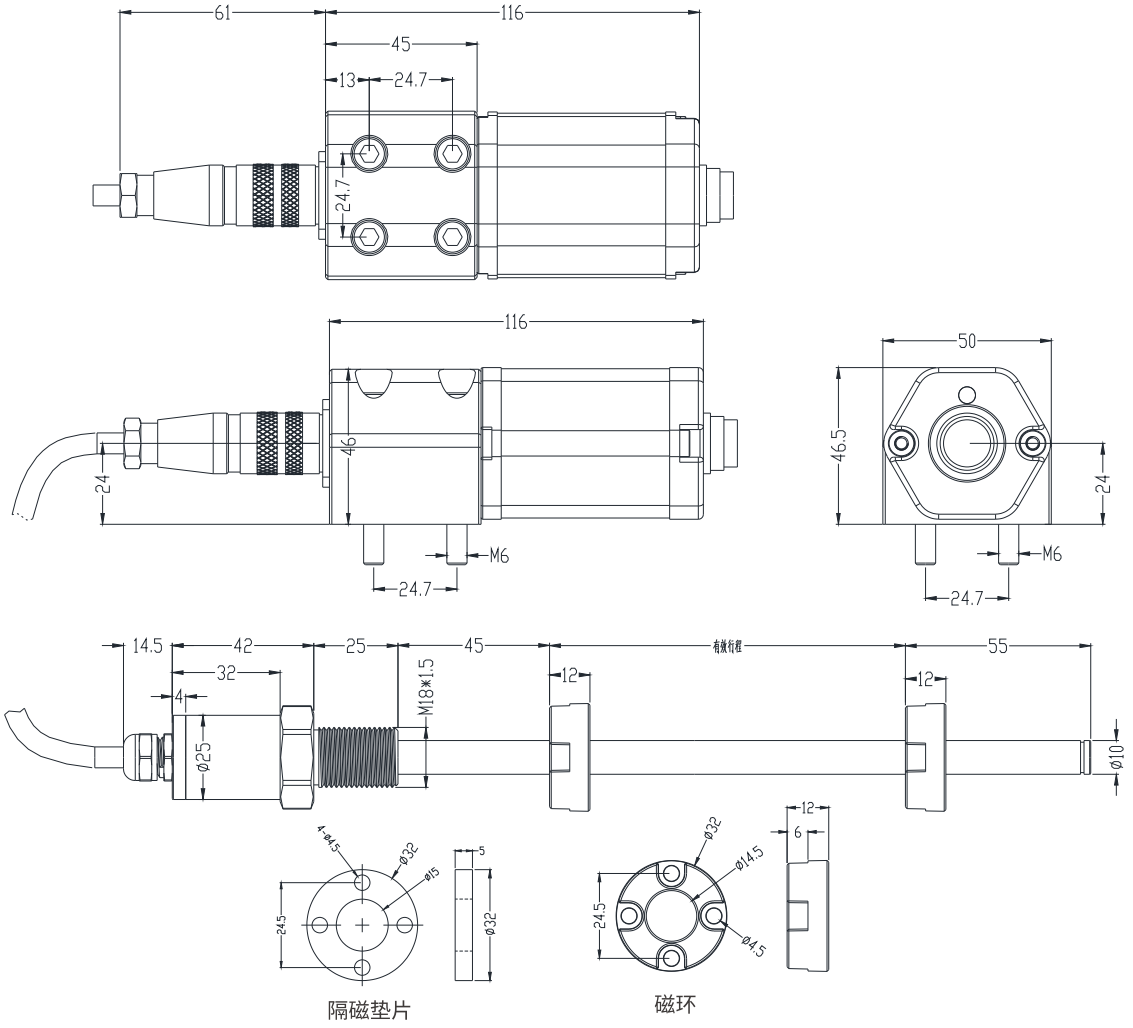
MFTS1高分辨率磁致伸缩位移传感器
MFTS1 high resolution magnetostrictive displacement sensor

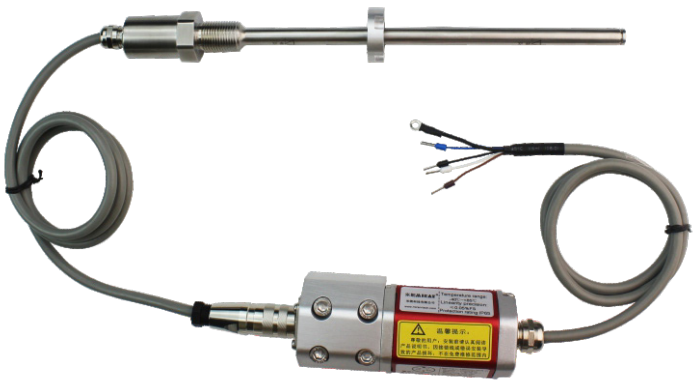
产品尺寸图Product Dimension Drawing

单位Unit:mm

MFTS1高分辨率技术图纸
MFTS1 high-resolution technical drawings

线长标配一米
cable length standard one meter





性能参数Performance Parameters

电气指标Electrical indicators

MFTS1高分辨率磁致伸缩位移/液位传感器 MFTS1 High Resolution Magnetostrictive Displacement/Level Sensor	
量程范围 Measurement range	50～3000mm
迟滞 Hysteresis	≤0.001%FS
非线性误差 Nonlinear error	≤0.05%FS
工作电流 Operating current	≤16mA
供电电压 Supply voltage	DC24V(±2V)
重复性误差 Repeatability error	≤0.005%FS
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm
输出信号 Output signal	0-5V/1-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen

性能指标Performance indicators

外壳防护等级 Shell protection grade	IP65
温度稳定性 Temperature stability	≤0.002%/°C
电子仓温度 Electronic warehouse temperature	-40°C~85°C
测杆温度 Rod temperature	-40°C~150°C
测杆材料 Rod material	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel
电子仓外壳 Electronic warehouse shell	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); 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)

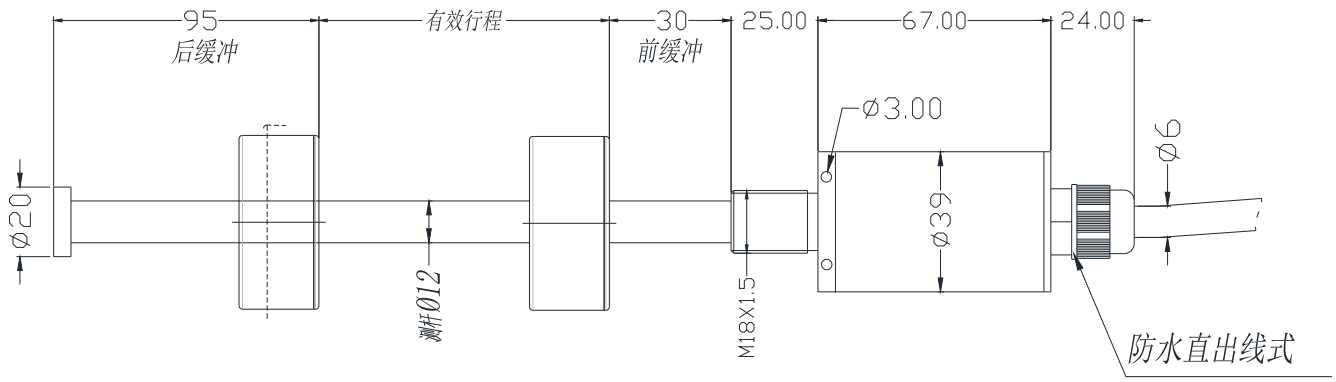
MF防腐蚀磁致伸缩位移传感器
MF corrosion resistant magnetostrictive displacement sensor

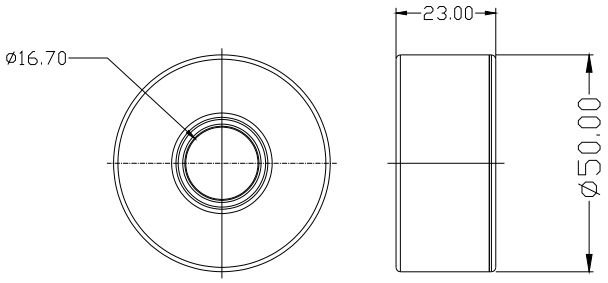
产品尺寸图Product Dimension Drawing

单位Unit:mm

MF1圆柱浮球技术图纸
MF1 cylindrical float technical drawing

线长标配一米
cable length standard one meter





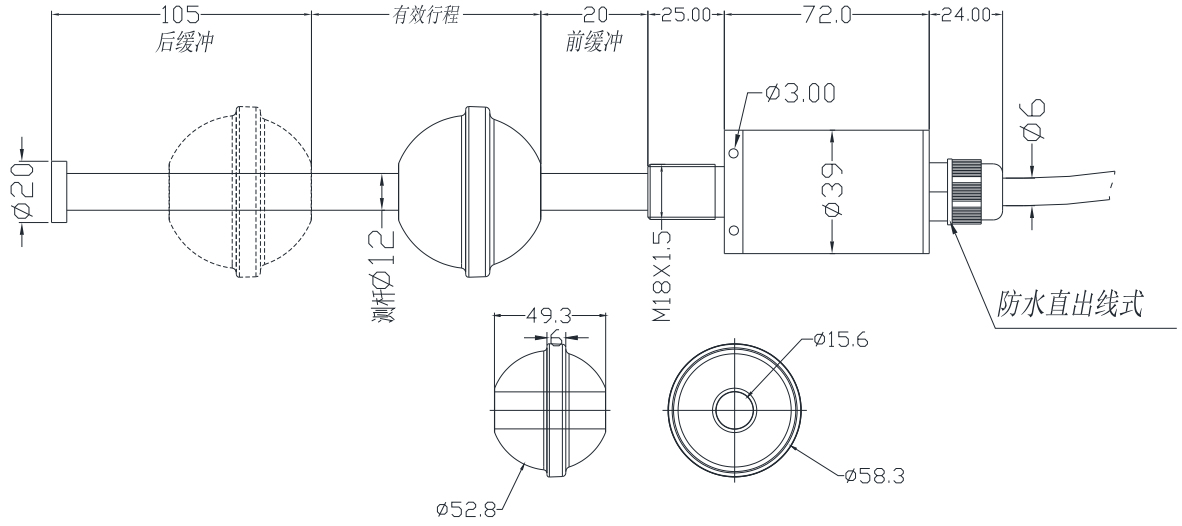
圆柱浮球



单位Unit:mm

MF2球型浮球技术图纸
MF2 ball float 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

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	DC24V (±2V)
外壳防护等级 Shell protection grade	IP65	重复性误差 Repeatability error	≤0.005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
工作电流 Operating current	≤60mA	测杆温度 Rod temperature	-40°C~150°C
温度稳定性 Temperature stability	≤0.002%/°C	电子仓外壳 Electronic warehouse shell	聚四氟乙烯 polytetrafluoroethylene
电子仓温度 Electronic warehouse temperature	-40°C~85°C		
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/MODBUS RTU/CANopen/SSI/start-stop		
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm		
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 Rod material	默认:聚四氟乙烯/0CR18NI9(304不锈钢);可定制为:316不锈钢 default: PTFE/0CR18NI9 (304 stainless steel); 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.

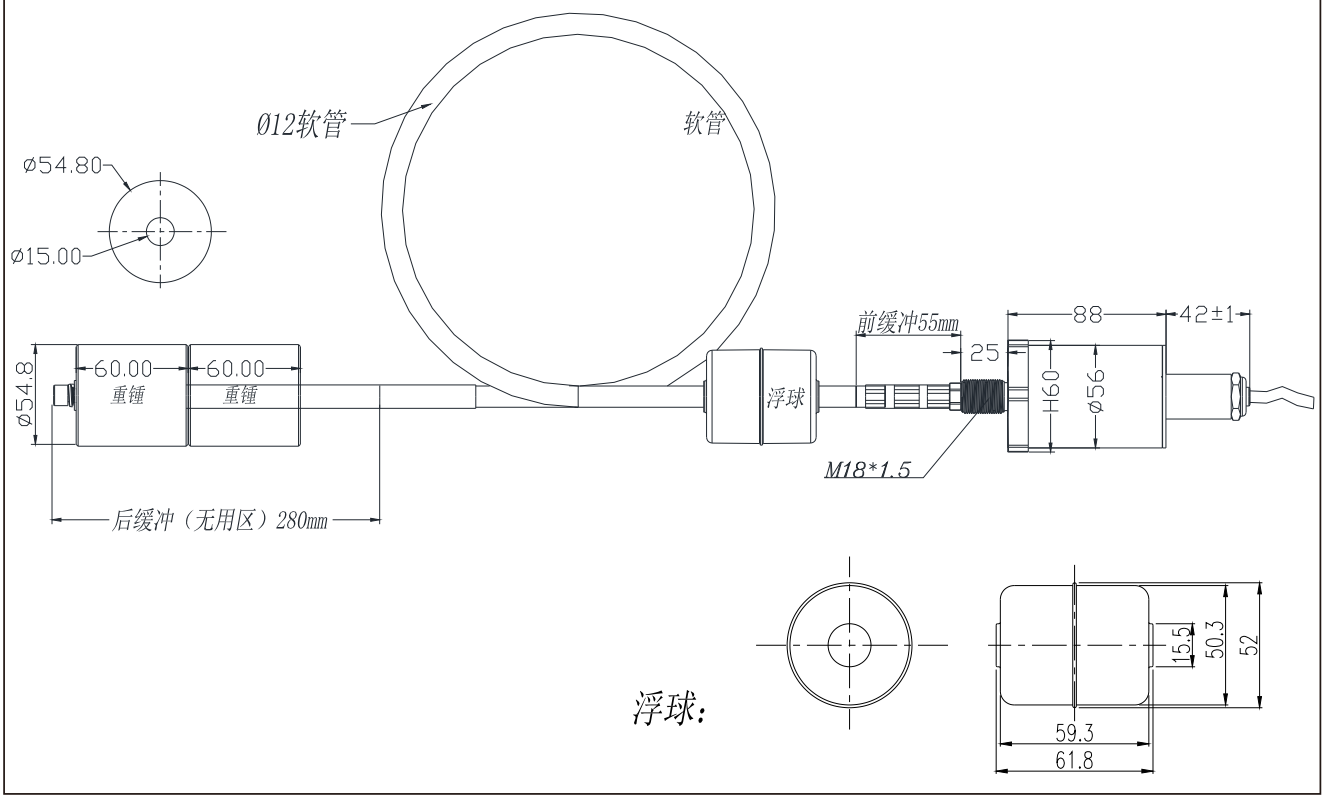
MR磁致伸缩位移传感器
MR magnetostrictive displacement sensor

产品尺寸图Product Dimension Drawing

单位Unit:mm

MR浮球软缆式(隔爆型)技术图纸
MR Float Cable Type (Explosion-proof) Technical Drawing
该款图纸可做防水接头，航空插头与赫斯曼插头做不了。
This drawing can be used to make waterproof connectors, but aviation plugs and Hirschmann plugs cannot be made with it.

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	50～12000mm
供电电压 Supply voltage	DC24V (±2V)
非线性误差 Nonlinear error	≤0.05%FS
迟滞 Hysteresis	≤0.001%FS
工作电流 Operating current	≤60mA
重复性误差 Repeatability error	≤0.005%FS
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm
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%/℃
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℃~85℃
测杆温度 Rod temperature	-40℃~150℃
外壳防护等级 Shell protection grade	IP65、IP67
软缆材料 Flexible cable material	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢编织网 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel woven wire mesh
电子仓外壳 Electronic warehouse shell	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); 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)

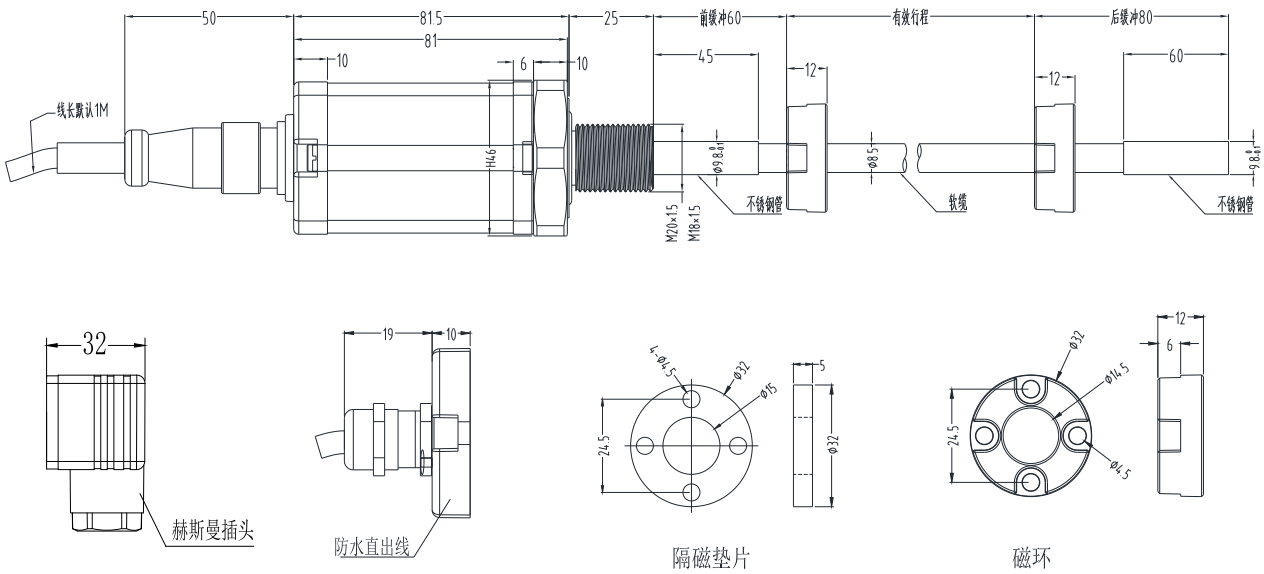
MR1柔性软缆式磁致伸缩位移传感器
Mr1 flexible magnetostrictive displacement sensor

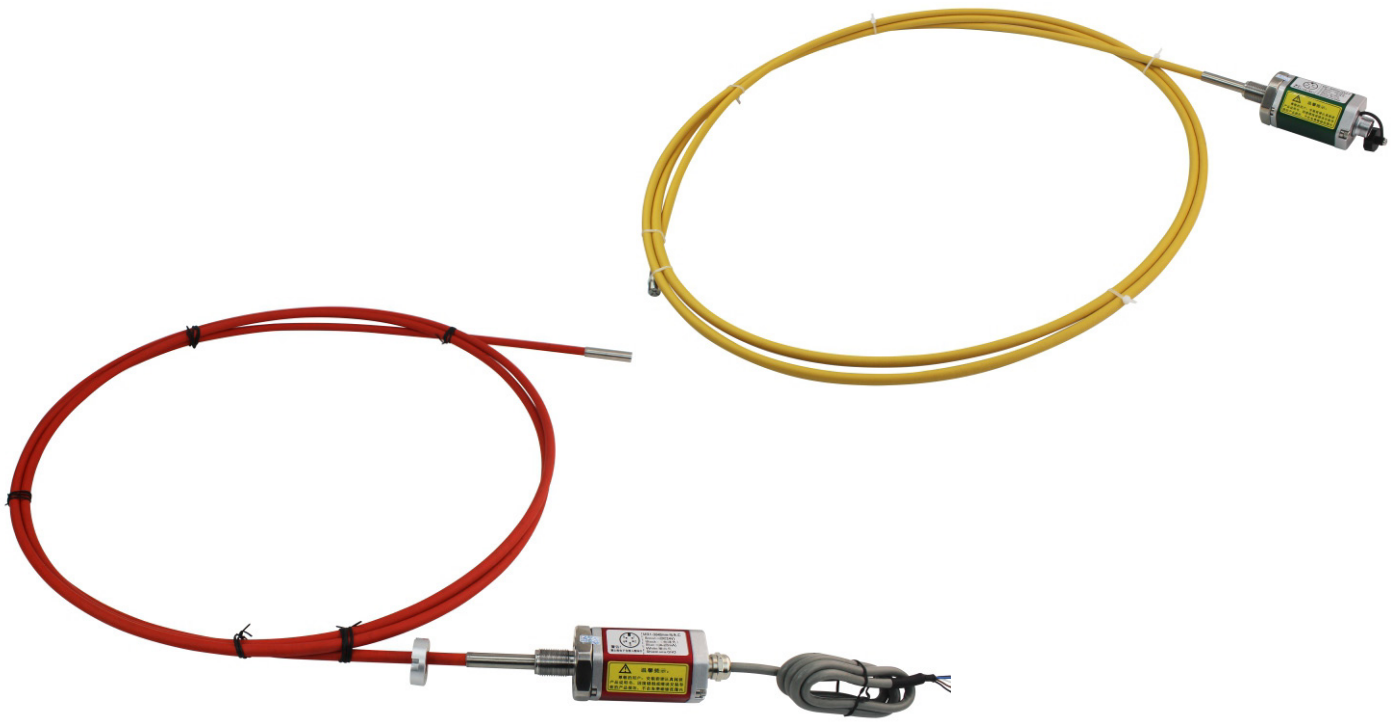
产品尺寸图Product Dimension Drawing

单位Unit:mm

MR1柔性软缆式技术图纸
Mr1 flexible 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

MR1柔性软缆式磁致伸缩位移 Mr1 Flexible Cable Magnetostrictive Displacement			
量程范围 Measurement range	500～12000mm	供电电压 Supply voltage	DC24V
非线性误差 Nonlinear error	≤0.05%FS	重复性误差 Repeatability error	≤0.005%FS
极限保护 limit protection	最大-30VDC maximum -30VDC	超压保护 Overpressure protection	最大36VDC maximum 36VDC
绝缘电阻 Insulation resistance	＞10MΩ	绝缘强度 Dielectric strength	500V
迟滞 Hysteresis	≤0.001%FS		
分辨率 Resolution ratio	0.01mm（量程500mm-4000mm）；0.04mm（量程4000mm-12000mm）；SSI输出为0.001mm 0.01mm (range: 500mm-4000mm); 0.04mm (range: 4000mm-12000mm); SSI output is 0.001mm		
输出信号 Output signal	模拟信号：电流4-20mA与0-20mA，电压0-5V与0-10V analog signals: current 4-20mA and 0-20mA, voltage 0-5V and 0-10V		
	数字信号：RS485、MODBUS-RTU，CANopen，SSI，Start-stop digital signals: RS485, MODBUS-RTU, CANopen, SSI, Start-stop		

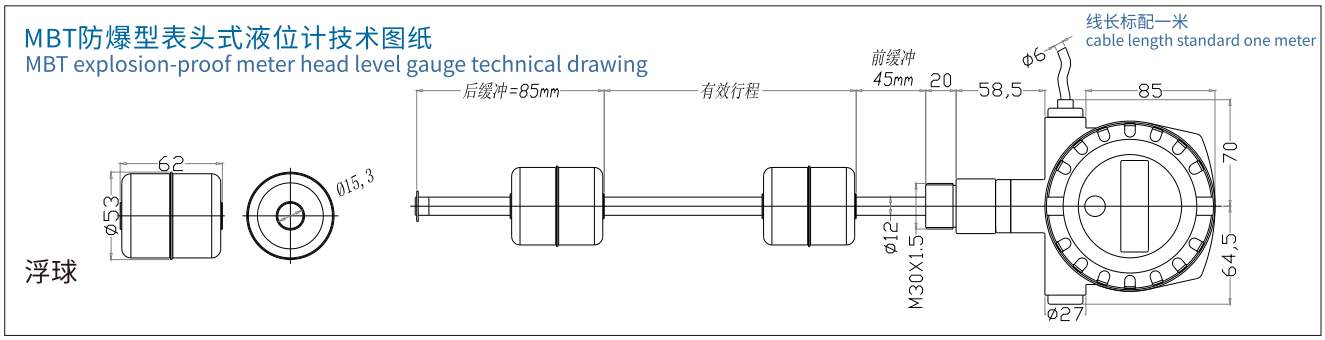
性能指标Performance indicators

温度稳定性 Temperature stability	≤0.002%/°C
工作温度 Operating temperature	-40°C～85°C
外壳防护等级 Shell protection grade	IP65、IP67
工作电流 Operating current	＜90mA（随量程大小而变化） <90mA (varies with range size)
出线连接 Outlet connection	航空插头/防水电缆接头/赫斯曼插头 aviation plugs/waterproof cable glands/hirschmann plugs
电子仓外壳 Electronic warehouse shell	铝合金（标准），304/316不锈钢（特殊定制） aluminum (standard), 304/316 stainless steel (special order)
测杆材料 Flexible cable material	不锈钢软管(最小弯曲半径：300MM，装运半径：600MM) stainless steel hose (minimum bending radius: 300mm, shipping radius: 600mm)
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 mark	防爆合格证见第12页（Ex db IIC T6 Gb） The explosion-proof certificate can be found on page 12 (Ex db IIC T6 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

单位Unit:mm





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	DC24V (±2V)
电子仓外壳 Electronic warehouse shell	默认:铝合金 default: aluminum alloy	重复性误差 Repeatability error	≤0.005%FS
非线性误差 Nonlinear error	≤0.05%FS	迟滞 Hysteresis	≤0.001%FS
工作电流 Operating current	≤60mA	测杆温度 Rod temperature	-40°C~150°C
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		
分辨率 Resolution ratio	标准:0.01mm,本安:0.25mm,SSI:0.001mm Standard: 0.01mm, Explosion-proof: 0.25mm, SSI: 0.001mm		
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 Rod material	默认:0CR18NI9(304不锈钢);可定制为:316不锈钢 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel		
输出信号 Output signal	0-5V/0-10V/4-20mA/RS485/SSI/MODBUS RTU/CANopen/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)		

特殊定制型Special Customized Type





注：该产品为特殊定制型MTL1C1磁致伸缩位移传感器，改装型，法兰安装，可油缸内置。

Note: This product is a special customized MTL1C1 magnetostrictive displacement sensor, modified type, flange mounting, can be built-in cylinder.

法兰盘，测杆，前后缓冲区等均根据客户要求定制。

Flanges, measuring rods, front and rear buffer zones, etc. are all customized according to the customer's requirements.

客户如有特殊定制要求均可联系我司工作人员洽谈，可根据客户需求特殊定制。

Customers who have special customization requirements can contact our staff to discuss, according to customer demand for special customization.

矿用本安磁致伸缩位移传感器
Intrinsically safe mining magnetostrictive displacement sensor

产品实物图Product Picture



GUC2500



GUC2800

产品概述Product overview

GUC2500/2800矿用位移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。

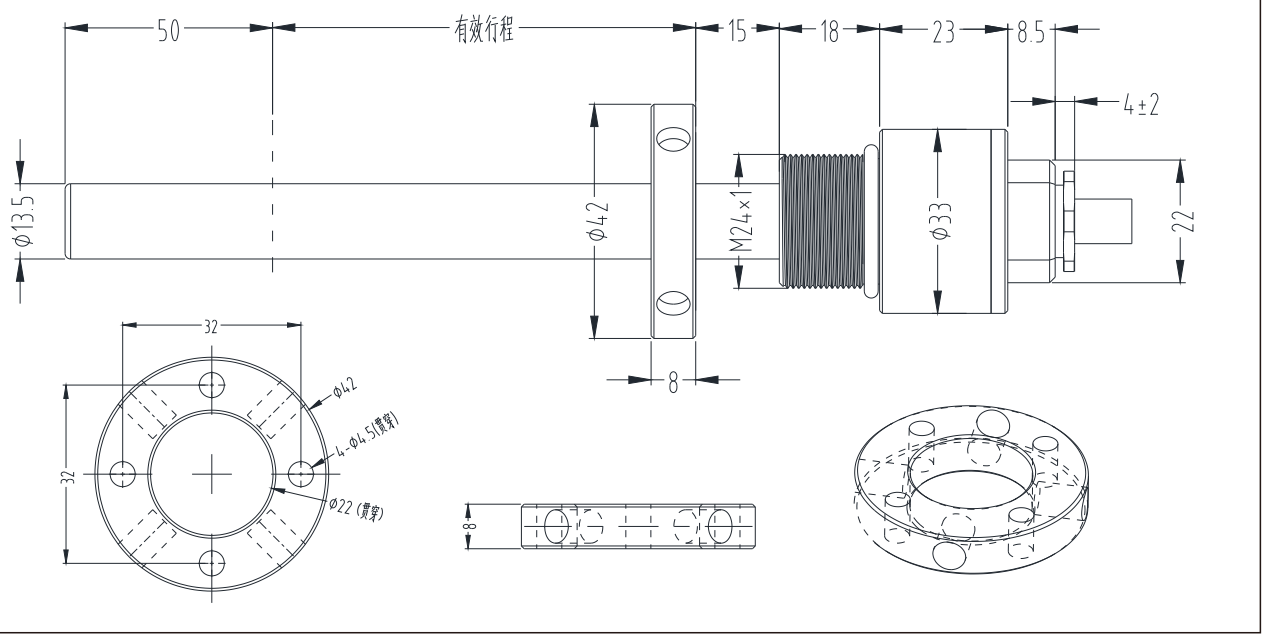
The principle of the GUC2500/2800 mining displacement sensor is based on generating a strain pulse signal when two different magnetic fields intersect, and then calculating the time period required for this signal to be detected, thereby converting it into an accurate position. One of these magnetic fields comes from a permanent magnet in the magnetic ring, while the other is generated by an excitation pulse from the electronic components in the sensor's electronics chamber. The excitation pulse travels along a waveguide wire made of magnetostrictive material inside the sensor at the speed of sound. When it intersects with the static magnetic field in the magnetic ring, due to the magnetostrictive effect, the waveguide wire produces mechanical vibrations forming a strain pulse. The strain pulse is quickly detected by the sensing circuit in the electronics chamber. By multiplying the total time from the generation of the excitation pulse to the detection of the strain pulse by the fixed speed of sound, we can accurately calculate the change in the position of the magnet. This process is continuous, so whenever the position of the magnetic ring changes, the new position is promptly measured. Since the output signal is an actual absolute value, rather than a proportional signal or one that needs further amplification, there is no issue of signal drift or variation, and unlike other sensors, there is no need for periodic recalibration.

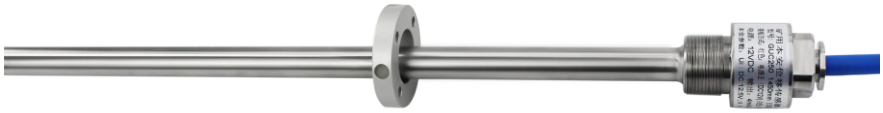
产品尺寸图Product Dimension Drawing

单位Unit:mm

GUC2500安装技术图纸
GUC2500 installation technical drawing

线长标配一米
cable length standard one meter





安装步骤Installation Steps

1. 检查传感器和磁环完好；规划电缆路径避开大功率设备；准备所需工具。

1. Check that the sensor and magnetic ring are intact; plan the cable route to avoid high-power equipment; prepare the necessary tools.

2. 清理螺纹；使用合适扭矩旋紧；壳体可靠接地。

2. Clean the threads; tighten with the appropriate torque; ensure the housing is properly grounded.

3. 磁环与测杆保持同心，无接触。

3. The magnetic ring and the measuring rod remain concentric without contact.

4. 严格按线色或标识接线，电源正负切勿接反，确保屏蔽线接地。

4. Strictly wire according to the wire color or markings, do not reverse the positive and negative power connections, and ensure the shielding wire is grounded.

5. 先单独通电测试，移动磁环观察输出变化，正常后再连接控制系统复核数据。

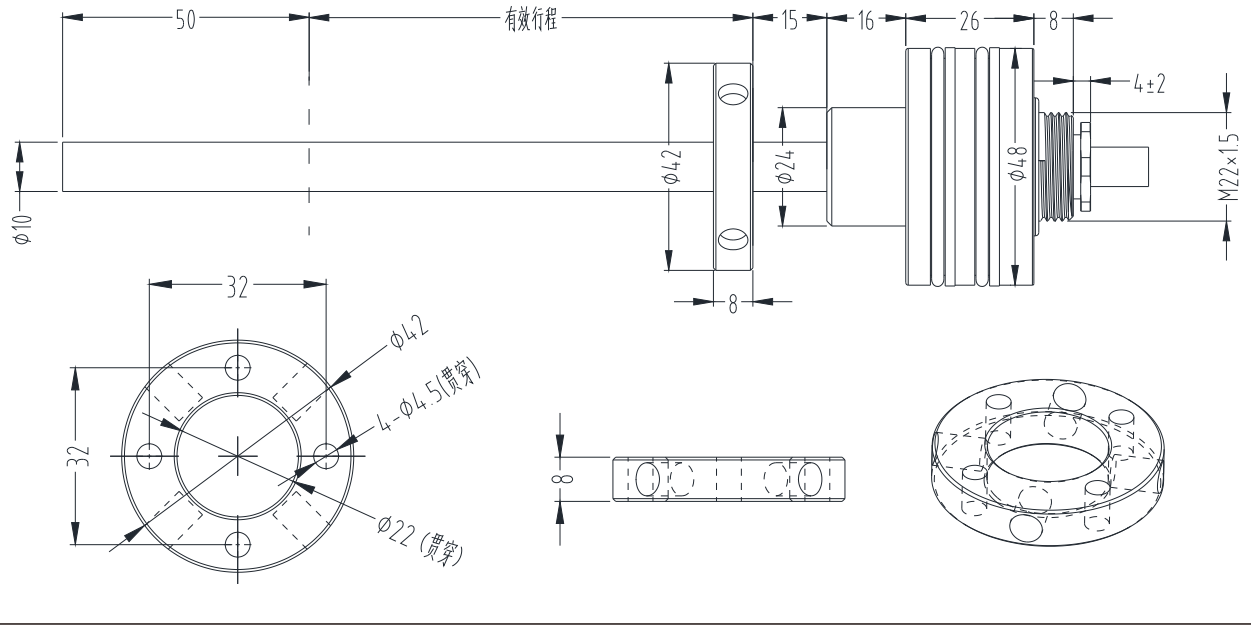
5. First, power on and test separately, move the magnetic ring to observe the output changes, and after confirming it is normal, connect to the control system to verify the data.

产品尺寸图Product Dimension Drawing

单位Unit:mm

GUC2800安装技术图纸
GUC2800 installation technical drawing

线长标配一米
cable length standard one meter





安装步骤Installation Steps

1. 检查传感器和磁环完好；规划电缆路径避开大功率设备；准备所需工具。
1. Check that the sensor and magnetic ring are intact; plan the cable route to avoid high-power equipment; prepare the necessary tools.

2. 清理接触面，确保O形圈密封有效；壳体可靠接地。
2. Clean the contact surface to ensure the O-ring seal is effective; ensure the housing is properly grounded.

3. 磁环与测杆保持同心，无接触。
3. The magnetic ring and the measuring rod remain concentric without contact.

4. 严格按线色或标识接线，电源正负切勿接反，确保屏蔽线接地。
4. Strictly wire according to the wire color or markings, do not reverse the positive and negative power connections, and ensure the shielding wire is grounded.

5. 先单独通电测试，移动磁环观察输出变化，正常后再连接控制系统复核数据。
5. First, power on and test separately, move the magnetic ring to observe the output changes, and after confirming it is normal, connect to the control system to verify the data.

电气连接Electrical Connection

接线定义 Wiring definition	红色 RED	白色 WHITE	绿色 GREEN	蓝色 BLUE	屏蔽线 SHIELDED WIRE
	供电电源(+) power supply (+)	供电电源(-) power supply (-)	信号输出+ signal output +	/	GND

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。
The above is for reference only, the specific wiring definition of the product physical labeling shall prevail.

性能参数Performance Parameters

电气指标Electrical indicators

GUC2500/GUC2800矿用位移传感器 GUC2500/GUC2800 Mining Displacement Sensor			
量程范围 Measurement range	0～1500mm	基本误差 Basic error	≤±0.1%FS
供电电压 Supply voltage	DC12V	工作电流 Operating current	≤30mA
分辨率 Resolution ratio	优于0.1mm better than 0.1mm	迟滞 Hysteresis	≤0.005%FS
温度性能 Temperature performance	≤0.005%/°C		
工作温度 Operating temperature	-30°C~60°C		
输出信号 Output signal	4-20mA，0-10V		
防护等级 Protection grade	IP67		
出线方式 Qualification method	防水接头直出线 waterproof connector with direct outlet cable		
测杆材质 Rod material	默认：0CR18NI9（304不锈钢）；可定制为：316不锈钢 default: 0CR18NI9 (304 stainless steel); can be customized to: 316 stainless steel		
电子仓材质 Electronic warehouse material	默认：0CR18NI9（304不锈钢）；可定制为：316不锈钢 default: 0CR18NI9 (304 stainless steel); 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≤250Ω voltage signal output load ≥4KΩ current signal output load ≤250Ω		
备注说明 Remarks	下单型号：GUC2500/GUC2800，具体行程及线缆长度需备注 order model: GUC2500/GUC2800, please specify the exact travel distance and cable length		

RS485数字信号转模拟量信号模块
RS485 digital to analog signal module

产品实物图Product Picture



固定式安装电子仓
fixed mount electronic warehouse



导轨式安装电子仓
rail-mounted electronic silo

产品概述Product overview

该模块是一款工业级标准模拟量输出产品，采用16位DAC芯片，精准的模拟量输出，支持4～20mA、0～5V、0～10V。供电电源采用隔离电源，应用层采用标准MODUBUS-RTU协议，符合工业标准，适用于各种工业场合及自动化控制系统等。

The module is an industrial standard analog output product, adopting 16-bit DAC chip, accurate analog output, supporting 4～20mA, 0～5V, 0～10V. The power supply adopts isolated power supply, and the application layer adopts the standard MODUBUS-RTU protocol, which is in line with the industrial standard, suitable for various industrial occasions and automation control systems, etc. The module can be used in a variety of industrial applications and automation control systems.It complies with industrial standards and is suitable for various industrial occasions and automation control systems.

产品特点Product Features

一、接线端子，可拔插连接接头使用更方便。

First, terminal block, plugg able connection connector is more convenient to use.

二、隔离电源防干扰，更安全。

Second, lsolated power supply to prevent interference, more secure.

三、配套使用的RS485信号输出的传感器，可以用米朗公司的专用软件，用PC电脑现场接入传感器，更改传感器配置。

Third, matching RS485 signal output sensors can be used with special software of miran to access the sensors on site with a PC to change the sensor configuration.

产品由来Product Origin

1.该模块是专为干扰较严重的环境而设计。在日常作业环境，模拟信号传送会容易受到干扰。传送电线质量，周边设备配置，和电线安装环境都会大大影响模拟信号传送。

1. This module is designed for environments with high levels of interference. In everyday operating environments, analog signal transmission can be susceptible to interference. The quality of the transmitting wires, the configuration of the peripheral equipment, and the environment in which the wires are installed can greatly affect the analog signal transmission.

2.该模块是配合米朗磁致伸缩位移传感器等RS485数字信号输出的产品使用。传感器把实时位移信号用RS485数字信号格式传送到安装在电控箱内的该模块进行解码。然后转化成0-10V电压等模拟量信号，再传送到控制器的标准模拟输入。

2. The module is used with products with RS485 digital signal output, such as miran magnetostrictive displacement sensors. The sensor transmits the real-time displacement signal in RS485 digital signal format to the module installed in the electronic control box for decoding. It is then converted into an analog signal, such as 0-10V voltage, and then transmitted to the standard analog input of the controller.

3.模块内有专用的电源电压过滤和稳压系统。为位移测量提供一个最完整的供电方案。解除了机台上因共用电源供电所带来的不稳定电压干扰而产生的不稳定读数。

3. There is a special power supply voltage filtering and stabilizing system inside the module. Provides a most complete power supply solution for displacement measurement. Eliminates unstable readings on the machine due to unstable voltage interference caused by shared power supply.

4.此方案不用改动现有设备配置，如控制电脑和配线，而且所得的位移读数更能媲美采用现场总线的效果。

4. This program does not have to change the existing equipment configuration, such as control computers and wiring, and the resulting displacement readings are more comparable to the effect of using fieldbus.

导轨式安装示意图
Schematic diagram of rail mounting





产品型号选型 Product Model Selection

MRS485 - □□ - □□□□mm - □ - □

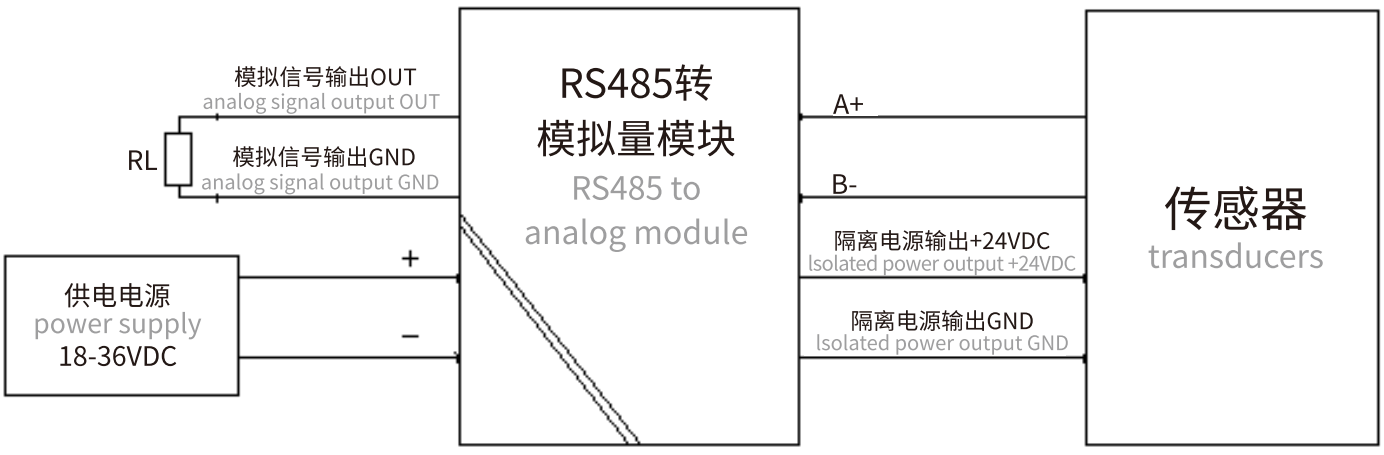
- MRS485：米朗RS485数字信号转模拟信号模块 Miran RS485 digital to analog module
- □□：V1:0-5V输出 V1:0-5V output；V2:0-10V输出 V2:0-10V output；A:4-20mA输出 A:4-20mA output
- □□□□mm：默认量程 default range
- □：G:固定式安装电子仓 G: fixed installation electronic silo；D:标准35mm导轨式安装电子仓 D:standard 35mm rail-mounted electronic silo
- □：C:配套磁致伸缩位移传感器 C:matching magnetostrictive displacement sensor；K:配套电子尺 K:matching electronic ruler；L:配套拉绳位移传感器 L:matching rope displacement sensor；LVDT:配套LVDT差动变压位移传感器 LVDT:matching LVDT differential variable displacement transducer；Q:配套倾角位移传感器 Q:matching tilt angle displacement sensor；D:配套电涡流位移传感器 D:matching eddy current displacement sensor；空白:通用性 Blank:generalization

例如 Example：MRS485-V2-100mm-D

表示米朗RS485数字信号转模拟信号模块，输出为0-10V，量程为100mm，标准35mm导轨式安装电子仓，通用性

Miran RS485 digital signal to analog signal module, the output is 0-10V, the range is 100mm, standard 35mm rail mounting electronic warehouse, versatile

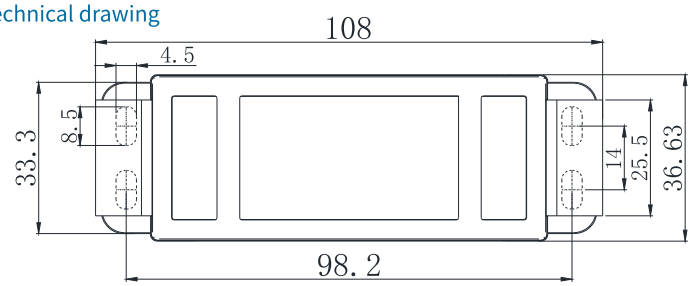
接线示意图 Wiring Schematic

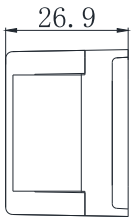


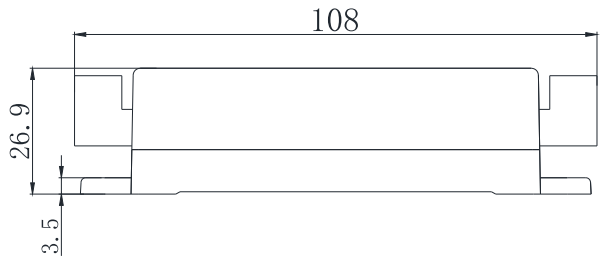
产品尺寸图Product Dimension Drawing

单位Unit:mm

固定式安装技术图纸
fixed installation technical drawing





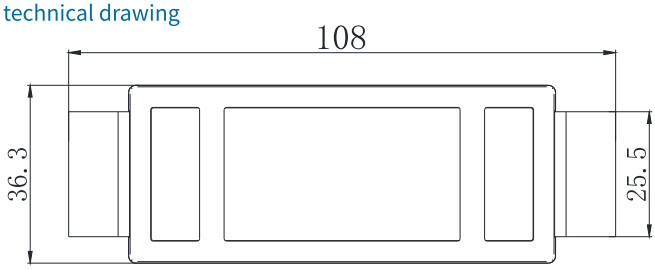


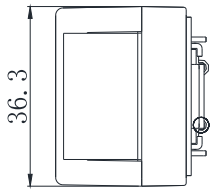


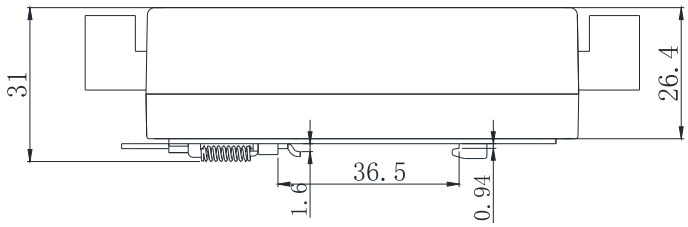


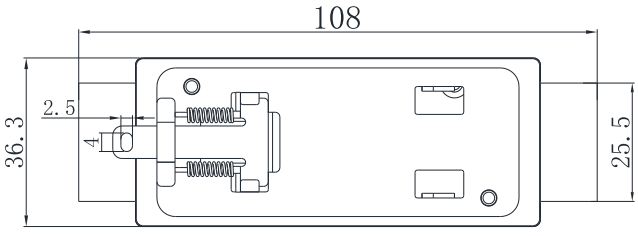
单位Unit:mm

导轨式安装技术图纸
rail installation technical drawing













性能参数Performance Parameters

电气指标Electrical indicators

RS485数字信号转模拟量信号模块 RS485 Digital to Analog Signal Module	
工作电压 Operating voltage	默认+18~36VDC（+9~18VDC可定制） default +18~36VDC (+9~18VDC can be customized)
工作电流 Operating current	＜35mA，传感器供电输出负载＜100mA(24VDC供电时) <35mA, sensor power supply output load <100mA (at 24VDC power supply)
输入信号 Input signal	RS485; 串口配置：波特率：115200，数据位8位，停止位1位，无校验，地址：01H RS485; serial port configuration: baud rate: 115200, data bit 8 bits, stop bit 1 bit, no parity, address: 01H
输出信号 Output signal	0～5V，0～10V，4～20mA可选配 0～5V, 0～10V, 4～20mA optional
分辨率 Resolution	16位 16-bit
精度等级 Accuracy class	±0.1%

性能指标Performance indicators

工作环境 Working environment	温度-30 ～+85℃，湿度0～85%不结露 temperature -30 to +85℃, humidity 0 to 85% without condensation
安装方式 Installation method	固定式安装，导轨式安装可选 fixed mounting, rail mounting optional
通讯距离 Communication distance	RS485通讯距离＜1200米 RS485 communication distance＜1200 meters
通讯协议 Communication protocol	标准Modbus-RTU协议（目前仅支持米朗公司传感器，若需兼容其他传感器需定制） standard Modbus-RTU protocol (currently only supports miran sensors, customization is required for compatibility with other sensors)
接线端子说明 Terminal block description	供电输入＋：电源输入+18～36VDC power supply input + : power supply input +18 to 36VDC
	供电输入 -：电源输入- power supply input - : power supply input -
	信号输出OUT: 模拟量信号输出+ signal output OUT: analog signal output plus
	信号输出GND: 模拟量信号输出- signal output GND: analog signal output -
	供电输出+24V：隔离电源输出+24VDC power supply output +24V : Isolated power supply output +24VDC
	供电输出GND：隔离电源输出- power supply output GND : Isolated power supply output-
	信号输入 A+： RS485 A+ signal input A+ : RS485 A+
	信号输入 B-： RS485 B- signal input B- : RS485 B-

模块说明Module Description

米朗RS485数字信号转模拟量信号模块（按键）可实现RS485信号转换模拟量信号（0-5V，0-10V，4-20mA），通过板载按键和LED指示灯的闪烁来实现用户自定义起点终点的功能。用户完成两点标定操作后，根据标定区间实现线性输出，标定之外的部分视为死区。模块出厂时内置默认量程100mm，若客户下单时候未进行特殊说明或二次标定操作，则根据默认量程100mm对应模拟量输出。该模块可以配套米朗公司几乎所有RS485输出的传感器产品，在传感器的量程范围内实现任意位置的起点及终点的标定，且不限制输出逻辑，即输出信号的最大值和最小值的方向也是可以自由调换标定的。

Miran RS485 digital signal to analog signal module (keypad) can realize the conversion of RS485 signals to analog signals (0-5V, 0-10V, 4- 20mA), and the user-defined starting point and end point by the on-board keypad and flashing LED indicators. After the user completes the two-point calibration operation, linear output is realized according to the calibration interval, and the part outside the calibration is regarded as dead zone. The module has a built-in default range of 100mm, if the customer does not make special instructions or secondary calibration operation when placing an order, the analog output will be corresponded to the default range of 100mm. The module can be used with almost all RS485 output sensors of Miran Company to realize the calibration of the starting point and end point of any position within the range of the sensor, and there is no restriction on the output series, i.e., the direction of the maximum and minimum values of the output signals can be freely switched for calibration.

传感器配置Sensor Configuration

该模块需配合米朗RS485输出（Modbus-RTU 协议）的位移传感器使用，传感器配置需和模块配置保持一致：波特率：115200，数据位8位，停止位1位，无校验，地址：01H

The module should be used with Miran RS485 output (Modbus-RTU protocol) displacement sensors, the configuration of the sensor should be the same as that of the module: baud rate: 115200, 8 data bits, 1 stop bit, no parity, address: 01H.

注：目前该转换模块仅支持米朗公司传感器，若需兼容其他传感器请咨询业务。

Note: At present, this conversion module only supports Miran's sensors, if you need to be compatible with other sensors, please consult the business.

按键功能性说明Key Functionality Description

模块正常输出时，LED灯常亮；按键下按2~5秒松开，LED闪烁3次后熄灭，进入标定状态；将传感器移动至目标起点，点按按键，LED闪烁2次后熄灭，起点标定完成；将传感器移动至目标终点，点击按键，LED闪烁两次后常亮，终点标定完成，传感器正常输出。若需擦除用户自定义标定点，使模块恢复至出厂默认量程输出，需在模块正常输出状态时，LED灯常亮，长按按键8~15s松开按键，LED灯闪烁五次后保持常亮，擦除完成，模块恢复出厂默认输出。

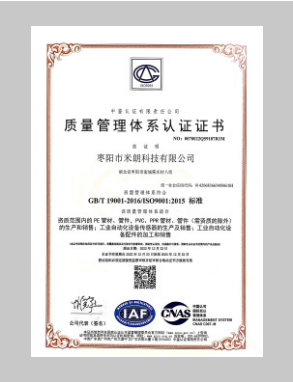
Module normal output, the LED light is always on; press the key down 2~5s to release, the LED blinks 3 times and then off, into the calibration state; move the sensor to the target starting point, press the key, the LED blinks 2 times and then off, the starting point calibration is complete; move the sensor to the target end point, press the key, the LED blinks twice and then lights up, the end point calibration is complete, the sensor is normal output. If you need to erase the user-defined calibration point, so that the module to return to the factory default range output, you need to be in the normal output state of the module, the LED light is always on, long press the key for 8~15s to release the key, the LED blinks five times to keep the light on, erase the completion of the module to return to the factory default output.

注意事项Caveat

若用户操作时误操作进入标定模式，只需将位移传感器位置保持不变，在同一位置标定起点和终点，当标定起点与终点间距过小时，模块会判定标此次标定动作无效。

If the user enters the calibration mode by mistake during operation, just keep the position of the displacement sensor unchanged and calibrate the start point and end point at the same position. When the distance between the calibration start point and end point is too small, the module will determine that the calibration action is invalid.

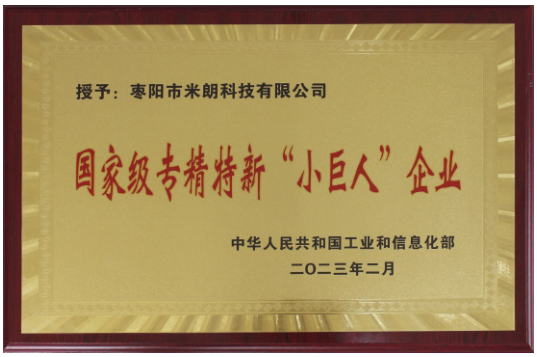
荣誉证书Certificate of Honor











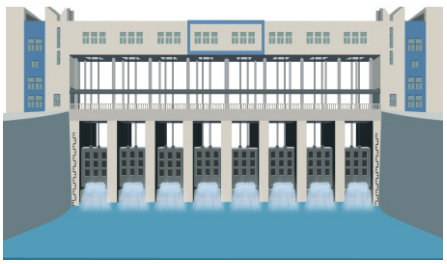








应用领域Areas of application



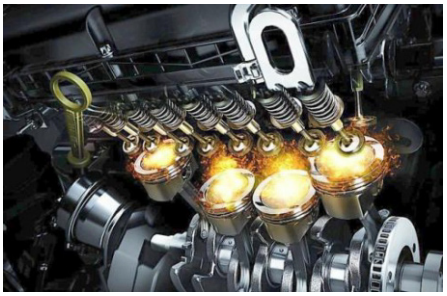
• 闸门开度控制
Gate opening control



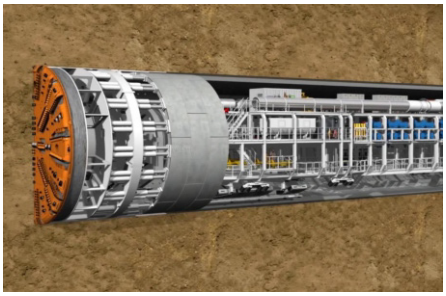
• 吹瓶机油缸位置反馈
Blowing machine cylinder position feedback



• 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



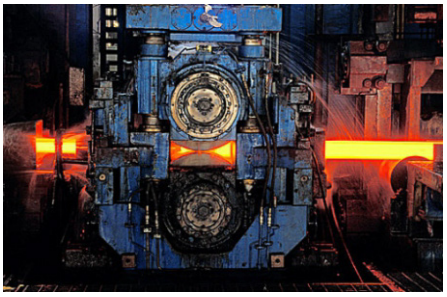
• 桥梁与大坝位移监测
Bridge & dam displacement monitoring



• 石油钻井设备位移反馈
Oil drilling equipment displacement feedback



• 冶金
Metallurgy



• 轧钢机油缸位置检测
Rolling mill cylinder position detection



• 铝型材挤压机
Aluminum profile extrusion machine



• 风力发电
Wind power generation

• • •

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.



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（尤其是在尺寸方面要求特别严格的，或者在产品实物没收到之前，就要先在自己设备上加工做好安装孔位和确定安装空间位置的，要特别注意,要在购买前3天内与我们书面再次确认好产品的实际尺寸，以免造成不必要的返工等损失，若没有在购买前3天内与我们书面确认尺寸而造成后续安装困难等损失，我司不予承担，最终尺寸要以产品实物为准。）

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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20261001-磁致伸缩位移传感器彩页

20261001- Magnetostrictive displacement sensor brochure

主要著作人：王工

Main author: Wang designer

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